right ovary in one. Excepting this last case the disease was bilateral in all, and double salpingo-öophorectomy was performed, with supravaginal hysterectomy in the 3 cases of associated uterine disease.

There were 3 cases of chronic salpingitis, and one case of pyosalpingitis. Two cases were associated with appendicitis. 2 with chronic metritis and endometritis, one with chronic metritis, and one with retroversion of the uterus. Both tubes and ovaries were removed, except in one instance in which a portion of the left ovary was left. Supravaginal hysterectomy was done in 3 of these cases, and ventrosuspension in the fourth.

There were 3 examples of chronic cystic öophoritis, one bilateral, one right-, and one left-sided. Associated conditions were chronic appendicitis, retroversion of the uterus, and endometritis in one; chronic appendicitis, prolapse of the uterus, and lacerated perineum in another; and prolapse of the vagina in the third.

There were 5 cases of ovarian cysts, 4 on the right and one on the left side. Appendicitis was present in all cases. The cysts were simple in 2 cases; dermoid with chronic salpingo-öophoritis, in one; papillomatous (adenocarcinoma), in one; and tuberculous in one case. In 3 cases of unilateral and 2 cases of bilateral salpingo-öophoritis, salpingo-öophrectomy was done. Pelvic abscess was evacuated by vaginal incision in 2 patients.

There was one case which resembled closely ectopic gestation for which complete supravaginal hysterectomy was performed, and also appendicectomy. Histological examination revealed hemorrhage and necrosis, no evidence of decidual tissue.

In addition to the operations described above, 49 others of less interest were also performed in the clinics.

STATED MEETING, HELD MARCH 1, 1909.

THE President, DR. WILLIAM J. TAYLOR, in the Chair.

OSTEOTOMY OF FEMUR FOR HIP ANKYLOSIS.

DR. RICHARD H. HARTE presented two patients upon whom osteotomy had been done for relief of ankylosis of hip in bad position.

CASE I.—Female, now twenty-five years of age, had tuberculous disease of the right hip when five years old. She first came under Dr. Harte's care at the Orthopædic Hospital, in November, 1904, at the age of 20 years. Her right hip was then ankylosed in slight adduction and marked flexion. There were scars of four old sinuses on the outer side of the thigh and in the inguinal region. She wore a shoe with a heel six inches high, walking with the foot in a position of extreme equinus, and having a marked limp. She came to the Orthopædic Hospital not for the deformity, but on account of pain in the hip. After being in bed at the hospital for one month with extension, she was discharged wearing a high shoe (six inches) which held her foot in normal position. In July, 1905, a sinus behind the great trochanter opened, and for this she was again put to bed in September, 1905.

On November 23, 1905, Dr. Harte did an osteotomy below the lesser trochanter, with osteotomes. The thigh was brought down into a position of almost complete extension and slight adduction, to overcome the previous shortening. She remained in bed with extension and sand bags for nine or ten weeks, and then gradually resumed walking. Measurements made in March, 1906, four months after the operation, are recorded as follows:

Right side, from anterior superior spine of ilium to internal malleolus, 28.5 inches.

Left side, from anterior superior spine of ilium to internal malleolus, 30.5 inches.

From umbilicus to internal malleolus, right, 32.5 inches.

From umbilicus to internal malleolus, left, 33.5 inches.

In May, 1906, the sinus back of the trochanter closed, and has remained closed since. In September, 1906, the patient was again in bed with some pain in the hip, but since then there has been no pain whatever. She now walks with a barely perceptible roll, wearing an ordinary shoe, with not even a lift on the heel. She has walked thirty city squares at a time, without experiencing discomfort.

Case II.—A lad, aged seventeen years, came to the Orthopædic Hospital in February, 1908. In July, 1907, he had had typhoid fever, being treated in St. Mary's Hospital, the typhoid being followed by an arthritis of the left hip joint. He remained in bed in the hospital until November, 1907, and was in bed for a month at home after his discharge. When he first came to the Orthopædic Hospital, in February, 1908, he walked with a marked limp, with the aid of a cane. The left hip was ankylosed in a position of twenty degrees of flexion and twenty degrees of abduction, with marked external rotation, so that as the lad lay on the bed the outer surface of his sole rested flat on the mattress. In April, 1908, osteotomy below the lesser trochanter was done, with osteotome. He was kept in bed with extension and sand bags for eight or nine weeks, and when discharged was walking with scarcely appreciable limp, the deformity having been corrected. It has been impossible to trace this patient since his discharge.

Case III.—A girl, aged fourteen years, suffered from typhoid fever in May, 1908, being treated at her home. A small abscess which formed above the right trochanter was lanced by her family physician. In June a large abscess developed in the left iliac fossa, and for this she was sent to the German Hospital, where the abscess, deep in the pelvis, was opened by Dr. Deaver, by an incision parallel to Poupart's ligament. She was discharged from the German Hospital in August, and was at home for two weeks, when she was first brought under Dr. Harte's care at the Orthopædic Hospital, September 3, 1908. There was fibrous ankylosis of the left hip in flexion and adduction, and she was put to bed with weight extension for over two months to see if any improvement could be obtained without operation. Examination November 11, 1908, showed that there was a range of motion in the left hip, of flexion and extension, of about ten degrees, extension being impossible beyond 133 degrees and flexion impossible beyond 123 degrees. Very slight rotation was possible in flexion. There was adduction deformity of 10 degrees, and no abduction was possible. A photograph made at this time shows the flexion deformity well, as well as the scars of the incisions for the iliac abscess.

Osteotomy below the lesser trochanter was done with osteotome in December, 1908, and the patient was kept in bed with weight extension and sand bags for eight or nine weeks. She now walks well without any support, only a slight limp being noticeable, and the thigh being in excellent position—very slight flexion, abduction of 15 degrees. There is no motion in the hip except very slight rotation. The shortening of the whole lower extremity is three-fourths of an inch.

