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No. V.

ARCHIVES OF MEDICINE:

A RECORD OF PRACTICAL OBSERVATIONS, AND ANATOMICAL AND
CHEMICAL RESEARCHES CONNECTED WITH THE INVESTIGATION
AND TREATMENT OF DISEASE.

EDITED BY

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IN KING'S COLLEGE, LONDON; HONORARY FELLOW OF KING'S COLLEGE.

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ARCHIVES OF M E D I C I N E.

CLINICAL OBSERVATIONS.

CASE OF LEUCOCYTHEMIA.

BY J. MILNER BARRY, M.D., M.R.C.P.,

Physician to the Tunbridge Wells Infirmary and Dispensary.

THE following case illustrates many of the clinical points usually observed in cases of this affection. The spleen was of very large size, and the white corpuscles in the blood very numerous.

History.—William Knight, aged 39, was admitted into the Tunbridge Wells Infirmary, January 11, 1859. He has for many years worked laboriously as a brickmaker and potter, but enjoyed, through life, excellent health, until three months ago, when he began to feel weak and unable to work, and he then noticed that his belly was getting very large and hard. Has had prolapsus ani and right inguinal hernia for several years. Had not lived in marshy districts, and never had ague.

FIG. 1.

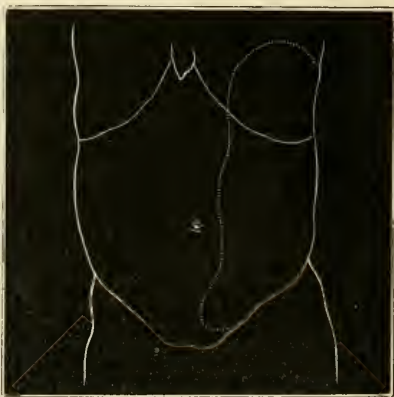
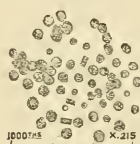


Diagram showing the extent of splenic dulness.

Present state.—Stature rather short, hair dark, aspect bilious but not cachectic, conjunctiva vascular but not jaundiced. He complains of anorexia, indigestion, diarrhoea, abdominal distension, and disturbed unrefreshing sleep; can lie in any position, and with the head low. The abdomen is prominent, hard, and tense, measuring over thirty-six inches in girth, a hand breadth above the navel, and thirty-five inches round the navel. The liver is enlarged and somewhat protuberant, and descends to three inches below the margin of the ribs. The left side of the abdomen sounds

dull to percussion from the ribs nearly down to Poupart's ligament, and is occupied by a hard smooth tumour, evidently the hypertrophied spleen, not tender to touch, and bearing any amount of manipulation without being painful. After emerging from the ribs it descends perpendicularly about an inch to the left of the median line, until it reaches the level of the navel, where it sweeps away to the left for a short distance, and then curves forward and terminates in a rounded prominence about an inch above the symphysis pubis. The anterior margin is smooth, rounded off, with a notch about half way down. The abdomen, where not occupied by the liver and spleen, has a clear tympanic sound. No fluctuation. No œdema. No appearance of distended blood-vessels over the surface of the abdomen. Pulse 80, weak, regular. Tongue clean. About three pints of urine passed in the twenty-four hours, usually turbid from the presence of urates, not albuminous, sp. gr. 1015—1018.

FIG. 2.



Appearances of a drop of blood, X 215. Showing white corpuscles.

Under the microscope a drop of blood from the finger exhibits a large number of white corpuscles, larger than blood disks, resembling pus-globules.

I ordered him nourishing diet, iodide of iron, sulphate of iron, with the extracts of aloe and henbane in pills, and the ung: iodinii co, to be rubbed over the left side of the abdomen.

February 26.—General health much improved, appetite and digestion good, sleeps well and feels stronger. The abdominal enlargement is greater than it was upon admission. He now measures thirty-seven inches in girth at four inches above the navel, and thirty-six inches round the navel.

Ordered to discontinue the iodide of iron and the iodine ointment, to continue the pills, to have the following mixture and to rub in a portion of the ointment over the left side of the abdomen:—

℞ Potassii bromidi ʒj
Extracti sarzæ fluidi ʒss
Aquæ puræ ʒvss

M. ft. mistura cujus capiat quartam partem bis in die.

℞ Potassii bromidi ʒij
Adipis ʒij

M. ft. unguentum nocte manèque infricendum.

March 28.—Health improved, feels stronger, walks out for some hours every day. The tumour feels softer, and his girth is somewhat less, but the white corpuscles seem to be more numerous.

July 4.—With occasional intervals of a few days, the bromide of potassium mixture and ointment were continued since the 26th February, and, seemingly, with advantage. The patient was always anxious to resume the medicine, and to rub in the ointment, as he did not feel so well when they were pretermitted. The tumefied spleen appears to be diminished in bulk, as determined by palpation and measurement, the liver remains unaltered. The patient looks ill, and has for two or three weeks been complaining of aching pains in the lumbar and sacral regions, but he is still able to walk about and take exercise very well. There is no appearance of jaundice or of dropsical effusion.

The blood was examined from time to time under the microscope, and at every successive examination the proportion of colourless corpuscles appeared to be augmented.

TABLE OF MEASUREMENT OF ABDOMEN.

	GIRTH IN INCHES.					
	Jan. 11	Feb. 26	Mar. 28	April 23	May 17	July 4
Three inches below nipples	36	36	35½	35½	35
Four inches above navel	36½	37½	36¾	36	35½	35½
Round the navel .	35	36	35¾	34¾	33½	33½

Knight was discharged from the Infirmary, July 4, 1859.

August 4th.—Knight after his return home continued for a fortnight or three weeks in much the same state as when he left the infirmary; then his strength seemed to fail rapidly, and ten days ago his face became puffed, then the legs and scrotum, and very soon general dropsy set in. I was requested to see him to-day, and found him sitting in a chair, from inability to lie down, and swollen and bloated from head to foot. The face and neck, scrotum and penis, upper and lower extremities, and the integuments of the abdomen are extensively infiltrated with serum, and there is fluid in the peritoneal cavity. Having much difficulty in micturating, in consequence of the distension of the scrotum and the curving of the penis, it became necessary more than once to make punctures in the integuments of these organs, through which much serum was drained away, to his great comfort. Diuretics and other means were employed with some temporary relief, but the dropsy went on increasing, he sank gradually, and died on the 9th of August.

Sectio cadaveris eighteen hours after death. General anasarca.

Thorax.—Lungs large, healthy, crepitating freely; a small quantity of sero-sanguinolent fluid in the pleural cavities; heart large, all the cavities dilated, nearly empty, some small friable dirty-yellow coagula in right ventricle; valves healthy, substance of the heart rather flabby.

Abdomen.—All the viscera dark from venous congestion. About a gallon of brownish serum in the cavity of the peritoneum. Liver of a deep red colour, congested, enlarged in all its dimensions, extending four or five inches below the hypochon-

drium; its capsule smooth; when cut into, sero-sanguineous fluid welled out abundantly from the incisions.

Gall-bladder.—Atrophied, about the size of the two first joints of the little finger, containing only a little mucus not tinged with bile. The cystic duct impervious, being obliterated at its issue from the gall-bladder by the pressure of two or three little cysts, the size of split peas, containing a dirty grey cheesy matter. Hepatic and common ducts unaltered. Pancreas large, loose in texture, otherwise healthy, and its duct free. *Spleen* attached at the upper part, and posteriorly and laterally, by old adhesions. Texture of the spleen firm, colour somewhat brownish, capsule healthy where free from the adhesions. I had no means of weighing the spleen; in shape it was somewhat oval, measured in circumference vertically twenty-eight inches, and sixteen inches around its greatest breadth. Loosely connected with it, and buried in the folds of the gastro-splenic omentum, was a small globular accessory spleen about the size of a walnut.

Kidneys.—Large, congested, dark, cortical portion rather coarse, medullary, healthy-looking. Intestines and stomach distended largely with flatus, dark, congested. The whole of the viscera thoracic and abdominal, appeared to be abnormally large.

Remarks.—This case is recorded as a contribution towards the history of Leucocythemia, the nature and pathology of which I do not propose to discuss at present. A brief remark or two in order to bring out some points of interest in reference to the case may be acceptable. When other therapeutical agents failed to procure any benefit or to produce any diminution in the abdominal enlargement; the bromide of potassium was exhibited, as a forlorn hope, (*melius anceps remedium quam nullum*,) upon the recommendation of the late Dr. Robert Williams, who believed it to possess* “unusual, if not specific, powers in the cure of diseases of the spleen.” The size of the spleen seemed to diminish during its administration, and the patient felt better while taking it, and was always eager to resume it when it was occasionally discontinued. The bromide was perfectly tolerated, never occasioning any irritation of the stomach or bowels in this patient, and possibly by acting as a sorbefacient may have tended to ward off the dropsy. But in another case of splenic enlargement, in which several years ago I exhibited the bromide, it occasioned a good deal of irritation, and, I thought, did harm, so that I was obliged to forego its employment after a brief trial.

* Robert Williams, M.D., *Elements of Medicine*, vol. 1, 1836.

The complete occlusion of the cystic duct is an interesting feature of the case in connection with the fact that the patient had commonly, for many years, lax motions, and that his bowels were very readily disordered. It is a somewhat curious coincidence that, in a case of leucocythemia with hypertrophied spleen, which Dr. Murchison brought before the Pathological Society of London,* there was also collapse of the gall-bladder, its neck being completely obstructed, whilst the ductus communis was free and contained bile. And Andral records two cases in which the cystic duct was obliterated, the common duct pervious, and the spleen hypertrophied.† It is somewhat remarkable, that in the present case, in Dr. Murchison's and in one of Dr. Bennett's,‡ the presence of an accessory spleen is noted. This would seem to indicate that in leucocythemia there is a natural tendency to the formation of an exuberance of splenic tissue.

CASE OF DIABETES INSIPIDUS, WITH ANALYSIS OF THE URINE.

BY PETER EADE, M.D., LONDON,

Physician to the Norfolk and Norwich Hospital, &c., &c.

Case.—Henry M., æt 40, married, of average stature and proportions, but pale and puffy looking, admitted into the Norfolk and Norwich Hospital under my care on June 4th, 1859. He states that he always enjoyed good health until he went to London between four and five years ago. Whilst there he followed the occupation of a cab-horse keeper, and although accustomed to take two or three pints of porter daily, with on rare occasions a glass of gin, he was not intemperate, and by no means in the habit of getting intoxicated. After he had been in London a year, he was attacked with rheumatic fever (apparently sub-acute), for which he was treated in Saint Bartholomew's Hospital, and soon after recovery from this he began to suffer from thirst, loss of appetite, and headache, followed by an increase in the daily discharge of urine, the quantity varying much, but averaging from four to six pints in each twenty-four hours. These symptoms came on gradually, and have continued ever since, together with vague pains in the trunk and limbs, general feelings of debility, and constipation of the bowels alternating with diarrhoea.

Has suffered from bleeding piles for many years. Has spit blood in small quantities several times in the last three years, for the last two of which he has resided in Norwich.

On Admission.—Complains of general feebleness, and of aching pains referred

* Transactions of the Pathological Society of London, vol. vii, p. 238.

† Andral, Clinique Médicale. Tome 2. Third Ed. 1834. Obs. LI.—“Le canal cystique était transformé en un cordon fibreux jusqu'à son embouchure dans le canal hépatique. Le canal hépatique présentait son aspect normal. Le canal cholédoque s'ouvrait librement dans le duodénum. La rate était très volumineuse.” Obs. LII.—“Le canal hépatique était sain, ainsi que le cholédoque. Un calcul, situé vers le milieu du canal cystique, en oblitérait la cavité. Rate volumineuse et molle.”

‡ Clinical Lectures, second edition, p. 822.

to the head, back, and various joints; of much thirst (to gratify which he is in the habit of drinking liquids freely); and of the discharge of an excessive quantity of urine, rising to pass it five or six times every night. He is languid and feeble, with a pale, pasty complexion, but is not emaciated. Pulse slow and weak. Heart's sounds, feeble and scarcely audible, apparently free from murmur. Respiration normal. Bowels at present rather constipated. Urine pale and watery looking—sp. gr. 1014, free from albumen, sugar, or excess of phosphates. There are no dropsical symptoms, and neither cough, expectoration, nor palpitation of the heart.

Ordered, full diet with a pint of porter daily, and to take

Potassii iodid, gr. iij
Tinct. ferri sesquichl. ʒss.
Dec. Sarzæ co ʒj. Ter in die.

June 14.—Reported to have suffered much from thirst, to have drunk much liquid, and to have passed nearly five pints of urine in the course of the preceding night, of sp. gr. 1003. It appears that the amount of liquids drunk bears a very close proportion to that of the urine passed, varying according to the degree of thirst experienced. Last night had again an attack of diarrhœa. Sleeps well and soundly in the intervals of rising to pass water.

℞ Tinct. Opii, ℥v.
Tinct. Catechu, ʒss.
Mist. Cretæ co. ʒj. Ft. haust. p. r. n. sumend.

June 24.—Somewhat improved. Has gained a little flesh and strength. Still passes seven to eight pints of urine daily.

July 8.—There is again some looseness of the bowels, which appears to recur regularly at intervals of a few days and to reduce his strength materially.

℞ Acid Gallici, gr. v.
Acid Sulph. dil. ℥x.
Ferri Sulph. gr. iij.
Aqua, ʒi. Ft. haust. ter die sumend.

July 12.—Rather better. Daily quantity of urine is now from six to seven pints, the quantity of fluid drunk in the same time being ascertained to be four or five pints. Urine is now pale, clear, of a light yellow colour, acid, with a slight mucoid precipitate after repose, and not readily decomposing. Of sp. gr. 1005.

Some of this urine was now submitted to analysis for me by Mr. F. Sutton, an able chemist of this city, with the following results:—

Twelve imperial pints evaporated to dryness left of solid residue .9285 per cent. (about 1000 grains).

Analysis 32.

Composition of Solid Residue.

	per cent.
Urea	60.000
Potash	5.630
Sulphuric acid	3.066
Phosphoric acid	2.966
Lime491
Chlorine	7.660
Soda and magnesia	11.140
Silica427
Ammoniacal salts, mucus, &c. ..	8.620
	<hr/>
	100.000

Analysis 33.

Composition of the Urine, per 1000 grains.

Water	990·720
Urea	5·570
Uric acid	a trace only.
Potash	·522
Sulphuric acid	·284
Lime	·045
Phosphoric acid	·275
Soda and magnesia	1·033
Chlorine	·710
Silica	·041
Ammoniacal salts and mucus	·800
	<hr/>
	1000·000

August 7.—Left eye is severely inflamed (cause unknown) both superficial and deep vessels being engaged.

Hirundines iv. ad tempus applicand.

℞ Hydr. c. Creta, gr. ij.
Pulv. Ipecac. Co. gr. iiss.

In pil.; ter die sumend.

August 26.—Eye well. Feels better as to his general health, and has gained both flesh and strength.

℞ Tr. Ferri Sesq. : ℥xv.
Ex aq. ter die sumend.

September 16.—Pale, but on the whole improved. Urine is now sp. gr. 1018, pale, clear, in quantity about five and a half pints daily. Tested by the Volumetric method, it is found to contain 2·24 per cent. of urea.

October 26.—Again slightly improved as to his general health, but still pale, weak, and unable to do any work. Diarrhœa recurred last week. Thirst less, and daily quantity of urine not more than four pints. It is bright and clear, of sp. gr. 1018, and contains 20·10 per 1000 parts of urea, and ·15 per 1000 of uric acid.

