On some affections of the liver and intestinal canal : with remarks on ague and its sequelae, scurvy, purpura, etc. / by Stephen H. Ward.

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WITH REMARKS ON

AGUE AND ITS SEQUELÆ,

SCURVY, PURPURA, ETC.

BY

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PREFACE.

THE contents of this book are of a purely practical character, and embody the author's experiences derived, chiefly, from a long connection, as visiting physician, with the Seamen's Hospital.

Some of the articles have appeared, from time to time, in the columns of the 'Lancet,' and these have been revised and supplemented so as to bring them into accordance with the views at present entertained by the writer. The articles on other subjects appear for the first time.

The author is indebted to his friend and colleague, Mr. Harry Leach, for assistance in reporting cases, and for important contributions to the Chapter on Scurvy.

28, FINSBURY CIRCUS;
May, 1872.

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CHAPTER I.

ABSCESS OF THE LIVER.

Abscess of the liver, except in connection with general pyæmia, is of rare occurrence in England. The experience of it as an idiopathic affection, or in association with dysentery, when the question of its being idiopathic is an open one, is almost limited to practitioners in India, or to those in this country who are brought into contact with officers, seamen, and other individuals who return invalided from tropical climates. The literature of the subject is, therefore, mainly identified with the names of 'old Indians,' as Annesley, Waring, Twining, Martin, and Morehead, or of those at home, as Dr. Budd, who have had some special opportunity of observing the disease. The Seamen's Hospital is the source from which Dr. Budd drew much of the material for his admirable work on

"Diseases of the Liver," and it is still the special field for the study of tropical hepatic and other abdominal affections in their sub-acute and chronic forms.

I have before me the notes of twenty-six cases of abscess of the liver, twenty-two of which were under my care at the Seamen's Hospital, the remainder having been met with in private practice. I purpose narrating but a few cases at any length, and shall avail myself of a general analysis of the rest in elucidation of doubtful or interesting points.

Abscess of the liver is not always readily diagnosed. In some of my cases the more striking symptoms were wanting; in other cases, where the indications of the affection seemed certain, and the patients died exhausted by the dysenteric process, no abscess was found. There are, however, symptoms which, when taken in the aggregate, may be regarded as tolerably conclusive. They are:

1. *Extension of liver dulness* upwards into the chest, downwards below the ribs, or across the epigastrium; and coupled with this, *bulging of the right hypochondrium* or *prominence of the liver* beyond it. If the abscess be near the surface, there will also probably be fluctuation.

2. *Pain* (A) *direct.*—Superficial and acute if the abscess be so near the surface as to involve the peritoneum; deep-seated, and detected by firm pressure over the hypochondrium when the abscess is away from the surface. In connection with this direct pain, may be noticed the position of the patient, who is generally most at ease on his back, feeling a dragging sensation if he turns on his left side, and pain from pressure if he lies on his right. A throbbing pain is also expe-

rienced when active suppuration is going on. (B) *Distant pain*, referable to the right shoulder, and especially localised about the acromion process. I am pleased to be able to dismiss the unsatisfactory term 'sympathetic' in regard to this pain, and to show that it admits of an anatomical explanation. In his Hunterian Oration Mr. Hilton accounts for the transference of pain to the shoulder, in hepatitis generally, by the fact that the right phrenic nerve arising from the third and fourth cervical nerves gives off a branch which takes its course under the inferior cava through the fissura venosa into the porta of the liver, and finally, also, one or two filaments to the round ligament. It will be remembered that the cervical nerves, from which the phrenic proceeds, send branches to the skin about the shoulder. Dr. Embleton,* admitting that this explanation of the pain when it is seated in the clavicle may be correct, says that the ordinary seat of shoulder-tip pain is not in the clavicle, but in the edge of the trapezius muscle behind it and between it and the acromial end of the spine of the scapula. He considers that this pain, as also that felt, in hepatic affections, in the neck and about the scapula, is to be explained by the distribution and relations of the spinal accessory nerve and par vagum; the latter extending to the liver either directly through its gastric branches, or indirectly through the ganglia of the sympathetic. What is the value of this shoulder-tip pain in abscess of the liver? Not, I think, great, unless taken in connection with other symptoms. It was present in ten of my cases, and in only 17 per cent. of cases collected by Rouis. Annesley regarded it as pathognomonic of

* See 'British Medical Journal,' Nov. 5, 1870.

abscess in the upper part of the right lobe, and Budd's experience accords with his. This view I cannot confirm. The symptom in question was present in one case in which the abscess, which was opened below the ribs, was clearly at the lower part of the liver. It was absent in two cases in which the abscess had opened into the lungs, and in two other cases in which there were abscesses in both lobes of the liver. Its presence is, I suppose, to be explained by the implication of nervous filaments.

3. *A rigid state of the right rectus muscle* was regarded by Twining as distinctive of deep-seated hepatic mischief. This symptom existed in a few of my cases, but I have observed it in other abdominal affections, and I think with Morehead that it is merely a natural effort to ward off pressure from a tender part beneath; and that while such contraction may be a valuable sign of subjacent inflammation it has no special relation to hepatic disease.

4. *Jaundice* existed in only two of my cases. In a case in which the greater part of the hepatic structure was destroyed, it was profound. Its absence would rather aid in the diagnosis of abscess from other affections of the liver, and may be explained by the fact that a large portion of the organ is usually left intact for the performance of its functions.

5. *Rigors and hectic fever* are frequently present when the suppurative process is in activity, and materially aid in the diagnosis.

The stools are usually natural, loose rather than otherwise, and fairly charged with bile. The urine is almost always high coloured, and my experience agrees with that of Mr. Busk, who tells me that he almost

invariably found it to contain a pink or lateritious sediment,

Other symptoms, of characteristic import, are determined by the course taken by the abscess. If it is about to open externally, there is fluctuation, with redness of skin and pointing; if it contracts adhesion with, or opens into some part of, the alimentary canal, there will be subsidence of the tumour occurring suddenly and coincidently with purulent discharges per anum. If, which is perhaps the most common result, the abscess effects an opening into the lung, other symptoms occur, which will be noticed presently.

The following case affords a good illustration of the usual symptoms and course of the affection:

Case 1.—D. B—, an Irishman, æt. 38, was admitted into the 'Dreadnought' on December 3rd, 1857. He had twice had ague—once, nine years before, in New Orleans, for three weeks, and again, two or three months since, on the coast of Africa. About two months back he was attacked with diarrhœa which soon merged into dysentery of an acute character. He had never suffered from this latter complaint before. He was comparatively well from the dysentery at the end of a week or so; but felt prostrate, had no appetite, and continued to suffer from pain in the abdomen. For the last three weeks the pain had centred in the right hypochondrium, and had been attended with dyspnœa and cough.

Symptoms on admission.—Complains of pain in the right hypochondrium, increased by firm pressure of the entire hand, and extending over the epigastrium. The abdominal muscles are rigid; there is no marked en-

largement of liver, or undue prominence over its site. He has dry cough, and short, catching respiration; and there are loud râles in front of the right side of the chest. The stools are loose and contain plenty of bile. The pulse is rapid, the skin hot and dry, and he appears emaciated. Complains of pain in the right shoulder. Was ordered dry cupping over the hypochondrium, saline mixture with liquor potassæ and tincture of hyoscyamus, and calomel and opium, every 4 hours. Was placed on milk diet,

7th.—Bowels have acted three times; stools bilious, urine high-coloured, sp. gr. 1020.

On the 9th he vomited a quantity of thickish, green fluid, and afterwards felt relieved. From this day to the 14th he appeared to improve, but, on the 14th, complained more of pain in the right side.

On the 17th it was found that he had been sweating profusely in the course of two or three previous nights. He was now put upon a course of nitro-muriatic acid, which was continued with apparent benefit for a week or two, the motions maintaining a healthy character, and the constitutional disturbance being less marked.

Jan. 7th, 1858.—Has more pain, and there is undue fulness over the region of the liver, but no material enlargement. Leaning on the right side causes pain, and he complains of pain and soreness in the right shoulder, and along the inner side of the arm. Ordered the nitro-muriatic acid bath every night. This seemed to do good, especially as regards the functions of the liver, and in diminishing the hectic fever.

On the 26th he complained of formication over the chest and abdomen, and occasional hiccough, and the bath was discontinued.

On the 29th he was worse; felt much prostration; more pain in the right hypochondrium, increased in moving or coughing; and he had sweated copiously at night.

From this date, through the month of February and greater part of March, he continued, with occasional improvements for a day or two, to get worse; the hepatic symptoms and indications of suppuration becoming more marked, and the constitutional symptoms, in the shape of hectic fever and subsequent perspirations, greater.

March 26th.—The abscess is pointing just above the angle formed by the junction of the cartilages with the osseous portion of the last ribs. The liver extends to about an inch and a half beyond the normal limits. The adhesion of the liver with the parietes is determined by the former not shifting its position with the altered position of the patient, or with expiration or inspiration. As the patient was becoming exhausted, it was determined to open the abscess. This was accordingly done with a sharp-pointed bistoury, and about a pint of curdy pus escaped. The abscess continued to discharge, especially under the acts of coughing and inspiration, and the severe constitutional and local symptoms were relieved. The patient, however, notwithstanding the free administration of wine, brandy, and beef-tea, continued to get more prostrated and emaciated, and died on April 5th.

Inspection.—Body emaciated. Liver encroaching on the right half of the chest to the level of the third rib. Right lung compressed, carnified below, œdematous above. At the apex three cicatrices, but no evidence of present tuberculous condition. Left lung healthy.

Anterior surface of liver firmly fixed to abdominal parietes for several inches around the external aperture. Weight of liver, six pounds and a half. In the right lobe there was a large abscess with smaller ones communicating with it. It had burrowed outwards and downwards until it reached below the ribs, then forwards and through the parietes. A number of small abscesses occupied the right and left lobes and contained greenish pus. Intervening hepatic structure healthy. The spleen weighed six ounces and was healthy; right kidney pale and flabby; left healthy; some of the mesenteric glands enlarged. Large intestines dotted over with circular ulcers, with raised, indurated borders; a few had irregular, congested borders. The mesenteric and portal veins were healthy.

When abscess of the liver effects an opening into the lung by adhesion with and ulceration through the diaphragm and its serous investments, other symptoms arise in addition to those already enumerated. There is, first, a pseudo-pneumonia excited at the base of the right lung, extending but a short way up and marked by crepitation, dulness on percussion, bronchial respiration, some cough and hurried breathing, and slight expectoration of mucus tinged with blood. There is no deficiency of the chlorides in the urine as is usually the case in true pneumonia. When the abscess has effected a communication with the lung there is suddenly a discharge of a large quantity of matter having a peculiar brick-dust colour. The appearance of this, Dr. Budd thinks, is quite characteristic. "There is," he says, "no matter like it expectorated in any disease of the lung itself, and I believe that its appearance is

quite pathognomonic of abscess of the liver, or at least of abscess perforating the lung." Mr. Busk, in a letter to me on the subject, confirms the view of Dr. Budd. In seven of my cases the abscess terminated by opening into the lung, and in every case with a fatal result. In five cases the expectoration had the brick-dust colour; in one of the remaining cases it had more of a mahogany colour and a distinct bitter taste to the patient. Dr. Budd has noticed the large quantity of matter expectorated in these cases. My experience confirms his statement. In the case of a captain, whom I saw in consultation with Mr. Coward in Stepney, the quantity of matter brought up in three or four hours was sufficient to half fill a large chamber utensil.

One case will suffice in illustration of abscess opening into the lungs.

Case 2.—J. M—, admitted on board the 'Dreadnought' on August 24th, 1860. Was in the hospital five weeks back with symptoms of congestion of the lung, and was discharged relieved at the end of eleven days. Since then he has been engaged on board his ship in dock. Eight days back, when at work, he felt something give way in his right side, and two or three days back he had rigors; otherwise has been pretty well. When he first presented himself he had returned from the West Coast of Africa, where he had been for six months, and had had ague, but not dysentery, but three years back in China had suffered from the latter complaint for some months.

On admission there was dulness on percussion on the right side, beginning a little above the nipple in front, and covering a large area behind; vocal reso-

nance slight, moist and rather large crepitation, most marked in the act of expiration, and heard anteriorly and posteriorly. Expectoration of thin, frothy matter, tinged with blood, and having a very bitter taste. No deficiency of chlorides in the urine. Weak, rapid pulse, and an aspect of ague cachexia. He was ordered milk and beef-tea, some brandy, a dose of morphia at night, and to keep quiet in bed.

August 27th.—Expectoration much the same in quantity, containing some blood, and of bilious odour; cough troublesome; physical signs not altered.

On the 31st the expectoration continued in considerable quantity, and was of the peculiar brick-dust colour. It varied in amount, but maintained the same appearance through September and the greater part of October.

October 24th.—Amount of expectoration much increased, but the same in appearance. There is large crepitation over bases of both lungs posteriorly, but more marked on the right side, where there is deficient expansion and increased vocal fremitus.

The expectoration continued in considerable quantity up to November 20th, when it began to diminish, and his condition to improve.

On December 5th he was reported as gaining flesh and strength, and the expectoration as still sanguineous but scanty. He was allowed a little meat in addition to the nourishing fluid diet on which he had been kept thus far. He continued to improve for more than a month, and there seemed a fair prospect of recovery. Unfortunately, however, in the early part of January, 1861, he became worse, and on January the 14th the report was:—"Expectoration much more profuse, of

reddish-brown colour, and purulent; dulness over right side to two inches and a half above the nipple; loss of appetite; anxious aspect; diarrhœa."

On the 21st he complained of pain in the right shoulder, and there was pain on pressure over the right hypochondrium. From this period he gradually sank, and died on February 21st.

On post-mortem examination the left lung was found to be adherent to the parietes, but healthy; right lung adherent below to the ribs and diaphragm. The ribs were divided, so as to take out the liver and lung together, but, in removing these, thick healthy pus escaped to the extent of about a pint. On dividing the liver and lung vertically, a large abscess was found occupying the upper part of the right lobe of the liver, and extending by a large opening through the diaphragm into the right lung. The walls of the abscess were irregular. The large intestine presented only a few old cicatrices.

I have noticed the termination of abscess of the liver by external opening and by communication effected with the bowels and the lung. I had one case which appeared to terminate by opening into the intestinal canal, and as far as it went, with satisfactory results, but the man left the hospital before he was quite well, and I heard nothing more of him. In another case the termination was fatal through discharge into the peritonæum and fatal peritonitis. The abscess or abscesses may not effect any outlet, and then death or recovery may be the result. The former event will be brought about by the gradually increasing hectic fever and exhaustion induced by the suppurative action going on in the liver, and frequently also by the

drain from concomitant chronic dysentery. It is tolerably certain, however, from cases that have occurred within my own experience and that of others, that a natural process of cure occasionally takes place, and that it is effected, as Morehead says, by absorption of the more fluid parts of the pus, so that nothing but a caseous or calcareous substance remains.

On analysing my twenty-six cases with reference to the mode of termination, I find that the abscess, in twelve, effected no opening, that in seven it opened into the lung, in one probably into the bowels, in one into the peritonæum, and in five pointed externally.

The post-mortem examination of twenty cases revealed but single abscesses in seven, and two or more in the remainder. In all the cases in which the abscess was single, it was situated in the right lobe of the liver; in three cases it had opened into the lung, in two had pointed and opened externally, in two was closed, but in one of these was contiguous to and had effected adhesion with the abdominal parietes. The single abscesses were generally large; sometimes sufficiently so as to have excavated the greater part of the liver, and to hold a pint or more of pus. When there were two or more abscesses, there was generally one of large size, the remainder varying in size, sometimes not being larger than a pea, and occurring in the left as well as the right lobe. In cases where the mischief had been of recent date, the walls of the abscesses were irregular, jagged, with shreds of liver-tissue hanging from them; and in one or two cases smaller abscesses communicated with the primary large one, or perhaps were merely an extension of it. In cases of longer standing, the walls were smooth, and, in

one or two instances, encysted. The abscesses were generally filled with healthy-looking pus, but in one case I find this described as of pinkish hue, and in another as being mixed with blood. In one case only, the fluid portion of the pus had become absorbed, and the two or three abscesses which were discovered contained a yellowish substance of almost waxy consistence. The intervening liver-structure was usually of normal aspect, sometimes paler than usual, and, at times, mottled, from patchy congestion. In six of the cases there was no evidence of dysenteric ulceration; in the remainder it was present in greater or less extent.