Dr. Oscar H. Allis said that the point which Dr. Harte made in regard to supporting the upper fragment is an extremely important one, for if the old trouble is disturbed, even if it has been ankylosed for twenty years, it may set up trouble and carry the patient perhaps to the grave. As an illustration of this he cited the history of a woman who when a little child went through all the stages of hip disease, abscess, etc., and got well. She walked with the traditional limp until about twenty-two or twenty-three years of age, attending to her work and earning a good living. She then married. As it was impossible for her to be delivered through the natural passages, she was subjected to Cæsarian section. The operation was skilfully performed, the mother and child both recovering. Both are living to-day, but within one week of the time she was operated upon the old trouble with the hip began, extensive abscesses formed, and it has now gone through every stage of hip disease. Though Dr. Allis had resected the joint it is still suppurating; the whole hip-joint region has been involved. He believed the cause of this disaster was that the thigh was badly adducted and flexed, and since a child is to be delivered by Cæsarian section it is to be done in as short a time as possible, it is probable that an assistant in this case took the thigh, forcibly dragged it out of the operator's way, breaking up old attachments, and doing just exactly what Dr. Harte has so properly warned against.

Dr. A. P. C. Ashhurst said that there is in existence an interesting correspondence between Mr. Adams and his father (Dr. John Ashhurst) on the subject of this operation, and Mr. Adams

laid particular stress on the points raised by Dr. Harte and Dr. Allis, that it is not advisable to make a large wound or to disturb the joint too much. Mr. Adams said, in effect, that it was enough to make his hair stand on end to read and hear of the various operations done under his name, in which large wounds were made, etc. His operation was a mere puncture made over the outer surface of the femur; along the tract made by this puncture he passed his little saw; and he sawed very gently, and did everything with neatness and precision.

GUNSHOT WOUND OF THE BRAIN WITH REMARKABLE RECOVERY OF FUNCTION.

Dr. William J. Taylor presented a girl of two years of age, who was first seen by him at St. Agnes Hospital on April 1, 1907. On Sunday, March 10, 1907, twenty days before, while she was lying in bed, her little brother fired a thirty-two calibre revolver within a short distance of her head. The ball entered one-half inch to the left of the middle line, directly over the glabella, and must have passed through the frontal sinus and directly backwards and upwards and emerged from the skull on the right side over the parietal protuberance at a point two and one-half inches from the middle line and two inches back of the mid-auricular line. The ball was found on the pillow by the side of her head. There was tremendous hemorrhage, and unconsciousness for two hours. There was total palsy of the left side, and on Tuesday, the wound having been made on Sunday, she had a series of general convulsions which continued at intervals until Friday. She regained power in the left leg, but on the first of April, twenty-one days after the injury, there was still total palsy of the left hand and arm. She was so young that it was very difficult to tell whether there was any alteration in sensation or in eyesight or taste, but apparently these were normal.

On April 2, as both the wounds of entrance and exit were suppurating, and at the wound of exit there was quite a distinct swelling, she was given ether and the wound of exit explored. There was a hole in the skull about three-quarters of an inch in diameter, through which was protruding quite a distinct fungoid mass. At the side of this was a piece of bone detached from and standing at right angles to the skull. After removing this piece of detached bone and cutting away a few jagged fragments of

bones, nothing further was done. Up to this time she had been extremely restless and unable to sleep, but almost immediately quieted down and had good and restful nights. Very quickly she regained the power and control over the left arm. She was very anæmic, having only forty per cent. of hæmoglobin. By April 16 her color had improved, her appetite was good and she was taking a large quantity of various foods. She slept soundly all night and took a long nap in the day, and she had regained complete power over her left upper extremity. This she now used quite freely, could move the hand and arm in any direction and lift it high up over her head, and it was impossible to detect any want of control or movement in it. She was able to walk around by herself with perfect equilibrium and the wounds, both of exit and of entrance, had healed except for a small scab. At no time had she any rise in temperature, her convalescence being absolutely uninterrupted. On May 7 the wound of exit discharged some pus, but this soon healed and from that day to this she has remained perfectly well. There is no palsy, no evidence of any alteration in her intelligence or power of motion, there have been no convulsions or other evidence of brain irritation.

He reported this case as a remarkable example of the tolerance of the brain to mechanical interference. This bullet must have passed through the frontal sinus, through the temporal lobe and through the substance of the parietal lobe to its exit just posterior to the parietal eminence. The soft bones of the skull of a child of this age could not have presented sufficient resistance to have deflected the bullet in any way.

TRAUMATIC ASPHYXIA.

WITH REPORT OF A CASE.

BY DUNCAN L. DESPARD, M.D.,

OF PHILADELPHIA.

THE term traumatic asphyxia has been applied to the series of phenomena following the suspension of the respiratory function for a more or less prolonged period by forcible compressure of the thorax or abdomen, or both. These consist of the usual symptoms of suffocation, associated with a peculiar mottled bluish discoloration of the skin of the face and neck, sometimes extending to the upper part of the thorax, and occasionally to one or both arms, accompanied by subconjunctival hemorrhages and frequently bleeding from ears, nose and pharynx.

An interesting case of this type was admitted to the Jefferson Hospital January 28, 1908, in the service of Prof. John H. Gibbon, to whom I am indebted for the privilege of reporting the case.

