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TWO INTERESTING SURGICAL
CASES.

BY

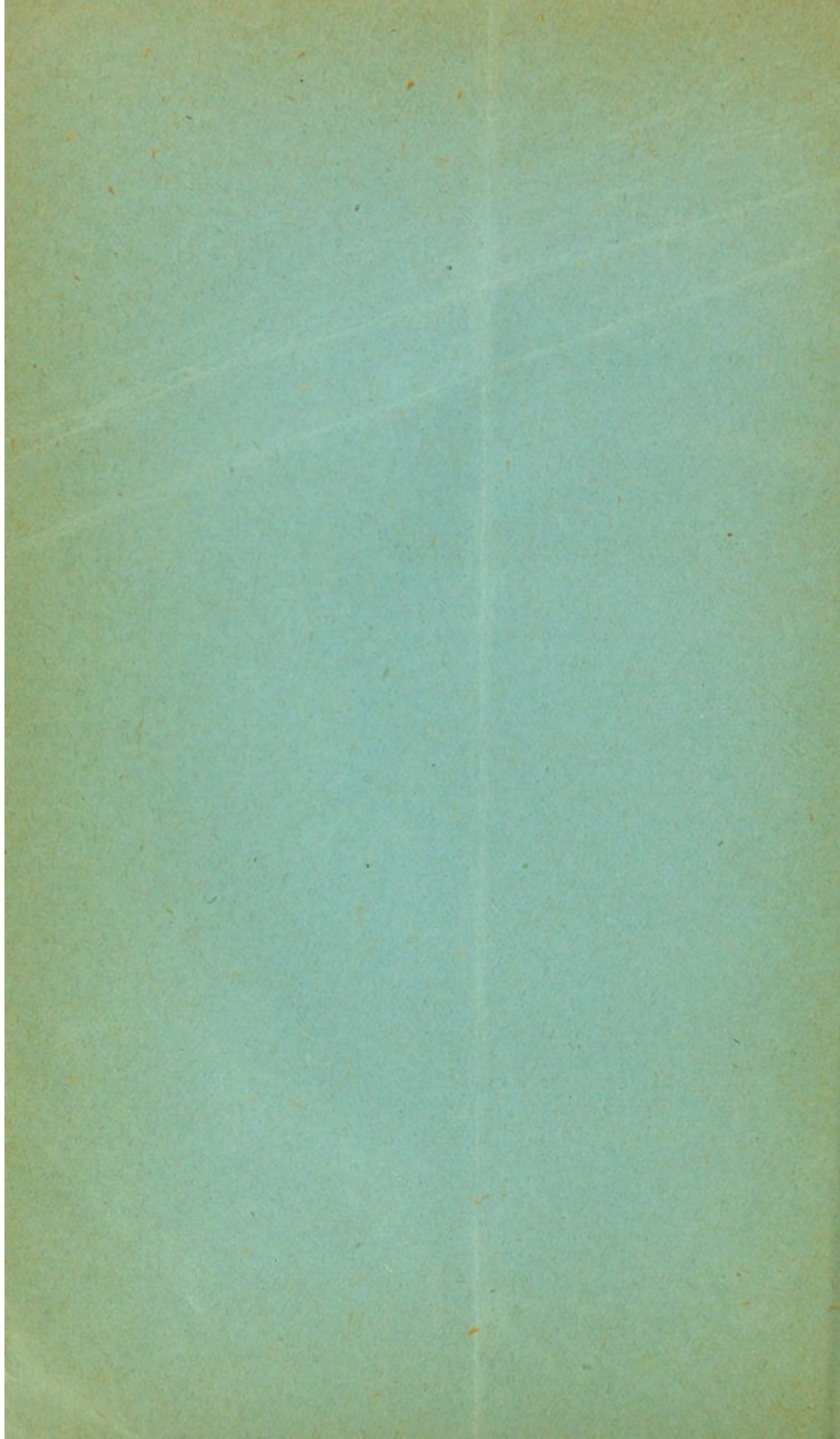
CLAUDIUS H. MASTIN, M.D., LL.D. UNIV. PA.
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FROM

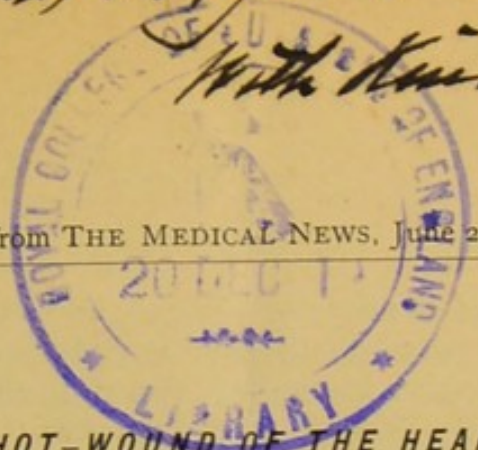
THE MEDICAL NEWS,

June 29 and July 13, 1895.