No difficulty generally attends the diagnosis of abscess from hydatid tumour of the liver; the quiet and protracted course of the latter affection, its freedom from severe local and constitutional symptoms, pointing usually with tolerable certainty to its nature. But an hydatid tumour may be injured mechanically, and suppurative inflammation set up in it or in the surrounding liver-tissue, and then diagnosis is uncertain.

The particulars of the following interesting case were forwarded to me by Mr. Knipe, of Melbourne, Derbyshire.

Case 3.—Mrs. S—, on August 15th, 1867, came under my care, having been only a few weeks unwell, with acute pain over the whole region of the liver, sharp febrile disturbance, sickness, &c. The liver I found tender and enlarged in every direction, extending an inch below the ribs, and upwards above the natural limit. Jaundice came on, but not deep,

in a few days. Under treatment the symptoms rapidly subsided, the jaundice disappeared, the swelling abated, and in a fortnight she was entirely well.

Exactly one month after, she came again under my care, having had pain and slight return of jaundice for a week. I then found the left lobe of the liver greatly enlarged, the right only slightly so; hard and tender, but no fluctuation. The swelling in the left lobe gradually increased, and in seven weeks fluctuation began to be perceptible, and she had one severe rigor. Hiccough now began to be troublesome, and constitutional disturbance more severe. About the end of November there was, on two occasions, a copious discharge per anum of frothy stuff, looking like altered pus, and mixed with clayey motion. These discharges were accompanied by diminution in the size of the swelling. In December it continued to increase, fluctuation became quite distinct, and the tumour very prominent. No further discharge by the bowels taking place, as the patient had sweating, rigors, and hiccough, and there was every prospect of her sinking, I tapped the swelling with a large trocar, and drew off over thirty ounces of offensive pus, having some semi-decomposed clots of blood in it; afterwards, clear serum-like fluid flowed out. A few days after there was another discharge from the wound of stinking pus, and some more watery fluid. I examined carefully for hooklets of echinococci, but could find none. The swelling decreased much, and the health of the patient improved rapidly, the wound closing in spite of efforts I made to keep it open. The swelling remained stationary for a month; then a rigor occurred and it

filled rapidly, and in March it began to point at the edge of the left rectus muscle.

On the 18th I opened it with a bistoury, and about twelve ounces of horribly offensive stuff escaped. A few days after, I put in a drainage tube, and the discharge continued free and purulent. Some inflammatory action came on with a rigor, and in two days a copious discharge took place, and the original wound also reopened. Both wounds discharged slightly for a fortnight or more, the swelling subsided, she recovered her strength, and on April 18th was able to walk to the surgery. There was then only a hard substance to be felt about the size of an orange, adherent to and evidently part of the left lobe of the liver. She is now perfectly well, and no abnormality can be felt, though she tells me that "if she gets wind on the stomach she feels a slight dragging at the ribs." The patient is inclined to ascribe her illness to the pressure of a large stay-busk at her work done in a sitting posture. "I suspected," adds Mr. Knipe, "hydatid disease, but could not obtain any proof, and the commencement was more like hepatitis, and the course rapid."

On careful consideration of the above case it appears, as Mr. Knipe thought, to have been one of hydatid tumour, inflammation in which, and in the adjacent liver-tissue, had been excited by the mechanical irritation of the steel busk, as noticed by the patient.

Etiology.—I am treating of abscess of the liver developed under the influence of tropical climates, and not of metastatic or pyæmic abscesses. There is, however, no doubt that a large proportion of the hepatic abscesses met with in this country are of the latter kind, and result from the contamination of the blood

by pus from suppurative inflammation at some distant point. In a case which came under my notice there were many small abscesses in the liver, points of matter on the spleen, the surface of the peritoneum, and in the lungs, and, for apparently the exciting cause, an abscess in connection with the urethra. Such general pyæmia not unfrequently occurs after surgical operations. Budd cites three cases of Dr. Jackson's at Calcutta in which abscess of the liver followed an operation for the removal of piles, and Mr. Bedford, formerly assistant-surgeon at the 'Dreadnought,' informs me of a case which occurred there in which the operation just alluded to was followed by the deposition of pus in the liver. In one of Dr. Budd's cases there were abscesses in the liver, lungs, and joints, from phlebitis after bleeding. The following case, although a pyæmic origin could not be detected, was, I believe, due to such, and I introduce it, very concisely reported, as it affords a fair illustration of pyæmic hepatic abscess.

Case 4.—J. H—, a tradesman, living in a low, damp district, contiguous to the Wandsworth Road, was seen by me and Mr. Powell in May, 1861. He had not been a drinker, had never been out of the district in which he lived, and had not suffered from diarrhœa or dysentery. He had been ill for some time, and when I saw him was intensely jaundiced, had an anxious, hectic look, rapid pulse, great heat of skin, pain over the liver, and occasional severe rigors. The patient died soon after, and Mr. Powell forwarded me the following report of the post-mortem appearances:—Thoracic viscera healthy. Peritoneum covered with

lymph, gluing together the bowels and opposed surfaces, which were easily separated, showing recent inflammation; intestines healthy; liver closely adherent to the diaphragm; on cutting into it it was found to be riddled throughout with abscesses, varying in size from a pea to a walnut; intervening tissue normal but soft. There was an abscess, larger than the others, at the upper and back part of the right lobe.

Admitting abscess of the liver as a not uncommon symptom in connection with general pyæmia, I come next to the question of its association with dysentery. Dr. Budd, following, as Frerichs remarks, views first brought forward by Ribes, is of opinion that the exclusive cause of suppurative hepatitis is the transmission by the portal vein, and the veins going to form it, of pus or vitiated secretion from an ulcerated intestinal surface. Ulceration of the bile ducts or stomach was present in two or three of his cases in which dysentery was absent. No doubt the association of the disease with dysentery is frequent. Out of fifteen cases of Dr. Budd's, the state of intestine was not noticed in two, but in eight of the remaining thirteen there were ulcers in the large intestine, in two in the stomach, and in one in the gall-duct. In twenty-nine cases, recorded by Annesley, twenty-one were associated with dysentery. In six out of the twenty-five cases of which I have notes there was no dysenteric ulceration or other evidence of pyæmic origin. In nineteen cases there was or had been dysentery, but in several of these the dysenteric affection had preceded the hepatic by a considerable period of time. In Case 2 more than two years had elapsed since the patient suffered from dysentery when the symptoms of abscess began to

be pronounced, and after death only old cicatrices were found in the large intestine. It is scarcely probable that in this and similar cases the dysenteric ulceration was the cause of the abscess. In fifty-one out of 204 cases of hepatic abscess occurring in the East Indies and cited by Waring there was no ulceration of large intestine. Morehead records seventeen cases of abscess of liver where there was no implication of intestine, and seven where the dysentery was secondary to the hepatic affection.

If hepatic abscess be excited by phlebitis in connection with intestinal ulceration, why, I ask, is it so rare a sequence? Dr. Bristowe some time since analysed the cases of ulceration of intestine and abscess of liver which had occurred in St. Thomas's Hospital, and found the proportion of the latter to the former to be small. In thirty-two cases of dysentery there were abscesses of the liver in four, and in three of these the dysentery was secondary. At the Seamen's Hospital hepatic abscess has not occurred in five per cent. of the cases of well-marked and severe dysentery. Niemeyer remarks that the fact that epidemic dysentery in Germany has hardly ever been complicated with hepatitis, although it has been followed by extensive gangrene of the mucous membrane and putrid decomposition of the contents of the large intestine, rather militates against Dr. Budd's view.

Dr. Murchison adduces arguments, supported by cases, which are effectively subversive of the pyæmic theory as regards what he aptly distinguishes as tropical abscess of the liver. The conclusions that may be drawn from what has been stated are, I think, the following:

1. That in some of the cases in which the dysentery was the prior affection the pyæmic theory may be admitted, although in these the abscess may have been merely an accidental accompaniment and induced by the same causes as the dysentery.

2. That in the cases in which the hepatic abscess has clearly been the prior affection, and in those in which there has been no ulceration of intestine or other evidence of pyæmic origin, the disease must be regarded as idiopathic, the exciting cause being probably, as Morehead suggests, a chill occurring in the cachectic state of system induced by a residence in the tropics or by other depressing influences. In many of my cases there was a history of pre-existence of ague, and it is a question whether the severe malarial poison of tropical regions may not play a part in determining hepatic abscess, dysentery, &c.

Treatment.—The most important point in the treatment of all severe abdominal affections is rest in the horizontal posture, either directly or on the back, or with inclination to one or other side, as the nature of the case or comfort of the patient may indicate. For the cases of sub-acute or chronic dysentery which are frequently brought to the Seamen's Hospital I have, of late years, been in the habit of not adopting any special treatment at the commencement. The rest in bed, and the even temperature associated with it, causes a rapid reduction in the frequency of the stools and alleviation of the constitutional symptoms. The same general indication is all-important in severe recent or in chronic diarrhœa. In simple perforating ulcer of the stomach rest on the back for weeks together, coupled with rest to the functions of the stomach by

not allowing the patient to take more than small quantities of easily absorbed fluid nutriment, offers, in my experience, the only chance of a cure. In typhoid fever, after the acute symptoms are over, and even when the patients are convalescent, if there has been severe intestinal complication, I enjoin protracted rest on the back, with a slight inclination to the right side, as affording the best security against perforation. In the disease under consideration rest affords the only possibility of a cure being effected by the natural process which has been alluded to, and even where cure may not result it materially lessens constitutional and local distress. In the case of the successful operation of opening the abscess presently to be introduced, the only relapse into serious symptoms was induced by the patient getting up without permission and committing in addition some little excess in diet.

The dietetic regimen should be restricted to light fluid nutriment, as milk, beef tea, arrowroot, &c., with the addition of a little wine or weak brandy-and-water. The application of warm-water dressing or a large linseed-meal poultice over the region of the liver is comfortable to the patient, and may assist in bringing about the pointing of the abscess.

I am not disposed, as is now the fashion, to condemn the use of mercury in all affections of the liver, for I have met with marked success from its exhibition in cases of enlarged congested liver in which other remedies had failed. In Case 1 it was resorted to without benefit in the early inflammatory stage, but was abandoned when the symptoms of suppuration were manifest. I am inclined to think that it would determine rather than prevent the suppurative process. Nitro-

muriatic acid has seemed to do good in these cases, acting as a tonic and alterative, and keeping up healthy action of the sound portion of the liver.

When hepatic abscess is pointing between or beyond the ribs the question arises as to the propriety of opening it. The considerations adverse to the operation are—1st: The danger of mistaken diagnosis. Annesley and others have known a distended gall-bladder to have been taken for an abscess, an opening to have been made, and death from peritonitis rapidly to have resulted. 2nd. There is danger of a similar result if the abscess has not contracted adhesion with the abdominal parietes. This point, as Dr. Budd has suggested, may be determined by marking a line on the parietes along the margin of the liver, and ascertaining whether this corresponds to the margin of the liver in different positions of the body, and in expiration and inspiration. If we are satisfied that adhesion has taken place, I think it best to open the abscess, believing that the risk of air getting into the wound is little as compared with that which would arise from the abscess continuing to extend and break up liver-structure, and from the aggravation also of constitutional symptoms which would result. Surgery has, of late years, taught us that more liberties may be taken with the peritonæum than would formerly have been thought practicable; and if the patient's constitutional symptoms were urgent I would puncture with a fine trocar, even if I were not satisfied that adhesion had taken place. Dr. Morehead has given some good practical suggestions in reference to the subject. He thinks that when the abscess appears to be single, is well defined, and is pointing either at the epigastrium or below

the ribs, it is wise to wait until the inflammatory blush on the skin appears, and then to open freely with a bistoury, so as to effect ready discharge of the matter. When, however, there is mere general bulging of the right ribs below the seventh, fullness of the intercostal spaces, and obscure fluctuation, or an extensive swelling below the ribs or at the epigastrium, with distinct fluctuation, he recommends puncture with a small trocar, and gradual evacuation of contents. I have not made trial of the practice formerly adopted in India, of thrusting an exploratory needle into the liver where abscess is suspected; and I feel the force of Dr. Budd's remarks against it, namely, that the diagnosis may be erroneous, that there is risk of hæmorrhage or of the escape of blood or pus into the peritonæum (to this I do not attach much weight), that the site of the abscess may not be hit upon, and that there may be more abscesses than one. Dr. Morehead says that the adoption of this line of practice in India was limited to one or two residences, that it was condemned by most Indian practitioners, and was soon abandoned.

Dr. Maclean suggests the evacuation of the abscess by means of Bowditch's syringe, which has been successfully used in the removal of pus from the pleura without the admission of air. At present, sufficient trial of this instrument has not been made to warrant any reliance upon it for the relief of hepatic abscess.

Any individual who has suffered under the symptoms of hepatic abscess, and has had the good fortune to recover, should be content to pass the remainder of his life in England or some temperate climate. A young gentleman in the civil service in India, who was invalided home for dysentery and hepatic affection,

came under my notice a few years back with well-marked symptoms of abscess. He recovered, and insisted upon returning to his station in India, where he died from fresh suppurative inflammation of liver a few months after his arrival.

The circumstances that render prognosis unfavorable are, 1: Co-existence of severe dysentery; 2. The possibility of there being more abscesses than one; 3. The exhausted constitutional state of many who are invalided home with the affection.

In the following case timely puncture of the abscess was attended with a successful result.

Case 5.—W. O—, æt. 30, was received on board the 'Dreadnought' on February 3rd, 1860. States that he had good health up to a year and a half back, when he arrived at Demerara from England. After being on shore there for three weeks he was attacked with quotidian ague, and after suffering from this for a week he fell a victim to yellow fever. From this he rallied in about ten days, but the ague continued. During his illness he was in hospital, and left relieved with the intention of returning to England. Two weeks after, he was very thin and in bad health, and a diarrhœa came on which compelled him to return to the hospital in Demerara. There he remained for three months, suffering from dysentery and ague, attended by vomiting. He left in comparatively fair health, but still had vomiting, and after a week at sea, on his homeward voyage the ague returned. This and the vomiting continued through the passage. On arriving in England he felt better, and after a short time attached himself to a vessel bound for St. Thomas, and kept

well for some time. About eighteen months back at Bombay he again felt ill, had loss of appetite, vomiting, and diarrhœa. He got better after a time, and continued so until a few weeks back, when, on the voyage from Calcutta to England, he began to feel pain at the scrobiculus cordis and in the right shoulder, and to have nausea and vomiting and occasional shiverings, which symptoms continued up to the time of his admission. Notwithstanding his ill health, on his arrival at Southampton he went, to use his own phrase, on a spree for a week or two, drinking, &c.

The symptoms on admission were distinct prominence in the right hypochondrium, with fluctuation and tendency to point to the left of the right cartilages, pain in the shoulder and on pressure over the liver, diarrhœa, weak rapid pulse, hectic, and much prostration. He had not, and had never had jaundice. He was kept on his back in bed, warm-water dressing was applied over the liver, and he was ordered fluid diet and wine and brandy.

On February 10th there was redness of surface and tolerably clear evidence of adhesion of the tumour with the parietes, and an opening was made by Mr. Bedford, the assistant surgeon, from which several ounces of pus were discharged. A poultice was subsequently applied, and he was kept perfectly quiet. The abscess continued to discharge healthy pus daily, and his general condition improved. He was kept strictly on fluid diet, with a fair quantity of stimulus. He had one relapse, attended with pain, sickness, and diarrhœa, but it was due to his own imprudence in disobeying orders as to rest and diet. The report on the 2nd of March was: sleeps well, lying towards the left side;

has no pain; bowels act every third day; appetite good; a small quantity of matter is still discharged.