November 9.—Reports himself as still continuing to mend. He has been able to do a little work. Amount of fluids drunk, three pints; of urine passed, four pints daily.

Remarks.—In my own practice I have now had four cases of this disease, two of the patients being children and the other two adults. The children were both unhealthy looking boys, who had suffered for a considerable portion of their lives from this disorder. One of them was remarkably benefited by the use of steel and quinine, and appeared indeed to be cured of his complaint, but after some months he relapsed. The other, after one or two visits, discontinued his attendance upon me, and I have lost sight of him. My adult patients were both men, of the respective ages of sixty-five and forty. The former,

a shoemaker residing in Norwich, without any known hereditary taint, but having suffered from jaundice, chronic rheumatism, and neuralgia, succumbed in eighteen months to the exhausting effects of the disease, with its continued diuresis, and the frequent urgent calls, both by night and day, to empty the bladder. The amount of irritation of the bladder which existed in this case was very remarkable and yielded to no remedies. The quantity of urine varied from three to six pints daily, never exceeded a specific gravity of 1008, and was free from albumen, sugar, or other morbid ingredient. The microscope showed nothing but epithelium and its débris, with some mucus or pus globules. A *post mortem* examination showed the following appearances:—

1. A bloodless state of the lungs; heart (cavities empty, and substance flabby); and large vessels; as well as of all the abdominal viscera.
2. Stomach empty, contracted, its mucous membrane of a claret-red colour, and covered with a mucous fluid like to thick gruel
3. The lobules of the pancreas appeared to be slightly enlarged, and more than usually distinct from each other, as if from the absorption of fat. A portion of its centre was much denser than the rest.
4. Spleen and liver healthy. Gall-bladder full.
5. Bladder rather large, its coats much thickened, and its muscles so developed that they formed prominent projecting bands on its internal surface, much like the fleshy bundles on the interior of the ventricles of the heart.
6. Ureters dilated—in places, to the size of the little finger.
7. Infundibula and pelvis of both kidneys greatly dilated, and the state of sacculated kidney evidently in process of establishment. Left kidney of natural size. Right, one half larger and of darker colour. Both showed depressions along the surface marking the interlobular portions. Previous to section, the cones could be distinctly felt as much denser than the interpyramidal portions, giving indeed the sensation of so many little tumours or nodules. On section, both were seen to be pale and flaccid, and evidently undergoing a gradual process of absorption.

The other adult patient is the subject of the case reported above, and he, as will be observed, has been greatly benefited by a prolonged course of steel.

What is diabetes insipidus? or rather that form of it which has been termed by authors, hydruria, poly-dipsia, and chronic diuresis?

Dr. Barclay, says of it, "at present it does not appear that any logical view of its cause has been suggested."

Dr. Beale says, "I do not think that the condition is sufficiently well characterized to give to it the title of a distinct disease; I believe it depends merely upon a large quantity of water having been taken."

Dr. Christison says, "the nature and cause of this form of disease are obscure. The most generally received doctrine regards it as fundamentally an affection of the organs of digestion producing inordinate thirst, and consecutively diuresis; but the nature of the primary disorder is unknown."

Becquerel and Rodier are of opinion, "that this is a disease entirely constituted by an aberration of the sense of thirst, which is, for the most part, greatly increased. The amount of water is greatly increased, while the solid matters remain for the most part, almost unchanged."

Dr. Hughes Bennett thus comments upon a case of this disease:—"I prefer calling this case polydipsia to diabetes insipidus, as frequent careful inquiry established the fact that it commenced with thirst, and that the increased flow of urine was a simple result of the quantity of water drunk."

Dr. Prout says, "my belief is, that it is often connected with, or leads to, incipient disease of the kidneys."

Dr. Watson says, "some of these cases appear to depend upon excessive thirst, arising from an unhealthy state of the mucous membrane of the pharynx, and are apt to end in phthisis."

Dr. Willis thus writes of it:—"In the present state of pathological knowledge it is impossible to say upon what peculiar morbid condition of the system generally, or of the kidney particularly, the elaboration of a large quantity of watery urine depends. I have no hesitation in saying, however, that it is intimately connected with the nervous temperament. All who have suffered from it, within the sphere of my knowledge, have been men of mind, possessed of keen sensibilities and highly impressible nervous systems."

From these quotations it will be seen that the opinion of most modern authors is to the effect that the affection is sometimes merely a habit, and that always the diuresis is secondary, and a result of some other and primary disorder, which resolves itself into a depraved condition of the mucous membrane of the pharynx or stomach causing inordinate thirst. This, however,

is not a sufficient or final explanation, since the further question immediately arises, To what is this disorder of the mucous membrane itself due?

The analysis of the urine given above differs but little, if regard be had to the respective specific gravities, from one by Dr. Beale, published in the number of the British Medical Journal, for 17th September of the present year. It is chiefly remarkable for the large percentage which the urea forms of the total solid matters, though the absolute quantity of the urea and uric acid excreted in the twenty-four hours would appear also to be somewhat diminished; and both tend to show that this disease is not a disease of the urine, so far at least as that there is no great excess or deficiency of any of the ordinary urinary constituents, and no addition of any superadded morbid material which the usual chemical and microscopical tests can discriminate. Whether, however, the diuresis may not be due to the presence in the blood of some subtle unrecognized diuretic material, or to some depraved innervation with exalted functions of the malpighian (water-secreting) portion of the kidney,—the result being a condition, as expressed by Dr. Willis, “in which the kidney is not at work to drain the system, but the system is at work to supply the kidney,”—is, I think in the present state of our knowledge, fair matter for speculation. However this may be, certain it is that the effects of the disorder, both secondary and tertiary, are very analogous to those produced by diabetes mellitus, and consist essentially of depraved nutrition and its results, with a gradual exhaustion of the powers of life.

Many of the cases recorded by Willis and others, under the name of diabetes insipidus, appear to be, and they doubtless are, merely examples of diuresis accompanying an abnormal habit of imbibing large quantities of liquid, yet others are as certainly cases of real, distinct *disease*,* for it appears impossible to believe that an affection, which can come on in an adult, or in one already in the decline of life (as in one of the cases related above), which can steadily and gradually exhaust and finally destroy the patient, in the short space of eighteen months, without leaving any other appearances than such as are due to anæmia, emaciation, and continued irritation of the

* Understanding by this term something more than a simple aberration or increase of the sense of thirst, with the resulting increase of the urinary discharge. The tendency of all recent researches is to show that diabetes mellitus is due essentially to disorder of the nervous system, especially of that portion which is located in the cervical region of the body, and if so, the similarity of the two affections in their symptoms and course is, I think, sufficiently great to justify a supposition of an analogous origin.

bladder—can be due merely to exalted thirst, or to the habit of drinking an excessive quantity of fluid.

One other point to which I would merely allude is the recurrence of the diarrhoea, which was a marked symptom in both my adult cases. This may, of course, be simply a mechanical phenomenon, due to a periodical effort of nature to remove the constantly recurring constipation, but it is also susceptible of another interpretation, and may be well explained by the hypothesis, that some morbid material continued to form in the blood which the kidneys were attempting to remove, but which after accumulating to a certain extent, was then got rid of by another outlet, namely, the mucous membrane of the bowels.

NARRATIVE OF A CASE IN WHICH MALFORMATION OF THE PULMONARY VALVES GAVE RISE TO REMARKABLE CARDIAC SOUNDS.

BY J. WARBURTON BEGBIE, M.D.

AT a meeting of the Medico-Chirurgical Society of Edinburgh on the 16th of November, 1859, Dr. Haldane, Pathologist to the Royal Infirmary, exhibited a heart which had been removed by him from the body of a patient on the 14th of the same month. In examining this heart, the valves of the pulmonary artery were tested by a stream of water, and were found to be slightly incompetent. There were four valves, three of about the ordinary size, the fourth much smaller than the others, and imperfectly separated from one of them. The other valves of the heart were healthy, and the organ was of its natural dimensions.* The heart, the description of the abnormal appearances in which I have given very nearly in Dr. Haldane's words, was that of a young man, who for a period of nearly three years had been under my observation, whom I had, times without number, occasionally alone, more frequently in the presence of a clinical class in the Infirmary, examined; and from the date of the first examination, at the commencement of 1857, had believed to labour under some abnormal condition of the arterial valves on the right side of the heart.

* Proceedings of Medico-Chirurgical Society, Edinburgh Medical Journal, December, 1859.

W. W., æt. 18, consulted me in the very early part of 1857, chiefly on account of a slight degree of difficulty in breathing, aggravated on making any forced exertion. In reply to my careful inquiry he stated that he had always considered himself to be "touched" in the breathing, having observed, from his earliest recollection, that he could not run with the same facility as other boys, and that on lifting heavy weights he was very soon fatigued and caused to "pant."

At eighteen when I first saw the patient, he had no appearance of suffering from bad health, was then able for the duties of a light porter, and admitted that he applied for medical advice from no feeling of increase in the difficulty of breathing and slight palpitation which from boyhood he had suffered, but in the hope that these his old symptoms might be subdued.

When W. removed his clothes to permit a careful examination of the chest, I was struck by the peculiar appearance of the right arm; it was much shorter and thinner than the left, a condition which he stated had existed from birth. The left arm was well developed. He was, it is scarcely necessary to add, left-handed. On inspection of the chest a more ample clothing by the pectoral muscles over the left than the right front was at once apparent. Besides this, there existed a decided prominence in the cardiac region. Impulse of the heart, without being decidedly exaggerated, was readily appreciable. Rhythm of heart natural. Apex beat was detected in the normal situation, and there existed no increase of precordial dulness. A very decided thrill accompanied the systolic action of the heart, when the hand was applied over the base. On more careful examination, the thrill was found to be almost entirely limited to the situation in which a loud systolic murmur was heard with the greatest degree of intensity. That was at the left border of the sternum, over the cartilage of the third rib. The systolic murmur thus distinguished was blowing in character and of an unusual loudness; in the same situation it was followed by a diastolic murmur of much less intensity. The systolic murmur was readily distinguished over the whole upper part of the chest, but with much facility the seat of its greatest intensity was determined to be that already indicated. The diastolic murmur was limited or almost limited to the same situation. Over the aortic valves something like the normal second sound was from time to time audible. The loud systolic murmur was not propagated in the course of the systemic circulation, for though loudly heard over the upper sternum, it was scarcely appreciable in the carotids.

The radial as well as other superficial pulses were normal, no jerking character or trace of visibility distinguished them. The strength of pulse good, average frequency 74. Respiratory murmur of both lungs was feeble, otherwise unaltered. Patient had never suffered from rheumatism, had never spat blood, had little or no cough, and no expectoration. Complained occasionally of drowsiness. Had no appearance of lividity of the countenance. Subsequent to this my first examination, he was on three occasions under my care in the Infirmary, once in 1857, and twice in 1858. Repeatedly examined, the physical signs underwent no change, so that in the notes of his case, I frequently find this remark, "physical signs precisely as before." The slight breathlessness he suffered was always relieved by the care and comfort of hospital residence, and the palpitation which seemed in great degree functional, was always mitigated by attention to the state of the bowels, proper regulation of diet, and on one or two occasions when more severe and lasting than usual by the application of a Belladonna plaster. By iron and henbane, which he took for a lengthened period, both when in the hospital and out of it, he stated that he always felt himself benefited.

He left the Infirmary for the last time on the 5th of October, 1858. I had then been successful in obtaining employment for him of a light nature; at this he continued for a considerable period. I saw him frequently thereafter; there was up to the very last occasion on which I accidentally met him in the early summer of 1859, no change in his appearance, and he always expressed himself as feeling as well as on any former occasion. For several months I had not seen him, when on Sunday the 13th of November, on visiting the Infirmary, I was startled by the announcement from the nurse—under whose charge in the hospital he had been on the occasions alluded to in this narrative,—that his body was then lying in the dead-house. On inquiry, I was grieved to learn, that during the afternoon of the preceding Friday, when in a state of intoxication, to habits of which he had only lately become abandoned—he had fallen down a stair, and had been brought to the surgical hospital, where, upon examination an extensive fracture at the base of the skull was detected. He died the same evening in a state of complete insensibility. It was in the performance of the post-mortem examination to determine the precise nature of the injury of the head, that the opportunity occurred for observing the state of the heart.

This interesting case may be almost left without any comments, on one or two points only I am tempted to make a few remarks:

1. The physical signs seemed to me from the very first examination to indicate a lesion of the pulmonary valves, one which offered some obstruction to the flow of the blood outwards from the ventricle, and at the same time permitted the reflux of blood backwards to a limited extent. The obstruction I argued could not be very great, as there existed no evidence of hypertrophy of the right ventricle, nor any signs of imperfect supply of blood to the lungs. The loudness of the systolic murmur seemed to bear out the doctrine of Dr. Hope, that pulmonary murmurs, from the greater nearness of the pulmonary artery to the surface of the chest, are likely to be louder than aortic murmurs. Equally strong indications of the pulmonary origin of the murmurs, as the precise situation in which they were most clearly heard, were the want of propagation in the aortic, and large vessels, or along the sternum, and the absence of any peculiarity in the superficial pulses. The incompetency of the pulmonary valves I considered to be only to a limited extent, from the faint character of the diastolic murmur and the absence of any marked pulmonary symptoms.

2. The history of the patient's case, the fact very specially, that throughout life, his breathing had been slightly affected; that he had never suffered from rheumatism, and his appearance, with the shortened right arm, made it not improbable that the cardiac lesion whatever it might be was of foetal origin.

3. Lastly, the absence of any other form of valvular disease, in this case, may reasonably be considered as having materially simplified the diagnosis, though its interest cannot be considered as on that account, in any degree diminished.

CASES ILLUSTRATING THE USE OF THE OPHTHALMOSCOPE.

BY ROBERT TAYLOR, F.R.C.S.

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AND

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(Continued from Vol. I, page 287.)

Case 5.—Martha Hollis, aged 20, a girl, of a brown, sallow complexion, vacant expression, and dull intellect, applied October 20, 1858. With the exception of frequent fits, to which she had been subject for some years, her general health was tolerably good. Catamenia regular, urine healthy and normal;

she occasionally passes lumbrici. She complains that the sight of the right eye began to fail her about two years ago, and has been gradually getting worse up to the present time. She is now perfectly blind of the right eye, and cannot distinguish light from darkness; the sight of the left one is also impaired, but she can read large type with it (great primer). On examination, the conjunctiva and sclerotic appear healthy. Palpation normal. Some lachrymation with a trifling mucous discharge. Both pupils fully dilated. There is external strabismus of the right eye. No pain or other subjective symptoms accompanied the gradual loss of sight.

OPHTHALMOSCOPIC EXAMINATION.—Plate 1, Fig. 1.—*Right Eye*.—Cornea, lens, and humours clear. The optic disc is of a pure, glistening white, circular, of normal size, and well-defined edge. No shadow of bulging or cupping is reflected from its uniform flat white surface. Four small retinal vessels enter and leave its centre, taking their ordinary course. The choroid around the optic disc reflects a bluish grey shade, which gradually fades into a somewhat pale red, the vessels being dimly seen; two or three spots of pigment are deposited below the optic disc. Over the situation of the macula lutea, fig. 2, is a patch of effused blood, apparently proceeding from a rupture of the choroidal vessels; around this are three other distinct, well-defined, blue deposits, with yellowish centres, elevated, and capped with spots of black pigment.