With kind remembrance,

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GUNSHOT-WOUND OF THE HEART.¹

BY CLAUDIUS H. MASTIN, M.D., LL.D. UNIV. PENNA.
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SURGICAL literature is not meager in details relating to wounds of the heart, and although much has been written, and many interesting cases have been placed upon record in the various journals, as well as in the standard surgical publications, the subject is one of especial interest, and every case presenting itself is worthy of note. No apology therefore appears necessary for offering to the Association the clinical history of a case that came under my observation in September, 1894, and which has been carefully examined and watched through its entire course. I am indebted to Dr. C. H. Mastin, Jr., for accurate notes of the case, from a few hours after the reception of the wound, through convalescence up to the date of discharge from observation.

I shall not weary the Association with an extended dissertation upon wounds of the heart, nor consume the time of its Fellows by skimming over a sea of statistics or ballooning amid clouds of doubt and speculation to establish the correctness of my diagnosis in this case, but will simply lay before you "a plain unvarnished statement," and leave you to form your conclusions.

The main points to be established in making clear a diagnosis of such a wound are, first, accurate visceral localization, and, secondly, the symptoms that follow the

¹ Read by title before the American Surgical Association, May, 1895.

reception of the injury. We all know that—except in those rare cases of transposition of the heart from its normal position in the left thorax to the right side of the chest—the heart occupies a space on the left side of the thorax, bounded by the upper border of the left third rib, and that a line drawn across the sternum from the upper portion of the left auricle, *when filled*, will pass into the second left intercostal space; that the left boundary-line of the heart is a curved line beginning on the third rib, three inches from the median line of the sternum, curving outward and going downward until the fourth rib is reached, at which point it is just four inches from the median line of the sternum; the line now begins to curve in until it reaches the fifth intercostal space, where, near the apex of the heart, it is just three-and-one-half inches from the midsternal line. The whole extent of the right ventricle is presented to the surface on the left side, with only the thin edges of the lungs intervening.

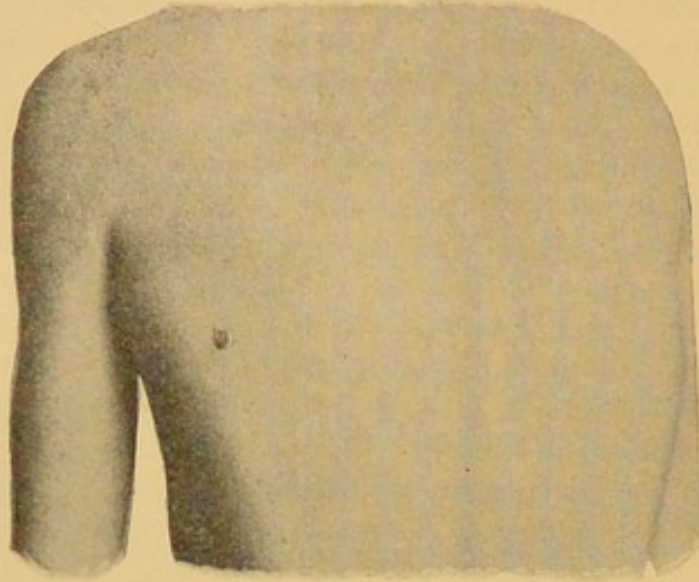
When a person is in the erect posture the heart sinks to a level somewhat below the sternal cartilage of the seventh rib, and rests upon the diaphragm, to which it is bound by the fibrous pericardium, and, although it rises and sinks according to the motions of that muscle in each act of respiration, it is prevented from swaying much to either side, whatever be the position of the body—a provision of Nature to prevent any impediment to pulmonary expansion. Such being the true anatomic position of the heart, there is no difficulty whatever in tracing upon the surface of the chest an accurate cardiac localization. Hence, if there be two points selected, one anterior and the other posterior, and the two points be within the area of localization indicating the position of the heart, then if a line drawn from these two given points pass through the assumed location of the heart, it becomes almost positive that it must pass through the heart itself.