On March 15th the wound had healed. He was kept quiet, and on fluid diet for some time longer, and was discharged cured on April 12th. The man presented himself at the Dreadnought for some trifling ailment a year or two later, and had had no return of symptoms connected with the liver. The two following cases are introduced in illustration of post-mortem appearances.

Case 6.—G. S—, æt. 22, a West Indian, admitted into the 'Dreadnought' on July 29th, 1859, after a four months' voyage from Bombay, where he had been ill with diarrhœa for a month. The diarrhœa had become worse on his passage home from exposure to rough weather, and he was troubled with cough.

On admission there were the usual symptoms of abscess, pain over the right hypochondrium increased on pressure, evident extension of liver beyond its limits, and distinct bulging of lower right ribs, hectic fever, loss of flesh and power. He was ordered perfect rest, fluid diet, wine, bark, and nitric acid.

On August 12th the abscess was evidently pointing over the lower ribs, and there was impulse there on coughing.

On August 17th the abscess was opened, and a considerable quantity of matter escaped. His strength, however, continued to decline, he suffered from diarrhœa and exhausting sweats, and died on August 24th.

Inspection.— The body was much emaciated; no œdema, no bed-sores. On the right side below and

exterior to the nipple was a large opening through the skin and intercostal spaces of 6th and 7th and 7th and 8th ribs, and communicating with the liver.

Abdomen.—Peritonæum showed signs (effusion into cavity of serum, and deposition of lymph on intestine) of recent inflammatory action. This was most marked in the right iliac region, the cæcum being glued by lymph to contiguous intestine, and to the iliac fascia and abdominal walls; the lower and back part of the caput was sloughy with circumjacent congestion; the ash-coloured slough had not separated, but was so soft as to give way under slight pressure. The interior of the colon showed extensive disease; the mucous membrane from one end to the other exhibited patches of ash-coloured sloughs, more or less oval in shape, and varying from half an inch to an inch in diameter. The sloughs were most extensive and advanced in the caput coli, less so in the transverse colon, but more again towards and in the rectum. In the caput coli the coats of intestine were all but perforated. The small intestine was healthy, but contained three round worms.

Liver.—Left lobe presented, both externally and internally, small and frequent secondary deposits, all recent. Right lobe posteriorly studded like the left with secondary deposits. The front was excavated by a large abscess of the capacity of more than a pint, with free opening by outlet already noticed. The diaphragm was firmly adherent about the margin of the opening; other abdominal viscera healthy.

Chest.—On both sides the lungs were attached to the pleura costalis by old adhesions. Apices of both showed cicatrices but no chalky remains. Right lung

not diseased. The lower lobe of left lung was heavy, congested, and studded with small secondary deposits.

Case 7.—J. B—, æt. 25, admitted into the Seamen's Hospital on August 29th, 1870, with the usual symptoms of severe chronic dysentery. There was nothing to call attention to special implication of the liver during the short time the patient lived. Died October 4th. Mr. Johnson Smith kindly favoured me with the following record of the post-mortem appearances :

Intestines.—Coats of large intestines much thickened and collapsed. On opening the colon, the mucous membrane along the whole extent was found to be much ulcerated. The ulcerated patches, which were irregular both in size and depth, were covered by a thick, semi-purulent fluid of a dark gray colour. The cæcum was much involved in the disease; its mucous membrane having been almost wholly destroyed. Meso-colon thickened, and mesenteric glands enlarged.

Liver.—Form normal; weight sixty-five ounces; surface of a bright yellow colour. At the upper portion of the posterior half of the right lobe, was a cavity containing about ʒxv of thick, greenish yellow, and perfectly inodorous pus. The walls of the sac were uneven but not shreddy, and formed of liver-tissue, covered by a tenacious deposit of thickened pus. There was but a very thin layer of liver-tissue intervening between the abscess and the capsule covering the superior surface of the liver. The hepatic tissue in the left and in the sound portion of the right was intensely nutmeggy (fatty degeneration with intense congestion in the centres of the lobules).

Spleen large; weight nine ounces, very hard; tissue firm, of a dark red colour, and translucent at the cut surface.

Kidney tissue pale and waxy, red colour on addition of tincture of iodine to kidneys and capsule of spleen.

Pericardium thickened and closely adherent to the surface of the heart. Cardiac cavities contracted and empty. No valvular lesion.

The subject of the following case was reported, on admission, to be suffering from quotidian ague, but the supposed ague fits were clearly only severe rigors; and after a time the symptoms of the hepatic affection became marked, and the diagnosis was established.

Case 8.—D. C—, æt. 40, was admitted into the Seamen's Hospital on October 24th, 1870, having just returned from Cochin China. He was at first on the surgical side of the hospital for stricture, and when this was relieved was transferred to the medical department. He stated that he had dysentery in India six years ago from eating fruit and drinking too much iced water, and that it had recurred, and lasted for some time, about five months since. On the voyage home he was acting as cook, and, in consequence of a severe gale which lasted for a week, he had to do his work and sleep in damp clothes. For the last month he has suffered from looseness of bowels, and ague fits. If he sits by the fire, a fit comes on shortly. In the end of November the following symptoms were recorded:—Is pale, emaciated, very weak, and looks pinched, and much older than he is. Suffers, almost daily, at irregular periods of the day from the so-called ague attacks, which have been thus far the prominent

feature in the case, and for which quinine has been freely given. Complains of sharp, darting pain in the right side in the region of the liver, and also of pain in the tip of the right shoulder, which prevents him from sleeping. The liver extends to from one to two inches below the ribs, and there is slight bulging at the lower ribs. Firm pressure with the hand over the liver region causes intense distress; he cannot lie on his left side. On the 12th of December he was suddenly seized with symptoms of severe collapse, and died soon after.

Post-mortem examination.—On opening the abdomen, the peritonæum was found to contain a large quantity of pus. This had come from a large abscess in the right lobe of the liver, which had destroyed a considerable portion of the hepatic substance. The wall of the abscess was adherent to the right kidney, which was flattened and somewhat atrophied. Two dysenteric ulcers of a chronic and indolent appearance, one of them very small, were found in the cæcum. There was slight injection of the serous investment of the small intestine.

The question arises as to whether the trifling, old-standing dysenteric lesion could stand in any causal relation to the hepatic abscess. I think not.

The following case is interesting, as showing a source of fallacy in diagnosis which could scarcely have been anticipated. The symptoms of the patient were regarded by myself, by the rest of the medical staff, and by Dr. Morehead, who visited the hospital at the time, as pointing to abscess of the liver. On examination, however, the abscess was found to be external to the organ, and between it and the kidney.

Case 9.—C. Antonio, æt. 40, admitted into the Seamen's Hospital on August 28th, 1871. Four months ago he had an acute attack of dysentery, stools being very scanty, very frequent, consisting of slime and blood, with griping and tenesmus, which lasted for a month. In a week or two after he had resumed work he had an attack of pain of lancinating character in the right hypochondriac region, attended with chills and fever. The pain has continued ever since, but is not so sharp as it was at first. Has pain in both shoulders. Since admission, the patient has had profuse sweating at night, and chills and fever through the day. The liver extends four inches below the ribs as far as the umbilicus; the conjunctivæ have a slightly yellow tinge. The symptoms, local and general, continued in increasing intensity, the patient's powers rapidly failed, and he died about a month after admission.

On post-mortem examination the liver was found to be enlarged (weighing six pounds), and congested, and of very dark colour. Otherwise there was nothing abnormal about it. The right kidney was firmly adherent to the under surface of the right lobe. On separating the kidney from the liver an abscess was found between them; the walls of the abscess were very strong and thick, and especially adherent to the under surface of the liver, from which separation could not be effected without laceration of the tissue of the organ. The abscess was quite external to the liver itself, and contained about four ounces of thick pus. No evidence of further peritoneal inflammation beyond the abscess, which was surrounded by a large amount of loose fat and connective tissue.

I add the following case in illustration of abscess discharging itself through the lung, and apparently likely to terminate in restoration to health. The report is condensed from full notes taken by Mr. Young.

Case 10.—T. B—, æt. 56, admitted into Seamen's Hospital on February 5th, 1872. Had West Coast fever many years back, and dysentery last summer.

Symptoms on admission.—Has cough, with muco-purulent expectoration tinged with blood. Complains of pain in the right side, increased on coughing and on firm pressure, and has slight pain in the right shoulder. There are rhonchi over the middle and lower lobes of the right lung, with largish moist crepitation in front and behind. There is no dulness on percussion, or increase in vocal fremitus or resonance. The left lung is free. He had rigors two days before admission. The bowels act regularly, and the stools are rather light-coloured.

One night, shortly after admission, the patient felt a saltish taste in the mouth, and soon after expectorated a great quantity of blood, about a pint, of bright colour. Subsequently to this, expectoration continued daily in considerable quantity, and purulent, with characteristic brick-dust colour. He was kept strictly in bed, upon light nourishing food. Towards the end of February he began to mend and the expectoration sensibly diminished. He was ordered cod-liver oil and a tonic. On April the 4th he had gained four pounds in weight in a week, felt stronger, the expectoration was almost nothing, and the chest signs had nearly cleared off.

CHAPTER II.

CIRRHOSIS OR INTERSTITIAL INFLAMMATION OF THE LIVER.

This is the most common of all the serious organic diseases of the liver, and that it is so, is due to the general prevalence, in this country, at least, of the exciting cause. The 'gin-drinking liver' is a sufficiently characteristic title, although other alcoholic fluids besides gin are to be credited with the production of the malady. Spirits taken habitually between meals in the undiluted form or but sparingly diluted with water are most injurious; beer and wine are less so; but I am satisfied that the practice of frequently taking any kind of alcoholic drink, the glass of wine, or even of strong beer, upon the empty stomach, may ultimately lead to the disease, and that such practice, in its less serious result, unquestionably induces congestion of the stomach and liver, and serious derangement of the functions of these organs. Taken on an empty stomach alcohol is readily absorbed into the portal system and thus causes direct irritation of the liver. This irritation is, at first, only temporary, for the alcohol passes rapidly on in the circulation to be consumed in part in the respiratory process. When, however, spirits are being constantly taken, several times daily, and day after day for months, or years, the consequence at length is congestion and inflammatory

action of the liver, ending in cirrhosis and its inevitably fatal course. In conjunction with other effects of drinking, cirrhosis is frequently met with in publicans, and is the cause of much mortality amongst them. The disease is scarcely so frequent amongst sailors as might be expected; and this may be explained by the fact that when at sea they often enjoy a long period of comparative abstinence, and that it is only when ashore they indulge in hard drinking. The result of this is frequent attacks of acute congestion of the liver and stomach, rather than the development of serious organic lesion, although this may, and often does, ultimately ensue.

Men are more liable to cirrhosis than women; but neither sex nor age is exempt from it. Wünderlich (cited by Niemeyer) found typical cases in two sisters, aged eleven and twelve years; and, on careful inquiry, it was found that both of them were great schnapps drinkers. In Case 2, introduced further on, the most marked specimen of cirrhosis I have met with was in a lad only eighteen, who had been to the East and West Indies. It may be asked, could the disease, in a boy of this age, have been induced by abuse of alcohol? My own observation of the habits of sailors from the commencement of their career leads me to answer in the affirmative. I have seen several sailor-boys standing in a ring, drinking gin, glass after glass, their seniors looking on and encouraging them in their dissipation. No doubt the high temperature of tropical regions may, in some cases, assist in determining the disease, but the fatal "fire-water," as the American-Indians term it, is the primary exciting cause.

Other causes, besides the abuse of alcohol, have been

regarded as excitants of cirrhosis; amongst them heart disease, the frequent recurrence of attacks of intermittent fever, &c. In some of my cases there was history of previous ague, and in Case 1 the patient had long resided in an agueish locality. In these cases, as in others in which the liver affection has been associated with heart disease, the complication is, I believe, merely accidental.

Cirrhosis consists essentially in inflammation and hypertrophy of Glisson's capsule, and of the connective tissue of the liver generally. In the early stage of the disease the organ is enlarged. This fact was noticed by Bright and others long ago. I have satisfied myself of the truth of it by the clinical observation of cases which have, on and off, been under my care for years, which have commenced with enlarged and, what I considered to be, congested liver, and have ended in the contraction of advanced cirrhosis, with ascites and other distinctive symptoms. Occasionally, also, where patients have died from some other affection, I have found the liver enlarged and congested, with indications of advancing cirrhosis in only a very limited portion of the organ. Niemeyer says that in the early stage, which is rarely seen, the peritoneum is somewhat thickened and opaque; and, with the exception of some slight elevations, the surface smooth; and that the parenchyma is interspersed by a vascular, succulent, grayish-red mass, which gives the liver a fleshy look, and between which the original tissue appears as large and only slightly prominent granulations.

In the advanced stage of the disease, and in a well-marked case, the liver is much reduced in size and weight, and altered in appearance. The left lobe is at

times diminished, so as to seem but a mere appendage to the right, which is rounder than normal; and the surface of the organ presents that irregularity which has given rise to the name 'hob-nailed.' At times the surface is studded throughout with fine granules, the size of hemp seeds, at others it is covered with knobs or semi-spherical projections, separated by deep retractions. On cutting into the organ, it is found to be firm and even resisting, and is seen to be intersected by white, fibrous striæ, which are everywhere surrounding and encroaching upon the secreting tissue, which appears in the shape only of little lobular or granular elevations. In extreme cases the new fibroid structure has almost entirely destroyed the parenchyma. The appearance of the cut surface varies. In some instances it is mottled, from small yellow lobules being surrounded by gray fibroid tissue; at others it is paler than usual and of light buff colour, and at other times it presents an uniform yellow colour, which, with the increased consistence, causes a resemblance to wax, and has given rise to the name 'cirrhosis.'

As the more fluid products of the interstitial inflammation of the liver become absorbed, the lymph contracts. The contraction of that contiguous to the surface of the organ causes the granular, or hob-nailed, or otherwise irregular external aspect. The contraction of that in the parenchyma accounts for the granular appearance of this. By this contraction the minute branches of the portal vein become compressed and to a great extent obliterated. The minute branches of the hepatic duct are also compressed, and the passage of bile interfered with; hence, the retention of bile and pigment in the acini, and the yellow colour

which results. The most serious consequence is the atrophy and destruction of the secreting structure of the liver, which is represented in some cases by granulations containing fat-globules and pigment, in others by pigmentary matter only.

The serous coat of the liver is frequently found to have contracted adhesions with the diaphragm, and other contiguous structures.

The spleen is found to be enlarged in most cases of cirrhosis, sometimes to a very considerable degree; occasionally it is small and firm.

The symptoms of cirrhosis in its early stage are chiefly those of impaired digestion, as furred tongue, dislike for food, especially early in the day, nausea, vomiting at times, more particularly on getting up in the morning; irregular state of bowels, at one time constipation, at another diarrhœa. In consequence of defective nutrition, there is also loss of flesh and strength. At this period the liver may be found to extend beyond its normal limits. There is frequently tenderness on pressure, occasionally a dull pain in the hypochondrium, or even a distressing feeling of fulness and tension. There is, early in the disease, a slight sallowness of complexion, or faint jaundice hue, seen most markedly in the conjunctivæ. Under appropriate treatment and abstinence from alcoholic stimulants these symptoms may abate for a time, to be renewed after longer or shorter intervals; and alternations of illness and comparatively good health may go on for months or even years, before the more characteristic symptoms of advanced cirrhosis are manifested. These repeated attacks, however, with more or less continuance of indulgence in the exciting cause, induce a state

of cachexia, marked by anæmia and sallowness of aspect, by loss of flesh and power, by passive cutaneous or other hæmorrhages, which is a prominent feature of the disease, up to the period of its termination.

