From the compressed and flattened condition of the rings of the trachea and from the general *post-mortem* appearance of asphyxia, I gave it as my opinion that the deceased died from asphyxia or suffocation.

PRECIS OF OPERATIONS PERFORMED IN THE WARDS OF THE FIRST SURGEON, MEDICAL COLLEGE HOSPITAL, DURING THE YEAR 1889.

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(Concluded from page 198.)

6*a*. *Laparotomy for obstruction.* — Hindu male, *æt.* 20. Bowels completely obstructed for 28 hours, vomited several times, abdomen tympanitic and tender, dilated coils visible, very restless and anxious, clammy sweats, pulse small and soft. The belly was opened, and intestines, which were much distended and congested, were systematically examined from end to end, but no cause of obstruction found. Patient died of shock 10½ hours after the operation. On *post-mortem* examination, the intestines were found to be congested, but no cause of obstruction could be discovered, except a band of mesentery crossing a loop of small intestine in the right iliac fossa. (Dr. Raye.)

b. *Laparotomy for wound of stomach.*—Mahomedan female, *æt.* 40, sustained a stab in the left hypochondrium caused by a clasp knife. Particles of food are said to have come through it. The abdomen is painful, and patient somewhat collapsed. The external wound was enlarged, and search made for the intestinal wound, which was found in the upper curvature of the stomach. It was stitched by Lembert's method, and the peritoneal cavity having been thoroughly cleansed, the external wound was stitched, a drainage being inserted. A gastric fistula formed, which eventually closed without further operation, and patient left the hospital well in 73 days. (Dr. Raye.)

7. *Lumbar colotomy.*—Eurasian female, *æt.* 40. Case of malignant stricture of the rectum with obstruction; the disease can be detected by rectal examination. The lumen of the gut is almost obliterated. Purgatives have been tried without effect. The intestines are much distended with fæces and flatus, and the patients condition is very miserable. The descending colon was opened in the left loin without difficulty. The operation gave great relief. Fluid fæces in large quantities came freely through the opening. Patient died of exhaustion five days after the operation.

8*a*. *Tenotomy for talipes equinus.*—Hindu male, *æt.* 13. The condition resulted from a sprain of the ankle joint sustained a year and a half ago. The tendo-achillis was divided subcutaneously, the ankle joint flexed, and the limb put on a McIntyre splint. The patient's stay in hospital was prolonged by a sloughing ulcer, which was caused by the pressure of the foot piece of the splint on the pad of the toes. He left after 106 days' residence with a useful foot.

8*b*. *Tenotomy for talipes equino-varus.*—Hindu male, *æt.* 11. The deformity is due to infantile paralysis, the tendo-achillis, tibiales muscles and plantar fascia were divided and suitable splints applied. He left hospital with a useful limb after 84 days' residence. (Dr. Raye.)

c. *Tenotomy for flexion of hip-joint.*—Hindu male, *æt.* 17. Admitted with burrowing sinuses of right groin and thigh, which were laid open and scraped. In healing they caused acute flexion of the hip-joint. In order to remedy this condition, the rectus femoris tendon was divided subcutaneously near its origin. In stretching the limb the skin gave way transversely, and a lozenge-shaped wound resulted. This was enlarged and deepened so as to remove all resistance to straightening. The wound was dressed antiseptically, and a weight attached to the limb for extension. When the wound healed he was allowed to walk about with crutches and a bag containing 4lb. of shot put round the ankle. Under this treatment he left with a straight and useful limb after having spent 7 months and 2 days in hospital.

9. *Incision for suppurated mastoid cells.*—Hindu female, *æt.* 7. Admitted with a tense painful swelling behind right ear and running of pus from the ear. The soft parts were divided with a knife and the bone with a chisel. Discharged well in 15 days. (Dr. Raye.)

10. *Incision for hæmatocele.*—In these three cases the cavity was inflamed, and was laid open by free incision, rendered and kept aseptic and treated for granulation. A cure was obtained in 44, 48, and 49 days.

11. *Incision for inflamed hydrocele.*—These three cases were treated similarly by free incision and drainage under antiseptic precautions. The tunica is not so diseased in such cases and smaller openings suffice. The cavity is also more quickly obliterated.

12. *Incision for stricture of rectum.*—Hindu female, *æt.* 30. The stricture was syphilitic and associated with ulcerated piles. The stricture was divided backwards and the piles removed. She recovered in 90 days. (Dr. Raye.)

13. *Incision for atresia oris.*—Hindu male, *æt.* 20. A cicatricial contraction of left cheek near the angle due to bad gumboil; cicatrix divided freely, and mouth forced open by screw gag, which was applied at intervals. Recovered in 27 days.