If then, in addition to the anatomic points at which a

ball enters and makes its exit from the chest, we mark the course or direction which that missile has taken, the symptoms usual in such wounds go far toward strengthening the postulate and warrant the diagnosis. But since symptoms of heart-wounds, when taken alone, are often so obscure, they are of very little diagnostic value, and it is necessary to investigate every point bearing upon the case. The usual symptoms are such as indicate severe shock, whether from simple nervous depression or from loss of blood, which is often exceedingly profuse. The patient is faint, anxious, and deadly pale; the pulse small, irregular, and very rapid; the surface cold and clammy, the pupils dilated, the voice feeble and indistinct, and respiration is labored and interrupted by sighs. The pain is severe all over the region of the heart and the sternum. Auscultation gives the sound usually heard in an aneurismal varix, and, even though the exhaustion consequent upon the wound is very great, cases are not infrequent in which the patient has been able to run or walk quite a distance before falling and expiring. Still, these combined symptoms are not wholly pathognomonic of heart-wounds, because they may be due to chest-wounds or injuries of large vessels, with much loss of blood. Yet when the direction of a wound is clearly in the location of the heart, and we find that it has penetrated the pleura, either from before or in the rear, we are justified in concluding that the heart has been injured, provided the train of symptoms just detailed follow the injury; and especially is this a diagnostic point if the wound has penetrated the chest-wall of *the left side, between the fourth and fifth ribs, and about two inches from the sternum.*

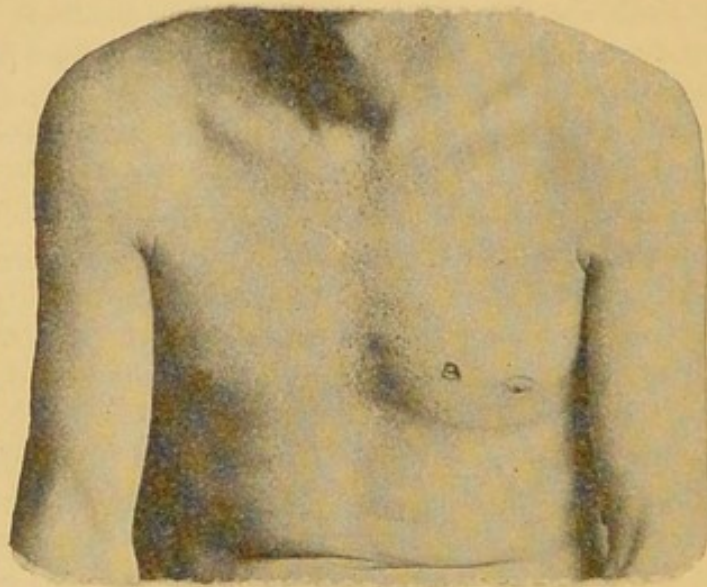
The clinical notes of the case, which I now offer to the Association, and the photographic pictures which I attach to the same, showing a front and rear view of the patient, I think fully authorize me in entitling this report a Gunshot-wound of the Heart.

FIG. 1.



Posterior view, showing wound of entrance.

FIG. 2.



Anterior view, showing wound of exit.

W. Y., white, aged thirty-two years, of good physique, born in Mobile County, Ala., a farmer by occupation, and residing sixteen miles from the city of Mobile, was shot on the morning of September 24, 1894, from an ambush, the weapon used being a 38-caliber Winchester rifle, and the distance, as afterward measured, 110 yards. The one who did the shooting was an expert marksman, and placed the ball in the rear of the chest, on the left side just below and to the outer side of the angle of the scapula, at which point it entered the chest between the seventh and eighth ribs, passing through the entire chest and emerging from the intercostal space between the fourth and fifth ribs, $2\frac{1}{4}$ inches from the left nipple. The exact measurement of this man shows that the distance from the midsternal line, in a transverse direction, to the center of the left nipple is $4\frac{3}{4}$ inches. A line drawn from the wound of entrance to that of exit passes directly through the right ventricle, and upon this anatomic location it is not possible for the heart to have escaped direct penetration.