N.B.—The blue deposits are rather too well defined at their edges by the chromo-lithographer.

Ophthalmoscopic examination of the left eye, shows the same appearance of the optic disc, but over the macula lutea is an increased state of vascularity of the choroidal, but not of the retinal vessels.

The treatment consisted of a combined tonic and purgative plan. Iron, with an occasional mercurial purge.

SECOND OPHTHALMOSCOPIC EXAMINATION, February 2, 1859.

—*Right Eye*.—The appearances of the optic disc and of the blue spots remain the same, but the patch of effused blood is absorbing, and a dark hazy shade is all that is to be seen. In the left eye also the vascularity over the same spot has almost entirely disappeared. The state of vision, however, remains much about the same.

The history and ophthalmoscopic appearances of this case seem to indicate cerebral disease. The blue spots seem clearly to be the remains of unabsorbed blood clots.

Case 6.—Mary Jones, a drunken, dissipated woman, received a blow on the right eye one evening in a quarrel. Next morning on awakening she found that the sight of the eye was so much injured that she could only distinguish the outlines of large objects, and that with difficulty. A few days afterwards she applied at the hospital, vision remaining in the same condition. There was no external appearance of injury, except slight discoloration around the eye from the blow.

OPHTHALMOSCOPIC EXAMINATION.—Plate 1, Fig. 3.—The fundus of the eye was of a much brighter red than usual, from choroidal congestion. The optic disc was of a rosy red hue, owing to which, and to the heightened colour of the choroid, its circumference was not so sharply marked as in the healthy eye. There was no change in the retinal vessels. A little to the inner side of the optic disc, and near its margin, lay a clot of blood of a somewhat crescentic form, deep red, almost approaching to black in the centre, gradually shaded off to bright carmine at the edges.

No special treatment was considered necessary. The blood was gradually absorbed, and in proportion as this took place vision returned. It was remarked that as the clot diminished in size, it assumed more and more the circular form, suggesting the idea that this might possibly be the process of formation of certain peculiar spots, which have been occasionally observed at this hospital, and probably also elsewhere. The spots in question are very dark brown, almost black, shaped somewhat like a quoit, being circular in form, with a bright, nearly colourless spot in the centre. No opportunity was afforded of ascertaining the correctness of this idea, as the patient discontinued her attendance when the sight was almost perfectly restored, but before the changes in the clot had ceased.

Before the discovery of the ophthalmoscope, the diagnosis, prognosis, and treatment of this case would have been alike matters of conjecture. In former days loss of vision resulting from a blow, where no external injury was visible, was commonly attributed to "concussion of the retina;" a vague expression to which no definite meaning can be attached, and which did not permit the surgeon to rest satisfied without submitting his patient to the usual routine treatment of leeching, blistering, and mercury. In this case the ophthalmoscope at once revealed the nature of the injury, the probability of perfect recovery, and the absence of any necessity for special treatment. It appears probable that in the great majority of similar accidents equal certainty may be arrived at by the use of this invaluable instrument, and the diagnosis and treatment thus rescued from the realms of uncertainty.

Case 7.—Mrs. Ancell, æt. 61, applied December 15th, 1858.—About five years ago, she received a smart blow on the right eye-ball from the handle of a saucepan. The pain, which at first was very acute, subsided in the course of the day; but from that time the sight began to fail, and has become gradually worse and worse. She has not had any regular medical treatment, and has only applied now because the vision of the left eye has, within the last few months, become seriously impaired. In neither eye has there been any pain during the progress of the symptoms; in the right eye, she has for the last two years been occasionally troubled

with floating muscæ, but has never had flashes or sparks of light; in the left, she has frequent, faint flashes, and the eye is slightly intolerant of light. There is no external appearance of disease, and both eyeballs are of normal consistence.

When the head was held downwards, so that the eyes were turned slightly upwards, she could, with the right eye distinguish the face, but not the features, of a gentleman sitting about four feet from her, and could even see a small gold watch chain, which hung across his dark coloured vest. On looking straight forwards, the dim outline only of the figure could be seen; no details could be made out. Objects seen with the inner and upper part of the retina, seemed as though broken in two. With the left eye she could make out type of the size used for the *date* of the "Times," but in a few seconds the letters seemed to run together and become confused, so that she was quite unable to read.

OPHTHALMOSCOPIC EXAMINATION.—*Right Eye*.—Plate I., Fig. 4.—The superficial choroidal pigment has been almost entirely removed, exposing the net-work of orange coloured vessels as distinctly and sharply marked as in a well injected specimen of the intestinal capillaries, which they much resemble in appearance. A broad band of brilliant white, extremely irregular in form, crosses the fundus of the eye transversely, surrounding the optic disc, and narrowing towards the inner side, where the vessels of the choroid again begin to appear. In this space the choroid is completely atrophied, and the white appearance is due to the sclerotica, shining through the diaphanous membrane. Masses of pigment, irregular in form, and jet black in colour, are dotted over the fundus of the eye. The optic disc is of dark grey colour, deeply shaded towards the margin. For about two-thirds of its circumference, it is surrounded by a line of jet black pigment. The retinal vessels are distended, and the arteries cannot be distinguished from the veins by their colour. At a little distance beneath the optic disc are two small spots of a greyish colour, and woolly, flocculent appearance, probably small masses of effused lymph. One of these is situated in the course of an arterial branch, which passes beneath it, and is concealed during its transit.

The appearances in the left eye are of the same general character as those in the right, but in a much less advanced stage.

Case 8.—William Brine, æt. 12½, applied April 27th, 1859. He had been a weakly boy during infancy, but at present he enjoys tolerably good health. His left eye, ever since he can remember, has been very deficient in sight. He can now hardly discern the hand passed before his eye. He has never had any acute inflammatory attack in his eyes; neither have they ever given him any pain. To external examination and palpation, the eye is healthy. On trying him with glasses N. 13, biconcave, he can see better, so as to distinguish the fingers on a hand held before him.

OPHTHALMOSCOPIC EXAMINATION.—*Left Eye*.—Plate I., Fig. 5.—The centre of the optic disc is thrown into relief by a light pinkish shade, the circumference towards the temporal

side is thrown into sharp outline by a dark shade having a defined lower edge, which is reflected from the pigmental layer of the choroid. On the nasal side, the white crescent, of so frequent occurrence in myopic persons, is here very evident. The retinal vessels cross the crescent transversely, and appear by the alteration in their shade and diameter to dip into a concavity as they pass over it. Small vessels arising at the edge of the optic disc also pass across it, and some few whose origin is only to be traced from the extreme edge of the crescent. The sclerotic is generally thinned and slightly staphylomatous at this crescentic part; this condition has been called "posterior staphyloma," altering the antero-posterior axis of the eye, may give rise to myopia; however, many myopic patients do not show this crescent at all.

The choroidal vessels are more plainly shown in this eye, the pigmental coat being generally deficient.

Case 9.—Lewis Marks, a Jew, applied March 24th, 1859. The right eye had been destroyed by previous disease some years ago. The left (Plate I, Fig. 6) is almost useless from excessive myopia, the use of the most powerful biconcave glasses only enabling him to find his way about the streets. This has been the case as long as he can remember.

OPHTHALMOSCOPIC EXAMINATION.—*Left Eye.*—This showed a remarkably small optic disc, with considerable hyperæmia of its surface, especially towards the temporal side. The retinal vessels which enter are few, and very minute. On the nasal side of the optic disc is a small white spot, with one small vessel running across it. Query, whether this is crescentic, or is it deposit?

Congenital atrophy of the optic disc and probably also of the retina is diagnosed here.

NOTES OF CERTAIN CASES TREATED AT THE ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.

BY ARTHUR ERNEST SANSOM, M.B., Lond. Assoc. C.S.

Medical Registrar.

I. *Gonorrhæal Ophthalmia under Stimulant and Supporting Treatment.*

Case 1.—Elizabeth Bannister, æt. 18, admitted under the care of Mr. Hancock, November 18th, 1857. Right eye affected. Enormous swelling and bluish-red discoloration of lids. Abundant secretion of thick yellow pus. Cornea opaque. Intense chemosis encroaching on about one third of the extent of the

cornea. Vision absent. Suffers acute shooting and aching pain. General health good.

Origin of disease.—She is a servant in a family where three children are suffering from an affection of the genitals. A towel which was used by a brother having the venereal disease, and subsequently for the children, seems to have been the cause of communication of the virus to the latter. She has lately wiped her eyes with a sponge used by the children.

Duration of disease until application.—Five days.

Treatment.—℞ Quinæ disulph. gr. ii, Opii gr. i ter die. Meat diet daily, and a pint of porter. Eye to be frequently cleansed with decoction of poppy heads, and a drop of solution of nitrate of silver (gr. vi ad ℥i) to be introduced every morning.

Progress.—Five days after admission, left eye also became affected. Nitrate of silver sol. (gr. x ad ℥i) was introduced. Then by Mr. Hancock's order all local stimuli were abandoned. Hydrarg. Chlor. gr. i was added to each pill. Porter exchanged for wine. 13th day of disease:—Intense pain of right eyelid. Delirium. Ordered a mixture containing ammonia and bark, and to continue the wine. 19th day:—Delirium ceased. Discharge from eye less. Chemosis of the left eye has disappeared. Cornea perfectly clear, vision good; still much conjunctival redness. Right eyelid less tender when touched, but much swollen. 34th day:—Left eye almost normal. Right eye-ball disorganized. The left eye soon regained completely its healthy condition.

Case 2.—John House, discharged soldier, admitted February 10, 1859, under Mr. Hancock, for granular lids. He can just see to get about. The granular state of the lids was for eight days combated by the application of sulphate of copper; then it was noticed that they had a quasi-erysipelatous swelling. Omit cupri sulph. and bathe constantly with warm water. 3rd day of disease:—Cupped to ℥ij from each temple. Calomel and opium. 7th day:—It was discovered that he had gonorrhœa; he had previously stoutly denied this. Discharge very profuse; much pain of left eye.

Treatment.—Ordered meat diet. Oj of beer. Quinæ disulph. gr. ij, Opii, gr. j, 4tis horis. Eyes syringed out every ten minutes with Decoc. papaveris. 14th day:—Right eye doing well; cornea almost clear. 16th day:—No chemosis of conjunctiva of right eye; cornea clear; left chemosed and evidently the worse. 29th day:—Right eye, vision good; in very favourable condition. Left, painful; cornea dull. Solution of nitrate of silver (gr. j ad ℥j) applied every morning. 30th day:—Left eye worse; punctured by means of a fine point of lunar caustic. 44th day:—Vascular staphyloma of lower part of left cornea. Staphyloma was gradually subdued by means of lunar caustic. On the 50th day, the prominence was very slight, and on the 70th day, he was discharged cured, right eye being completely saved.

Case 3.—John Few, æt. 21, admitted March 15. Both eyes affected; left lids more swollen than right. Left eye: cornea dull, conjunctiva chemosed. Right eye: cornea clear, chemosis slight. Separation of the lids discloses thick yellow purulent secretion.

Origin.—A month or six weeks before admission had gonorrhœa; discharge continued after entry. Seven days before admission noticed that lids of left eye were agglutinated and yellowish white discharge extruded. Following day he was unable to see with it. On the third day after the commencement, the right eye began to be affected in the same way. Suffered much in the left eye.

Treatment.—Meat diet with a pint of beer. ℞ Quinæ disulph. gr. ij, Pulv. opii, gr. j. 4tis horis. Eyes to be well washed out frequently with decoction of poppies.

Progress of Case.—Soon the upper part of the cornea of the left eye appeared sloughy, and there resulted an uneven staphyloma. The cornea of the right kept perfectly clear. 15 days after admission the right eye was nearly well. The left iris protruded, and was touched with a point of Argent. Nitras.

29th day :—Left eye totally disorganized, but no active inflammation whatever taking place. Right eye in excellent condition. 32nd day :—Discharged.

Case 4.—John Maltby, æt. 20, admitted August 20, 1856. Left eye affected; lids very much swollen; copious purulent discharge, and much pain.

Treatment.—Similar to the former. Eye frequently washed with a weak solution of nitrate of silver. He was discharged cured on the 23rd day after admission.

Case 5.—Ann Keeley, æt. 19, admitted November 4, 1856. Left eye intensely red; interstitial deposit between the layers of the cornea had taken place. Whilst she was walking up the stairs of the hospital the cornea gave way.

Origin.—Suffering from gonorrhœa, and accustomed to bathe her eyes with her own urine. At first the local mischief was treated by a general practitioner with sulphate of zinc lotion. The symptoms became aggravated, and leeches were then applied. For a week she continued to bathe her eyes with warm water, and then applied at a general hospital when she was treated by blue pill and lotion of nitrate of silver. Finding herself worse, three days afterwards she applied here.

Duration until application.—About fourteen days.

Treatment.—Double allowances of meat and beer. Quinine. The eye frequently washed out with solution of nitrate of silver (gr. ij ad ℥j). Belladonna applied over the brow. Afterwards the point of nitrate of silver was applied to the ruptured part of the cornea, and slight pressure made thereupon by a pad.

Result.—Eighteen days after admission (about 32nd day of disease) she was discharged to attend as an out-patient. The sight was entire; the pupil regular; a small point of the cornea at its lower part was surrounded by a hazy patch, which gradually diminished.

Case 6.—William Laurence, right eye was affected; subjected to similar treatment to the foregoing; left the hospital 69 days after admission.

Case 7.—Emma Nelson, æt. 57, admitted December 13, 1856. Right eye; palpebral and ocular conjunctiva much chemosed, cornea depressed, dull and milky, and almost covered by the swollen conjunctiva. Pupil barely visible; faint appreciation of light; great tenderness and pain, and much discharge.

Origin.—Has been nursing a child having purulent ophthalmia, the father of whom is reputed to have gonorrhœa; thinks she has wiped her eyes with the cloth used for the child.

Duration until admission.—Four days. Two leeches had been applied to the temple.

Treatment.—Local ablution with decoction of poppies, solution of nitrate of silver (gr. ij ad ℥j); instilled; Hydrarg. chlorid. gr. ij; Quinæ disulph. gr. j every two hours.

Diet.—Beef-steak and arrow-root.

Progress.—Towards evening the pain entirely ceased. Opium (gr. ss.) was added to each powder. *Second day after admission*—Gums slightly sore. 3rd day :—Powders given three times a day. 4th day :—Ol. ricini, ℥ss. statim. To leave off calomel and take quinine and opium. 5th day :—Ulceration apparent at upper part of cornea. 6th day :—Left eye waters, and a pricking sensation is experienced therein. Sol. of nitrate of silver (gr. xij ad ℥i) dropped in. 7th day :—Cornea of right eye gave way and aqueous humour escaped. Iris slightly prolapsed. Pad applied. Left eye: conjunctivæ becoming chemosed; discharge increasing cornea still clear. 12th day :—Three leeches applied below ciliæ of lower lid; chemosis rather less; cornea peripherally hazy. 2nd day :—Cornea less dim; Chemosis much diminished; ulceration has taken place at the upper part of the cornea. 24th day :—Opium omitted. Sol. of nitrate of silver (gr. ij ad ℥j) instilled three times a day. 28th day :—Healing of ulcerated cornea taking place. A drop of Vinum opii introduced daily. 32nd day :—Nearly well;

sight good. Mark of corneal cicatrix very slight. 44th day :—Discharged ; left eye normal ; right destroyed.