CASE REPORT.—Male, age 27, a mulatto. At 4.45 P. M. on the date of admission he was on an elevator, the sides of which were unenclosed, and which was used for moving merchandise from the cellar to the sidewalk. The top of the shaft was closed at the street level by two iron doors which were usually open. When the elevator approached these doors the patient found them closed, and, becoming alarmed, attempted to jump off of the elevator. In doing so, he was caught between the moving elevator floor and the beam supporting the upper framework of the shaft, in such a manner that his head, neck, the right part of thorax, the right arm, the leg and right side of abdomen were under the beam, while the corresponding parts of the left side of the trunk, arm and leg remained on the floor of the elevator, his face being directed downward. The line of compression extended from the

left side of the base of the neck to the right lumbar region. He remained in this position about five minutes, and when found his face was said to have been almost black,—eyes bulging, mouth open, and tongue protruding. He was completely unconscious when rescued. On admission to the hospital at 8.30 P.M. he was still unconscious. Respiration 18, regular but sighing; pulse 82, fairly full and regular, increasing in rate to 96 beats per minute in a short time.

The examination of lungs and heart showed nothing abnormal. There was a dislocation of the right sternoclavicular articulation. Both arms were apparently paralyzed. Over the forehead, face, neck, and extending to the right shoulder anteriorly and posteriorly, were what seemed to be small ecchymotic spots, dark red in color, which did not disappear on pressure and were separated by normal skin. These areas were well marked over the upper part of the thorax and the left shoulder. There were also a few slight abrasions over the right shoulder. Both eyes showed marked subconjunctival hemorrhages.

About ten minutes after being sent to the ward he had a convulsive attack, shrieking with each expiration, throwing himself about, and at times raising himself in bed, as if struggling for air, apparently having difficulty in breathing. This condition lasted about ten minutes; he then became quiet with normal respirations.

It was noticed during the attacks that his arms took no part in his muscular efforts, and hung limp at his sides; and that when his name was called loudly he seemed to hear, turning his head and eyes in the direction of the sound.

He remained unconscious for seven hours, during the first part of which the convulsions were repeated at half-hour intervals, the periods between the attacks gradually becoming greater and the attacks lessened in violence and duration.

January 29, 1908. The urine examination showed it to be clear, sp. gr. 1030, acid in reaction—no reaction to test for sugar, slight cloud of albumin, a few hyaline casts and no blood.

The patient seems to be only partly in possession of his mental faculties, and could give no account of the accident. He did not complain of pain, was quiet, and slept a greater part of the time.

Examination by Dr. Wm. M. Sweet the same day showed the eye-grounds to be normal, and during the examination it was noticed that his eyes followed the light, as if he could see it.

January 30, 1908. The patient's mind was much clearer and he remembered vaguely that he was in some way injured by an elevator. His appearance was much the same as the previous day. Palsy of both arms seems to be complete, with exception of the power to move the fingers of the left hand.

February 6, 1908. Examination by Dr. Francis X. Dercum was as follows: Flaccid palsy of right forearm. The shoulder is only moved by special shoulder muscles. The pain, temperature, and tactile sense is present. Faint response to biceps tendon reaction. Stereognosis of the right side is lacking, but normal on the left, sense of position impaired at the wrist, and unimpaired at the elbow. There is no tenderness over the nerve trunks. Electrical reaction: Little response on either side to Faradic current. Galvanic current showed no sign of reaction of degeneration of facial, spinal accessory, perineal or ulnar nerves. The extensors and flexors of the forearm, around anus and legs, are normal, *i.e.,* no reaction of degeneration.

February 10, 1908. The patient was able to flex and extend the fingers of the right hand, and February 18 he was able to flex and abduct the arm to a limited degree. In other respects his recovery seemed complete. The hyperæmic spots having entirely disappeared, gradually fading, and not undergoing the chromatic changes usually seen in extravasation, he was allowed to leave the hospital, but returned to the out-patient department for electrical treatment. In about six weeks from the date of discharge, he had fairly well recovered the use of the right arm, but there was still some muscular weakness.

Tardieu, in 1870, made very extensive studies upon this subject, drawing information from the observation of the victims of a panic occurring on the Place de la Concorde, in which 30 persons were injured (with 9 deaths), and those of Prof. Hardy, where a number of women were injured by a stampede from a workshop caused by the falling of a part of a wall, as well as quoting the studies of M. Olliver of Anvers, upon those injured in the Champs de Mars, in the year 1837, of whom 23 died. All those injured presented practically the same symptoms, only varying in degree, consisting of unconsciousness, brief or prolonged respiratory and cardiac

depression, sometimes with pulmonary engorgement which was characterized by a cough and moist râles associated with bloody expectoration, and all without exception exhibited a reddish-violet, or even black, discoloration of the face, neck, in some cases extending up to the upper part of the chest. and occasionally to the arms, possessing the appearance of minute ecchymotic spots, at times so numerous as to be almost confluent. Sub-conjunctival hemorrhages were common to all and a few bled from the mouth, nose or ears. In none was there delirium, convulsion or paralysis; a few who were thought to be suffering from apoplexy when first seen, disproved this upon regaining consciousness. The post-mortem findings of 9 cases of Tardieu and at least as many of Olliver (Beek states 16) were uniform, and consist briefly of pulmonary congestion and frequently pulmonary apoplexy. Ecchymosis existed under the serous surfaces of lungs and heart and emphysema from rupture of air vessels. Among the characteristics most common was increased fluidity of the blood, which was dark in color, and its accumulation in the chambers of the heart, especially in those of the right side. Tardieu emphasizes the integrity of the brain in the two cases in which he was allowed to open the cranium, and states that Olliver in only a single instance found a considerably bloody exudate on the surface of the cerebral hemispheres. It is of interest to note that Tardieu has known similar symptoms and ecchymotic areas in women following prolonged labor, and in an epileptic, upon whom he made an autopsy.