Upon the reception of the wound the man did not fall, but walked about twenty steps, and then, feeling very weak and profuse hemorrhage coming from the *front wound*, he sat down. His wagon was then brought up and he was taken to his house, a distance of about a fourth of a mile. He coughed only once or twice and spat up a little froth tinged with blood, but there was no hemorrhage from his mouth or the wound of entrance. Pain was intense all over the anterior portion of the chest, and collapse was complete. The shooting occurred about eleven o'clock in the forenoon, and soon thereafter the man was placed in a spring wagon and brought to the city, a distance of sixteen miles, over a very rough road; owing to an accident on the way he did not reach the city until about seven o'clock in the evening, at which time I saw him, and found his condition as follows: There was little or no reaction; the clothes were

saturated with blood ; shock was complete, with an almost imperceptible pulse of 136 beats to the minute. The man was still suffering great pain, but it was not so violent as it had been ; the skin was blanched and covered with a cold perspiration ; the voice was almost inaudible, sighing, and restless. He was covered up and mustard-plasters, with artificial heat, were applied. Morphin, $\frac{1}{4}$ grain, with atropin, $\frac{1}{150}$ grain, were given by hypodermic injection, together with whisky. The pain was severe during the night, but slight reaction took place toward morning.

On September 25th there was less pain, a slight cough, a pulse of 116, and a temperature of 99° . Morphin was repeated and hot milk given as nourishment. In the evening the pulse was 116, the temperature 100° ; there was less pain, but more cough. Morphin was ordered as before. On September 26th the morning pulse was 92 and the temperature 101° . The man had slept about two hours during the night, suffered less pain and had less cough. His bowels were moved by Rochelle salts ; the morphin was discontinued, and he was put upon an exclusive milk-diet. In the evening his temperature was 100.5° , the pulse 114, and his general condition about as in the morning. I ordered codein phosphate, $\frac{1}{4}$ grain, to be repeated during the night if he was restless. On September 27th the morning temperature was 99.8° and the pulse 96 ; the man had passed a fairly good night, but cough had increased, with expectoration of traces of blood and pus ; his respiration was 28 per minute. There was no increase of pain, but there was much tenderness over the region of heart. Auscultation had given no positive signs, as the heart-sounds were so muffled that it was not possible to gain any positive assurance from them. His diet was milk and broths ; his bowels acted naturally, and he enjoyed quiet rest. In the evening the temperature was 101° , the pulse 92, the respirations 32 ; there was some cough, but less pus,

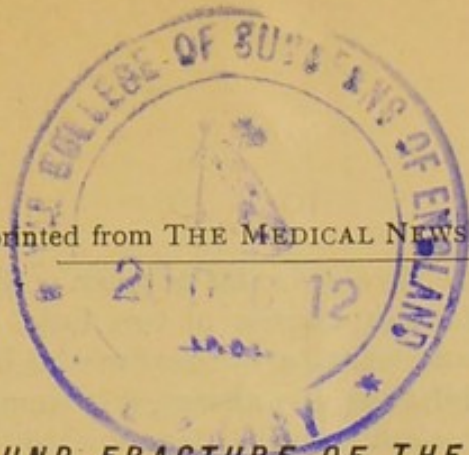
and only a streak of blood, with little or no pain. On September 28th the morning temperature was 100° , the pulse 96, respirations 21; the man had slept most of the night, had less pain and less cough, with little or no blood or pus in the sputum. His diet was milk, broth, eggs, toast. In the evening the temperature was 100.5° , the pulse 92, and respirations 32; cough was less and there was very little pain. The man was doing well. On September 29th the temperature was 99.8° , the pulse 96, and respirations 21. There was a slight discharge from the posterior wound, consisting of bloody serum, with a very little pus. The anterior wound has closed by blood-crust. The entire condition was favorable, with little or no pain or cough. In the evening the temperature was 100.5° , the pulse 104, the respirations 24; there was an increase of cough, with a little blood, but the general condition was as good as it had been. On September 30th the morning temperature was 99.8° , the pulse 96, the respirations 24. There was some cough, with traces of blood; the man had slept well and had no pain save in coughing. In the evening the temperature was 100.4° , the pulse 96, the respirations 24; and the condition was about the same as in the forenoon. October 1st the temperature was 99.5° , the pulse 100, the respirations 28, and the general condition was better. On October 2d the morning temperature was 99.5° , the pulse 88, the respirations 33. There had been some increase of cough, and a little pus in the sputum; but there was no pain, and the man had rested quietly. On October 3d the evening temperature was 100° , the pulse 96, the respirations 32, with very little cough. On October 4th the morning temperature was 99.3° , the pulse 92, the respirations 28, with less cough. On October 5th the evening temperature was 99.5° , the pulse 92, and the respirations 21. On October 6th the evening temperature was 99° , the pulse 92, the respirations 24, and there was no cough and no pain. On October 7th the noon temperature was 99°