Case 8.—John Carey, æt. 23, admitted October 13, 1855. Left eye affected ; conjunctiva much swollen ; discharge purulent and copious ; cornea very slightly clouded towards lower part.

Origin.—Sleeping with a fellow-workman, and having some difficulty in procuring water for lavatory purposes, each has been in the habit of washing himself with their mutual urine. The patient, more unfortunate of the two, was after some time affected with severe inflammation of the left eye, and then he discovered that his companion had gonorrhœa. Such is his own account ! He applied bread and water poultices to the eye, and caused himself to be purged with Epsom salts.

Duration before admission.—Twelve days.

Treatment.—Precisely the same as in Case 7. 5th day after admission :—Mouth tender ; chemosis much less. The bowels were next freely opened by colocynth and sulphate of magnesia. 12th day :—Cornea presented small ulcers ; aqueous humour escaped ; iris prolapsed. Ulcer was touched very lightly with a point of caustic, and extract of belladonna was smeared over the brow. Treatment altered to quinine and opium. 15th day :—Ulcer quite healed. Vinum opii introduced. 20th day :—Sight perfect. He was discharged. He presented himself afterwards as out-patient, when there was seen merely a slight speck at the lower part of the cornea, which gradually became clear.

Case 9.—Joseph Miller, æt. 32, admitted October 17, 1855. Disease had attacked both eyes, both seemed in much the same state. Conjunctivæ much chemosed, cornea hazy. Discharge copious, adhesive, and purulent.

Origin.—He says that it arose from his using a towel belonging to a fellow-workman who had “something the matter with his eyes.” But he is a married man and has been absent from home for some time. He had no gonorrhœal discharge at the time of his admission.

Treatment.—Precisely the same as in the last case.

Progress.—Second day :—Mouth slightly touched ; pain and photophobia nearly gone. 3rd day :—Mercury decreased to three times a day ; chemosis diminishes ; cornea becoming clearer. 7th day :—Lotio aluminis substituted for Decoet. papaveris. Bowels opened by Magnes. sulph. 13th day :—Corneal haziness nearly gone. 16th day :—Discharged.

Case 10.—Robert Burnett, æt. 26, admitted January 19, 1856.—Left eye affected. Great tumefaction of lids ; profuse discharge ; extreme chemosis ; cornea totally opaque, at upper margin appearing inclined to slough.

Origin.—Has gonorrhœal discharge.

Duration.—Ten days.

Treatment.—Quinine and opium (gr. ij and gr. ʒ) three times a day. Liberal diet and Oij of porter. Fomented with Decoet. papaveris, and orbit occasionally syringed with a weak solution of nitrate of silver (gr. ss. ad ʒi). 2nd day :—Much less swelling ; chemosis somewhat less. Ext. Belladonnæ applied over brow ; aperients. 5th day :—Improvement in every respect. 7th day :—Cornea showing greater tendency to slough ; slight protrusion of iris at upper part. 9th day :—Sloughing arrested ; improvement in the other respects. 13th day :—Iridal protrusion much less. Pupil rather more than normally contracted. Belladonna over brow. 15th day :—Cornea quite clear ; chemosis subsided. 27th day :—Sight steadily improving, and pupil gradually becoming more dilated. Iodide of potassium in 5 grain doses substituted for quinine and opium. 35th day :—Discharged with a capital eye.

Case 11.*—Mary Hatt, æt. 18, admitted June 7th, 1859. Right eye affected. Cornea very opaque ; conjunction very much chemosed, distressing lachrymation.

* See *Lancet*, for September 17th, 1859.

Origin.—Gonorrhœa.

Duration until admission.—Five days.

Treatment.—Precisely as in Case 10; 2nd day after admission, restless, cornea showed tendency to slough. 3rd day:—Delirious, great cephalalgia. Omit opium. 4th day:—Eye syringed with solution of nitrate of silver (gr. ss. ad ℥j). 13th day:—Inflammation decreased, pain less. 18th day:—Cornea cloudy, but all tendency to sloughing has passed away. 20th day:—Begins to distinguish form and colours of objects. 30th day:—Pain and lachrymation ceased. 32nd day:—Sight, she says, is as good as before the outbreak of the disease. 42nd day:—Only remaining sign of disease is mottling of the circumferential part of the cornea. 52nd day:—Discharged cured, slight opacity remains below the axis of vision.

Case 12*—John R., æt 21, admitted August 17th, 1859. Left eye affected. Lids much swollen. Intense chemosis, but cornea pretty clear.

Origin.—Used the towel of a companion who was suffering from gonorrhœa.

Duration.—Twelve days.

Treatment.—Similar to Cases 9 and 10.

Progress.—3rd day:—So much better, wishes to leave the hospital. 15th day:—Chemosis entirely disappeared, cornea looked slightly soft. A solution of nitrate of silver (gr. ij. ad ℥j), dropped between the lids. 16th day:—Sight perfect, conjunctival congestion fast disappearing, slight mottling of margin of cornea.

The foregoing are abstracts of all the cases of gonorrhœal ophthalmia which have been treated in this hospital upon a stimulant and supporting plan. The general lesson taught by them seems undoubtedly to be that this is superior to the old depleting method. It is rather by the experience of individuals than by statistical argument that this point must be judged, for the latter is not supported by sufficient numbers to establish any valuable conclusions; Mr. Hancock, the senior surgeon of this hospital, under whose care all the forementioned cases were placed, is fully convinced of the great success of this mild antagonism† of the disease over the old system of combating it with the whole battery of antiphlogistic remedies. The data, too, which we possess, though they are necessarily imperfect point to a similar conclusion. Thus, Lawrence‡ states of 14 cases observed by him, 9 had one eye affected, 5 both. The eye was lost in 6 cases in which one alone was attacked, and of those in which both were involved, both were lost in one instance, and one perished in two cases—one recovered partially and one completely. An analysis of the 12 cases here recorded shows that the disease attacked one eye in 7 instances, both in 5—that in all the 7 instances the eye was saved—and that of the 5 in which both were involved, 4 resulted in the loss of one eye, and one case completely recovered.

It will be observed that the local treatment was gentle, *weak* astringent solutions were employed.

* See *Lancet* for September 17th, 1859.

† See *Dixon*. Diseases of the Eye. Page 43.

‡ Quoted by *Erchen*. Surgery. Page 911.

Certainly the disease carries with it the sight of extreme depression of the vital powers. Added to the local mischief, is the dread of losing the sight, and either the self-reproach of having contracted the first cause or the sense of misfortune in having suffered from another's fault. Thus in cases 1 and 11, delirium was a prominent symptom.

Altogether a marked analogy seems to exist between this and those other acute diseases, in which a plan of treatment tending to support the powers of life has been attended with signal success.*

II.—*Effects of Partial Paralysis of the Fifth Nerve.*

Alfred Stowers, æt 26, admitted July 15th. Tall, but very pale. Served in the army throughout the Crimean campaign, but was discharged six weeks before admission on account of partial paralysis of the left side, accompanied by ptosis. Eighteen months previously, he was suddenly attacked with severe frontal pain not confined to one side; at the same time he experienced dizziness and protracted vomiting. He said that at this time the sight became clouded.

Nine months before admission, pain recurred in the left temple near the eyeball, afterwards it shifted to the eyeball itself. He now began to find that the left side of his face was benumbed; then the left upper eyelid fell, and he was unable to raise it, the same side of the body also lost power. This occurred about five months before his admission; two months afterwards the ptosis ceased, and then he says the lids were retained open, and the globe was drawn to the outside. The conjunctiva became bloodshot, and for this condition a practitioner dropped into the eye some fluid which, he says, immediately caused the cornea to become white, and he was unable to see. Subsequently he recovered the sight in some degree.

Pre-ent Condition of the Eyeball.—It is normally exposed and occupies its usual position. The conjunctiva is vividly congested. The cornea presents a chalk-looking film, with a rim of gelatiniform, pale yellow substance intervening between it and the redness of the conjunctiva, and, as it were, supporting it in its surface. This softened material bulges out at its most dependent part. He has faint vision at one point. The tongue, on being protruded, deviates to the left side. The muscles of this side of the body appear slightly atrophied. There is no difficulty of deglutition. He was ordered, strychnine gr. ss. mist. acid; nitromuriatic ʒviij; capiat ʒj ter die. Gradually the whole cornea was converted into a gelatinous mass, but the general health improved. The conjunctiva became less and less congested. The sloughing cornea was treated by the application of the solid nitrate of silver. He was discharged to return to the country, his eye presenting a greatly improved appearance, on the 12th of August.

Most writers on diseases of the eye have said that sloughing of the cornea from implication of the fifth nerve differs little from sloughing under other circumstances. But this case shows that there are differences, and these are very interesting in a physiological point of view. The appearance of the eye is almost pathognomonic. Mr. Hancock, on near inspection, at once declared the nature of the disease.

(1). *The Cornea.*—In this case the sloughing is due to want of nervous supply, and differs from ordinary inflammatory

* See Dr. Todd, "On the Treatment of Acute Disease." Archives, Vol. I.

sloughing in its universality. No commencing of the disorganization at any distinct points of the cornea is observed—it is centripetal. It may thus resemble that rare form of progressive inflammation adduced by Dixon,* but it will differ therefrom in the peculiar condition of the conjunctiva.

(2). *The Conjunctiva*.—It does not present the aspect of ordinary inflammation, although it is highly vascular and sometimes simulates chemosis. There is little or no secretion from it; it looks dry. To the want of this protective secretion which in health keeps the conjunctival surface moist, the changes ensuing on lesion of this nerve have been attributed,† but this is not all. Another effect of the insensibility of the conjunctiva is to permit the introduction, unknown to the patient, of foreign particles into the eye, which yet induce determination of blood without true inflammation. When this patient first came in, there was universal conjunctival redness, the outlines of the vessels could not be seen; but soon much of the redness subsided, and the conjunctiva presented the appearance of passive congestion, the vessels being visible, and turgid with blood. Another potent means of furthering these changes, is the absence of lachrymal secretion; for the gland does not receive its proper nervous supply. Hence there is a wide distinction between this condition and inflammation—there is no pain, sensibility is destroyed—there is no lachrymation, the lachrymal gland does not secrete—there is no discharge, that is not formed when the sensibility of the mucous surface is destroyed.

LARGE STONE IN THE BLADDER CAUSING NO PAIN,

REPORTED BY

R. McCORMICK, Esq.

House Surgeon to the Bucks Infirmary.

D. G., æt. 45 years, admitted into the Bucks Infirmary, September 8th, 1858, under the care of Mr. James H. Ceely. At the age of 15 years he suffered from pain in the hypogastric region, extending along the urethra to the glans penis, which at intervals during the succeeding twelve months was very violent,

* Diseases of the eye. Page 85.

† Carpenter's Human Physiology, 5th Edition. Page 470.

and was at each attack followed by the evacuation of bloody urine. Occasionally since then he experienced pain in these situations, when taking horse exercise, or during unusual exertions, but *never to any great extent, and he was never compelled to seek advice.*

With these exceptions his general health, although delicate, has been good till last June, when he had an accession of symptoms resembling those mentioned but greatly aggravated. The urine, in addition to blood, containing "gravel." At this time he consulted Mr. Reynolds of Thame, who detected a vesical calculus, and on the 20th September, Mr. J. H. Ceely performed the lateral operation and removed a rough, irregular, mulberry calculus weighing 12 drachms.

During the first 10 days subsequently to the operation, the urine contained considerable quantities of pus and blood, after which time all abnormal characters disappeared, and the patient was discharged perfectly well on the 8th of October, 1858.

The history of the foregoing case is, we believe, not devoid of interest when we consider that the patient enjoyed excellent general health during a period of 29 years, notwithstanding the presence of symptoms unequivocally implying the existence of a calculus during that period. It is not often that we find an organ so sensitive as the human bladder, adapting itself to a calculus so large and irritating as that indicated in the sketch, without giving rise to considerable pain and inconvenience.

Fig. 3.



Mulberry Calculus two-thirds the natural size. From a photograph.

A CASE OF INDURATED TUMOR OF THE BRAIN.

By J. T. ARLIDGE, M.B., A.B., M.R.C.P.

Physician to the Fulham and Hammersmith Dispensary. Formerly Medical Superintendent of St. Luke's Hospital.

CASES of cerebral tumors are of sufficiently rare occurrence, and the pathology of cerebral disorders so far involved in obscurity, that a record of symptoms manifested during life, and traced to a determinate lesion of the brain, detected by an examination after death, must possess a certain value to the medical inquirer.

The following case of circumscribed cerebral induration, or, in common parlance, of cerebral tumor, recently occurred to me in dispensary practice. It was that of a woman, Elizabeth Deane, æt. 36, married, the wife of a labouring man. She had had four children, and one miscarriage. Her complexion was pallid; the expression haggard, and indicative of long-continued suffering. The pulse 80; tongue furred, white, moist, and flabby, protruded but a short distance, as if its muscular power was enfeebled; catamenia absent for twelve months; bowels regular; urine sometimes scanty, at others copious and pale; some leucorrhœa present; frequently experiences a choking sensation in the throat, and palpitation of the heart, and suffers much from flatus. She applied to me, as she had for a long time suffered from "fits," which had latterly become much more frequent, although less violent, and unfitted her for any employment, or the care of her family. I gathered from her that she had a first fit about two years previously; that it lasted a couple of hours, rendering her unconscious, and producing a partial loss of motion of the left side. The paralysis, however, did not last, but the fits continued to recur every three or four weeks, but not at the catamenial periods; they were confined to one half the body, which was thrown into convulsive action.

A blister was applied to the nape of the neck, and after this the convulsions became restricted almost entirely to the left side of the face and neck, but withal their frequency greatly increased. When she applied at the Dispensary these partial convulsions were very frequent: in the course of some fifteen minutes, during which I was engaged in examining her case, three paroxysms occurred, each lasting about three minutes. They seized her suddenly whilst speaking, and were first noticeable about the mouth and eye, and rapidly extended over the half of the face, and the upper portion of the neck, producing a striking distortion of the features. The several facial muscles were spasmodically contracted; the mouth was drawn downwards and outwards; the orbicularis palpebrarum acted forcibly, and the eye was everted. At the same time the whole head trembled, and was slightly inclined towards the left shoulder, and there was some suffusion about the face, and watering of the affected eye. The convulsive action was not rigid but tremulous, the lips and eyelids twitching or vibrating rapidly. Its onset was so sudden as to interrupt the enunciation of a short sentence, and so unimpaired was the consciousness, that, after the transition of the paroxysm, the broken sentence was resumed by the patient; the interruption and the tremor of the lips resembling much the break down in speech and the nervous efforts of a stammering person to resume his discourse.

The pupils of the eyes were unaffected, as was likewise the pulse; and no excitement of the heart could be felt during the paroxysm. There appeared some constriction about the larynx, but the respiration was not impeded. The mental powers were unaffected.

The patient had not suffered from convulsions in infancy, but when she reached adult life, she became subject to severe headaches on the right side, which, just prior to the first fit, and, subsequently to the present date, grew more unbearable, and attacked her at times so violently as to make her shriek with the pain.

Previously to her applying for my advice, she had been under the care of a medical man at intervals, and from him I learn that nothing appeared to relieve the intense pain in the head so much as iodide of potassium. Latterly, more especially, her general health was so much enfeebled, that he prescribed for her tonics with occasional aperients, and ordered her nourishing diet and wine.