More recently the following cases are found in the literature:

Huerter reports two cases, the first a boy, fifteen years old, was injured by being caught in a threshing machine, resulting in a penetrating wound of abdomen about 3 cm. long, through which intestines protruded. He was not unconscious when seen an hour after the accident; the face was swollen, dark blue in color, and showed a number of petechiæ, the edges of which were irregular. This condition extended over the entire face to the edge of the hair and below from the cricoid cartilage to the nape of the neck the margins of the discolored area were sharply defined. The eyes showed marked sub-conjunctival hemorrhages; there were also hemorrhages from the nasal mucous membrane. The bluish discoloration

lasted for a period of twenty-four hours, but the arterial hyperæmia persisted for three days and gradually faded. There was no injury to the head or chest.

The second case presented by this author was one of Vogt's, which occurred in a boy aged fifteen, who was run over by a wagon in a soft sandy road. He was unconscious for a brief period and when examined, shortly after the injury, was found to have a contusion of the abdominal wall which was not very marked. The eyes were bulging, and the face and neck presented the same appearance of the above case. There was no injury to the head. Recovery took place in about three weeks.

PERTHES records two cases: that of a boy fourteen years of age who was injured in a cotton mill, being pushed into a space about two hands' breadths wide between a wagon and the handles of a cylinder; the wagon also struck the right side of his face. He was unconscious when rescued, but shortly afterwards regained consciousness. Subsequently he stated that in the first hour after the injury, he could hear all that took place around him, but could not see. When examined one hour after the accident, he was found to be a weak, poorly nourished boy,—conscious, pulse regular and strong, face blue except the lower half of the right cheek, which was pale; the blue color did not disappear on pressure. Within the blue area were numerous dark red petechiæ; the latter were also present over the upper half of the left side of the neck. There was a slight exophthalmus, and sub-conjunctival hemorrhages. There was no sign of injury to the head, and no hemorrhage from the nose or ears. The facial nerves were uninjured, and the pupils of the eyes reacted to light. The left clavicle was fractured at the junction of the middle and outer thirds. Pain was elicited in the mid-axillary line over the third and fourth ribs, by pressure which almost developed crepitus. Respirations were frequent but regular. On the third day the temperature ran to 38° centigrade without any apparent cause, the pulse varying between 76 and 96 beats per minute. By the fourth day the discoloration of the skin was decidedly less, but the sub-conjunctival hemorrhages did not disappear for several weeks.

The second case was that of a male, aged thirty-six years, who was crushed between a wagon and an iron post, the force acting from before backwards. The man was held suspended with his left fore-arm imprisoned between the wagon and fence. In this position respiration was suspended and, while retaining consciousness he could see, and felt as if his eyes were going to pop out. His hearing was unimpaired. Respirations were rapid, shallow and painful. The entire face, and especially the temporal region, was swollen and colored a bluish red; this was very marked in the region of the lower eyelids. There were sub-conjunctival and scleral hemorrhages. On the upper part of the neck were isolated petechiæ. No evidence of injury was found on the head, thorax, or lower part of left chest, where there was pain. No other sign of injury was found with the exception of a compound fracture of the radius. On the third day after being hurt, the temperature rose to 39.9°, and there was bloody expectoration, with impaired resonance râles

on the left side over the area that had previously been painful. The temperature increased for four days, but in ten days all of the signs of pneumonia had disappeared. This condition Perthes calls compression pneumonia. The discoloration had largely disappeared by the fourth day, but that of the conjunctiva persisted until the thirty-ninth day after the date of injury. The eye grounds were examined on the eighth day and found to be normal.

BRAUN describes the case of a male twenty years of age, who was injured by a stone wall falling and pinning him to the ground, so as to compress the thorax and abdomen for half an hour. The neck and face were not injured. The examination of the patient showed the face to be swollen and of a dark blue color, the eye-balls were prominent with sub-conjunctival hemorrhages, especially marked in region of the palpebral fissure. The pupils were dilated and did not react to light. Later a large number of ecchymotic spots appeared, distributed over the face, neck and left arm. He complained of abdominal pain, but had no other symptoms of visceral injury. The patient was at all times conscious with normal pulse and temperature. By evening the ecchymosis was more pronounced; the pupils were still dilated, but reacted to light slowly. The urine was normal except for the presence of albumin, which persisted for two days. The eye grounds were normal on the day following the injury. There were no unfavorable developments, and the patient left the hospital on the fifteenth day, with the face still swollen and with evidence of blood extravasation still well marked.

BURRELL and CRANDON record a case of a male twenty-two years old, who was compressed by having his chest caught between an electric car and a door-post, for three minutes. On examination one hour after the accident, he was found entirely unconscious. Pulse 100; respirations 30 and shallow, with a groan at the beginning of expiration; the hands and nose were cold; bleeding from both ears, nostril and mouth. There was no wound of the head. Pupils small, equal, and did not react to light; excessive chemosis. Reflexes present, but diminished with the exception of the knee jerks, which were absent. Emphysema was present in region of the seventh, eighth and ninth ribs on left side, which obscured the localization of a probable fracture. Slight spasms of the abdominal muscles were noticed. There was a bluish discoloration over the face, extending into the scalp, over the neck and on to the chest as far as the third rib. Pressure over this discoloration only produced slight paling, the former color returning slowly upon withdrawing the pressure. A careful examination of these bluish areas showed that there were spaces of healthy skin .5 to 1 mm. in diameter, evenly distributed throughout its extent. These were limited by an illy defined bluish border, uniting to form a network. This condition was found to involve the mucous membrane of the lips to a limited extent. There were marked sub-conjunctival hemorrhages confined to the parts not covered by the eye-lids. Small retinal hemorrhages were present. The patient improved and consciousness returned in four hours. Urine contained albumin and blood, but was normal in a few days. Vision was still imperfect on the third day. By

the fifteenth day the discoloration began to grow less, and by the eleventh day had almost disappeared, but it did not pass through the usual changes of extravasated blood.