In proceeding to determine whether the liver is enlarged or not, it must be remembered that normally the dull percussion sound caused by it extends in front upwards to about the sixth rib, laterally, to the eighth, and, by the spine, to the eleventh; that the lower border of the right lobe corresponds in front to the lower border of the ribs, and that the dulness behind merges in that caused by the right kidney; that the left lobe extends across the epigastrium to the left of the mesial line, and that the dull sound caused by it is continuous with that produced by the heart. It should be remembered that these limits present, compatibly with health, sometimes considerable variations, and that there are certain sources of fallacy which may lead to an erroneous conclusion as to the size of the organ. Thus, a distended intestine may get in front of the lower border of the liver, and lead to the supposition that there is contraction of the organ when the contrary is the case; an emphysematous lung may press down the organ from above. Where there is much ascites it is difficult to make out the lower boundary of the liver. In this case, however, by placing the patient on the left side, so as to let the fluid gravitate over to this, we may make a tolerably clear diagnosis. Ordinarily, for purposes of examination, the patient should lie on his back with his thighs drawn well up, so as to relax the abdominal muscles, the rigid contraction of which, especially of the recti, is often a source of fallacy.

The liver is generally enlarged in the early stages of cirrhosis, and frequently so in the more advanced stages of the disease. When it is so, its rounded, irregular margin may be detected below the ribs on careful palpation. Occasionally, however, the liver is much contracted, sometimes to such an extent that the percussion dullness corresponding to the left lobe is lost, and that marking the right lobe is reduced to a band only an inch or two in width. Palpation will also not unfrequently detect more or less enlargement of the spleen, which is due, for the most part, to the splenic vein not being able to empty its contents into the portal system.

The effects of the obstruction to the circulation through the liver may be seen in the congestion, more or less intense, of the veins which go to form the vena portæ, of the gastric and splenic, the superior and inferior mesenteric, and their tributaries. This congestion endeavours to relieve itself in various ways, viz. by splenic distension already noticed, by flux from the stomach and intestines, or by hæmorrhage from these, by hæmorrhoids, by the establishment of fresh venous channels for the return of the blood to the heart through the general circulation, and, lastly, by ascites.

The splenic enlargement is not generally very considerable. In a case lately under my care the organ extended forwards to an inch or two beyond its limits, and its edge could be distinctly felt below the ribs. In Case 3 it weighed over two pounds. There can be little doubt but that the detention of so much blood in the spleen tends to put off more serious results.

The congested veins of the stomach relieve themselves by a flux of mucus, which may be tinged with

bile and coloured by the acids of the viscus, and which gives rise to more or less frequent vomiting. A similar flux may take place from the intestines, and may continue irregularly throughout the disease; and by its draining and exhausting action materially determine the fatal termination. Rupture of the small vessels of the stomach may occur, and blood be poured out and discharged by the mouth, constituting hæmatemesis, which may occasionally be of an alarming character; or if only a small quantity of blood exudes, it may pass downwards and be voided per anum.

The congestion of the lower mesenteric becomes referred on to the hæmorrhoidal veins; hence, hæmorrhoids are a frequent and troublesome symptom of cirrhosis.

The congestion of the mesenteric veins also becomes relieved after a time by the transudation of serum into the peritoneal cavity; when ascites results. When once ascites occurs, it seldom is entirely removed. In the advanced stages of the disease it often becomes so intense as to cause pressure on the iliac veins, and some œdema of scrotum and lower extremities, or by the pressure upwards it prevents the descent of the diaphragm, and causes embarrassment of the action of the heart and lungs. In some cases of ascites the fluid on tapping is found to consist not only of serum, but to contain flocculi of fibrin, and at times, also, to be sanious from exudation of the red corpuscles of the blood.

Some of the more serious results of congestion, especially ascites, are often deferred to a late stage of the disease in consequence of the compensatory venous circulation which becomes gradually set up, and the

evidence of which is afforded in the large, tortuous veins which course up over the belly and chest, and which constitute a prominent feature of the disease. The channels by which such compensatory circulation is effected have been well pointed out by Frerichs, Budd, Niemeyer, and others. They are—1. Communications between the inferior mesenteric and hæmorrhoidal plexus and the hypogastric. 2. Anastomoses between the branches of the left coronary vein and the œsophageal and diaphragmatic veins. 3. Through the newly formed vessels in the adhesions established between the liver and the parietes and diaphragm. Budd says that it is very common in advanced cirrhosis to see large veins on each side of the belly and chest, and that he has more than once seen a large vein emerge abruptly immediately below the right false ribs, and pass up in a varicose condition over the chest. I have myself seen, in one or two cases, a complete venous belt just below the chest. 4. Perhaps the most important channels of collateral circulation are certain branches of the portal vein which pass between the folds of the falciform ligament from the liver to the abdominal parietes, and which anastomose with the radicles of the epigastric and internal mammary veins. It is through these latter, which empty themselves respectively into the left brachio-cephalic and superior cava, that the return of the blood to the heart is at last accomplished.

Other symptoms of cirrhosis are to be explained by the more or less serious destruction of the secreting structure of the liver, and by the compression of the minute hepatic ducts. The effect of the former is to interfere with the secretion of bile; that of the latter

to prevent what bile may be secreted from passing down into the intestine. The absence of bile in the intestine accounts for the constipation which often attends the earlier stage of the disease, for the pale, unhealthy, and irregular appearance of the evacuations, and for much of the defective nutrition and loss of flesh which result when the disease has lasted for some time. The reabsorption of bile explains the usual slightly-jaundiced aspect of the cirrhotic patient; for the more intense jaundice, which occurs in a few cases, we must, perhaps, look to pressure on the larger ducts. The serious destruction of secreting structure necessarily brings about such a vitiated state of blood as might be looked for where the function of so important an organ as the liver is seriously interfered with. This vitiation of blood expresses itself in anæmia, in a peculiar cachexia, and in the tendency to hæmorrhages not due to portal obstruction, as epistaxis, and purpuric spots on various parts of the body. It may be remarked here that the urine sometimes contains bile pigment, and usually other colouring matter and lithates.

Cirrhosis terminates in various ways. Sometimes the patients die gradually exhausted; at others, continuous diarrhœa, of mucous character, determines the fatal exhaustion. In some cases peritonitis is set up, after the operation of tapping, and death ensues. A not unfrequent mode of death is by brain-poisoning from cholæmia, with the symptoms of delirium, convulsions, perhaps, and coma.

The diagnosis of ascites occurring in connection with cirrhosis from that caused by peritonitis is not always easy. Intemperate habits are not a necessary

element in the history of the latter disease as they are in that of the former. The complexion in peritonitis is usually clear; in cirrhosis it has a dingy sallow hue. The ascites is not so prominent or so persistent in peritonitis as in cirrhosis; the fluid, at times, in the former disease, in consequence of the intestines being fixed down by adhesions, occupies the most elevated portion of the abdomen; or it may be effused in pouches formed by various adhesions, thus rendering fluctuation less distinct than it is in cirrhosis. In peritonitis there is usually abdominal pain and tenderness; and if the disease be of tubercular character, there will be exacerbations of hectic fever. The absence of physical indication of enlarged or contracted liver and of functional hepatic disturbance will also assist in determining the cause of the ascites. In a case introduced farther on, cirrhosis was regarded as the cause of the dropsy. The man had been of very intemperate habits, he had a sallow complexion, had had jaundice a year before he came under notice, the ascites was very marked, and the veins on the external abdominal parietes were very prominent. On examination after death there were evidences of extensive peritonitis, and the intestines were glued to the anterior parietes, but the liver also was enlarged, the bile ducts were full, and the portal system much congested. It was evident, therefore, that the condition of the liver, although not cirrhotic, had had something to do with the extensive effusion.

In a not very advanced stage of cirrhosis, as also of cancer of the liver, the organ may be enlarged and its surface uneven to the touch; and in both diseases there is great resemblance in the aspect and general

cachectic state of the sufferers, and similar disturbance of gastric and hepatic functions. In cancer, however, the ascites is generally but slight, and the liver, instead of contracting as it usually does in cirrhosis as the disease progresses, continues to increase until it extends often over a considerable portion of the abdomen, and can be felt to be resisting and marked by protuberances. In cancer the skin is often perspiring; in cirrhosis it is harsh and dry. It may be added that intemperance is not a necessary element in the history of cancer.

Much good might probably be effected in the earlier stages of cirrhosis, if the disease could then be brought under continuous treatment, and the victims of it could be induced to exercise the self-denial necessary to the arrest of mischief. Mercurial preparations given with a view to slight but specific action, or where these are inadmissible or have failed, the iodide of potassium, might induce the absorption of the lymph effused, whilst it is yet in an organized state. Or, supposing a portion of liver to be irreparably damaged, further extension of disease might be prevented by strict abstinence from spirituous drinks, by bland, nourishing food, and by remedies calculated to improve the tone of the stomach, and to keep up healthy action of the unimpaired secreting structure of the liver. If the tongue is furred, and there is nausea and vomiting, effervescing medicine with diluted hydrocyanic acid and some excess of alkali will do good; and if the bowels are constipated, and the evacuations pale or unhealthy in aspect, a dose of blue pill or gray powder should be given at night, and a saline aperient, in the form, perhaps, of Püllna or Friedrichshall water, the

following morning. When the more urgent gastric symptoms have been relieved, the tone of the stomach and liver may be improved by the administration of bismuth with calumba, or the diluted nitro-muriatic acid with taraxacum and the addition of a little tincture of nux vomica. No special remedies, however, will be of more than temporary service, unless the patient consents to give up absolutely the use of spirits especially upon the empty stomach. When the liver is enlarged, and there is tenderness on pressure, relief is frequently given by the application of a few leeches followed by hot poultices, or by dry cupping, or counter-irritation with iodine or croton oil liniment.

Advanced cirrhosis is an incurable disease. Nothing can remove the lymph which has everywhere been effused and which is no longer organized, or restore the destroyed secreting structure. We can only endeavour to relieve the more urgent symptoms. Hæmorrhage from the stomach or bowels must be met by the free use of saline aperients in the first instance, and subsequently by astringents. The flux from the stomach and bowels, which is chiefly of mucous character and is often troublesome in the advanced stage of the disease, may be controlled by the alkaline carbonates given in conjunction with some tincture of rhubarb and calumba.

Diuretics are comparatively useless for the relief of the ascites, which is usually the most prominent symptom of cirrhosis towards its close. We must have recourse to hydragogue cathartics, as the compound jalap powder in one to two drachm doses, and the extract of elaterium in quarter of a grain dose. These

drugs carry off the serum from the intestinal vessels, and directly tend to relieve and to prevent effusion into the peritoneum. When hydragogue cathartics fail to relieve the ascites, and this becomes so considerable as by upward pressure seriously to embarrass the breathing, nothing remains but to tap the abdomen. The effect of the operation is to give immediate relief to the distressing symptoms; but the patients are now in an advanced stage of the disease, their strength and flesh seriously diminished and blood materially impoverished, and they often sink rapidly after the first or second tapping. It is, I know, opposed to the experience of most physicians to tap early, rather than to persevere in the use of hydragogues; but these drugs very often cause much irritation and depression, impair the appetite and keep up an irritable state of bowels, and it is to me a question of moment whether an early tapping, of course when the abdomen is much distended, is not preferable.

I have recently had under my care at the Seamen's Hospital a man who had all the symptoms of advanced cirrhosis, who, before his admission, had been tapped six times, and who subsequently to his admission has been tapped five times. After each operation, which was performed at intervals of from two to three weeks, he was much relieved, and being well supported by a flannel bandage was able to get about and make himself useful. I tried compound jalap powder and elaterium in his case, and they relieved the dropsy, and enabled us to postpone the tapping, but made him feel ill and uncomfortable.

The following cases will suffice in the way of illustration :

Case 1.—D. L—, an Englishman, æt. 20, admitted September 30th, 1867, has never been in hot climates, only in colliers to and from the North of England. When not on his short voyages, has lived at Grays, an agueish locality, but has never had ague. Has been, on and off, of intemperate habits. Has never experienced pain in the right side; has never had jaundice, but his urine has been for some time scanty, and of the colour of brown brandy. Has, at times, suffered from loss of appetite and morning sickness, and has lost much flesh during the last six months. His belly began to swell about ten days back. Five years ago he had chancre, and has now the stains of syphilitic rash.

Symptoms on admission.—Abdomen much distended; fluctuation evident; dulness on percussion over the depending portion of the abdomen; tympanitic resonance over the umbilical region; superficial abdominal veins gorged; no jaundice, but rather dingy hue of skin; conjunctivæ clear; plenty of bile in the motions; urine free from bile and albumen. The liver apparently does not extend to its usual limits. His breathing is thoracic, and embarrassed on any movement. He was ordered an ounce and a half of compound decoction of scoparium, with a scruple of extract of taraxacum, and half a drachm of sweet spirits of nitre, three times a day; and a drachm of compound jalap powder occasionally; milk, beef tea, and four ounces of gin daily.

On October 2nd ordered a turpentine injection, with a view of relieving flatulent distension of the intestines.

On October 9th, as the urine was not copious, some acetate and nitrate of potash and tincture of squills were added to the mixture.

20th.—The ascites was much reduced, owing to free secretion of urine and watery stools; and on now examining the abdomen the spleen was found to be considerably enlarged, extending two inches below the border of the free ribs, and the same extent towards the umbilicus. He was ordered ten grains of bromide of potassium three times a day.

On the 22nd there was rather acute tenderness over the spleen, which was relieved by dry cupping and free purging. As the bromide of potassium, after a week or two of perseverance with it, had not produced any effect on the spleen, it was discontinued.

On November 28th he was in a very cachectic state; his strength and flesh were much reduced. He was ordered decoction of bark and dilute nitric acid, and two drachms of cod-liver oil, three times a day, and some mistura vini gallici.

On the 30th the ascites was much increased, the bark, &c., was omitted, and return made to the diuretic mixture. The stools, under the action of hydragogue cathartics, were not as fluid as could be desired, though exhibiting a free secretion of bile. About this time he began to have slight attacks of epistaxis, which recurred at intervals up to the time of his death.

December 5th.—Ascites much increased; respiration becoming distressingly urgent. Paracentesis was performed, and nine pints of clear serum were drawn off, of sp. gr. 1010. For some days after the operation there was tenderness over the abdomen, tympanitic distension, and vomiting of food; relieved by opium given internally and the application of linseed-meal poultices. He continued in a comparatively comfort-

able state up to January 1st, when his powers began to fail more rapidly. He had from this time, in addition to rather profuse epistaxis, occasional hæmorrhage from the left ear and from the gums, and there was œdema of the right eyelid. He died exhausted on January 12th, the intellect having remained clear to the last, and there having been no functional hepatic derangement from the time of admission.

Inspection.—Right pleural cavity distended with a slightly turbid fluid; lung compressed, recent lymph-bands traversing the fluid from the costal pleura to the opposite surface. Old adhesions in left pleura; left lung congested, and presenting a white deposit, the size of a pea, in the upper part of the lower lobe, resembling hardened putty. Some fat on the surface of the heart: all its cavities empty.

Abdomen.—Peritoneal cavity contained a considerable quantity of clear serum, three to four quarts, intestines distended with flatus, no peritoneal adhesions.

Liver pale and uneven on its outer surface, much contracted, weighing two pounds and a half, tough, yet wanting in compactness. On incision presenting a pale yellowish colour; the thickened connective tissue intersecting like thick white lines, and encroaching everywhere upon the secreting structure, which was rather soft, and readily detached from the other. Hepatic cells; some in normal state, others distended with oil-globules, and some containing pigment. Gall-bladder contained some healthy bile.

Spleen ten inches by five, weighing twenty-six ounces; capsule thickened, white, and dense; substance very friable, gorged with pale red blood. A

current of water washed away the parenychma, leaving merely white cellular substance. Other viscera healthy.

The question presents itself whether the very large spleen which existed in the above case was due to long exposure to malarious influence, or merely secondary to the cirrhosis of liver, or the result, which I think most likely, of a combination of the two causes.

Another question arises as to whether the engorged state of spleen did not materially relieve the hepatic portal circulation and prevent ascites in the earlier period of the malady, and limit the extent of the ascites in the more advanced stage. The epistaxis and hæmorrhage from the gums and ear indicated a deteriorated state of blood such as is met with in purpura, &c.