I saw this patient but on the one occasion, when I registered her case. I then prescribed for her an aloetic pill at night, and a mixture of quinine with sulphate of magnesia, and ordered her a blister behind the left ear. Two days after she had seen me she was attacked in the evening with a strong fit, in which she lost her consciousness and was generally convulsed. Before this fit had passed by a second occurred, and was followed by coma with dilated pupils, and death.

A post-mortem examination of the head was made about 48 hours after death. Head well formed: no external injury discoverable. The scalp was peculiarly dry and naturally separable from the cranial bones: these were of the average density and thickness, and, in the line of the longitudinal sinus, deeply hollowed by large paechionian bodies, which projected through the dura-mater, and well nigh perforated the parietal bones at some points. There was no abnormal adhesion of the dura-mater to the cranium, but its sinuses were turgid with dark venous blood. In raising the dura-mater from the brain, it was found inseparably adherent to the cerebral matter, over a rounded space of about three-quarters of an inch in diameter, and could only be detached by tearing the brain substance. A very slight milky opacity was remarked over much of the arachnoid covering the vertex, an appearance however due in a great measure to a small amount of subarachnoid fluid in the meshes of the pia-mater. This last membrane was venously congested; and on cutting into the brain the same venous congestion was indicated by the very numerous and large bloody points.

The cortical substance was well coloured, did not tear by the detachment of the pia-mater, and presented the usual secondary laminae, or bands; of which the principal white one was very distinct. The white matter was of normal firmness; the ventricles healthy, containing a very small quantity of serum, and the choroid plexuses not congested, but, on the contrary, rather anæmic.

The only lesion discoverable in the brain was beneath the superficial space to which the meninges were adherent. Here there was some loss of substance, a hollow space existing larger than could have been caused by the fragment abstracted in the detachment of the membranes. At the same time the brain tissue was softened at this same part, which was situated in the right hemisphere, near the line of junction between the anterior and middle lobes of the brain, or at a point corresponding with the termination outwards of the sylvian fissure. On slicing the hemisphere from above downwards, a portion of denser, firmer tissue, was cut down upon just below the level of the roof of the lateral ventricle, of an inch in diameter, internally coloured of a deep blackish brown, not so, however, uniformly. Some of the surrounding cerebral substance was softened, but the diseased portion could not be isolated, nor its boundary defined. From its position, the morbid tissue was in relation on the internal aspect with the corpus striatum whilst its

external surface reached, as before noticed, the surface of the brain.

A microscopical examination of a section of the morbid mass exhibited the characters of no specific pathological lesion. It could not be identified either with tubercular or cancerous disease; probably its relations were rather with the former. Its constituent elements were nucleated and slightly granular cells, having considerable refractive powers, and particles of fibrous tissue.

ORIGINAL RESEARCHES IN ANATOMY AND PHYSIOLOGY, AND MORBID ANATOMY AND PATHOLOGY.

ON GRANULATION AND THE PART IT PLAYS IN DISEASES OF THE JOINTS.

By RICHARD BARWELL, F.R.C.S.E.

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PHYSIOLOGY has of late years received a large supply of facts, and great increase in power of arriving at just conclusions from its branch science histology; but it is doubtful whether pathology has profited as much by these additions as could have been expected. It appears that Morbid Anatomy might very advantageously become more and more histological in its character. There is no lack either of ability or industry in compiling the facts of diseased appearances; but the ground which Morbid Anatomy occupies is much restricted to the changes of special organs, and a more general, connected, and logical way of looking at many diseased appearances would, it seems to me, lay open a wider field for particular research.

Now, if we take the simplest example possible of disease, one of which we know the cause and extent—namely, wounds—and contemplate their mode of healing (putting aside agglutination, or by first intention), we shall be struck by observing that wounds of certain parts become united, or filled up with the same tissue. Other parts, however, are incapable of repairing a loss of substance by like material; they fill up such breach by the substitution of some other texture. Considering these facts, and the differences in the many organs of the body, we shall find a curious relationship of events, which ought to be observed.

Certain organs have intrusted to them a peculiar function necessary to the life of the body; others have what may be called the general function of connection and of support; these latter were classed by Donders, of Utrecht, under the head of *Bindegevebe* *Anglicé* connective tissues. To the first class (the

special) belong nervous, muscular, and glandular* tissues—the functions of these parts are performed by means of that organic example of a simple machine, the cell. The nervous power is formed by means of cells, which have filled themselves with a special material. Muscular power is produced in the same way, for in whatever manner we consider muscle the position remains, that the *sarkos* is stored in cells; all secretion is produced by cells, which absorb, and then give up the material to be secreted. In examining the properties of any one of these cells, we find that besides its special function, dependent upon its contents, it is capable of maintaining its own nutrition; but not of producing any germs for the formation of new cells. To begin with the plainest example: the red blood cells have absorbed a special material which enables them to assume the function of respiration, but they lose their generative powers, and a special organ (probably the spleen) is destined to form new blood cells; but the white corpuscles have not taken upon themselves any function beyond that of ordinary cells, and they retain the vegetative faculty. The epithelial, or epidermic cells, are constantly being cast off at the free surface, and new germs, producing new cells, grow (in a way we cannot fathom) from the basement membrane, not from germs, which the cast-off cell gives up at its death. Tubular glands form their secretion in cells, which, bursting, give up the products of their life into the tube, and fresh cells sprout from the tubular basement membrane, not from germs scattered by the rupture of the deceased cells. The same structures, which store the muscular element die or deliquesce, when they have worn out their functional power; a new pabulum is supplied by the blood, the cell itself leaving behind it no germ for a new formation. The same may be said of the brain, in fact, when the cell has been occupied by any substance, intended to carry out a special function, it loses its generative power.†

The connective tissues are bone, cartilage, cornea, fibrous (ligament, tendon, and fascia), and areolar tissue. Of these, the cell is a constituent part, but it does not contribute to their hardness, elasticity, or toughness, whereon the value of the part depends. The material producing these qualities is fixed *not in*, but *around* the cell in the intercellular, or hyaline substance, the cell having simply to maintain the nutrition and

* With this last are classed the skin and mucous membranes, because they really perform the glandular function, and because it is not possible to show sufficient structural difference to warrant placing them in a separate category.

† The reader is requested to receive this statement for the present, without further proof, which will be given hereafter.

integrity of the part, and being itself free of the characteristic material of the tissue, probably is filled with the common albuminous contents, which permits to the body the common cell-functions, without adding another to them.

Bone tissue is permeated by a number of vessels, around which are arranged in a circular form so-called lacunæ—namely, intervals, or gaps, in the hard substance, which have a number of minute branches running to the vessel on one side, and from it on the other, dividing thus the tissue into innumerable small spaces. Messrs. Tomes and Campbell de Morgan* have named each of these circlets of cells, with its central canal, an Haversian system, and have shown that each lacuna is occupied by a cell, each branch by a membrane, and that the Haversian canal is lined by membrane. Moreover, they have pointed out the mode in which the nucleus of the bone cell may be seen without any preparation—viz., by observing it in one of the thin lamellæ which inclose the cancelli at the spongy end.

It is easy to get a section of articular cartilage, and to observe therein how the structure is in part composed of oval corpuscles, which contain each from two to five nucleated cells, near the attached part, while, by the division of these bodies, the cells are as a rule separate near the surface. It is also easy to detect the nucleus, the intercellular substance is translucent, and the structure is more easily seen than in bone.

The cornea is, according to Professor Hiss,† made of transparent substance, among which are arranged lineally stellate cells. Virchow has in his *Cellular Pathologie* two plates, which represent this structure very well; the cells are pretty closely packed, and intercommunicate by opposing rays. Mr. Canton, whose investigations on the “arcus senilis” are already so well known, is carrying his researches further, and will, I believe, add his valuable testimony to the above statements.

The white, fibrous, inelastic tissues, ligament and tendon, consist of bands of fine fibres, running parallel to each other, among which are arranged long spindle-shaped cells, that at first look only like accidental spaces between the fibres. The most satisfactory way of studying ligament is to take the internal crucial ligament of the knee from some of the smaller birds (the younger the better); this is in them a thin flat oblong riband, which can easily be detached from both ends and preserved in fluid. Tendon is best examined in similar small creatures, or it may be conveniently studied in the *Palmaris Longus*, or *Plantaris* tendon of man, which can be pulled out

* Philosophical Transactions.

† Ueber den Bau des Hornhauts.

very thin, and afterwards tortured with needles. The long fusiform cells in these structures are then not only distinctly seen, but are found to be nucleated.

On the structure of areolar tissue we must pause a little longer; it is best seen as it underlies the mucous or serous tissues, and, when one of these membranes be pulled from the underlying structures, the submucous or subserous tissue is to be seen uniting them loosely, as a delicate film, among which a few white fibres are visible. Examined by the microscope, it is seen to consist of the two elements of fibrous tissue—namely, the white and the yellow—the former appears as bands of minute wavy fibres, the latter more rare as thicker branching fibres, having, whenever broken through, a remarkable tendency to curl up. Virchow finds, that where this tissue sends off branches, is situated a stellate, nucleated cell, the branches being but prolongations of the rays of the star, and he believes that the fibres are tubes carrying a nutrient fluid; this tubular character requires more proof; but of the existence of stellate cells there is no doubt; but in many instances they appear isolated. The point, however, which is more important for our present purpose, is that among the white fibres are seen on the addition of acetic acid, many cells, and a large number of nuclei, and, in the meshes of the yellow, a quantity of these bodies, as well as a great many nucleated cells of remarkable clearness and beauty. This tissue is usually prepared for examination, by tearing it to pieces with needles in water, whereby many of the above-named bodies are necessarily washed away; but the tissue should be carefully separated with the scissors where it is thin and delicate, placed upon the glass without fluid, and adjusted with as little rending and disturbance as possible upon the slide; then covered with the thin glass, and a little dilute acetic acid be allowed to pass under the cover. In this way all the cells will be preserved, and the observer will be struck by their number and beauty. They are more plentiful in the yellow element; hence, in the subserous and subsynovial tissues, where this form of fibre is most abundant.

We will now return to our subject—a wound—and see how the cells of these tissues comport themselves under those circumstances. Mr. Bowman* has shown that when the cornea is wounded, there takes place in the edges of the wound, after a few days, a great activity of cell growth; the texture is filled with cells to such an extent as to render the structure at that spot opaque and milky in color; the cells fill up the wound, and after a time vanish, the disappearance commencing at the

* On the parts concerned in Operations on the Eye.

outer rim of the opaque part, and gradually contracting towards its centre, until the whole is again transparent; the wound, in fact, is united by a material identical with that injured.

Mr. Redfern* made numerous experiments upon dogs by passing a seton through a costal cartilage; the result was invariably great growth of cells inside the cartilage corpuscles, which were increased in size by this action, and which at last burst, discharging the cells free into the hyaline substance.

When a tendon breaks, or is divided in any animal, it will be found after a few days to be surrounded with a soft reddish matter, which also is spread among the fibres. Examined by the microscope, this matter will be found to consist of cells nuclei and granules. It extends for about half-an-inch from the wound, but decreases in amount as it recedes from its edges. A section of the tendon, just beyond this soft growth, shows the fusiform cells as having assumed a rounded shape, being very much larger, multinucleated, and granular.

When a bone is sawn through, as in amputation, or when it is broken, the truncated end, or ends, of the injured tissue throw out a material called granulation; this is formed of precisely similar constituents to the material thrown out around injured cornea or tendon—viz., cells nuclei and granules.

Again, areolar tissue, when injured and irritated, granulates, as we know, in a precisely similar manner. All these textures, under favourable circumstances, complete repair of the injury, by converting the mass of cells into the same material which received the hurt. The exception is cartilage, and even this unites by a similar, although not identical material; a sort of fibro cartilage.

This power of granulation is confined to connective tissue, and is due to the cells, which are disseminated through its structure. It is true that a wound in any part, and in any organ of the body, will granulate. Mr. Paget has given an account of the glazing of the surface of open wounds:—

“ Blood gradually ceasing to flow from the surface of such a wound, one may still see some blood-tinged serous-looking fluid oozing from the surface; as this becomes paler, some of it collects like a whitish film or glazing on the surface, and this if it be examined by the microscope will be found to contain an abundance of the white corpuscles of the blood embedded apparently in a fibrous film. The collection of these corpuscles on the surface, especially on wounded muscles and fasciæ, appears to depend only on their peculiar adhesiveness. One sees them adhering much more closely, than ever the red corpuscles do to the

* On the Abnormal Nutrition of Articular Cartilage.

walls of the minute blood vessels, and to the glass on which they are examined, and so on cut surfaces, while the other constituents of the blood flow away, the white corpuscles, and probably also some of the fibrine quickly co-agulating, adhere.*

These cells which Mr. Paget describes as white blood cells, are, I believe, derived from the areolar cells. It is difficult to understand how the white blood cells should, by their simple adhesive quality, be able to separate themselves sufficiently to form a glaze; nor how, when the fibrine "quickly coagulates," the red blood corpuscles should escape, and, on the other hand, the *locale* where this glaze principally appears are the fasciæ and the muscles, the former made of connective, the latter plentifully permeated by areolar tissue.† Besides muscles, a more delicate special-tissue, the brain, also granulates when wounded, and so plentifully, that the production sprouts out between any opening of the bone, and has been named *fungus cerebri*, and that this fungus, as well as the granulation from muscles, comes from the areolar tissue, may be strongly inferred from, if not altogether proved by, the following facts.

Firstly, we may cut off the fungoid granulations without producing bad symptoms nor loss of power, and without finding any cerebral or muscular matter in the excised portion.

Secondly, every cell in the body must have a progenitor.

If we entertain the idea of spontaneous production of cells, we must admit the spontaneous production of animals; a doctrine which cannot be held logically, and whose supposed facts are daily being proved fallacious—if the muscle or the brain cell were capable of producing the cells of granulation, those cells would, like their progenitors, be muscular or cerebral, or would, at least, be converted into muscle or brain, but none of the special tissues unite by similar structures.

Thirdly, wounds of the special tissues unite after granulation by a connective tissue, *i.e.*, the granulation cells arising from a connective tissue, produce a structure similar to that, from which they take origin.

The study of those morbid actions, which take place in certain joint diseases, first led me vaguely to consider in my mind some of the analogies and differences above stated, and to look more widely for similar processes, than merely into the

* Lectures on Surgical Pathology, Vol I., page 201.

† It must be remembered that areolar tissue is of all structures the most widely spread throughout the body. It ramifies among and supports the minute fibres of the brain; it forms a constituent part of the heart, lung, and of all glands; it binds together the fibrellæ of the muscles.

actions of those parts, whose diseases I have been for some years more especially engaged in studying. The enormous growth of a soft gelatinous tissue in the so-called strumous synovitis perplexed me, for struma does not seem to predispose to the growth of any special tissue, unless we confer such a name upon tubercle; nor could there be perceived in this growth any peculiarity of material, which should render it more particularly fit to be classed among strumous complaints, although it is empirically evident that the so-called "Morbid Change of Stricture Degeneration of Synovial Membrane,"* is nearly or entirely limited to persons of scrofulous habit. While I was thus doubting a man was brought into Charing Cross Hospital, who had received a compound fracture at the lower end of the femur by a fall from a scaffold. Mr. Canton, under whose care the patient came, succeeded in checking the profuse hemorrhage from a wound above, and to the inner side of the knee. Synovia afterwards flowed from the wound; secondary hemorrhage occurred however so frequently and profusely that it was found necessary to amputate the limb, nine days after the accident; I was kindly permitted to examine the part. It is unnecessary to relate here more than the state of the joint: all the inner and back part was so infiltrated by blood, that little could be seen, but that the parts were somewhat thickened. A wound of the synovial membrane on the inner side, admitted blood into the joint. The free surface of the synovial membrane was generally covered by clots, which had in great part, lost their colour; on lifting these away, the surface was found roughened by papilla-like eminences, and much reddened, and on the outer side of the joint it was seen, that the subsynovial tissue was changed into a gelatinous mass partly fibrinated. As this seemed to lead to the debated point, every part of the tissues, from the skin to the synovial membrane, was submitted to careful microscopic examination. I found, that for a certain distance from the synovial membrane, the whole areolar tissue was filled by or converted into a mass of cells, while farther outwards, the tissues were less full; and the fibres more distinct; still, passing outwards, the cells decreased in quantity until the membrane became normal.