Beach and Cobb published an interesting case which occurred in a well-developed male thirty years of age, who was crushed by an elevator and subjected to pressure for three to five minutes. He was conscious for a few minutes and bled from nose and mouth. When examined one hour after the accident, he was in a condition of moderate shock. The eighth and ninth ribs on left side in axillary line were fractured, and in this region the presence of subcutaneous emphysema was noted. The skin of the abdomen was contused and hematonia was found in the left loin and back near the pelvis. The face was bluish in color; the skin seemed to be dotted with numerous black or reddish-black areas between which the skin was normal in appearance. The discoloration extended over the neck, terminating in a well-defined transverse line passing outward from the inner ends of the clavicles, posteriorly; the bluish-black discoloration was confined to the area overlying the trapezius muscles. Pressure over the discolored area did not cause it to fade completely.

The eyes were bulging and there were marked sub-conjunctival hemorrhages; pupils were equal and reacted to light. There were no retinal hemorrhages. Mind was normal.

On the third day the temperature rose, there was blood expectoration and pulmonary râles, this disturbance lasting twenty-four hours. The microscopic study of sections of skin removed from the neck, comprising some of the dark areas, showed the skin to be normal, with no evidence of blood outside of the blood-vessels.

Henry records a case of a young man twenty years of age who was crushed between two iron pillars. He was unconscious for a short time. When examined, the face, neck, and upper part of chest anteriorly were cyanotic. There was bleeding from both ears, but not from the nose or pharynx. Marked sub-conjunctival hemorrhage of both eyes was present. The mind was clear and the patient complained of pain in the head, thorax, and legs; there was a tenderness over the lower dorsal region in both groins. A perineal wound was found. This wound healed without suppuration. There developed a compression pneumonia with a right-sided emphysema, from the pus of which the pneumococcus was isolated. The patient failed to recover, and at the autopsy the right lung was found to be collapsed and the left lower lobe partially so. There were several abscesses of the right lung, and some of the branches of the pulmonary artery of both lungs were thrombosed. He now concludes that the patient recovered from the traumatic asphyxia, but died from sepsis entering the perineal wound.

Winslow narrates the incidents of an accident to a young man twenty-two years of age who was bent forward between the ceiling and an ascending elevator, compressing the abdomen and thorax. There was no loss of consciousness, but there was marked bluish punctiform discoloration of face and neck as far down as the collar line, or on a level with the cricoid cartilage. The discoloration did not fade on pressure, and

gradually disappeared without the usual changes seen in true ecchymosis. The microscopic examination of the skin removed from the discolored area, "showed the capillaries in places more or less distended with blood, but no blood was found anywhere in the tissues outside of the blood-vessels."

The appearance of a child thirteen years old, after being caught between the cow-catcher of a cable car and the ground, is described by Robertson. There were some abrasions of the thorax and thigh, his face had a peculiar bluish-black tint, with a great many minute reddish-brown spots squirming through it. Pressure did not affect it. There was a distinct line of demarcation at the level of the middle of the clavicles, below which the skin was normal. The color gradually faded, and at the end of eighteen days there was only some duskiness of the face.

Reppanner has collected from Wilm's clinic four cases, two of which were women injured in a panic following an outbreak of fire in a theatre. The area of the discoloration was not limited to the neck, but extended to the upper part of the thorax, and in one case to the upper arm, while in the other both mamma were the site of the characteristic discoloration. Both were unconscious, but became very restless and were given morphine to quiet them. The following day they had regained consciousness, but could not recall what had taken place at the time of their injury. His other two cases were men, one of which was crushed between a wall and a great weight, for about one minute. His face, neck and upper part of the thorax showed the dark red punctate area usual in these cases.

The other man was rolled by a tram car; his head and chest were free from the car. He was unconscious for a short time and sustained a fracture of the femur. The face was discolored by small punctate hemorrhages. The eye-lids were swollen and discolored, while the whites of the eyes were not visible on account of the sub-conjunctival hemorrhages. The palpebral conjunctiva and mucous membrane of the mouth showed the punctate hemorrhagic areas. The neck was free from the discoloration, but on the chest there was a triangular area corresponding to the part exposed when the shirt is open at the top.

Beatson presents a case resembling that of Winslow's in which a man twenty-four years old was bent down and forward by a pit cage. There was intense congestion of the head and neck, petechial in character, but not affected by pressure.

Ryerson describes the condition of a boy who was injured by being compressed between the springs and wheels of a wagon. There were abrasions behind the right ear, forehead, abdomen and the left thigh. His face and neck had a deep blue mottled appearance in front and behind, shading into normal skin at the upper part of the thorax. The discoloration was not influenced by pressure, and in the course of two weeks had faded without going through the usual color changes of extravasated blood.

Bolt presents the case of a man thirty-eight years old whose abdomen and lower thorax were crushed between two cars. The skin of face and neck became a violet blue, with the exception of a line corresponding

to the position of the rim of his stiff cap, which was pressed well down upon his forehead at the time of the accident; this line was normal in appearance. The patient was semi-conscious, realizing what was going on about him, but helpless, and temporarily losing the sense of sight, which returned in fifteen or twenty minutes.

Compression pneumonia developed, but seemed to reach its maximum in a few days; the patient, however, died almost twenty-seven days after the injury, from causes that were not clear even after an autopsy was performed. Microscopic examination of section of the discolored skin, showed in some places an effusion of blood outside the capillary vessels. The number of red blood-cells thus situated were relatively small.

ETTINGER has been able to collect from the literature 36 cases, and enrolls a case of his own, which was that of a young man who was knocked down and trampled upon by a mob. He was unconscious for about an hour. There was œdema, or swelling and cyanosis of face and neck. Hemorrhages in skin of face, neck, of the conjunctiva, also in the mucous membrane of the nose, mouth, fauces, and of the tympanic membrane, and blood was found in the urine. The evidences of dilatation of the right side of the heart were present. The symptoms of pulmonary disturbance were present from the first, and later a left-sided pneumonia developed.