the pulse 92, respirations 26; there was some cough, with clear blood in the sputum, but no pain. On October 8th the temperature was 99°, the pulse 90, the respirations 24. There was less cough, with no blood. On October 9th the temperature was 99.4°, the pulse 80, respirations 20, and no cough. The wounds had closed, the man was sitting up, and his general condition was so good that no further notes were taken, as improvement was steady and unaltered to October 15th, when he was discharged from all observation, and at that time the accompanying photographs were taken.

Such is the outline of a case that has proved of great interest to me. I have not the shadow of a doubt in my own mind that the right ventricle was traversed by the ball; that the *profuse* hemorrhage of the wound of exit came from the heart itself—the intercostal artery not being injured—because at this point only a very thin edge of lung intervenes between the right ventricle and the chest-wall, and since there was little or no hemorrhage from the wound of entrance, it shows that the lung was not giving out any great amount of blood; and, again, he had little or no hemorrhage from the mouth in coughing.

As will be seen from the clinical notes, there was absolutely little or no treatment; the case was simply watched and the indications were met as they arose. The man recovered solely through his own inherent vitality.

[Reprinted from THE MEDICAL NEWS, July 13, 1895.]



**COMPOUND FRACTURE OF THE SKULL, WITH
SEVERE LACERATION OF THE BRAIN, IN
AN INFANT TWO MONTHS OLD, WITH
RECOVERY.**

By CLAUDIUS H. MASTIN, M.D., LL.D. UNIV. PENNA.,
OF MOBILE, ALA.

THE following interesting case of severe injury to the brain of an infant, less than two months of age, is not without interest, but is worthy of record in the archives of surgical literature. It shows the tolerance of very young children to severe wounds, even when such injuries implicate vital organs. Although familiar with the histories of very many severe injuries to the skull and the brain itself, I am not able to find among surgical records a single case in which so young a child has met with so severe an injury and made so rapid a recovery—if indeed there has been recovery after such an injury.

The following notes, carefully and correctly taken at the time of the injury, will suffice to lay the case before the profession.

On Sunday, April 21, 1895, I was hastily summoned in consultation to see an infant boy, a child of Mr. E. H., the Imperial German Consul at this port. The child had been born February 26, 1895, and was consequently on the day of the accident just fifty-four days old—less than two months. The parents having gone to attend services at church, the nurse, with whom the child had been left, placed it in its little carriage and rolled it upon the front gallery, which is elevated from the ground eight feet, and reached by a flight

of rather steep steps, eleven in number. She carelessly left the infant in charge of two little children upon the gallery and went to the rear of the house for some purpose; whilst she was absent, it is supposed the little ones, in play, pushed the carriage toward the landing of the steps, over which it toppled and fell to the bottom and out upon the walk. The child was thrown out at the time the carriage upset, and, in falling, the little steel rod which supports the sunshade struck the frontal bone just above the orbital ridge over the right eye, penetrating the skull and entering the brain to the distance of about three-quarters of an inch. (I *estimated* this depth from the stain of blood and brain remaining upon the rod.) Entering the skull with much force, it appeared to have torn itself outwardly as the child, which evidently had been impaled upon the rod, fell away from the carriage. The wound extended upward and outward on the right side of the frontal bone, from just above the orbital ridge, near to the sagittal suture, a distance of very near, if not entirely, two inches. The rod measured three-eighths of an inch in diameter, and at the point was rough and jagged, just such an instrument as would be calculated to inflict such an injury. There was considerable loss of blood, and at least a dessertspoonful of brain-substance was scattered upon the inside of the sunshade, upon which the child had fallen; besides, an equal amount had been smeared upon the face and some considerable quantity oozed from the wound. The wound was a horrid, lacerated gash, and from it was trickling a flow of dark-colored venous blood, to all appearances coming from the longitudinal sinus. There was no depression of the skull, but rather an eversion of the torn integuments, with a bulging outward of the edges of the fracture, as if they had been forcibly turned out by the rod of steel after penetrating the skull and then ripping up.