14. *Internal urethrotomy.*—Hindu male, *æt.* 31. Stricture divided from behind with Civiale's urethrotome, and a No. 12 metallic catheter

passed. Discharged with a fully dilated urethra in 19 days. (Dr. Raye.)

15*a*. *Perinæal section with a guide* (*Syme's operation*).—i. Mahomedan male, *æt.* 30. Admitted with urinary fistula (scrotal and pubic) and elephantiasis of scrotum. The perinæum was divided, the urethra freely laid open on a guide and a Syme's catheter tied in. This was done on the 12th of February. The fistulæ closed, and the elephantiasis was removed on the 25th of March. (See VIB. 1*b*. xi).

ii. Hindu male, *æt.* 45. Admitted with urinary fistulæ (perinæal and scrotal) and internal piles. Health indifferent. The perinæum was laid open, the urethra opened freely on a guide and a Syme's catheter tied in, and retained for two days. The piles were removed by Whitehead's method. He had smart fever for two days which subsided. A full-sized bougie was easily passed on the 6th day. On the 9th day the perinæal wound became sloughy, and he got hiccup and prostration. He lingered on till the 11th day and died of exhaustion. *Post-mortem* examination was not made.

b. *Perinæal section without a guide* (*Cock's operation.*)—i. Hindu male, *æt.* 35. Admitted with perinæal abscess and retention. A catheter could not be passed. The abscess was opened, and the urethra divided in front of the apex of prostate. Syme's catheter was passed into the the bladder and tied in. Patient left hospital in 12 days. (Dr. Raye.)

ii. Hindu male, *æt.* 32. Admitted with retention and bleeding from the urethra due to unsuccessful catheterism before admission. Owing to the existence of false passages an instrument could not be introduced into the bladder. The prostatic urethra was opened by Cock's method, and a Syme's catheter introduced and tied in. Patient left hospital in 13 days. (Dr. Raye.)

iii. Hindu male, *æt.* 38. Has suffered from stricture for 8 years. An abscess formed in perinæo 6 days ago, and when trying to make water on the morning of admission, he felt something give way, and the perinæum and scrotum swelled shortly afterwards. An instrument could not be introduced into the bladder, and Cock's operation was performed and a Syme's catheter introduced. An attempt was then made to divide the stricture by Wheelhouse's method, but nothing could be got to pass through it. Incisions were made in the scrotum. Patient suffered from cystitis for a few days, and absconded 36 days after operation. He was urinating comfortably. (Dr. Raye.)

iv. Hindu male, *æt.* 65. Admitted with cystitis and ammoniacal urine due to enlarged prostate. The bladder was emptied with No. 2 catheter with some difficulty, and was washed out with a 1 per cent. solution of boracic acid. The instrument had been used thrice daily, and each introduction was followed by shock and fever. On the 7th day after admission the urethra was opened in front of the prostate, and a soft catheter passed and tied in. It was removed in two days on account of the man's restlessness. The bladder was then regularly emptied and washed out by introducing the instrument per perinæo which was easily accomplished. He died of exhaustion on the 9th day.

v. Hindu male, *æt.* 25. Admitted with extravasation of urine reaching above the umbilicus. Scrotum prepuce and perinæum sloughing. Stricture of 4 years' standing. Repeated attacks of retention. Had not made water for 48 hours before admission. Urethra lacerated by unsuccessful attempts to introduce the catheter before admission. The urethra was opened by Cock's method and a Syme's catheter passed therein. Free incisions were made into the sloughy and œdematous parts. These incisions suppurated and sloughed, and while the sloughs were in process of separation, and the wounds beginning to granulate the man sank from exhaustion 16 days after the operation.

vi. Hindu male, *æt.* 50. Had been operated on for scrotal tumour (VIB. 1*b*. xxiv), and in trying to relieve his bladder by catheter next day a false passage was made. The urethra was opened by Cock's method and a Syme's catheter passed in and retained for two days. The perinæal wound closed in 27 days, and he left hospital micturating normally when the scrotal wound closed.

c. *Wheelhouse's operation for stricture.*—Hindu male, *æt.* 50. Admitted with stricture of long standing and urinary fistulæ in perinæo. A filiform whalebone bougie was passed into the bladder and Wheelhouse's bougie down to the stricture which was divided. The penile urethra was found to be narrow and was divided by a urethrotome. The urethra then admitted a No. 9 catheter. A Syme's catheter was passed per perinæo and retained. The urethra was gradually dilated to the full size, the perinæal wound healed, and he left hospital 37 days after the operation. (Dr. Raye.)