In this form of suffocating, not only is the air prevented from entering the lungs by their inability to expand, but the contents of the thoracic vessels may be forced out, and, in the case of the veins, the current is reversed, overcoming the valves and damming the blood back into the capillaries. If the force acting is sufficiently great, it is conceivable that the capillary vessels would be dilated to a point where paresis would ensue.

Beach and Cobb advanced this view, and their microscopic studies seem to be conclusive proof of its correctness. This is further supported by the fact that pressure over the discolored surface caused only some paling in color, and that it did not pass through the characteristic changes marking blood extravasation as seen in other traumatisms. Perth believes the limitation of the discoloration to the face and neck to be due to the absence or incompetency of the valves of jugular and facial veins. The fluidity of the blood and its dark color, upon which Tardieu and Olliver lay so much stress, is explained by Draper, who attributes it to the withdrawal of atmospheric oxygen from the blood and thereby lessening its coagulability; but he does not believe this to be peculiar to

any special form of asphyxia, and states that it occurs in any case where atmospheric air is prevented from entering the lung.

Sub-conjunctival and retinal hemorrhages, and hemorrhages from the mucous membrane of the nose and pharynx, may be explained by the lack of support the capillary vessels receive from the surrounding tissue, in comparison with the capillaries of the skin, where they are surrounded with the dense fibrous tissue of the corium. This leads to the speculation as to what the condition of the smallest vessels of the brain may be, and whether the slow return of consciousness and the tardy resumption of the mental functions in some cases, is not directly traceable to a paresis if not of rupture of some of the capillary vessels of the cerebrum.

Beek quotes Olliver, that in all cases where the conjunctiva was swollen by infiltration of blood, and in those where blood had flowed from the ear, the vessels of the pia mater and of the substance of the brain were engorged with blood.

In the absence of more definite cerebral symptoms, it cannot be stated with any degree of certainty that a similar condition of the blood-vessels of brain prevailed in the case under discussion, or whether the occurrence of convulsions and their repetition was in any way attributable to circulatory disturbances of the brain or medulla, from this source.

It is, however, well understood that spasms are produced by depriving the respiratory centres of their normal blood supply, as by compression of the great vessels of the neck; or they may be brought about by irritation of these centres, dependent upon an increased carbodioxid content of the blood, thereby lessening the supply of oxygen.

The probability of the convulsions being due to the formation of toxins arising from faulty metabolism, induced by the condition of asphyxia, has been suggested. The early appearance of the convulsions after the accident militates against this hypothesis.

I am inclined to attribute the occurrence of convulsions as due to respiratory interference. This may have been occas-

ioned by injury to the phrenic nerve or its communicating branches, as the area in which the nerve is situated lies directly in the line subjected to the greatest compression.

The loss of muscular power in both arms probably is best explained by the injury of the spinal nerve trunks. The pressure must have been more or less oblique at the base of the neck and with sufficient force to overcome the natural protection afforded by the sternoclavicular articulations. The greatest injury to the nerves appeared to be on the same side as the sternoclavicular dislocation.

The treatment of this condition is directed to the re-establishment of respiratory function, such as artificial respiration, oxygen inhalations, atropine and strychnia, and when the right side of the heart is dilated venesection is indicated.

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A CASE OF STASIS CYANOSIS FOLLOWING AN EPILEPTIC SEIZURE, SIMULATING TRAUMATIC ASPHYXIA.

BY E. G. ALEXANDER, M.D.,
OF PHILADELPHIA,
Visiting Surgeon to the Out-patient Department of the Episcopal Hospital.

THE following case clinically resembled traumatic asphyxia so closely that I was at a loss how to classify it. Etiologically it was undoubtedly due to epilepsy, and this fact has forced me to describe the condition as a case of stasis cyanosis following an epileptic seizure.

E. B., American, male, age 18 years; occupation, electrician; family history good.

Previous history: Had measles and whooping-cough in infancy, typhoid fever at the age of twelve. In the fall of 1906 while at work, a fifteen-pound wrench fell from a scaffold twenty feet high, striking him on the head in the left parietal region; he was rendered unconscious from the blow for a few minutes. On regaining consciousness, he continued his work for about one-half an hour, then, owing to intense pain and headache, went to his family physician for treatment. The wound inflicted was a trivial one, the skin not being broken, and from which he entirely recovered within a few days.

The patient was perfectly well until September, 1907, nearly one year after the injury, when he was seized with an attack of epilepsy. In October, 1907, and January, 1908, he had similar attacks.

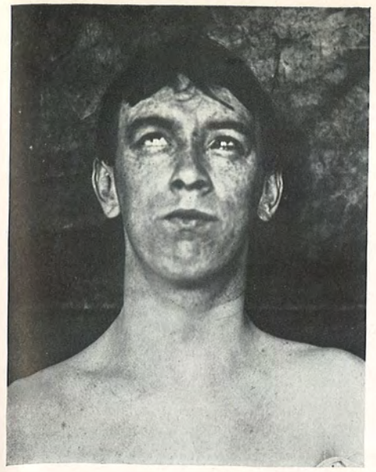
Present trouble: On the morning of March 4, 1908, he was called to a meat market to repair an electric meat-grinding machine; after finishing his work he was seized with an attack of epilepsy and fell to the floor. Two witnesses of this attack said that the patient had just finished his work and was standing behind the counter talking when he suddenly let fall a hammer from his hand, straightened up, stared across the room as if