Case 2. *Cirrhosis of liver, with jaundice.*—A lad, æt. 18, was brought to the 'Dreadnought' in September, 1856, presenting the following history and symptoms:—He had been for one or two voyages to the East and West Indies, and had had repeated hepatic attacks. He complained of uneasiness and tenderness on pressure in the right hypochondriac region. There was diminished dulness on percussion over the site of the liver, and evident contraction of this organ; dusky yellow hue of skin, and conjunctivæ; urine of deep porter-like colour, and loaded with bile; alvine evacuations generally darker than natural, at times paler; bowels either confined or very relaxed; ascites, to moderate extent, with engorged superficial abdomina veins; no anasarca; occasional rather free epistaxis; tongue furred, appetite variable. Ordered

taraxacum with nitro-muriatic acid and decoction of scoparium. For the first month after his admission he improved somewhat as regards secretions, amount of ascites, &c., but towards the end of November the ascites increased, and the colour of the urine and skin became deeper than ever. About November the 20th he complained of rather acute pain in the right hypochondrium, and a blister was ordered to be applied over this region. This, instead of relieving him, produced strangury and great distress. There ensued general tenderness over the abdomen, tympanitis, obstinate constipation, and almost complete suppression of urine. After a few hours he became delirious, then comatose, and died. On inspection the peritoneum presented marks of recent inflammatory action, and its cavity contained a considerable quantity of serum. The liver was a model specimen of cirrhosis, much retracted, and weighing about two pounds and a half; its capsule thickened, and entire surface irregularly nodulated; incision resisting and fibroid; cut surface of uniform yellow colour.

In the above case percussion marked a decidedly contracted liver; the ascites without anasarca, and the engorgement of superficial abdominal veins, were diagnostic of formidable obstruction in the portal system of vessels. A fatal result could not have been very distant in the above case, but it was unquestionably immediately due to the arrested renal secretion caused by the action of the blister.

Case 3.—G. P—, æt. 43, admitted into the Seamen's Hospital on April 19th, 1871. His last voyage was from St. Kitts, West Indies. Seven years ago he

had syphilis. Has drunk hard all his life, and has not restricted himself to any particular liquor. Had been ill for two months before admission, and had had ascites for a month. About five weeks back he vomited up, on two or three occasions, large quantities of dark-coloured blood.

On examination, the patient, who is greatly emaciated, complains of pain in the belly, which is much swollen (41½ inches in girth at umbilicus) with fluid, and traversed on the surface by large blue veins. There is fluctuation, and clear percussion note over the colon. The pressure of fluid on the diaphragm gives rise to much dyspnœa. The appetite is fair; tongue dry and furred in the centre; bowels regular. He has slight cough and some congestion of lungs. The pulse is 100, and thready; he sleeps badly. Urine acid, with purpurine, but no albumen.

The ascites increased from 41½ inches on April 20th to 45 inches on May 4th, when tapping was performed, and twelve pints of clear albuminous fluid were drawn off. After the operation the patient measured only 35 inches at the umbilicus. He experienced great relief for a time, but the ascites gradually returned, his powers failed, and he died on May 24th.

Inspection.—Thirty-six hours after death.

Thorax.—Pericardium contained a little red fluid; heart small, valves healthy; patches of atheroma in the aorta. Left lung adherent along the posterior margin. Both lungs slightly engorged behind, but otherwise crepitant and healthy.

Abdomen.—Peritoneal cavity contained 280 ounces of clear albuminous fluid.

Liver adherent, especially at the upper surface;

nodulated and syphilitic deposits present, chiefly near the surface of the organ; substance tough, and interspersed with formations of fibroid tissue; weight over four pounds.

Spleen much enlarged, and firmly adherent to surrounding structures. Its substance was firm and hypertrophied; weight over three pounds.

CHAPTER III.

HYDATID DISEASE OF THE LIVER.

This affection is of rare occurrence among sailors. I have had but one case under my care at the Seamen's Hospital in fourteen years. Mr. Busk had but two cases during his long connection with this institution, and Dr. Budd, during his shorter association with it, only one. It would seem also to be rare in India, according to the authority of Dr. Morehead, who had met with only two cases there, one of which had been developed in Europe.

The disease generally exhibits itself as a tumour of variable size, situated either in the right hypochondrium or the epigastric region, evenly globular in its early stages, firm, resisting yet elastic, and at times with sensation of fluctuation. Frerichs also notices as peculiar to such tumour a vibration or trembling, which is felt when the surface is compressed gently by two fingers of the left hand and struck abruptly with the right; but he does not consider such symptom as of much importance, it having been present in only one half of his cases. If the tumour is situated behind the liver it will, as it develops, push this organ forwards, flatten it, and increase the area of dulness. The tumour may last for a considerable time, and increase to some extent, and the patient nevertheless may

remain free from constitutional disturbance, perform all his functions well, and keep in good condition. When, however, it has attained to a large size it will give rise to various symptoms, to a feeling of tightness and distension; if it presses upwards, to embarrassed breathing, cough, palpitations; if upon the abdominal viscera, to interference with their functions. In the case presently to be recorded, among the prominent symptoms, was a dull gnawing pain, extending forwards from the lumbar region, and somewhat paroxysmal. Irregularity of bowels was another constant symptom. At last, from pressure upon the portal vein, there was some ascites, and from pressure upon the right iliac vein, œdema of the right lower extremity. In Morehead's cases there was present a gnawing paroxysmal pain at the epigastrium, which was worse when the stomach was empty, and was accompanied with marked symptoms of dyspepsia.

Hydatid tumour of the liver is not always easily diagnosed, but the characteristic features of the tumour, already noticed, and its compatibility in many cases up to an advanced stage, with a good state of health, will point to its nature. Abscess of the liver may be distinguished by local and distant pain, the frequent antecedence or coexistence of dysentery, the severe constitutional symptoms, as hectic fever, rigors, &c. Cancer of the liver will be marked by the usually nodulated surface of the enlarged viscus, by the rapid progress of the disease, and the cachectic aspect, wasting, and loss of power with which it is associated. Some time back I saw in conjunction with my friend Mr. Ross, of the Commercial Road, a patient who had an epigastric tumour of even spherical shape, the

strong pulsations of which, elevating the head as one auscultated it, coupled with the bruit traceable along the aorta before and behind, pointed to its aneurismal nature. The man died soon after, suddenly, from rupture of the sac into the peritoneum. The site, the pyriform shape, and uniform size, and the usual accompaniment of jaundice, will distinguish from hydatid disease the tumour caused by a distended gall-bladder. There was some difficulty at first in determining the nature of the disease in the second case I have introduced, but careful percussion and palpation showed that the tumour was extra-pleuritic and connected with the left lobe of the liver. Frerichs thinks that hydatid disease of the liver is more frequently confounded with localised pleuritic effusion at the base of the chest than with any other affection. He shows that the same physical signs—dulness on percussion, absence of vocal thrill, intercostal fluctuation—would be present in both cases. He rests the diagnosis on the fact that the line of dulness on percussion would present a curve which would look upwards in one case, downwards in the other. The following case, which was for some months in the Seamen's Hospital, affords an excellent illustration of the affection under consideration, and of the post-mortem appearances presented by a hydatid cyst in an advanced stage of development.

Case 1.—J. H—, æt. 36, a sailor, was admitted into the Dreadnought on September 19th, 1861, for an abdominal tumour, incapacitating for work. He states that he has made many voyages to the East and West Indies, but has never remained ashore for any long time. Fourteen years ago, in Jamaica, after drinking

new rum, and exposure at night, he had fever, which, from his account, must have been yellow fever. Since then has had no other illness. Some months before he had anything amiss with him he had been at the Australian gold-diggings, where he drank hard. He observed, for the first time, about four years ago, that his right side was enlarging beneath the small ribs, and that he had occasional gnawing pains over the site of this enlargement. Since then the swelling has gradually increased in size, and for the last two years and a half he has been unable to work. He has latterly had a dull aching pain extending from the right lumbar region forwards, and for a long time has had gradually increasing dyspnœa. His bowels act irregularly; sometimes there is no evacuation for six or seven days, and then he is much purged; stools usually of a light colour. Has never had vomiting or jaundice. Urine free, of good colour, and free from albumen. He has been gradually losing flesh for the last year and a half, and his strength now fails much. A tumour occupies the abdomen as low down as a line half way from the umbilicus to the pubes, and is most prominent on the right side, where the ribs are much elevated; it extends also into the left hypochondriacal and lumbar regions; it is firm and elastic to the touch, and, with gentle tapping, indistinct fluctuation is felt. In the middle of October he complained, at times, of what he called a deadening pain in the loins. There was now some fluid in the abdominal cavity, and œdema of the right leg and thigh.

Oct. 20th.—Tumour firm and elastic as before, and increasing in size; percussion now elicits a marked vibratory thrill. A night or two after this date he

began to vomit much thin fluid, of a dull, yellowish-green colour; this continued throughout the night, with considerable pain over the abdomen. The day following, much prostration ensued, and he gradually sank.

Post-mortem examination.—On removing the abdominal walls over the right part and lower margin of the liver there was a thin layer of recent lymph, and the margin of the liver extended to the supposed limit of the tumour. On lifting up the liver slightly, the hand came upon a firm, elastic tumour, which was closely connected with the liver above, and covered by it in its whole anterior extent. In attempting to remove the tumour whole from its attachments behind, the knife unfortunately entered it, and a large quantity of clear pale yellow, limpid fluid escaped, about a gallon in all. When removed the tumour was laid open, and found to consist of one immense hydatid cyst; its proper membrane, in parts, being about a quarter of an inch thick, and in some places looking like boiled white of egg, in others having a gelatinous consistence. The cyst was connected with nearly all the left lobe of the liver, and a large part of the right; and the latter, much flattened out, covered a considerable part of its anterior wall. Six or eight secondary cysts were found in the mother cyst, varying in size from a pea to a hazel-nut. Echinococci were abundant in the fluid, and in the matter scraped from the walls of the cyst.

Hydatid tumour of the liver may last for years and be compatible with an average state of health, or at an early or advanced period of its existence it may terminate in one of the following ways:

1. As in the case just narrated, it may, from its bulk and position, press upon and interfere with the functions of different parts and organs. Pressure on the large venous trunks may induce ascites and dropsy of the lower extremities; pressure upon the stomach and intestinal canal may obstruct functions connected with assimilation, induce failure of strength and flesh, and ultimately death from exhaustion.

2. The tumour may contract adhesion with the diaphragm; ulcerative action through this may be set up, and either (*a*) discharge of contents of tumour may take place into the pleura, and fatal pleuritis result, or (*b*) further adhesions and ulceration may effect communication with the lung, pneumonic symptoms be the result, and the contents of the sac, mixed with the products of inflammation, be expectorated.

3. Adhesions may be effected with some part of the alimentary canal, and the contents of the sac be discharged by vomiting or stool.

4. Rupture of the sac may be caused by a blow or otherwise, the contents be discharged into the peritoneum, and fatal peritonitis result.

5. The tumour may contract adhesions with the parietes, and point externally, and be opened or effect an opening by natural process. A blow or pressure may previously have set up suppurative inflammation in the sac, and then the risk will be greater, and there will be difficulty, as in Mr. Knipe's case, reported under head of hepatic abscess, in distinguishing from that affection.

6. Budd and Frerichs notice a possible cure from the obliteration of the sac by a putty-like matter, forming

within it, which involves, or perhaps results from, death of the cysts.

Treatment.—So long as hydatid tumour induces no distressing symptoms, and does not interfere with the functions of any organs, there is no pressing reason for operation. When, however, it is increasing prominently, is the seat of pain and distressing distension, and is causing, as in Case 2, such symptoms as difficulty of breathing, &c., it will be well at once to have recourse to puncture. Indeed, it is a question whether in all cases, when the disease is sufficiently developed, while the cyst is yet, perhaps, single and the walls elastic, it is not the best course to puncture with a fine trocar, and let out the contents. I remarked, when treating of abscess of the liver, that modern surgery had taught us that we might take more liberties with the peritoneum than formerly we should have dared to do; and by attention to such precautionary measures as were practised in the case I now introduce, the danger attending the puncture of a hydatid tumour may be reduced to a minimum.

Case 2.—E. A—, æt. 36, a married woman, who had been residing in a healthy part of Essex, was admitted under the care of Dr. Ward, at Victoria Park Hospital, on August 3rd, 1867. Has had no family; previous health always good. She states that she has not been in the habit of leaning upon her stomach, but that fourteen years ago she struck her stomach against the back of a chair. She has for many years felt tenderness in the epigastrium. Three years ago she suffered for a time pain in the left hypochondrium, with dyspnœa. The pain disappeared for a year, but has

recurred three or four times since, lasting, on each occasion, only for a few days. Six years ago she perceived swelling in the pit of the stomach. This has increased, and she has suffered considerably from pain in the back and between the shoulders.

Symptoms on admission.—A healthy, strong-looking woman, with dark hair and florid complexion; was able until lately to work as usual, but had to give it up on account of pain in the back. Pulse 92, full and regular; breath short upon exertion; tongue clean, appetite good, bowels regular. There is a large tumour occupying the whole of the left hypochondrium, and part of the epigastrium. The dulness extends to two inches to the right of the median line, and to within two inches of the umbilicus; it is continuous with that of the liver and heart, and is separated by a resonant interval of the spleen. The false ribs and cartilages on the left side bulge considerably. The tumour is tense, elastic, with deep fluctuation. There are apparently no adhesions between it and the abdominal wall. At its higher portion, in the median line, there is some tenderness, and at its lower part a bruit can be heard on pressure. She complains of a gnawing pain between her shoulder which disturbs her sleep. Catamenia regular.

August 20th.—A bandage was applied over the lower part of the abdomen and of the tumour, which was then tapped by Mr. Power, resident medical officer, at the tender spot with a fine trocar; thirty-seven ounces of fluid were evacuated, at first clear, afterwards of a pinkish colour, and turbid. Digital pressure was kept up for an hour; a compress was then placed over the puncture, and a flannel bandage

was applied firmly. Forty drops of solution of hydrochlorate of morphia were given. On microscopic examination the fluid was found to contain a quantity of red corpuscles and cells of the same size, upon which could be seen a circle of very small spines.

21st.—Has passed a very fair night; very little pain, chiefly in the back and side, but not in the neighbourhood of the puncture. Is quite comfortable; skin soft and warm; pulse and respiration natural; bowels not open since the tapping. To be kept perfectly quiet in bed, and on light diet.

27th.—Has had no bad symptoms; her only annoyance having been the pressure of the bandage. Bowels acted yesterday for the first time since the operation. Has been taking solid food for the last two days.

September 3rd.—Bandage removed. Upper line of dulness not altered; lower nearly one inch higher. Abdominal wall does not move over the tumour. No fluctuation. Resonance of left hypochondrium continues. Patient allowed to sit up.

On September 4th a plaster was applied, and over it a linen bandage; and on the 7th the patient left in good health.

On January 24th, 1868, she wrote, in answer to a note respecting her health—"I am happy to say I have not felt anything of my side, only sometimes I have felt a little fulness in it." From an account received in December, 1868, it appeared that the side was again enlarging. The case came again under my notice in December, 1869. The tumour was then much larger than at first, and was causing great distress. I requested Mr. Gay to accompany me to the house at which the patient was staying, for the

purpose of tapping the tumour. Shortly before our arrival, however, an opening had been effected, apparently into the stomach, and the fluid contents of the tumour had been discharged by the mouth.