16. *Incisions for sinuses.*—These resulted from abscesses in unhealthy subjects which had not been skilfully treated in the first instance. The procedure followed consisted in laying them open freely, scraping thoroughly with a sharp spoon, rendering the cavities aseptic, and keeping them to rest, suitable constitutional treatment being at the same time attended to. The result in all cases was favourable, though in some instances the period of repair was somewhat prolonged.

17. *Large abscesses.*—Six of the cases included under this heading were iliac abscesses, 1 ilio-lumbar, 1 lumbar, 1 mediostinal, 2 popliteal, 1 cervical, and 1 multiple. Antiseptic management was scrupulously carried out, and the

result was favourable in all cases, though some of the collections were deep and the incisions required to reach them formidable.

X. REPARATIVE OPERATIONS.

1. *For cicatrix after burn.*—Male Hindu child, *æt.* 7. The right arm adhered to the side of the chest and the forearm to the front of the arm by means of cicatricial bands caused by contraction resulting from a burn sustained three years ago. These bands were completely divided, and flaps of skin taken from the neighbourhood and laid on the raw surfaces. Care was taken during the process of repair to prevent reproduction of the deformity. A satisfactory result was obtained in 82 days.

2. *For epispadias and extroverted bladder.*—Mahomedan male, *æt.* 10. Roof of urethra, anterior wall of bladder and corresponding portion of anterior abdominal wall deficient. Horizontal ramus of pubes undeveloped, penis very small, and tied down to pubes, testes undescended, posterior wall of bladder protruding, ureters visible. Wood's operation was successfully performed by Dr. Raye, and a second operation of the same sort lower down by Dr. McLeod. These operations provided a covering for the bladder and reduced the size of the opening into it, so that although constant dribbling of urine continued, the patient's condition was much more comfortable. The case was in fact reduced to one of aggravated epispadias.

3. *For vesico-vaginal fistula.*—Hindu female, *æt.* 60. Prolapsus of uterus and anterior wall of the vagina in which there is a large hole revealing the interior of the bladder which is also prolapsed. These conditions are said to be due to a fall sustained eight months ago. The edges of the fistula were carefully pared and the sides of the rent brought accurately together by silk stitches while the parts were prolapsed. The prolapsus was then returned and the parts kept in position by carbolized tow, a catheter being retained in the bladder. The stitches cut their way out and the rent gaped. Patient declined a second operation. (Dr. Jameson.)

4. *For hernia testis.*—Hindu male, *æt.* 30. Syme's operation was performed by Dr. Raye after scraping off some sloughs and paring the tunica. Patient left hospital on the 17th day after operation with a granulating ulcer.

5. *For protrusion of the omentum through an abdominal wound.*—Hindu male child, *æt.* 7. Sustained a wound of right hypochondrium by falling on a piece of glass. Omentum protruded, the wound was slightly enlarged, the omentum thoroughly washed with an antiseptic lotion and reduced, and the wound carefully stitched. It healed by first intention, and the child left hospital perfectly well in 11 days. (Dr. Jameson.)

6. *For ulcer of the sole of the foot.*—Hindu male, *æt.* 22. The skin of the sole of the right foot was entirely removed by the claws of an alligator. When the sloughs separated, four flaps were taken from the sides of the foot, and stitched with catgut on the granulating surface. This proceeding greatly accelerated repair, and the sole got eventually covered with strong cicatricial material.

XI. OPERATIONS NOT CLASSED.

1. *Rapid dilatation of stricture.*—In these four cases of stricture dilatation was accomplished by means of Lister's probe pointed graduated bougies. The dilatation was maintained by passing the full-sized instrument (9-12) every third or fourth day. I have found this to be quite the easiest and most efficient method of treating stricture of the urethra. It is as well to administer chloroform on the first occasion. If 0-3 of the series can be passed, and with patience and care it seldom happens that this cannot be done, the rest is easy. Sometimes the preliminary use of the fine straight bougie-probe facilitates the all important initial step of introducing the 0-3 bougie. In very irritable and tight strictures it is better to stop at 6-9 and continue the dilatation up to 9-12 a few days afterwards.

2. *Aspiration of the bladder.*—This was resorted to by the resident surgeon to relieve urgent retention. The stricture was subsequently treated successfully by rapid dilatation.

3. *Reduction of prolapsus of the rectum.*—Patient, a Hindu male, *æt.* 22, was admitted with an œdematous sloughy prolapse of the rectum, measuring 4 inches in length and 6 inches in circumference, which had descended 10 days previously, and remained unreduced during the whole of that period. The mass was reduced with some difficulty under chloroform, the sloughs separated, and the resulting ulcers healed. No return of the prolapse occurred during the 11 days he remained in hospital, and he has not been heard of since.

GENERAL REMARKS.