seeing something in the distance, and then slowly sank face downward to the floor. They also said that "he puffed and snorted like a steam engine" and they believed that he would have smothered if they had not turned him over; during this seizure no convulsive movements were noticed, nor did he foam at the mouth. He was carried in an unconscious condition into an adjoining room; here the light was much brighter and they noticed that his face was blue and that his eyes were blood-shot; he remained unconscious several minutes. A patrol wagon was summoned, the patient was taken to the Episcopal Hospital and admitted to the surgical dispensary; he was transferred from the dispensary to the house and admitted to the service of Dr. G. G. Davis, to whom I am indebted for the privilege of reporting this case. On admission to the dispensary the patient had fully regained consciousness and the history he gave was that while standing on a table doing some electrical work he received a shock which caused him to fall from the table to the floor, after which he remembered nothing. (I have been unable to substantiate this history. The two witnesses were seen separately and gave almost identically the same account of the accident. The current was turned off during the repair of the machine, so that it is highly improbable that the man, who now remembers nothing of the accident, could have received a shock.)

On admission to the hospital the patient complained of nothing but the discoloration of the face and eyes.

Examination.—A young adult, well nourished, and apparently in good health. The face and neck showed a diffuse bilateral bluish and slightly punctiform discoloration of the skin that disappeared but slightly, if at all, on pressure. This discoloration stopped with a decided line of demarcation just where the collar passed around the neck. (The patient was wearing a tight collar when the accident occurred.) Below this line the skin was of a normal color. The lips showed a purple discoloration. The tongue was moist and clean, and showed no evidence of having been bitten. There was no hemorrhage from the nose or ears. The eyes showed a marked subconjunctival ecchymosis, more marked in the left, the pupils being widely dilated and failing to react to light; this was due to atropia which had been instilled a few days previously for the purpose of testing the vision; the eye grounds showed no fundus change. The chest and abdomen

FIG. 1.

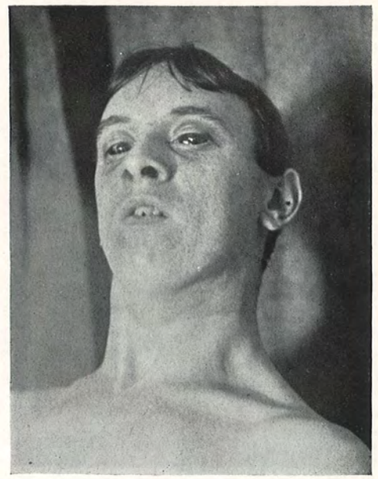


Appearance one hour after attack while wearing a tight collar.

FIG. 2.

Lateral view; appearance one hour after attack.

FIG. 3.



Appearance three days after onset of condition; the right eye shows a subconjunctival ecchymosis which was not present when first photograph was taken.

failed to show any signs of recent injury. The heart and lungs were apparently normal. Examination of the head failed to reveal any scar, depression or injury, either recent or old.

Urine.—Specific gravity 1020. Reaction, acid. Trace of albumin, no sugar, a few granular casts, leukocytes, squamous epithelial cells and urates.

March 6, 1908. Line of demarcation more pronounced than on admission. Subconjunctival ecchymosis more marked. Patient's general condition good.

March 8. Discoloration of face beginning to fade. Ecchymosis of conjunctiva still intense.

March 11. Discoloration gradually fading.

March 18. Discoloration has almost disappeared.

March 22. The patient had an attack of epilepsy.

March 24. Patient discharged and referred to the Orthopædic Hospital for treatment.

Through the kindness of Dr. Sinkler, to whose clinic the patient was admitted at the Orthopædic Hospital, I have examined their records and find the nervous history obtained almost identical with the above. The patient was treated at the Orthopædic Hospital for eight months, during which time he had no attacks of epilepsy. The parents of the patient told me that on his discharge from the Episcopal Hospital, they noticed that his face still showed a faint bluish discoloration.

Spratling [1] states that "punctiform hemorrhages covering one side of the face and neck are not infrequent after grand mal attacks in certain individuals; this condition is noticed as soon as the fit is over, the face having a dark, diffusely mottled appearance without elevation, the discoloration partly disappearing under pressure to quickly return when it is removed; as a rule, such extravasations are visible for some days afterwards, first fading in changing colors like a bruise."

That the face suffers most, Spratling attributes to "constricting bands of clothing about the turgid neck, which increases the efforts of the mechanical congestion."

Echeverria [2] reports a case in which a general petechial eruption on the face, neck and limbs, followed diurnal attacks of petit mal and nocturnal spasm; the eruption following the

nocturnal spasm was "minute and confluent in character and generally passed off within two or three days."

Pierce Clark [2] reports a case of profuse subcutaneous hemorrhage on the right side of the face and neck following epilepsy.

Gowers [3] states that "after the tonic spasm has lasted a short time, ten or twenty seconds, the face becomes congested and cyanotic; but with the increasing remission of the spasm, air becomes changed in the lungs and the cyanosis lessens."

Aldren Turner [4] says "that hemorrhages, petechial and of large size, have been described as occurring under the skin of the face, eye-lids and neck during the cyanotic stage of fits; but these must be unusual in uncomplicated cases of epilepsy."

Oppenheim [5] calls attention to the fact that "minute rupture of the capillaries of the skin and mucous membrane or circumscribed hemorrhages of the conjunctiva may occur."

Tardieu, in performing an autopsy upon an epileptic, found a great number of small ecchymoses at the base of the neck and anterior part of the chest analogous to the *tache de purpure.*

The above case I believe to be unique. It differs from the cases referred to by the authors quoted in distribution, duration, character of discoloration, and manner in which it disappeared.