Dr. Hilton Fagge and Mr. Durham read a paper at the Royal Medical and Chirurgical Society, on November 8th, 1870, on the electrolytic treatment of hydatid tumours. Eight cases had been treated successfully by this plan, which consisted in passing two needles into the tumour, which were connected with the negative pole of a modified Daniell's battery of ten cells. The positive pole, terminating in a moistened sponge, was placed upon the surface of the abdomen. The current was allowed to pass for a period varying from ten to twenty minutes in different cases. The needles were then withdrawn. The operation was followed in most cases by rapid diminution of the tumour; fluctuation at the same time becoming perceptible in the lower part of the abdomen. It seemed probable that the success of these cases was due solely to the acupuncture. In reference to this the authors of the paper remark—"As regards the *modus operandi* of electrolysis in the cure of hydatid tumours there is, we think at present, room for doubt. We have already stated that in several instances we have been able to detect the presence of fluid in the peritoneal cavity (and, in one instance, even in the pleural cavity) very soon after the operation, and that we believe this to have resulted from the passage of part of the hydatid fluid through the apertures made by the needles. It has occurred to us that this may perhaps be an essential element in the success of the operation. It is well known that simple tapping of an

hydatid cyst is often sufficient to cure the disease; and it may be that electrolysis is, as it were, in effect a kind of subcutaneous tapping, with effusion of the cyst fluid into a serous cavity."

CHAPTER IV.

JAUNDICE.—FUNCTIONAL DERANGEMENTS OF LIVER.

JAUNDICE is but a symptom resulting from various causes which may be arranged under the following heads:

(*a*) Jaundice in connection with excessive secretion of bile.

(*β*) From deficient or arrested secretion of bile.

This head may be subdivided into—(1) from impaired secreting structure, as in congestion of the liver, adhesive or suppurative inflammation, atrophy of the organ, or disintegration of secreting cells; (2) from mental or moral emotions; (3) from the presence of certain poisons in the blood, as syphilis, mercury, certain miasmata, the peculiar poison of acute rheumatism, &c.

(*γ*) Jaundice from obstruction to the passage of bile into the intestine. This resolves itself into (1) causes within the duct, as gall-stones, inspissated mucus or bile, catarrhal inflammation of the lining membrane of the duodenum and ducts, and probably spasm of the latter; (2) causes external to the ducts, as scirrhus of the liver or pancreas, enlarged lymphatic glands, loaded state of large bowel, strangulation of duct by products of adhesive inflammation around it, pregnancy, &c.

(*a*) Jaundice undoubtedly occurs in many cases in which there is no interference with the flow of bile into the intestine, nor any deficiency of secretion. Coincidently with copious bilious vomitings and free discharges of bile by stool, the patients in these cases become jaundiced, and the urine is loaded with bile, indicating that there is excessive rather than deficient secretion of this material. The condition of liver in these circumstances would appear to be one of acute hyperæmia, and the excessive discharge to be, to some extent, a natural remedial effort. I have met with jaundice occurring in this way as the result of an occasional excessive drinking, and I have also met with it in connection with general abdominal congestion, where there has been no indication of excessive alcoholic stimulation.

A lady, forty years of age, of full habit of body, accustomed to live well, but not given to undue indulgence in the use of spirituous liquors, came under my care on several occasions in the years 1868-9-70 for acute congestion of liver and jaundice, occurring simultaneously with menstruation. The menstrual discharge had on each occasion been abundant, and, as it was passing off, the liver became implicated. She complained of distension of a distressing kind in the right hypochondriac and epigastric regions; there was tenderness on pressure over and some enlargement of the liver, the skin was hot and the pulse rapid. She was constantly throwing up bilious matter from the stomach, and there was free discharge of bile by stool. The urine at the same time became loaded with bile, and the conjunctivæ and skin became jaundiced. A five-grain dose of calomel soon relieved the sickness,

and with the aid of a saline purgative, which was given a few hours after, determined an effective discharge of bile per anum. The symptoms passed off rapidly, and the patient in a few days was well. She suffered from similar attacks on several occasions, at intervals of a few weeks or months, but always in association with the menstrual period. Under a careful régime, embracing regular exercise, unstimulating diet, strict attention to the bowels, and the free relief of them before the menstrual period, the patient has now for many months enjoyed uninterrupted good health.

(β 1) *Jaundice from impaired secreting structure.*—In the majority of cases of acute as well as in cases of chronic congestion, the secreting structure of the liver is affected, and there is more or less suppression of bile, and resulting jaundice.

Case 1. *Jaundice from acute congestion of liver.*—W. S., a Scotchman, æt. 39, was admitted into the Dreadnought on August 20th, 1858, having been ill for about a month, and well previously for several years. When attacked, he was in Southampton, and had been drinking hard for several days, but is not, he says, an habitual drunkard. The attack came on with vomiting, inability to retain anything on his stomach, and diarrhœa. In about a week he became jaundiced; his stools were white, and urine almost as deep as porter in colour. For the last two or three mornings he has had shiverings.

On examination his liver was found to extend below the ribs and to the left side, and there was tenderness

on pressure. The stools were ex-bilious, the urine was charged with bile, and the skin and conjunctivæ were jaundiced. Tongue moist, and nearly clean; pulse rather frequent. Ordered milk and beef tea, five grains of calomel at night, a drachm of compound jalap powder in the morning, and a mixture of dilute nitric acid and infusion of scoparium three times a day.

August 21st.—The bowels have been freely relieved, but the motions are ex-bilious, and there is marked tenderness over the left lobe of the liver. Ordered dry cupping, and the nitro-muriatic acid bath night and morning.

23rd.—Says he feels better, and has lost the tenderness. Two stools since yesterday, with faint indications of bile in them. To repeat the calomel at night, and the compound jalap powder in the morning.

24th.—Stools still ex-bilious, and liver enlarged. It was thought advisable to put him under the influence of mercury, and a grain of calomel with a quarter of a grain of opium was given every four hours. This plan was continued to the 27th, when the mouth becoming affected it was discontinued. There was now decidedly more bile in the stools and the liver seemed reduced in size. He was ordered five grains of iodide of potassium, half a drachm of extract of taraxacum in an ounce of water, three times a day; and the compound iodine ointment to be applied on flannel over the region of the liver.

On the 28th the stools were more bilious; and on the 30th the urine was free from bile, the motions were duly charged with it, and the jaundice was disap-

pearing. From this period the liver continued to perform its functions well, and he was discharged cured early in September.

Case 2. *Jaundice from congestion of liver.*—A Cephalonian, æt. 24, was admitted into the Dreadnought on July 26th. Had been jaundiced for sixteen days, and when attacked had some pain over the stomach. His liver, on admission, extended somewhat beyond the normal limits, but there was no tenderness on pressure, nor pain, either constant or paroxysmal. His motions were white; urine of a deep colour; skin and conjunctivæ deeply jaundiced. Ordered milk and beef tea, a dose of compound jalap powder, and some nitric acid, taraxacum and scoparium, three times a day.

July 27th.—Bowels not open. Ordered five grains of calomel, to be followed a few hours after by an aperient draught.

28th. — Motions confined and quite ex-bilious. Ordered five grains of calomel, and a drop of croton oil, which produced free action of bowels, but no appearance of bile.

August 1st.—Stools still devoid of bile. Ordered calomel one grain, opium a quarter of a grain, three times a day; mercurial and compound iodine ointments, in equal parts, to be rubbed over the liver. This plan was continued to August 13th, when the motions were more bilious, and the urine freer from bile. As the mouth was slightly affected, the pills were discontinued. On the 18th the liver was found to be reduced, and the stools almost normally bilious; and on the 20th the urine was clear and free from

bile, and the complexion clearing. He was discharged cured on the 24th.

Case 3. *Jaundice from chronic congestion of liver.*—E. N—, æt. 19, admitted into Seamen's Hospital April 20th, 1871. Says that he has had syphilis, but has always been temperate. The jaundice came on gradually, and did not excite his notice for some time. After a time, he felt pain over the right hypochondrium, but not of an acute character. He attributes his affection to long exposure to weather, during winter, in a coasting vessel.

Symptoms on admission.—Has an intense jaundice hue; the liver extends beyond its limits, both below and to the right side; no marked tenderness on pressure. The stools are loose and quite white; urine highly charged with bile; the skin is dry. There is loss of flesh to some degree, but not amounting to emaciation. He was ordered a powder of calomel and compound jalap powder, and a saline diuretic mixture three times a day. His appetite was fair, and he was placed on ordinary diet.

On April the 22nd he was ordered twenty drops of diluted nitro-muriatic acid in compound decoction of scoparium three times a day, and the nitro-muriatic acid hip-bath every night. This plan of treatment was adhered to for a fortnight without any effect, either in reducing the liver or improving the secretions.

On May 6th he was ordered a grain of calomel every four hours, and the croton oil liniment over the region of the liver.

On the 11th the gums were slightly affected, and there was slight ptyalism. From this time the liver

became rapidly reduced, and bile began to appear freely in the motions. When he left, towards the end of May, the liver had regained its normal limits, the secretions were normal, and the jaundiced hue was rapidly passing off.

The comparatively sudden onset of the symptoms in Cases 1 and 2, the circumstances under which the attack took place, the pain and tenderness over the region of the liver and epigastrium, the enlargement of the viscus and suppression of its functions, and the absence of indications of disease in the heart and other organs, pointed to direct congestion of the liver. In the first case, and probably also in the second, the attack ensued upon a course of hard drinking, and was due to the immediate action of the alcohol. This, as has been shown by physiologists, does not, like other articles of food, pass into the general circulation, but directly through the portal vessels to the liver, and by its stimulating action upon the capillaries determines an increased flow of blood to the organ. This temporary overcharge of blood may be, and often doubtless is, relieved by increase of function; such natural effort at relief was exhibited in the bilious vomiting and diarrhœa which marked the onset of the attack in Case 1, but, probably from the individual keeping up the exciting cause, was ineffectual. When such effort of nature is not set up, or is unattended with success, congestion is established, the organ becomes distended, the flow of blood through it, after a time, is interfered with, and its function becomes impaired.

In the first two of the above cases it was thought desirable to make trial of drugs which have a known

effect upon the liver, and which, by relieving the overcharged portal system, tend to remove the hepatic congestion. Recourse was accordingly had to such remedies, but without effect. From the fact that the symptoms did not begin to yield until the patients were brought under the influence of mercury, and from the rapidity with which they disappeared on the establishment of such influence, congestion had probably resulted in interstitial deposit, had, in fact, gone on to the first stage of adhesive inflammation. In cases of advanced cirrhosis which have come under my observation there has generally been an early history of gastric and hepatic derangement, epigastric or hypochondriac fulness, or tumour; and there can be little doubt but that attacks of congestion, such as I have narrated, induced by drinking, constitute the first stage of adhesive inflammation. The patients are, it is true, apparently cured at the time, but some damage has been done to the liver, some portion of its structure has probably been destroyed, and, after a time, under further exposure to the exciting cause, cirrhosis, with its train of serious results, is established.

In the third case long-continued exposure to cold, in a system impregnated with syphilitic taint, would appear to have been the exciting cause. The jaundice, however, in this case did not yield until the patient had been brought slightly under the influence of mercury.

Case 4. *Jaundice from congestion of liver secondary to heart disease.*—L. J—, æt. 37, a tall, muscular man, of lymphatic temperament, was admitted into the

Dreadnought on June 8th, 1867. He had just returned from Australia, where he had been working at the "diggings." Until eight months ago he had enjoyed uninterrupted good health, except that he had once had an attack of ague. While at the "diggings" he was attacked, after getting very wet, with shortness of breath and palpitation, followed by swelling at the epigastrium, but no jaundice. The food on his passage home was wretchedly bad. He now complained of dyspnœa on slight exertion. The liver extended for two fingers' breadth below the ribs, and unduly towards the left side; there was a soft, regurgitant, mitral bruit, most audible when he was in the recumbent position; the urine was slightly tinged with bile, but not albuminous; there was a dirty hue of skin, and some blueness of lips; the stools were formed and bilious. He was ordered a drachm of compound jalap powder every other day, and the following:—Acetate of potash half a drachm, spirit of nitrous ether half a drachm, tincture of squills ten minims, compound decoction of scoparium an ounce and a half; and to be placed on milk diet.

June 11th.—As the liver was not acting, he was ordered, in lieu of the diuretics, twenty minims of the diluted nitro-muriatic acid, with the compound decoction of scoparium, three times a day; the nitro-muriatic acid lotion to the side, and a pediluvium of the same every night. This plan of treatment was continued for nearly three weeks.

30th.—Liver somewhat reduced; motions deficient in bile; urine containing bile and lithates, sp. gr. 1028. He was ordered a grain of iodide of mercury night and morning.

On the 8th of July this medicine was omitted, as the gums were tender.

On July 18th he had cough, with some roughness of breathing beneath the right clavicle; and, as he was getting anæmic and cachetic, he was ordered cod-liver oil and iron in conjunction with diuretics.

28th.—Hepatic symptoms more marked; deficiency of bile in motions; urine very scanty, and highly charged with bile and lithates; sputa bilious; marked jaundice; drowsiness, and evident tendency to coma; blueness of lower extremities. He was freely purged with a drop of croton oil and five grains of calomel, and was ordered compound decoction of scoparium, with taraxacum and bicarbonate of potash three times a day. Under this treatment the comatose tendency disappeared, the jaundice became less pronounced, bile reappearing in the motions, and the urine, though highly charged with bile, becoming more copious.

August 7th.—Urine but little charged with bile; jaundice materially less; liver reduced in size; mitral bruit rather harsher in quality. Ordered to continue the medicine, and rub the compound iodine ointment over the side night and morning. He continued the treatment, with slight changes in the medicine and diet, according to variations in the symptoms, up to September 18th, when he was discharged. The bowels were kept well open throughout. When he left the hospital the liver was reduced almost to its normal limits, the secretions were healthy, the jaundice had disappeared, and the mitral bruit was scarcely audible.

It is probable that the cardiac disease in the above case was of long standing, either the result of acute rheumatism, or established during the ague attacks,

from which the patient had suffered some months previously to his exposure to damp at the "diggings." Under the influence of the fresh exciting cause, and consequent arrested function of skin, congestion of the internal organs would appear to have taken place, the embarrassment of heart and lungs being evidenced by dyspnœa and palpitations, and the secondary implication of the liver by hypochondriac fulness. Regarding the hepatic congestion, then, as resulting from obstruction to the circulation in the imperfect mitral orifice, it was evident that we had to look to diuretics and saline purgatives for relief, rather than to the specific action of mercury. This was quite unintentionally induced by the iodide of mercury, which was given with a view to alterative action, and the consequence was an increase of cachexia, &c. The condition of the patient on the 28th of July was most precarious; the bile was not being eliminated by its proper channel, and the kidneys were scarcely affording any compensatory action; the blueness of extremities and tendency to coma indicated blood imperfectly aërated, and probably poisoned also by altered bile. Free purging, however, followed by medicine directed to the kidneys and liver, brought the patient out of danger, and a continuance of such remedies for some weeks placed him in the state of comparative safety and good health, in which he left the hospital.

With respect to cirrhosis as a cause of jaundice, it is remarkable to how great an extent the liver may be affected with this disease, and no material degree of jaundice result. It is, as Dr. Budd has pointed out, more particularly a consequence when the principal divisions of the excretory duct are strangulated by

effusion of lymph around them. I have only met with marked jaundice in a very small percentage of the cases of cirrhosis which have come under my care; in two cases, of which I have record, it was very intense. In most of the cases bile was discharged to a greater or less extent by the normal channel; in one or two cases the motions were devoid of bile, but there was compensatory excretion of it by the kidneys. Suppurative inflammation of the liver is not usually attended by jaundice. In only two of the cases of this affection treated by me was jaundice present; in one of these, in which the jaundice was profound, the secreting structure of the liver was to a great extent destroyed. In the other there were but small points of suppuration, but the liver was enlarged from congestion, and it was probably from this latter condition that the jaundice resulted. In three or four cases a very large portion of the liver was destroyed by suppurative action, but the remaining healthy structure sufficed for the effective secretion of bile. Dr. Morehead states, as the result of his experience, that jaundice is by no means a constant symptom of suppurative hepatitis.