The papilla-like growths were of precisely similar formation, in those parts where the growth was firmest, *i.e.*, close to the synovial membrane, very many of the cells were fusiform and arranged, end to end forming lines three or four cells broad,

* Sir B. Brodie conferred this title on the malady in question. "Diseases of the Joints," p. 72, 3rd edition.

and many of the cells in these rows seemed passing into fibre cells. The lines ran in many directions, intersecting each other, again and again, so as to enclose spaces, which were filled by round, and some fusiform cells, also by some bare nuclei, and a great number of granules. In other parts, which were further from the synovial membrane, the cells smaller in number were all, or nearly all round. Rokitansky has given some account of the process of growth of cells, from serous membranes under the name of "Gewebs-Vegetation," or vegetation of tissue; but he appears to limit his description to the free surface of such membranes.

Now it is certain, that the synovial tissue belongs to the connective class; for we know, that bursæ secreting a perfectly pure synovia, are formed out of areolar tissue wherever unusual friction occurs; and it is also certain that the gelatinous structure above described is simply formed by granulation. It is exactly similar in structure to the gelatinous or pulpy tissue of strumous synovitis; the difference consists only in the degree of development to which it will attain. The strumous habit predisposing to chronic inflammations is also marked by the low development of their products, and in such cases we find a growth of granulation—tissue, which does not advance beyond that stage. The same process takes place both in the joint cavity, and in the periarticular tissues. The whole of the textures surrounding the joint, and in part forming it, become a jelly-like mass, in which the synovial basement membrane, and the fibrous areolar tissue are lost, the ligaments also become softened by a like process, partly due to the admixture in their substance of common areolar tissue, and partly to the action of their own cells, so that in a little time the joint is loosened, the bones being no longer held in close contact. The state of the parts thus granulated is similar to that of an ulcer occurring in a debilitated constitution, where large, florid, flabby granulations crop out from the opening, and retard, by their want of further development the healing process; if the condition of system can be improved, however, the granulations contract, organize, and the wound heals; so also in this form of joint disease, improvement in the general condition will lead to solidification of the granulation tissue.

The papilla-like growth from the free surface, to which Rokitansky has applied the name of tissue-vegetation, and which occurs in all serous inflammations assumes different forms in different cases. In chronic strumous synovitis, they commence as short broad-based cones, whose bases unite more and more until the conical shape is lost, and they appear as a mere

irregular wavy lining-tissue. As the inflammatory process is always more developed at the loose folds of the membrane; so this tissue is most abundant on those parts, therefore on the synovial fringes, and they thus come in a marked manner to overlap the cartilage; and to such overlying portions Mr. Key attributed the absorption or ulceration of cartilage.* In a paper, which appears in the *Edinburgh Monthly Journal* for February, 1860, I have endeavoured to show the real relationship of these growths to cartilaginous disease. Many parts of the cartilage will be seen, when this membrane is pushed back, to be of a dead white hue, to many parts the false membrane will be adherent, but certain spots of the articular cartilage, (not covered, not even accessible, until a late stage of the disease, to the granulation tissue), will also be found to have lost their lustre, even to be actually fibrous, while other spots, covered by the false membrane, will be normal. If from the spots which have lost their lustre, thin sections be taken and put under the microscope, it will be seen, that the cells for some distance from the surface have assumed a very great amount of growth, so that each corpusele is much increased in size, and contains a large number of cells and granules; the hyaline structure has become fibrous, and ultimately the corpuseles burst, giving exit to the cells which are distributed freely among and in the fibres; some of these released cells now become fusiform, even stellate, and thus the structure, instead of remaining of the normal type of articular cartilage, assumes more the form of fibro-cartilage, and ultimately in far advanced and chronic cases of a sort of areolar tissue. In acute inflammations the same growth of cells takes place, but so rapidly as to absorb, or eat up, the hyaline structure, instead of previously, or merely converting it into fibres. This latter process leaves an ulcer with cleanly cut edges, such as Sir B. Brodie describes as "looking as though they were cut out with a chisel." The slower form converts the cartilage as above stated into a fibrous substance, and as the growth of new cellulo-fibrous membrane, from the continual action of the cells goes on, the new formed structure unites with the granulation from the synovial membrane by intermixture of the parts, *i.e.*, by growth of the cell structure into each other, and it is this condition, which was supposed by Mr. Key to indicate that the cartilage was absorbed by a false tissue growing from the synovial membrane. The condition, however, of the cells of the cartilage at a dis-

* Med. Chi. Transactions, vol. xix.

tance from the surface, wherewith this false tissue may come in contact, negatives this idea; as well as the fact that precisely similar changes take place in spots removed from the influence of such tissue. It is not possible, moreover, to conceive, how the mere contact of a new formation with the surface of any structure should cause changes in the deep parts thereof.

The truth is, that the cartilage-cell undergoes the same process as those of any other connective tissue; of the areolar for instance, where we have already seen that granulation consists in great generative activity of the cells, whereby multitudes take the place of one or two, and convert the tissue into a cell-mass, which under favourable circumstances assumes further development into a fibro-cellular tissue.

When this action has gone on for some time, and generally before the granulation process shall have reached the attached surface of the cartilage; there begins in the bone an action whereby the articular lamella becomes detached, and the spongy end, with its cancelli, is laid open towards the joint. The walls enclosing the cancelli disappear more and more, by a process known as *caries insensibilis*. The disease is in fact caries occurring in spongy bone, and may be more or less rapid in its action; but it is otherwise the same, whether it be primary and independent of any other local disease, or whether it be secondary and following, as in the case we have been considering a synovitis. Two actions usually occur in this disease, one the absorption or disappearance of bone in the centre of inflammation, the other a deposition of osseous matter in the surrounding parts,* so as to cut off the carious portion from the rest of the bone. The first appearance of the malady is a coloration of the end of the bone in red, or rather pink, at one spot, if it be a large spongy end, as that of the femur or tibia. The color depends in part upon hyperæmia, in part upon an effusion of pinkish serum into the cancelli. The hyperæmia at first confined to the lining membrane of the cancelli soon spreads to the Haversian vessels. Suppuration commences in the focus of the inflammation, imparting to the part a dirty-yellow hue, which conceals the underlying redness of the hyperæmia, while in the surrounding parts, deposition of bones and solidification of the cancelli takes place, or if the disease be situated near the external shell of the bone, the thickening is produced by accumulation of bony matter beneath the periosteum in the form often of osteophytes. The disease thus described is *caries centralis*. Another form, *caries super-*

* In much debilitated constitutions, this latter action may be absent, the case is then called diffuse caries.

ficialis begins beneath the periosteum, and then deposition of new bone takes place inside, instead of outside, the bony case, while suppuration and loss of bone matter occurs on the surface. If, in this condition, the thickened periosteum be stripped from the bone, it will be seen that instead of coming away with difficulty, and drawing from the smooth bone surface a few fine fibres, it will, on leaving the bone, drag with it a number of thick soft ridges and plugs, which come easily out of corresponding grooves and holes in the bone. The osseous surface itself, when cleaned of pus and other effusion, is seen roughened and perforated like a worm-eaten piece of wood. Very little examination of a surface-section of such bone, shows that each of these large holes and grooves is produced by the melting away of a whole Haversian system, which opened on the surface perpendicularly or longitudinally. The mode in which the system melts, may be thus described: the bone cells surrounding an Haversian canal increase in size, their interior looks very granular, their canaliculi grow both in size and number; thus the bone tissue loses in substance, but besides this it becomes coarsely granular, in parts actually studded with little holes. By and by the Haversian canal itself increases in size, while the thickness of the system decreases; this takes place by opening of the first circlet of cells into the canal, partly through increase in size, partly through disappearance of the bony partitions. Such process goes on from one circle of bone cells to the other, until the whole system has dissolved into a soft, granular, and cellular mass, which, if it be on the surface, comes out like a plug with the periosteum. In my possession is a section from a carious phalanx showing this process in different stages, the first being simply enlargement of the cells, the last a condition wherein the whole Haversian system is rendered black and opaque by the enormous development of the cells and the softening of the bone structure. Another preparation taken from a spongy bone in a carious state, shows the gradual destruction of the walls of the cancelli by a like growth of the cells. The process is very similar, indeed, nearly identical, with the inflammatory ulceration of cartilage, consisting in a growth of cells so abundant as to absorb or change the intercellular parts, converting them into a granular, nuclear, and cellular mass, more or less mixed with cell-fibres.

Thus a chronic inflammation of connective tissues, chiefly consists in abundant generation of new cells from the old ones, which form an essential part of the tissue; the deposition from the blood of coagulable lymph, which gradually solidifies

and becomes organized, is a rare effect of a chronic inflammation,* the thickening, which is so often its result, being due to a cell-growth, and to the formation of new tissue, thereby produced. The joints, which by their very nature consist of a variety of connective tissues, are very liable to inflammations of the chronic sort, and to abundant cell-growth in those textures. This action is a *vis medicatrix naturæ* of a very marked kind, for when the inflammation has proceeded far enough to render the joint useless, it converts the synovial membrane, the cartilage, and failing that, the bone itself, into a granulation tissue, whose nature being to unite and to contract, tends to obliterate the cavity, and join the bones. This granulating action usually begins like the inflammation in one of the textures only, but gradually spreads to the others, so that in the end they all become affected in the same way: whether the disease may have commenced in one part or another, the tendency always is to surround the joint cavity with granulation-tissue, which by its further organization and growth, shall fill up that space. Certain circumstances, however, retard or prevent the fulfilment of this process. One is want of further development, the other degeneration. The former gives rise to those slow, intractable cases of chronic strumous synovitis, or pulpy degeneration of synovial membrane. The latter has, up to a certain time, the same history; following the inflammation and growth of cells, there comes a time of inaction, which is superseded by fatty degeneration of large portions of the cell tissue, accompanied by profuse suppurations and destruction of parts, caries necrotica, &c.

By this pathology we are able to account for, and to follow many of the different forms and vagaries of joint disease, which under any other theory, are inexplicable. We might enter more widely into the subject and show how suppuration in deep parts, with formation of abscess, how certain low forms of ulceration, of bone disease, of contraction in fibrous structures are produced by this generative quality of the cells of the connective tissues, acting under different circumstances. But the limits of our space forbid a further discussion of the actions, and enough has, it is hoped, been done to render the views on articular disease more logical, and to lead to certain important modifications in treatment, which reasonably may be deduced from the pathology, and which practically are found beneficial.

* Limited probably to the rheumatic form, in which there is some reason to believe such mode of tissue-formation may occur.

ON THE ANATOMY OF THE LIVER IN HEALTH AND DISEASE.

BY LIONEL S. BEALE, M.B., F.R.S.

IX.

FATTY LIVER.

DEPOSIT OF THE FATTY MATTER IN THE CENTRE OF THE LOBULES.

PLATE II.

IN the specimens of fatty liver which I have hitherto examined, the fatty matter was deposited principally at the margin or *portal aspect* of the lobules. In the present instance, however, the cells near the postal surface of the lobules are comparatively free from fat, while this substance is present in large quantity near the intratubular or hepatic vein. The deposition of fat seems to have commenced in the centre, and to have spread from thence towards the circumference of the lobule. In the fatty liver of phthisis, and in other varieties of fatty liver, which have been described by authors, the oil globules are very numerous towards the circumference of the lobules, while often none can be detected in the centre. The accumulation of fatty matter at the outer part of the lobule is often so great as to map out the lobules most distinctly, the central part of each being surrounded by a broad belt of fatty matter which looks quite white by reflected light.

In the present instance the deposit of fatty matter took place differently, and must have been due to causes of a very different nature to those which determine this change in the liver generally.

The liver was obtained from a girl, aged 14, who was found in a field in a state of starvation. No history could be obtained, and her intellect was so much impaired that she was unable to give any account of herself. She had probably endured cold and exposure, and had received but a very small allowance of food for a considerable period of time. She was admitted into the hospital in a state of extreme emaciation, and was placed under the care of Dr. Todd. She lay in a dull listless state, but never rallied, and died five or six weeks after her admission. No morbid condition of any organ could be discovered by the unaided eye. There was generally extreme emaciation, and an almost total absence of adipose tissue. The liver was the only organ I examined microscopically. It presented nothing remar-

kable on general inspection, and its size, colour, and consistence, were normal. It contained little blood.

Now, in this case, it is clear, that the presence of the fatty matter cannot be attributed to the existence of a large quantity of fat in the portal blood. It can therefore hardly be referred to increased nutrition of the cells. It is very improbable that in such a case the cells should have possessed an increased power of attracting fatty matter from the blood. It would seem as if the nutritive processes were almost entirely suspended, and although life was prolonged for a considerable period, the waste seems to have continued in spite of every attempt to introduce a sufficient quantity of nutrient materials into the organism. Why did not the cells at the circumference of the lobules which are the oldest, undergo a morbid change before those in the centre? The most important changes occurring in the healthy organ undoubtedly takes place in these cells. The portal blood, rich in fatty matters and other constituents, recently absorbed from the intestine reaches these cells first, and before it arrives at the centre of the lobule, certain substances entering into the formation of bile, are doubtless almost entirely removed. Here the circulation is slowest, and in this part of the lobule the most active secretion of bile undoubtedly occurs. It is in this situation that the changes in fatty liver, and those in cirrhosis of the liver undoubtedly commence. It must be borne in mind that the cells grow from the centre towards the circumference of the lobule, the youngest cells being always found in the former, the oldest—in the latter situation. The *development* and multiplication of the cells then appear to take place near the hepatic vein, where the circulation is most rapid, their *growth*, as they pass towards the circumference of the lobule where the blood is distributed over a great extent of surface, and the circulation comparatively slow.

The accumulation of fatty matter in the present case would seem to be due to changes affecting the development and early growth, rather than upon those connected with the secreting action of the cells. It is difficult to explain the manner in which the fatty matter is produced, but it is not unreasonable to suppose that the material so closely resembling oily matter in its microscopical characters which seems so intimately connected with the formation of nuclei, should accumulate to an unusual extent in a case where the conditions necessary to the complete development of the nucleus, and the material which surrounds it, are not present. There would seem to be a greatly increased proportion of fatty matter in this part of the lobule without any absolute increase, and possibly even with a dimi-

nition in the total amount of hepatic tissue entering into the formation of the lobule. Probably some constituents present in a normal state are entirely absent in this instance. The force to which their separation from the blood, and their conversion into the materials of the normal cell is due is wanting, and substances which ought to have been converted into the material of which the cells are composed and from which the bile is formed, remain in a crude state and assume the form of fat globules as has been described. At the same time it must be admitted that this explanation is not very complete or satisfactory, and it is offered only in the hope that more light may be thrown upon the subject in future investigation.