Mortality.—The death-rate for 1889 was unprecedentedly low, namely, 5·85 per cent. of cases treated to the end. On referring to the list of fatal cases, I find that in the majority of them the result was due to conditions existing before the operation, and for whose removal or cure it was performed in vain.

Eight out of the 14 cases came under this category. In the remainder the "shock" and "exhaustion" indicate a combination of causes of which the operation was one and the last. The most precise and regretable cause of death was pneumonia in the fatal operation for hernia. No case died of septic causes *per se*, but in the urinary cases, septicity no doubt contributed to death.

Antiseptics and hospitalism.—Bichloride of

mercury was used as lotion and dressing almost to the exclusion of every other agent. Boracic acid and iodoform were employed as deep dressings. In some cases mercurial irritation of the skin occurred, but in none were any constitutional effects of mercury observed. The wounds remained sweet and underwent repair kindly in the large majority of cases, and we have now learned to look upon hospitalism in any shape as a rare experience, except, as happens occasionally, when imported from without; for though antiseptic surgery is largely and successfully carried out in private practice, cases occur mostly outside of Calcutta in which the treatment of wounds and injuries has been faulty.

NOTES ON ANÆMIA, ITS PATHOLOGY AND TREATMENT.

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ALTHOUGH the following lines may seem to be a recapitulation of more or less known facts, yet I think the importance of the subject warrants their reproduction. Of all the most striking symptoms one notices amongst Europeans resident in the tropics and even amongst Natives themselves, none perhaps is more universally apparent than anæmia.

Amongst the numerous terms by which different diseases are known to us, none is more inappropriately applied and generally misleading than the word anæmia, as, pathologically, the diseases included under this term differ markedly from each other. Indeed, as a broad statement, I may say that the term anæmia in its usual adaptation is used more to describe a symptom than an actual disease. Any derangement of the blood causing loss of colour and giving the face or conjunctivæ a blanched appearance are all alike, incorrectly, included under this term.

Pathology—Anæmia being essentially an affection of the blood, I will refer to the latter as a circulating tissue, the most important constituents of its protoplasmic bases being the corpuscles, of these the red corpuscles and the hæmoglobin contained in them, individually and collectively, are especially concerned in the pathological anatomy of this affection.

In other words, the causation of two distinct varieties or classes of anæmia is traceable, pathologically, to the condition of the red corpuscles and the hæmoglobin of the blood.

In the first class or variety are included those diseases which are characterized anatomically by a diminution of the hæmoglobin contained in the red corpuscles with no consequent diminution in the normal number of the corpuscles themselves.

Under the second class or variety are those diseases which are caused and characterized by a numerical loss or waste in the actual or normal numbers of the red corpuscles. (Instead of existing in the proportion of 130 per 1,000 parts of the blood as in health, they are reduced to 80, 60, or even less.)

Individually the red corpuscles, although numerically weak, may be enlarged but there is no diminution of the quantity of hæmoglobin contained in each, and, on the contrary, if any are thus enlarged, the enlargement is due to an increased absorption of hæmoglobin.

The above anatomical facts in these diseases can fairly be demonstrated by Dr. Gower's "Hæmacytometer" for ascertaining the numerical strength of the blood corpuscles and by his "Hæmoglobinometer" for the clinical estimation of hæmoglobin.

With reference to these two classes it must be noted that the anatomical differences enumerated above refer only to marked and characteristic diseases of each variety.

Undoubtedly there are intermediate types of anæmia which are constantly met with, and which pathologically combine the two, and hence in these cases a combination in treatment would be necessary.

Excluding those it will be seen we have two distinct varieties of disease to all of which a single term is applied, *viz.*, anæmia. Consequently this term is misleading, and its mere existence tends to originate errors in treatment which I fear are not uncommon, especially if the pathology of these affections is not referred to as the bases, or at any rate as an aid to their treatment.

The characteristic diseases under the first class in which hæmoglobin-formation is depressed include chlorosis or chloremia, anæmia due to renal, febrile and other acute diseases. Of all these chlorosis is the most characteristic as it is the most common disease of this group.

Coming to the second class in which the essential feature is depressed, corpuscle-reproduction, are included those diseases which most concern us working in the tropics, the most characteristic being pernicious anæmia, malarial and spleen anæmia, lymphatic anæmia, &c., in fact, most diseases, with anæmia, as a prominent symptom and more or less of a chronic nature as compared to those under the first variety.

I will now briefly refer to some more recent and important hypotheses on the further pathology of these affections.

Chlorosis.—Sir Andrew Clark in his paper entitled "Observations on the Anæmia and Chlorosis in Girls,"[1] brought to the notice of the profession that chlorosis and anæmia in young girls of nervous temperament and imperfectly developed sexual organs was probably due to the absorp-

[1] Medical Society of London, November 1887.