Case 4. *Jaundice; impaired secreting structure.*—G. H—, æt. 50, of dark complexion, was admitted into the Dreadnought on August 15th, 1868. Twenty-five years ago he had typhus fever, but no illness since then up to two months back, when on his passage from Cronstadt he was attacked with a bad cold and pain in the right side of the chest, extending back to the shoulders. He was cupped, dosed, and got relieved in about eight days, but continued weak, and had no appetite. Three weeks before admission his skin became yellow, urine

deep coloured, and stools white. Fifteen or sixteen years ago he drank heavily of rum, and continued to do so at intervals for five or six years, but since then he has been very temperate. Diarrhœa came on the day before admission—he thinks from eating an apple. His stools were now of dark brown colour, half liquid, and very offensive. He had deep jaundice and irritation of the skin; the urine contained some bile. There was some tenderness on pressure under the ribs, but no increase of dulness on percussion. He was weak, emaciated, and anæmic. Ordered mercury with chalk three grains, compound ipecacuanha powder five grains, night and morning; dilute nitric acid ten minims, compound decoction of scoparium an ounce and a half, three times a day. Beef tea with wine.

August 20th.—One dark bilious stool; urine less charged with bile; is very drowsy and has pain in the head. Ordered one drachm of the sulphate of magnesia to each dose of the mixture.

22nd.—Itching in skin again troublesome; one loose stool. His pulse is feeble, and he feels much depression; his feet and lips are cold. Ordered dry cupping over the liver; to omit previous medicines, and to take the following three times a day:—Sesquicarbonate of ammonia five grains, spirit of ether half a drachm, water an ounce and a half.

23rd.—Stools deficient in bile; urine deep coloured. Ordered the nitro-muriatic acid bath night and morning.

25th.—For the last two days there has been more bile in the stools, but as the bowels were rather confined he was ordered a drachm of compound jalap powder, to be taken at once.

27th.—Motions again less charged with bile; conjunctivæ deeply stained. Ordered calomel a grain, opium a quarter of a grain, three times a day.

On the 31st the motions were more bilious, and as the mouth was slightly affected the pills were discontinued, and he was ordered iodide potassium five grains, extract of taraxacum half a drachm, infusion of gentian an ounce and a half, three times a day.

On the 9th of September he complained of pain in the head and was very drowsy, but these symptoms were removed by free purging with compound jalap powder.

September 11th.—Motions almost ex-bilious. Ordered again the nitro-muriatic acid bath, and nitric acid with gentian. His diet, which had at first been milk and beef tea, then ordinary, was now changed to full. Under this treatment he gained somewhat in point of health and strength, but his motions continued almost entirely devoid of bile and very offensive, his urine deep coloured, and the jaundice of as deep a hue as ever.

On the 16th he left at his own request for his native place, Hartlepool.

The above case, though not followed out to its termination, is one of considerable interest. The man had lost much flesh and strength, and was very anæmic. The deep persistent jaundice indicated interference with the secretion of bile, but the occasional appearance of this in the motions was opposed to the supposition that there was permanently obstructed duct. The intense jaundice, the emaciation and debility, the evidently depraved state of the blood, and the threatenings of cerebral complication, seemed to point to some disorganization of the secreting structure of the

liver, consequent either upon congestion or upon some obstruction, subsequently removed, to the passage of bile by its usual channel. The case contrasts well, in several points, with one presently to be introduced, in which there was a permanently obstructed common duct, but in which, although the jaundice had lasted for some months, there was not much loss of power, and no head symptoms had occurred. On what does the cerebral complication or the threatening of such depend? Not simply on the presence of bile in the blood, because in some cases of persistent jaundice we have no cerebral symptoms. Probably, the true explanation is that given by Dr. Budd, that there is some decomposition going on in the liver, and absorption of the poisonous products thereof into the circulation.

I pass on to the consideration of the suppression of biliary secretion and consequent jaundice from mental exhaustion and moral emotions. Undue tension and anxiety of mind, rage, grief, jealousy, the "green and yellow" melancholy, disappointment in love or in commercial speculations, are amongst the exciting causes of jaundice from suppression. The disturbance of the functions of the liver, under such influences, accounts for the prominence assigned to this organ by the older poets, and even philosophers, in relation to the emotions. How these causes act in suppression of hepatic secretion, whether by diversion of nervous influence or by constriction of the capillaries, as those of the skin under the influence of fear, it is difficult to say. Cases of jaundice from the causes under consideration are familiar to all. Amongst those that have lately come under my own experience, one has been from disappointment in love, another the result of over-work and

anxiety, a third occurred in a gentleman who, previously quite well, had a serious quarrel one evening with a friend, and came down next morning jaundiced. In answer to inquiries about an individual's antecedents some time back in an examination for life assurance, it was stated "that he got jaundiced once after a bad debt."

Case 5. *Mental anxiety and over-work; jaundice.*—A medical practitioner, between 30 and 40 years of age, who had recently entered upon the charge of a large practice and had had much fatigue and anxiety in connection with midwifery cases, finding that his skin was getting yellow and his urine deep coloured, came to consult me. I found him distinctly jaundiced; his skin was dry, but the tongue was clean and there was no fever. When I saw him at home on the following day I found the urine charged with bile and the motions almost white. He had no pain or tenderness over the liver, and there was no enlargement of this organ. I prescribed a vapour bath, a mixture of sulphate of magnesia, taraxacum, and sweet spirits of nitre, three times a day, and five grains of blue pill at night. On the next day the secretions were much the same, but there was a faint yellow tinge in the motions. To continue the mixture and pill, and, as the bowels had not acted freely, to take a dose of compound jalap powder in the morning. The latter produced stools containing a fair amount of bile, and he rapidly improved afterwards.

The absence of pain, tenderness, and constitutional disturbance, are diagnostic features of this form of jaundice. It does not, however, always disappear

rapidly. It may, indeed, become persistent; secondary changes may take place in the liver, and a fatal termination be the ultimate result.

The following case is interesting as showing the association of jaundice with the poison of syphilis.

Case 6. *Secondary syphilis; jaundice.*— T. M—, æt. 22, was admitted into the Dreadnought on February 14th, 1859, from a vessel from Shields. He had been ill for some days with cough, &c., and became jaundiced about nine days back. Says that he had not been drinking before he left Shields, or since, and that he came direct from the ship to the hospital. Four months back he had chancre, for which mercury was given, but his mouth was not made sore. Has now an elliptical ulcer, with raised edges, on the right tonsil, and papular eruption all over the body. The skin and conjunctivæ were of a bright yellow colour; urine of deep porter-like colour; stools slate coloured and very deficient in bile. Looking at the specific constitutional disorder rather than at the jaundice, he was ordered the liquor hydrargyri bichloridi one drachm, with extract of taraxacum and compound decoction of scoparium three times a day.

On the 23rd, the secretions and jaundice being the same as when he was admitted, I decided on bringing him more quickly under the influence of mercury, and gave him, in addition to the mixture, three grains of calomel night and morning. Under this treatment the gums became affected on March 2nd. The pills were then discontinued, and, the bowels being constipated, he was ordered a smart aperient, which brought away bilious evacuations.

On March 4th he had irritability of stomach and vomiting, and was ordered the alkaline effervescing mixture. The jaundice was now rapidly disappearing and the urine becoming clearer.

7th.—One rather confined motion, well coloured with bile; skin clearing, but rather unperspiring. To repeat the aperient to-morrow morning, and have a warm bath at night.

18th.—Jaundice almost gone; ulcer on tonsil all but healed, and papular eruption faint. He seemed in a cachectic state, and was ordered full diet, porter, cod-liver oil, and a mixture of nitric acid and gentian.

Discharged cured in the middle of April.

I do not pretend to associate the syphilis and jaundice in the above case as cause and effect. I, however, consider such relation as probable, seeing that the usual exciting causes of jaundice were absent, and that this appeared while the patient's blood was charged with the syphilitic poison. This view is strengthened by the fact that both affections yielded to the remedy which is considered a specific for secondary syphilis.

As was noticed by Dr. Graves many years back, jaundice is not an uncommon occurrence when mercury has been taken by a patient to excess. It is usually, however, of short duration, provided the exciting cause be not kept up.

Jaundice is a not unfrequent concomitant of severe remittent, and protracted intermittent, fevers, but is, I think, due not so much to the specific contamination of the blood with miasmatic poison, as to the congestion of the liver which accompanies malarious fevers.

(γ). *Jaundice from obstruction to the passage of bile into the intestine.*—This form occurs occasionally during the protracted passage of gall-stones, and disappears with the cause.

Tht following case illustrates the symptoms of obstruction of the duct when persistent.

Case 7.—C. H—, æt. 35, was admitted into the Dreadnought on February 10th, 1858. In May, 1856, he had diarrhœa, when in the Mediterranean, for two months, but got well, and remained so until July, 1857. He then, while off the coast of Nova Scotia, suffered from headaches, which was followed in a week by jaundice, with severe pain in the right side and at the pit of the stomach, which was worse in paroxysms; his stools were then almost white, and his urine deep in colour. He formerly drank very hard, was sick at times and unable to take solid food. In November last he took mercury to ptyalism, but without relief to his symptoms. On admission his general condition and strength were pretty good, but he was deeply jaundiced, his urine was charged with bile, and his motions white. He had hæmorrhoids. Ordered compound jalap powder every other morning, the nitro-muriatic acid bath at night, and the following three times a day: dilute nitric acid, ten minims—extract of taraxacum, ten grains, compound decoction of scoparium, an ounce and a half.

Feb. 17th.—No improvement; ordered iodide of mercury, one grain night and morning; iodide of potassium, five grains; acetate of potash, one drachm; compound decoction of scoparium, an ounce and a half three times a day.

18th.—Motions quite devoid of bile; urine deeply charged with it and copious; about two quarts in twenty-four hours.

March 3rd.—Stools the same. To discontinue the iodide of mercury as the mouth is sore.

This man continued in hospital until the end of March. Iodine and mercury, externally and internally, pustulation with tartar-emetic ointment, nitro-muriatic acid bath, electricity, &c., were successively tried, but without any good effect.

The history of the case, the mode of attack, the persistent jaundice and utter and constant absence of bile from the motions indicated closure of the duct, and the paroxysmal pain at the onset of the attack pointed to inflammation and obliteration of the duct, excited by the passage of gall-stones, as the cause of obstruction. When obstruction is caused by the pressure of scirrhous or other tumours, enlarged glands &c., paroxysmal pains are not usually present at the onset, and the jaundice is only gradually established. That the diagnosis is not always easily effected is shown by the following case, which will serve in illustration of our subject, and also of a not very common affection, viz., malignant disease of the pancreas.

Case 8. *Malignant disease of pancreas; compression of the ductus communis; jaundice.*—H. T—, æt. 27, admitted into Seamen's Hospital on October 22nd, 1862. An ill-nourished man, of mulatto complexion. Conjunctivæ are of a deep yellow colour, and the skin generally of a tawny yellow tinge; bowels relaxed and stools deficient in bile; urine abundant, of a deep

yellow colour; slight cough and expectoration; pulse feeble; he complains of severe paroxysmal pains in the epigastric region. He was taken ill seven days before admission with severe pain in the epigastrium, vomiting and constipation. He has been occasionally intemperate. Came last from New York. Never had a similar attack. He was ordered a grain of podophyllin and half a grain of extract of cannabis indica at once, and to be repeated if requisite.

October 25th.—Bowels relieved once since yesterday; urine same as before; pulse 90, weak; tongue moist and flabby; appetite good; no marked hepatic enlargement. To have two grains of blue pill night and morning.

27th—Complains of pain in the epigastrium; bowels freely open; urine the same; ordered diluted nitric acid in compound decoction of scoparium thrice a day.

30th.—Has sickness; ordered two grains of oxalate of cerium at once, to be repeated at bed-time; next day an enema of turpentine was ordered.

November 1st.—Bowels relieved by enema: complains of constant pain in the course of the ascending colon, which seems much loaded; a drop of croton oil to be given.

3rd.—Bowels freely relieved; stools of a clayey colour; urine dark, contains no albumen; the pains in the epigastric region continue. A hard circumscribed nodulated mass can be felt in the epigastrium, a little to the right of the mesial line, just below the margin of the ribs; it is somewhat tender to the touch. Ordered podophyllin and cannabis indica twice a day.

5th to 7th.—Stools and urine remain the same;

tongue clean; bowels open; pain continues: tumour can be felt lower in the abdomen, and there is gurgling above it.

7th to 20th.—The urine and stools remain the same. Has frequent sickness and paroxysms of excruciating pain; has lost all inclination for food, and becomes rapidly weaker and more emaciated. Died on November 20th.

Post-mortem examination.—The head was not examined. The abdominal and thoracic organs were deeply bile-stained. The pericardium contained a little dark fluid; the heart was normal in size, and the valves healthy. The left lung was slightly adherent at the apex; underneath the pleura and throughout its substance were small semi-transparent deposits, having the appearance of tubercle, and others much larger, opaque, yellowish, and soft in consistence. At the apex of the left lung was a cavity as large as a bean, lined with a thick false membrane: the lining tissue was congested for some distance around it.

Abdomen. — Immediately below the pylorus, and embraced by the duodenum, both of which were pushed very much forward, was a firm nodulated swelling, occupying the position of the head of the pancreas; it extended upwards behind the duodenum, completely surrounding the common bile-duct; the coats of the duct were free from disease, and a probe could just be passed along it into the duodenum; the gall-bladder was greatly distended, and contained several ounces of dark bile; the lower end of the duodenum was completely surrounded by the tumour, but its coats were not implicated; the aorta, vena cava, and right renal vessels were imbedded in large masses, separate from

the tumours above described, which appeared to replace the mesenteric and lumbar glands. On cutting into the tumour it was seen to consist of greyish-white material, arranged in lobules more or less isolated by areolar tissue and easily broken down. The diseased glands were of still softer consistence. Liver nearly normal in size, and dark in colour. Under the capsule were several deposits about as large as a sixpence, of a white colour, with considerably depressed centres separated from the liver structure by a well-defined margin; they were of very soft consistence. Deposits of the same substance were scattered through the organ, which was otherwise normal. The spleen contained deposits similar to those in the liver, and they showed a disposition to arrangement parallel with the trabeculæ. The kidneys contained no deposits, and were healthy with the exception of a few small transparent cysts. Under the microscope the principal tumour and the secondary deposits both showed cells of various sizes and shapes containing large nuclei, many of them more than one. The prevailing form was oval, while others were lengthened out so as to be fusiform or caudate. The small transparent and the larger deposits noticed in the lungs presented the same structure as the abdominal deposits.

The persistent jaundice in the above case, coupled with the history of paroxysmal pains tended at first to lead one astray as to diagnosis, and to adopt the supposition that there was occlusion of the common bile-duct through impacted biliary concretions. The detection of the tumour induced a different view of the cause of obstruction. When, however, the existence of a tumour was evident, the question arose as to the

nature of such. A tumour, hard and circumscribed, coupled with severe lancinating pain, might be considered as characteristic of the disease which existed in the above case, but would be equally so of schirrus of the pylorus. The tumour in the latter affection would, however, be moveable, and in schirrus of the pancreas fixed, or comparatively so. Constipation might be common to both affections, but functional disorder of the stomach, in the form of constant vomiting would be regarded as pointing to pyloric rather than pancreatic mischief. Yet in the above case, vomiting was a prominent symptom. The symptoms, however, would appear, from the few recorded cases, to vary. In a case narrated by Frerichs the patient had been quite well up to within six months before he came under notice, and then began to complain of short attacks of severe pain extending from the region of the gall-bladder to the epigastrium. Seven weeks before he came under Dr. Frerich's treatment, he became gradually jaundiced. In a second case recorded by this pathologist there had been transient and scarcely noticeable pains in the upper part of the abdomen, and for three months gradually increasing and ultimately persistent jaundice. In a case of Dr. Hughes Bennett's there had been, for only four weeks, pain in the lower part of the abdomen, with costiveness; subsequently, vomiting of food a few hours after taking it, and, later on, jaundice. Jaundice can result from cancerous disease of the pancreas only when the head of this viscus is involved and enlarged so as to embrace the common biliary duct. In the case of Dr. Bennett's, as in mine, the cancerous deposits in the lungs and glands bore a close resemblance to

tubercle, but the microscope determined their real nature.