In Fig. 1, Plate II, the general appearance of a thin section of the liver in which the portal vein had been injected, is shown—a portion of a lobule more highly magnified in which the branches of the hepatic vein were injected is figured immediately below this (Fig. 3). The large oil globules in the centre of the lobule are well shown, and their gradual diminution towards the circumference, where the tubes appear to be filled with brown granular matter, is represented. Below this figure some of the collections of oil globules are seen. In Fig. 7, the branching of the duct and its connection with the tubular network is very distinct.

In these drawings there is little indication of the existence of true cells, indeed it is very difficult in many diseased specimens to detect any thing like a liver cell as it is usually described. The free portions observed are certainly not enclosed in a cell membrane, but appear to be fragments irregularly broken off from the mass which occupies the tubular network. Many portions were observed closely resembling those figured in which there was not the least cellular appearance. I have already alluded to this subject in the "Anatomy of the Liver," page 47, and I propose to discuss this important question in its numerous bearings in a future communication.

The conclusions derived from an examination of this liver may be summed up as follows.

1. The fatty matter exists in the central part of the lobules, and diminishes in quantity towards the circumference.
 2. The changes probably are connected with the development and early growth of the cells, not with their secreting action.
 3. The nuclei of the cells are destroyed and degenerate, or are not formed at all in that part of the lobule where their multiplication takes place in health, and oily materials which would have been altered during the development and multiplication of nuclei remain in a crude and unaltered state.
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RESULTS OF THE CHEMICAL AND MICROSCOPICAL EXAMINATION OF SOLID ORGANS AND SECRETIONS.

EXAMINATION OF SPUTUM FROM A CASE OF CANCER OF THE PHARYNX AND ADJACENT PARTS.

FOR the interesting specimens of cancer figured in Plate III, I am indebted to the kindness of my friend, Mr. Newham, of Bury St. Edmonds. They were present in sputum expectorated by a woman, aged 44. Mr. Newham sends me the following history of the case:—

CASE.—The patient was a small spare woman, with small features and very pale. She had never been married, and had for some years been a cook in London. Her health for some years past had been indifferent, but being of an active disposition she had never been obliged to discontinue her employment.

About thirteen weeks ago she was seized with great pain, apparently situated about the centre of the base of the skull, extending to both temples and over the head generally. She was never free from it, and often it increased in severity. There was a dry cough. In a few weeks the throat became sore, and the effort of swallowing produced pain, but nothing could be seen upon carefully examining the mouth and throat. The pain in the head gradually increased, and deglutition became still more troublesome. The pain in the head was so much increased by sleep that she feared its approach, and refused to take anodynes. At length sputum made its appearance. The cough always appeared convulsive in character, and was accompanied with nausea and a desire to clear the throat of discharge, and did not seem to result from pulmonary obstruction. The sputum was not in the least offensive until a day or two before death. Gradually, in addition to the pain of swallowing, that is, of the *muscular effort* necessary to the act, there arose a difficulty of getting the food beyond a certain spot opposite to the thyroid, but no swelling could be detected by external examination in this region. At length the cervical glands began to enlarge; the pain and difficulty of swallowing from obstruction of the œsophagus increased. The sputum became more abundant, and her strength failed. She died from exhaustion consequent upon the small quantity of nutriment she was able to take. For the last three weeks of her life she refused all medical aid. As she became weaker the pain diminished, and almost subsided a few days before death.

Mr. Newham thus describes the post-mortem appearances:—“The cervical glands involved were situated just outside the carotid sheath. A portion sent for examination was removed from the under surface of the sphenoid and occipital bones; in fact, from the roof of the pharynx. The bones were carious,

but whether so originally or from the ravages of the disintegrating deposit did not appear. It felt pulpy, fibrous, and somewhat gritty. The thyroid was considerably enlarged, and a portion of it, which was as hard as bone, was impacted between the larynx and œsophagus, and pressing so tightly on the latter for the last fortnight as to render deglutition almost impossible.*

Microscopical examination of the sputum.—A portion of the sputum was placed upon a slide and covered with thin glass, and examined without the addition of water or any chemical reagent. The appearances observed are carefully delineated in Plate III. The drawings were made upon the wood block, and were accurately copied from the specimens in the microscope. I am indebted to Mr. Wragg for the beautiful and very perfect manner in which the engraving has been carried out. It is only justice to the engraver to say that so perfect a representation of microscopical appearances on wood has very seldom been obtained.

The specimen is a very instructive one, and shows the manner in which the cancerous mass grows. On a cursory examination it would appear that the drawings confirm the statements of many observers with regard to the so-called endogenous multiplication of cancer cells, and excellent examples of the so-called parent cells seem to be scattered abundantly all over the field, but a careful study of the subject proves that the different bodies alluded to are not cells at all. Only a few of the general forms which these bodies assumed are represented, but there were other intermediate shapes too numerous for representation. The observations upon the character of these bodies will equally apply to a number of cancerous growths, but as the appearances in this case were so unusually distinct and well defined, and as it was quite impossible they could have been produced by artificial means, I have selected them for careful study.

Now it will be observed that the bodies in question are not all composed of the same material. Some refract light differently to others, as indicated by the different varieties of shading, and there is an absence of that granular appearance which is observed in the greater number of specimens figured. The cellular appearance of many of the bodies in question is fallacious, and many that would be termed mother cells are only

* "I only had permission to examine the throat, but I ventured as far as the chest, and as far as my observations extended, I found no other morbid products or appearances than those I have mentioned. Lungs quite healthy."—Extract from Mr. Newham's letter.

masses of granular matrix with nuclei irregularly scattered through them. In some instances these have broken in such a way as to leave cavities into which the nuclei evidently fitted. At *p*, fig. 1, such a mass is seen, and at the lower portion is a cell-like piece nearly detached, with others which are quite separated. It is difficult to explain all the appearances represented in the figure, and for the present I shall content myself with illustrating the principal forms exactly as they appeared in the microscope. They were not treated with any reagent. Water was not even added, so that the appearances represented are not produced by any artificial processes whatever. A portion of the mass removed after death is represented in fig. 2, and in fig. 3 the microscopical characters of one of the cervical glands are indicated.—[L. S. B.]

URINE SUSPECTED TO BE CHYLOUS.

By DR. MILNER BARRY, Tunbridge Wells.

THE present case of chylous urine differs in some respects from that described in page 11 of the first volume of the Archives. For the specimens of urine, and for the following notes of the Case, I am indebted to Dr. Milner Barry of Tunbridge Wells, who has taken great trouble to discover the real nature of the affection.

CASE.—William Avery, aged 10, a staid-looking pale complexioned boy, but fairly grown and nourished for his age, has always been delicate, his spirits outrunning his strength, but does not appear to have suffered from any serious attack of illness, until last summer, when hæmatemesis and discharge of blood from the bowels came on, after a school feast, where he had displayed too much prowess as a trencher-man. This illness passed off without, apparently, leaving any ill effects. Three weeks ago he began to suffer from constant weakness and vomiting. Soon after swallowing his food, he has to rise up from the table, and the food was immediately ejected from the stomach. He also vomits "watery phlegm" when he gets up in the morning. There is some tenderness at the epigastrium, but not to any great amount, and no pain complained of in any region. Coincident with the commencement of this attack of

illness, he has been passing "milky urine," having never done so previously. It resembles milk more or less diluted with water, does not vary much from day to day or from night to day, seems to have no urinous smell, is acid, and usually about of the sp. gr. of 1018. After reposing for some hours, a cream-like layer forms on the surface, which becomes diffused again by agitation. By the application of heat or nitric acid, a scanty, curdy precipitate is produced. Shaken up with æther it becomes transparent, and a thin coagulum forms by repose between the ether and the urine.

This urine contained numerous oil globules, like those present in milk, and a substance possessing the ordinary reactions of caseine, and it appeared, therefore, very important to avoid all possible chance of being misled by imposition. Dr. Milner Barry has been at very great pains to settle the question, but has not yet succeeded in satisfying himself beyond a doubt that the case is a genuine one of chylous urine. He has not actually seen the boy passing the urine, but has obtained the following statement from the boy's mother:—

"She positively states that she has repeatedly observed the boy passing the white urine. Several weeks before he had medical advice, she noticed that the water was white in the chamber-vessel of the little bedroom where he slept by himself. That she had seen the water white when he had made water in the courtyard behind the house. The white water and the dreadful sickness frightened her very much. When he sat down at meals they always had a basin at hand, but the sickness used to come on so suddenly that the contents of the stomach were ejected before there was time to lay hold of the basin. For the last few months the sickness has left him, and the urine has not been white, but he does not look well. She had seen him herself passing the urine."

Dr. Barry goes on to say that, "This is the substance of the boy's mother's replies and statements. If there is deception, it seems to belong to the boy, and to be motiveless. There is one point, perhaps, worth noticing, viz. : that in cottages of the labouring population in towns, milk is not very extensively consumed, and therefore it would not always be at hand to enable this boy to play the imposter. I asked to have some of the urine sent to me if it should ever become white again."

If this was a genuine case of chylous urine, it would afford much interest as the fatty matter was in the form of globules, and not merely in a granular state. I have never seen a specimen of chylous urine in which the fat occurred in the state of

globules like those of milk, but think it not improbable that such cases occasionally occur. The present instance cannot be regarded as conclusive, and Dr. Barry hopes that before long he may be in a position to determine the nature of the case with certainty.—[Ed.]

URINE OF CHOREA.

THE following specimens of urine were passed by a little girl nine years of age, who was suffering from chorea. The case was not a severe one, and, at the time the urine was obtained, had lasted about a month. The child was thin and weighed 44 lbs.

October 8th.—The urine passed in 24 hours amounted to 19 ounces = 8312·5 grains.

Specific gravity, 1018. *Reaction* acid.

Analysis.		In 24 hours.	In 100 of solids.
Water	958·70		
Solid matter	41·30	343	
Urea	24·00	200	58·11
Sulphates	2·096	17	5·07
Fixed salts.. ..	12·008	100	29·07

October 9th.—The urine passed in 24 hours amounted to 24 ounces = 10500·0 grains.

Specific gravity, 1014. *Reaction* acid.

Analysis.		In 24 hours.	In 100 of solids.
Water	964·00		
Solid matter	35·80	376	
Urea	21·00	220	58·65
Sulphates	1·414	15	3·95
Fixed salts	11·014	116	30·76

The proportion of urea excreted in chorea is very great, as has been shown in cases recorded by Dr. Bence Jones and others. A strong man, weighing about 170 lbs., passes not more than 400 to 500 grs. of urea in 24 hours, in a state of health. At the same time it must be borne in mind that, in health, the proportion excreted by children is much greater than in adults. Several analyses of the urine in cases of chorea are published in my lectures on urine, urinary deposits, and calculi.*

* British Medical Journal, 1859.

DUMBBELL-LIKE CRYSTALS OF PHOSPHATE OF LIME.

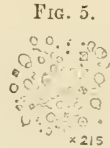
FIG. 4 represents some of the largest crystals of this form which are met with. They were accompanied by numerous crystals of triple phosphate and were deposited from the urine of a patient suffering from continued fever at about the fifth week. The case was under the care of Mr. Carver of Cambridge, to whom I am indebted for the specimen.—[Ed.]



Dumbbell crystals of phosphate of lime.

CIRCULAR SPORULES CLOSELY RESEMBLING BLOOD CORPUSCLES IN URINE.

THE deposit represented in fig. 5 was obtained from acid urine which contained a little oxalate of lime. The secretion was in other respects normal, and reference is only made to it here in consequence of the very close resemblance of many of these sporules, both in form and size, to red blood corpuscles. Upon careful examination, however, many bodies were observed with a point in the centre and larger than a blood corpuscle. If blood corpuscles were present in great numbers, albumen would of course be detected in the urine, and all doubt as to the nature of the circular bodies would thus be removed, but where only a few have escaped, this character would be absent. In doubtful cases, the urine must be kept for a few days when the germination of the sporules and their increase in number will place their true nature beyond a question. The circular crystals of oxalate of lime which are also very much like these bodies are not altered by remaining in the urine, and blood corpuscles can always be distinguished by the ragged edges which appear after maceration in urine, and by the difference of their refractive power.



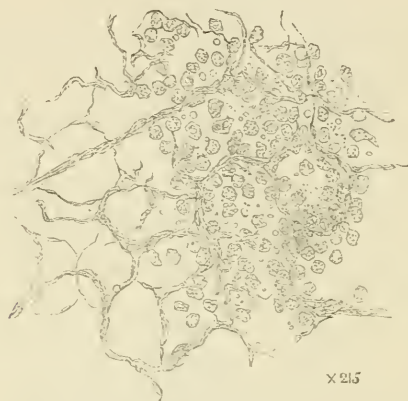
Circular sporules, resembling blood corpuscles, from acid urine.

SOFT CANCER OF THE TONSIL.

THE growth which is represented in fig. 6, was removed from the throat of a woman seventy-eight years of age, by Mr. Hooper of Aylesbury. Mr. McCormick sends the following particulars of the case. The patient's previous health had been good. Six weeks before her admission into the infirmary she experienced a soreness and smarting sensation, attended with a slight enlargement of the left tonsil. The

tonsil has now (May 1859) attained the size of a pigeon's egg. The outline is irregular, and its upper and inner borders, which are free and excoriated, are covered with a yellowish secretion. It is attached by a few fibres to the mucous membrane lining the cheeks, and to the base of the tongue. To the touch it is moderately hard. No enlarged glands could be detected about the throat or neck. It was excised by Mr. Hooper, and very

FIG. 6.



Tumor removed from the tonsil of a woman aged 73. The cells and delicate fibrous matrix sparing in quantity are represented. On the left the fibrous matrix is alone shown.

slight hæmorrhage followed the operation. The growth was transparent and well supplied with vessels. A section could be easily obtained by Valentin's knife. There was a small quantity of fibrous tissue forming the walls of areolæ which were filled with a clear transparent substance containing numerous cells. The patient is still alive.--[L.S.B.)

ACCUMULATED MENSTRUAL FLUID.—IMPERFORATE UTERUS WITH DEFECTIVE VAGINA.

MR. HOOPER, Aylesbury.

Case,*—Martha Smith, æt. 23 years, admitted into the Aylesbury Infirmary, May 2nd, 1859, under the care of Mr. Hooper. Light hair, fair and healthy complexion. With the exception of fever 3 years ago, her general health has been good. When she had attained her 17th year she states she observed a slight appearance of menstruation, but since then there has not been any recurrence of it, though at irregular intervals she has had pain in the lower part of her back and hips.

About 6 months prior to admission she observed that the left and lower part of her abdomen had become enlarged, the pains also, to which allusion has been made, were much aggravated and she occasionally experienced difficulty in micturition.

* Reported by Mr. McCormick, House Surgeon to the Aylesbury Infirmary.

The abdomen as high as the umbilicus is found enlarged and hard, the enlargement extending higher on the left side; it is not tender upon pressure.

Upon separating the vulva, a tumor is visible a short distance within its lips, it is elastic, adherent throughout its whole circumference, so that scarcely any trace of vagina is discernible, nor can any os uteri be detected.

Rotation of tumor in hypogastric region influences the tumor just within the vulva, clearly indicating its uterine character.