The shock was profound, and the child was almost in-

sensible, deathly pale, and pulseless. To all appearances the case was hopeless and surgical efforts were seemingly of little avail—in fact, the child was apparently in *articulo mortis*. Unwilling to abandon the case to a certain death, I concluded to wipe away the extruding brain and close the rent in the forehead, more with the intent of making it a less repulsive corpse than with any hope of effecting a cure! To this end I closed the wound with interrupted silk sutures carried through the scalp and including the pericranium, down upon the skull itself. I was not able, except by pulling aside the edges of the skull, to catch up the dura, else I should have also closed that membrane before closing the integuments. At the point of entrance of the rod, where the integuments were perforated, I left it open for drainage, if perchance the wound should unite. The skull was so soft, very little firmer than a dense sheet of cartilage, that it was an easy matter to bring the edges in close apposition and retain them there by a compress of iodoform-gauze, with a bandage carefully adjusted. As stated, the shock was so profound that the child did not cry or give evidence of the least pain during the introduction of the sutures or in the adjusting of the dressing, being as quiet as if under the influence of an anesthetic. This was about one o'clock in the afternoon, and I had little thought that the child would live through the night. When I again called late in the evening I was astonished to find that reaction was almost complete, with an absence of fever, and that the child had rested quietly and nursed from its mother as it had usually done.

During the night the child suffered a good deal from colic and the temperature had run up to 102°. The infant was restless and irritable. I ordered quiet, and phenacetin, gr. ss, every two-and-a-half or three hours until the temperature came down.

On April 23d the temperature had fallen during the night to 99°, the babe had rested quietly, its functions

were normal, the bandages were saturated with cerebro-spinal fluid. I readjusted the bandages and found that the flow of fluid was rather profuse, as it ran out and trickled down the child's face. I instructed the mother to absorb it as well as she could, but to avoid any pressure upon the wound.

On April 24th the morning temperature was 98.4° . There was no appreciable change in condition of wound or child. The noon temperature was 99° and at 3 o'clock P.M. it had increased to 100° , but at 7 P.M. had fallen under the administration of phenacetin to 98.4° .

In the morning of April 25th the child was evidently more comfortable, and with the exception of a slight attack of colic during the night had got along very well. At noon the temperature was 99° , and at 6 P.M. it had risen two-fifths of a degree. The wound appeared healed, save at the drainage-point, from which a continued flow of cerebro spinal fluid issued. The child's functions were normal, and it appeared as well as if no accident had happened to it.

On April 26th the child was evidently doing well, and nursed regularly and slept quietly ; the temperature remained at 98.4° . The wound appeared soundly healed, save at a small point in the lower angle, from which there continued a rather profuse flow of cerebro-spinal fluid. I concluded to try to arrest this by pressure over the spot, and, having dusted it thickly with boric acid and put on a little compress of gauze, I confined it by a narrow strip of rubber plaster and a bandage. This proved of no avail, for the fluid continued to flow and saturate the dressings, and, as the bandage and plaster seemed to give the little patient discomfort, I concluded to remove all dressing, save a simple fold of gauze to absorb the fluid, and to leave the treatment to the unaided efforts of Nature. The sutures had been removed on the sixth day, and as the wound was entirely closed, save at the minute opening from which the fluid issued, there were

no indications to be fulfilled other than quiet, good nursing, and waiting for developments. The next three days, the 27th, the 28th, and the 29th, were passed without any change, with the exception of the night of the 29th, at which time the fluid ceased to flow, and the little opening on the morning of the 30th was closed as tightly as the entire line of wound.

I visited the child again on May 1st and 2d, and finding it perfectly well, with only a narrow line marking the place where the rent had opened the skull, I concluded to discharge the case from my list.

A few days ago I called to see the little patient and met the nurse with it in the yard. The mother informed me that it had never had a single bad symptom, that all its functions were normal, that it nursed and slept as all her children had done. When questioned as to whether the child was as bright as children usually are at his age, now going into its fourth month, she replied: "Doctor, I think my little boy is the brightest child I have had; he laughs, and plays, and cooes, and is the dearest little fellow in the world."

Such is the outline of this case, which I record as interesting on account of the gravity of the injury, and being followed by such speedy and satisfactory an issue. I might mention the profuse discharge of fluid as exceeding my expectation, although it was not possible to measure the quantity lost, as it was absorbed by the dressings as it issued from the wound; judging from the saturated condition of the gauze, bandages, and little cap which was put on to keep the dressing in place, I feel safe in *estimating* it to have been not less than six or eight fluidounces.