In Spratling's and Clark's cases, the eruption was limited to one side of the face and neck. In Echeverria's case, there was a general petechial eruption—the discoloration, however, disappearing in two or three days. In this case, the discoloration was bilateral and lasted over a fortnight. I am unable to form any accurate conclusions as to duration, except in the cases referred to by Gowers and Echeverria. In the former's cases, the cyanosis disappeared in a few minutes after muscular relaxation was obtained, while in the latter's case, it lasted for two or three days. Spratling states, rather indefinitely, that the condition may persist for some days afterward.

The discoloration described varied from the transitory

cyanosis of Gowers, the petechial, confluent, and minute eruption of Echeverria, to the punctiform hemorrhages of Spratling. Spratling says that the cases fade "in changing colors like a bruise." This was not true in the above case; the condition simply faded gradually without the characteristic changes of extravasated blood being absorbed. With the fading the punctate character of the eruption became more pronounced.

I am inclined to believe the factors producing this condition similar to those causing traumatic asphyxia, namely, a fixed thorax, a closed glottis, an increased intrathoracic pressure, a lack of æration of the blood, and the incompetent and absent valves of the jugular, subclavian, and facial veins. That fractures and dislocations can be produced by muscular action during epileptic seizures is a well-known fact. Why, then, during these seizures cannot the intrathoracic pressure be raised by muscular action to a corresponding degree as that produced by trauma. The length of unconsciousness may have been augmented somewhat by the cerebral cyanosis. A small portion of the blood no doubt was outside of the blood vessels, but from the diffuse bilateral character of the discoloration, and the manner in which it disappeared, I believe that which was extravascular to have been very small.

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[1] Spratling: Epilepsy and its Treatment, p. 251.
[2] Ibid: p. 252.
[3] Gowers: Epilepsy and Other Convulsive Diseases, p. 107.
[4] Turner: Epilepsy, p. 161.
[5] Oppenheim's Diseases of the Nervous System (Mayer), p. 814.

DR. JOHN H. GIBBON said that he saw the case described by Dr. Despard. It was the first he had ever seen. The moment he saw it he was struck by the resemblance it bore to that colored plate published in the ANNALS OF SURGERY, with the paper on the subject by Cobb and Beech. Although much like the photograph referred to, the discoloration was not as sharply defined. In this case the discoloration went down on the side of the neck. The palsy is another interesting feature. Dr. Alexander's case, he

thought, was more unique, because apparently it pathologically simulates traumatic asphyxia very closely and differs from the ordinary extravasation and discoloration seen in cases of epilepsy. The long duration of the discoloration differed from the ordinary discoloration of a bruise, as did also the way in which it faded. In Dr. Despard's case, as the discoloration paled, there was not the slightest yellow or greenish discoloration, as takes place in extravasated blood. This clinical observation would tend to corroborate the findings on skin section made in the Cobb and Beech case, and in one or two others referred to by Dr. Despard, namely, that there is a stasis of the blood in the capillaries with very little extravasation into the perivascular tissue.

Dr. Duncan L. Despard said that it seemed to him that Dr. Alexander's case belongs in the same class with traumatic asphyxia. The discoloration in both cases must have been due to the same causes. In this connection, it is interesting to recall the case of Perth, in which the injury was in a boy who was lying in a soft, sandy road, and the wheels of a cart passed over the abdomen alone, not injuring the thorax, so that the increased pressure in the thorax and vessels of the neck was caused by the pushing up of the diaphragm and thereby increasing the intrathoracic pressure. In an epileptic the same condition may be produced, not only muscles of the thoracic wall but the diaphragm itself taking part in the rigidity, thereby preventing respiration. The limitation of the discoloration is a question of interest. Some of those who have reported cases, Tardieu for instance, say that the surfaces are free from the discoloration where pressure was made from the outside by clothing. Apparently the vessels were sustained and supported by this extravesicular pressure. The same thing occurred where the inspector's cap was driven down over the forehead, in the case reported by Bolt.

Dr. E. J. Alexander (by invitation) said that he had had the opportunity of seeing another case of traumatic asphyxia occurring about the same time as Dr. Despard's. The patient was admitted to the Episcopal Hospital in the service of Dr. Frazier. The man was in a railroad accident, having his chest caught between two cars. He had some discoloration, as in Dr. Despard's case, with bloodshot eyes, but unfortunately he died within two hours of admission, and there was no autopsy.

STATED MEETING, HELD APRIL 5, 1909.

The President, Dr. William J. Taylor, in the Chair.

GREEN-STICK FRACTURE OF THE LOWER END OF THE ULNA COMPLICATING FRACTURE THROUGH LOWER PART OF THE RADIUS.

Dr. John B. Shober presented a series of radiograms which, he said, illustrated the importance of studying a radiogram made immediately after the setting of fractures.

On September 25, 1907, Margaret S., age 8 years and 10 months, fell from the back of a chair, striking on her right extended hand. The typical deformity of Colles's fracture of the radius presented itself. Twenty minutes after the accident, under chloroform anæsthesia, he set the fracture and applied a Levis splint. Though exercising great care he could not set the fracture to his entire satisfaction. The next morning he removed the splint and took the radiogram (Figure 1). It shows imperfect reduction of the fracture of the radius, which is accounted for by a green-stick fracture of the lower end of the ulna. The same afternoon he again anæsthetized the child, and by manipulation succeeded in straightening the green-stick fracture and obtained perfect reduction of the radial fracture, as can be seen in Figure 2, made through a Bond splint. Compare the lines of the outer and inner borders of the ulna and the relative position of the articulating surfaces in each picture. Also compare these pictures with Figure 3, a radiogram of the normal left wrist.

The point Dr. Shober wished to emphasize was, that without the aid of a radiogram the green-stick fracture of the ulna could not have been determined, and unless it was straightened the fracture of the radius could not have been properly reduced, and the surgeon's course would have been reflected upon for a resulting partially deformed and lame wrist.