On May 8th a puncture was made into the elastic tumor with a trochar and a dark fluid of a chocolate color, inodorous, slightly coagulable, and of the consistence of treacle, amounting to 40 oz., was evacuated. Upon introducing the finger into the aperture, after the expulsion of that fluid, it passed directly into the dilated cavity of the uterus, the fundus of which could not be felt, its interior was smooth anteriorly, posteriorly corrugated, and it was evidently contracting.

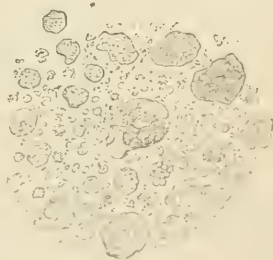
The distance from the orifice to the fundus measured $6\frac{1}{2}$ inches.

After the operation no hypogastric tumor could be felt.

14th. There has been a considerable quantity of discharge since the operation, at first florid, subsequently assuming a pale color; the cavity of the uterus has become contracted into a narrow passage measuring $4\frac{1}{2}$ inches in length, and the aperture scarcely admits the point of the fingers.

Microscopical Examination.—The microscopical examination of this fluid afforded interesting results. It contained a vast number of the large compound cell-like bodies, which are so common in the blood of the spleen, called “blood corpuscle-holding cells.” Such bodies are not unfrequently detected in blood which has remained for some time in contact with living tissues, as in cerebral hæmorrhage, extravasations of blood into cavities or into cysts, &c. The bodies in question are not in fact cells, but mere collections of blood corpuscles which assume more or less a spherical form. There is no cell wall on the exterior of the mass, but the viscid material which causes them to cohere fills up the intervals between them, and thus the outline of the mass appears smooth, and even an outline like that of a cell-wall is produced. In this specimen of retained menstrual fluid, were observed masses of every size and form. A few of these are represented

FIG. 7.



Retained menstrual secretion showing collections of blood globules and altered corpuscles.

in the cut and amongst them were numerous altered and partially disintegrated blood discs and much dark brown granular matter consisting no doubt of altered coloring matter of the blood.

The chemical composition of the fluid is shown in the following analysis :

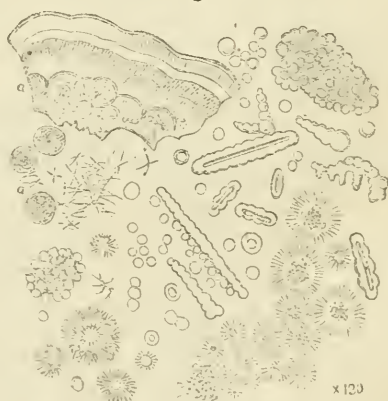
Analysis 34.

Water	792.00
Solid matter	208.00
Soluble in { Insoluble in alcohol..	3.18
water { Soluble in alcohol ..	3.78
Albumen and blood corpuscles ..	182.44
Fatty matter	2.80
Alkaline salts	6.24
Earthy salts	9.56

LEUCINE.

Fig. 8 represents the appearance of crystals of leucine, under a power of 130 diameters. Those marked *a*, were obtained by crystallization from water, the others from an alcoholic solution. The recognition of this substance, has of late years become very important. It is sometimes met with in the liver, and it has been detected in the urine in several cases. It sometimes exists in the pancreatic secretion, and has been found in other animal fluids. It may generally be recognized by its tendency to crystallize in spherules, and in acicular crystals, which are soluble in water and very readily soluble in alcohol.

Fig. 8.



Crystals of leucine. Those represented *a*, were crystallized from water. The rest from an alcoholic solution.

JOURNALS WITH WHICH THE "ARCHIVES OF MEDICINE" IS EXCHANGED.

Glasgow Medical Journal.

Journal de la Physiologie de l'Homme et des Animaux, publié sous la direction du Docteur E. Brown-Séquard.

American Medical Monthly.

North American Medico-Chirurgical Review.

Archiv für die Holländischen Beiträge zur Natur und Heilkunde.

Guy's Hospital Reports.

New York Journal of Medicine.

Journal of Practical Medicine and Surgery. English Edition.

Quarterly Journal of Dental Science.

Ophthalmic Hospital Reports and Journal of the Royal London Ophthalmic Hospital.

Archiv für Pathologische Anatomie und Physiologie, und für Klinische Medecin. R. Virchow.

* * The Editor will be happy to exchange with any other Journals.

BOOKS RECEIVED.

Jos. v. Lenhossek, Neue Untersuchungen über den feineren Bau des centralen Nervensystems des Menschen. 1. Medulla spinalis und deren bulbus Rhachiticus.

The author gives a minute description of the medulla oblongata. His researches were carried out upon sections made in various directions, prepared by a modification of the process recommended by Mr. Lockhart Clarke. The anatomy of the ganglion cells and of the fibres, is given. The connections of the anterior and posterior roots of the spinal nerves, the system of nerve fibres distributed to the pia mater, and the anatomy of the hypoglossal spinal accessory, pneumogastric and glossopharyngeal are fully described. The memoir is illustrated with five tinted lithographic plates.

Dr. Russell Reynolds. The Facts and Laws of Life. An Introductory Lecture delivered at the Westminster Hospital.

The author considers the "aim" of the student, and the subject matter of his study. He urges the vast importance of learning facts, and discusses what is meant by *Law*, showing the importance of not confounding the laws of nature with statistical results. He concludes, by urging the student to be generous in feeling towards others, and to work for the benefit of his fellow men.

Joseph Lister, F.R.C.S., and W. Turner, M.B. Observations on the Structure of Nerve-Fibres.

In this paper, the authors show that the white substance of Schwann, is arranged so as to form concentric layers round the axis cylinder. The specimens were prepared according to a plan recommended by Mr. Lockhart Clarke.

Portions of the spinal cord were soaked in dilute chromic acid, and thin sections of the hardened cord steeped in a solution of carmine in ammonia. The specimens were afterwards mounted in Canada balsam. The axis cylinder alone becomes coloured under these circumstances. Mr. Lister adds some supplementary observations on the fibrous arrangement in the white substance of schwann. The paper is illustrated with a chromo-lithograph.

The Australian Medical Journal, No. 16, October, 1859, Melbourne.

The number contains original papers, reports of societies, hospital reports, general correspondence, &c. The journal is published quarterly.

Dr. Halford. The Action and Sounds of the Heart. Churchill.

Dr. Halford considers that the first sound is produced by the tension of the auriculo-ventricular valves, and brings forward numerous facts and new experiments in support of this view.

The memoir is illustrated with several well-executed wood engravings, and contains numerous observations of great interest as well as practical importance.

Dr. Munroe, Medical Statistics of the Hull Police Force.

The report shows the amount of sickness in the Hull Police Force, during the last two years. The force consists of one chief constable, five inspectors, ten sergeants, and one hundred and six constables. The affections from which the greatest number have suffered in the last year, are, *cold*, 133; *diarrhoea*, 72; *dyspepsia*, 72; *fever*, 60; *rheumatism*, 22; *cough*, 17. There was one death from phthisis.

B. Wills Richardson, F.R.C.S. Pathological Researches, Part II. From the Dublin Quarterly Journal of Medical Science.

This memoir contains the following cases: Excision of a portion of the lower jaw; rapid recurrence of the disease after operation. Case of fragments of a round shot in the right eye. Congenital opacity of the cornea, with adhesion of the iris. Intra-uterine periostitis. Illustrated with woodcuts.

Dr. Brinton on the Action of the Pancreatic Juice.

The author shows that the solution of albuminous substances by the pancreatic juice, is slow and imperfect, and is accompanied with putrefactive changes. The solvent power was much increased, after the infusion of pancreas had been kept for some time. Although the author agrees with Corvisart, in assigning to the pancreatic secretion out of the body, a power of dissolving albuminous substances, he considers that such an office is not performed in the living organism.

Dr. W. Roberts. A contribution to Urology, embracing observations on the diurnal variations in the acidity of the urine, chiefly in relation to food (Mem. Manchester Phil. Soc., 1859).

Dr. Roberts confirms the observations of Dr. Bence Jones, that the urine is rendered less acid, or even becomes alkaline, a short time after a meal. After some time, the acidity is increased. The depression of the acidity coincides with the *absorption* rather than with the *digestion* of a meal. The mineral constituents of a meal depress the acidity of the urine. The kidneys regulate the alkalinity of the blood.

EXPLANATION OF PLATES.

The scales at the bottom of each Plate represent hundredths or thousandths of an inch magnified in the same degree as the object delineated.

PLATE I.

To Illustrate Messrs. Taylor and Hulne's Cases, illustrating the use of the Ophthalmoscope (p. 14).

Fig. 1. Right eye of a girl aged 20, showing bluish grey shade around optic disc. The patient was quite blind with this eye. Two or three spots of pigment are seen below the optic disc.

Fig. 2. Right eye of same patient, with effused blood over the situation of the yellow spot, from rupture of the vessels of the choroid. The blue spots seem to be unabsorbed blood clots.

Fig. 3. Choroidal congestion with clot of blood, as seen a few days after the patient had had a blow over the right eye.

Fig. 4. Right eye of a woman, aged 61, showing changes in choroid resulting from a blow received five years before. The choroid has completely wasted over the colourless space represented in the drawing.

Fig. 5. Left eye of a boy $12\frac{1}{2}$ years old, myopic, with thin sclerotic, and slight posterior staphyloma.

Fig. 6. Extreme myopia of left eye, small optic disc, with hyperæmia of its surface.

PLATE II.

To Illustrate Dr. Beale's Observations on a Case of Fatty Degeneration of the Central Parts of the Lobules of the Liver (p. 41).

Fig. 1. General view of several lobules. Portal vein injected. The dark parts in the centre of the lobules indicate the situation of the development of the fatty matter.

Fig. 2. Small interlobular fissure, showing injected ducts, and their connexion with the cell-containing network.

Fig. 3. Segment of a lobule, in which the hepatic vein (*a*) was injected, showing capillaries in the centre of the lobule, with their meshes, occupied with large oil globules, which gradually diminish in size towards the portal aspect of the lobule.

Fig. 4. Fragments of the cell containing network, from the centre, and nearer the portal aspect of the lobule, more highly magnified.

Fig. 5. Another fragment.

Fig. 6. Portion of a lobule in which the portal vein was injected, showing fatty matter in the centre of the lobule, and the granular appearance of the cell containing network, near the circumference of the lobule.

Fig. 7. Narrowest portion of the duct showing its continuity with the cell containing network, more highly magnified. The granular appearance of the network near the circumference of the lobule, is seen to depend upon the presence of small oil globules and fatty matter in a granular state.

PLATE III.

To Illustrate the Microscopical Characters of the Sputum in Mr. Newham's Case of Cancerous Growth in the Pharynx, with Drawings of the Tumour itself. From a Drawing by Dr. Beale (p. 44).

Fig. 1. Shows the various forms of the so-called cells in the sputum. These are clearly not cells, but fragments of a mass containing, irregularly scattered through it, nuclei or small cells. At *p*, is represented a piece from the lower part, of which the nuclei and portions of the mass surrounding them have been broken off, leaving cup-shaped cavities in which they were lodged.

Fig. 2. Portion of the tumor itself obtained after death.

Fig. 3. Portion of a cervical gland.

1



2



3



4



5



6



Fig 1

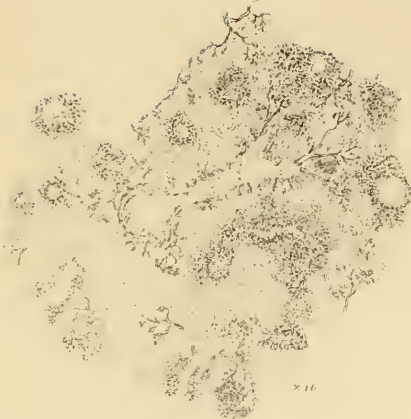


Fig 2



Fig 3

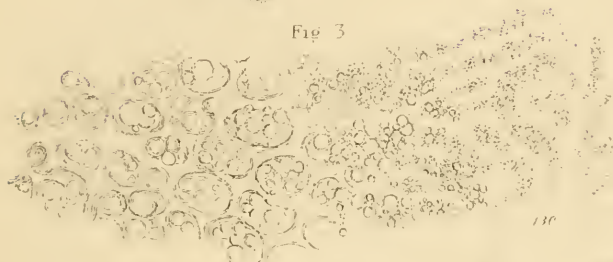


Fig 5



Fig 4



Fig 6



Fig 7



100ths	→	x 10
100ths	→	x 42
1000ths	→	x 130
1000ths	→	x 215

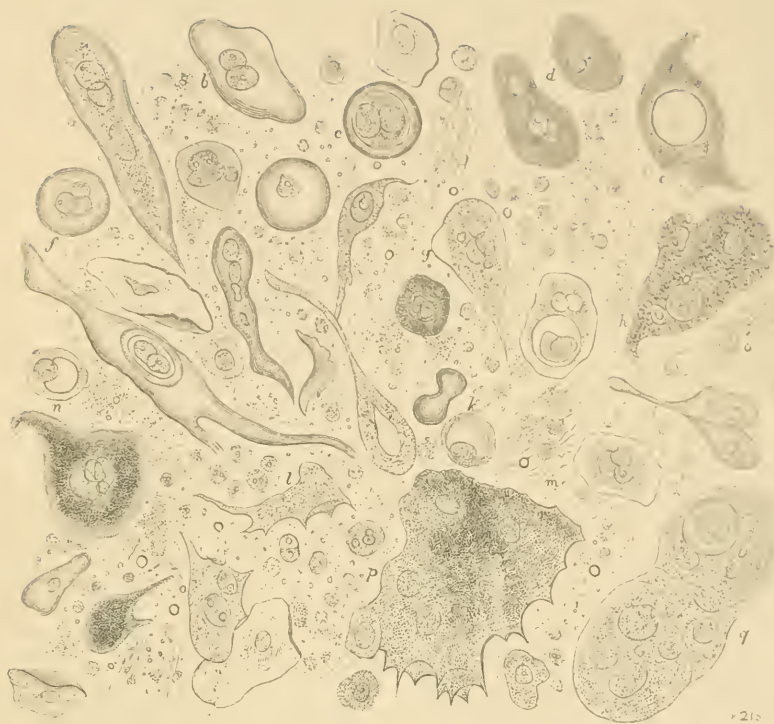
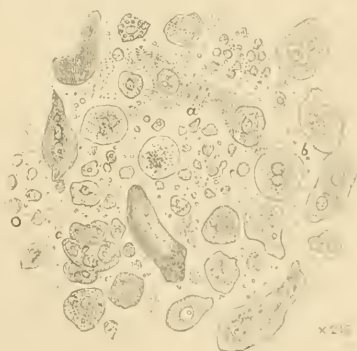
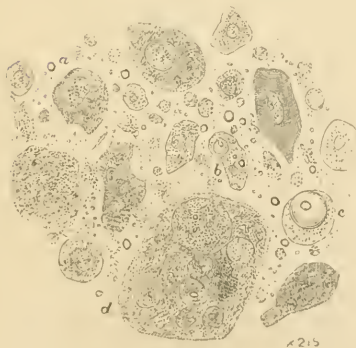


Fig. 2.

Fig. 3.



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§ 23	<i>corresponds to</i>	§ 43	§ 237	<i>corresponds to</i>	§ 298
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44	12	239	300
45	13	240	301
47	118	241	302
48	55	242	303
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236	297 & 299	317	157 & 308

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Part IV. will be published as soon as possible: but, from the nature of the subjects to be illustrated, a longer time must elapse than heretofore, as it is difficult to meet with specimens adapted for illustration.

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** * Contributions should be forwarded to the Editor as soon as possible.*