Jaundice resulting from catarrhal inflammation of the duodenum and gall-ducts, with tumefaction of the lining membrane of both, and exudation into the latter, is ushered in by nausea, vomiting, perhaps by diarrhœa; and is attended by absence of bile in the motions, a sense of tension and tenderness below the right ribs, with some prominence of the liver. This cause of jaundice is more frequently met with in early than in advanced life.

The diagnosis of jaundice from obstructed bile duct is to be determined, according to Dr. Harley, by the detection of the bile-acids in the urine. In cases of jaundice, where the bile-ducts are free, the bile-acids are supposed to pass down with the fæces, and not to be reabsorbed into the circulation. In obstruction the bile-acids find their way back into the system, and are eliminated for the most part by the kidneys. The mode of detecting the bile-acids in the urine may be described in Dr. Harley's own words: "To a couple of drachms of the suspected urine add a small fragment of loaf sugar, and afterwards pour slowly into the test tube about a drachm of strong sulphuric acid. This should be done so as not to mix the two liquids. If biliary acids be present there will be observed, at the line of contact of the acid and urine, after standing for a few minutes, a deep purple hue. This result may be taken as a sure indication that the jaundice is due to obstructed bile ducts. On the other hand, the absence of this phenomenon, and the occurrence of merely a brown instead of a purple tint, although in the earlier stages of jaundice equally indicative of suppression, is

no indication of the cause of the suppression, which must be gleaned from other circumstances."

My own experience is opposed to reliability upon the above test in all cases. In a case which lately came before me, in which the history and symptoms seemed to point strongly to jaundice from obstruction, the characteristic appearance did not ensue upon the application of the test. Dr. Murchison says that he has found the same result produced by Dr. Harley's test in urine where there was no jaundice, as in urine where there was jaundice from obstruction.

I have given illustrations of jaundice arising from different functional and structural derangements of the liver, and I cannot refrain from alluding with satisfaction to the light which morbid action is ever throwing upon healthy function. The phenomena of disease, in cases such as I have narrated, have given us nearly all the knowledge we possess as to the real purposes of the liver in connection with digestion and assimilation. One symptom which results from the absence of bile, for any lengthened period, from the intestine, viz. emaciation, confirms the views of physiologists, that bile contains a material which effects the solution and consequent absorption of the fatty portion of the chyme. Experiments would appear to have shown that the pancreatic juice is adequate to the solution of fatty matters, but observation of the consequences which ensue where the bile is absent points to the conclusion just stated. The constipation which attends the deficiency or absence of bile, and the diarrhœa consequent upon its excess, prove that the use of part of its ingredients is to stimulate the peristaltic action of the bowels and promote the removal of

excrement. Further, the offensive character of evacuations devoid of bile points conclusively to the antiseptic properties of this fluid.

The comparative torpor of the brain, and the effort with which it performs its functions in some cases of jaundice, and the more serious cerebral symptoms in others where there is no secretion of bile by its usual channel and imperfect elimination also perhaps by the kidneys, points to the fact that this fluid contains materials, the separation of which from the blood is essential to health. A closer analysis of cases also shows that cerebral implication more immediately impends where the secretion is arrested than where the fluid has been separated from the blood, but has been prevented by obstruction in the ducts from passing off by its usual course.

The anæmia, passive hæmorrhage, &c., which ensue when jaundice has existed for any length of time, show the damaging effect upon the blood itself.

The colour of a jaundiced person varies from the faintest tinge to the deepest yellow or yellowish-brown. It is frequently to be seen beneath the conjunctivæ when it is scarcely visible on the skin. Its presence in the sclerotic coat serves to distinguish jaundice from the yellowish complexion of other affections, as, for instance, of chlorosis. A jaundiced person requires to be seen by daylight, as the colour cannot be detected by artificial light.

The presence of the colouring matter of the bile in the urine is a characteristic accompaniment of jaundice. The urine is generally clear, but instead of presenting a pale sherry colour is deep yellow, and at times of the hue almost of porter. When the utensil in which the

urine is contained is agitated, the yellow colour may be seen on its sides. The patient's linen is also frequently stained by his urine. Additional confirmation of the presence of bile in this fluid may be obtained by the nitric acid or Pettenkofer's test. The former may be readily applied by spreading a little urine on the white under surface of a plate, and then carefully dropping a little nitric acid upon it, when the colouring matter exhibits an iridescent play, successively changing from green to violet, pink, and yellow. Pettenkofer's test is to be applied in the following way: Having ascertained that the urine contains no albumen, and if it does, having separated this substance by coagulation and filtration, some of the suspected urine is to be placed in a test tube, and two thirds of its bulk of sulphuric acid is to be added. The latter is to be added very gradually in order to prevent the evolution of too much heat, by which the characteristic colour would be destroyed. A little syrup is now added, and the mixture is shaken and allowed to stand for a short time. If bile is present the liquid will gradually assume a more or less intensely red colour with a tinge of violet.

The yellow bile colour may show itself in the perspiration of jaundiced persons. It is also not unfrequently present in morbid secretions, as in the matters expectorated from the lungs. In a case which came under my notice some little time back, in which the jaundice resulted from congestion of liver secondary to cardiac mischief, and which was complicated by bronchitis, the expectoration, which was copious, was intensely stained throughout the attack with bilious matter. I have met with yellow-vision in two or three cases, but it

must be regarded as a rare symptom of the affection; and either the media of the eye are not usually coloured, or we must take with limitation the expression of the poet that "all looks yellow to the jaundiced eye."

I have already, in commenting upon the cases cited, alluded to the more serious cerebral complications which may supervene in connection with jaundice. Nearly always, however, there is evidence of cerebral oppression, in the shape of languor, listlessness, tendency to drowsiness, or even stupor. Occasionally an opposite state of things exists, and the patients are irritable, restless, and sleepless.

Itching is a symptom complained of by some patients labouring under jaundice, and is extremely annoying. An alkaline bath, or the internal use of alkalies, affords the best prospect of relief.

In the treatment of jaundice, no matter from what causes, one principle must be borne steadily in mind, viz. to promote in every way the functions of those organs by which compensatory elimination of bile is effected. To carry out this principle we must avail ourselves of warm, vapour, and hot-air baths, and the various diuretics, as sweet spirits of nitre, acetate and nitrate of potash, taraxacum, scoparium, &c. Frerichs says that lemon juice, in quantities of an ounce and a half to three ounces daily, agrees with the digestive organs and excites abundant diuresis. In Case 2, cited under the head of cirrhosis, an illustration is given of the fatal results which may ensue upon the suspension of the functions of the kidneys through the action of an ordinary blister. Acting upon the experience derived from the case in question I would recommend that where counter-irritation is required some other

form should be had recourse to than the emplastrum cantharidis; as liquor ammoniæ, sinapisms, &c. The strong blistering fluid which produces vesication quickly would be less likely to be absorbed into the blood.

In jaundice from acute congestion of the liver, counter-irritation in the form of a mustard plaster, fomentations over the region of the liver, saline purgatives to unload the engorged portal system, are the curative measures most likely to be followed by relief. Of the value of one or two full doses of calomel in some cases there can be no doubt, but after recent physiological investigations we must not, I suppose, speak of it as a cholagogue. Dr. Murchison has the following pertinent remarks upon this point: "The practical physician gives a dose of calomel, finds the quantity of bile in the motions greatly increased, and argues that the liver has been stimulated to an increased secretion; but the physiologist ties the common duct, makes a fistulous opening into the gall-bladder, and then finds that calomel has no effect on or even diminishes the amount of bile that drains away through the fistula. Mercury and allied purgatives probably produce bilious stools by irritating the upper part of the bowel, and sweeping on the bile before there is time for its absorption; irritating articles of diet will often produce precisely the same effect."

When the congestion of the liver is due to spirit drinking, and such as may go on to adhesive inflammation, mercury pushed to slight specific action, and followed by iodide of potassium, would appear, by the cases cited, to be indicated. In closure of the common bile-

duct, irritation of the portal system by saline purgatives can do no good; here we can only carry out the principle of elimination by other channels—as the skin and kidneys. In jaundice from suppression of bile consequent upon mental or moral causes, the treatment consists in saline purgatives, diuretics, warm or vapour baths, and above all, in removal of the exciting or sustaining causes. When bile once appears in due quantity in the evacuations we must not go on pushing our remedies simply because the skin continues yellow; for as Dr. Budd, who lays stress upon this point of practice, observes, some time must elapse before the skin can regain its normal colour. Threatenings of cerebral implication are to be met by drastic purging, by counter-irritation to the nape of the neck and calves of the legs by sinapisms, and by free action of the kidneys; and as we have seen, especially in one of the cases cited, may be met successfully.

Certain functional and chronic derangements of the liver may be considered in connection with the subject of jaundice.

The secretion of bile may be excessive or deficient, and, in either case, natural or altered in its quality.

Excessive secretion of bile is usually connected with more or less hyperæmia of, or undue determination of blood to the organ. An example of this has already been given as occurring simultaneously with menstruation; and under the head of "ague and its sequelæ" will be found illustrations of the affection as resulting from exposure to malarious influence. A highly hyperæmic state of liver is frequently induced in individuals on first going to India and other tropical regions, especially if care is not taken in adapting

habits, as regards diet, &c., to altered conditions of climate. In this country exposure to heat and subsequent chill may induce a similar result in a milder degree; but here we usually meet with hyperæmia, and consequent excessive secretion of bile as a consequence of irregularities in eating and drinking. Immoderate eating, and especially habitual indulgence in rich articles of food, and the lethargy and disinclination for exertion which the habits of the gourmand induce, are a constant source of engorgement of the vessels of the liver and other abdominal viscera. A not less prolific source is undue and frequent use of alcoholic liquors, especially upon an empty stomach. The bad effects of such habit have been noticed under the head of cirrhosis, but cannot be too much insisted upon.

The more prominent symptoms of hepatic hyperæmia, and the undue secretion of bile which results therefrom, are, a sense of fulness and uneasiness in the right hypochondriac and epigastric regions, a furred tongue, nausea, or vomiting of bile, bilious diarrhœa, sallowness of complexion short of jaundice. In some cases the bile seems to be peculiarly acrid, and causes much griping and distress as it passes downwards; and smarting when it is voided. The urine is high-coloured, and loaded with lithates. The patients often complain of headache, are irritable, depressed in spirits, feel languid and drowsy. Disturbances of circulation are indicated, in severe attacks, by irregularity of pulse and palpitation of the heart. Attacks of hyperæmia of the liver, if frequently repeated, as they will be if the exciting causes are kept up, may end in chronic congestion of the organ, or more serious impairment of liver tissue as has already

been noticed in this article, and in connection with the subject of cirrhosis.

The insidious expressions of functional hepatic derangement, such as habitually furred tongue, loss of appetite, nausea, irregular action of bowels, vitiated biliary secretion, &c., from which many people suffer as the result of their mode of living, are almost more serious than the severe attacks of biliousness just described, because they are less likely to be energetically dealt with, and may steal on until irreparable mischief has occurred.

Torpor of the liver, and a deficient or vitiated secretion of bile may arise from various causes. In a mild form, such derangement is frequently met with in this country as a consequence of sedentary or indolent habits, or of mental anxiety or depression of long continuance, or of general want of functional vigour, or of the inability which arises in the weak and dyspeptic to take a sufficiently stimulating diet. The symptoms which characterise such derangement are, dyspepsia, flatulence, generally constipation, evacuations of a pale yellow or drab or whitish colour, depression of spirits, languor, and a sluggish circulation.

A more serious form of torpor of the liver with deficient and altered biliary secretion, occurs in connection with damaged structure or chronic enlargement of the organ, in those who have resided for many years in India or other tropical countries. The liver, which has been long over-stimulated by the direct action of a high temperature, and frequently, perhaps, has also been the seat of active congestion from attacks of intermittent or remittent fever, becomes at last im-

paired in structure and function. The symptoms which mark such hepatic derangement are, cachexia and anæmia, sallowness of complexion, loss of flesh and power; a weak circulation, indicated by great susceptibility to changes of temperature, by chilliness and coldness of the lower extremities; and disturbances of nervous system, shown in irritability, depression of spirits, disinclination for effort either of mind or body, headache and at times giddiness. The liver may be enlarged or not; in either case, impairment of its function is manifested by dyspepsia, flatulence, irregularity of bowels, sometimes by constipation, at others, especially where there has been antecedent dysentery, by diarrhœa, and by deficient or vitiated secretion of bile. The urine sometimes contains bile, and usually oxalate of lime and excess of urea. The skin is dry and harsh. Individuals so affected may prolong their existence for years, but can be scarcely said to live. In many cases, however, the profound interference with nutrition involves increasing loss of flesh and power, and premature decay.

Attacks of acute hyperæmia may usually be relieved quickly by rest, by restriction to a bland, fluid diet, and by free purging by calomel or other mercurial preparation, followed after a few hours by a saline purgative, either in the form of draught, or of one of the more active mineral waters. Notwithstanding the results of experiments upon animals, few practitioners will be content to give up the advantage which their clinical experience has taught them is to be derived from the judicious use of mercurials as cholagogues; and they will scarcely be content with the explanation that the bile has already passed into the upper portion of the

intestinal canal, and that the dose of calomel or blue pill merely effects its expulsion. The action of the saline purgative is, by causing a drain from the intestinal vessels, indirectly to relieve the congested hepatic portal system. The Püllna, or if a milder action be desired, the Friedrichshall water may be taken by those subject to hepatic congestion and hyperæmia, every or every other morning. The action of these mineral waters when used in this country is facilitated by adding an equal quantity of hot water. Where there is difficulty in procuring them, a draught may be prescribed, containing their principal ingredients; or an approximate effect may be produced by an ordinary saline draught. Still, any substitute or artificial imitation will not equal the happy combination of ingredients in the natural mineral water.

In some cases mercury is inadmissible, or disagrees, and in any case it is well not to give it too frequently, or to continue it for too long a time; for its protracted use is apt to impair digestion and nutrition, and even weaken the function of the organ which it at first relieves.

Of late years a valuable addition to the list of cholagogues has been made in podophyllin. From a quarter of a grain to a grain of the resin may be given for a dose, and it may be combined with a little hyoscyamus, or half a grain of extract of cannabis indica to prevent griping, and a grain or two of rhubarb or watery extract of aloes; or with some extract of colocynth if it is desirable to quicken the effect. It is not very rapid in its action, but when it acts favorably it produces one or two bulky evacuations, with copious

secretion of bile, followed by a feeling on the part of the patient that the bowels have been thoroughly emptied. In my experience its action is at times neither satisfactory nor certain, and it causes occasionally much griping, irritation, and tenesmus, and subsequent depression.

In torpidity and chronic enlargement of the liver, the nitro-hydrochloric acid is one of our most effective remedies. It acts by altering and promoting the biliary secretion, and by improving the tone of the digestive organs, and of the system generally. It may be used both internally and externally. Ten or fifteen drops of the diluted acid of the pharmacopœia may be given two or three times daily, and where it is desirable to keep up the action of the bowels and kidneys, may be advantageously combined with the extract or juice of dandelion. Quinine may be associated where the system is impressed with the leaven of old intermittent fever.

We have for years used the nitro-muriatic acid at the Seamen's Hospital in chronic hepatic affections, and with unquestionable benefit, and have not only given it internally, but applied it externally, either in the form of compress over the abdomen, or by sponging the surface of the body, or by the use of baths to the lower extremities. The remedy has long been in repute in India; and Annesley, Royle, and others have given directions for its application; but I have always ordered the fluid to be used in the strength and manner recommended by Sir J. Ranald Martin, and I therefore here introduce his directions:—

"Take of hydrochloric acid, three parts, nitric acid, two parts; mix the two acids very carefully and

slowly, so as to avoid any evolution of heat, and then, having waited twenty minutes, add of distilled water, five parts, and mix the whole carefully.

"*For the general bath to immerse the whole body.*—Pour into the bath about five pailfuls of cold water, add two quart bottles containing sixty-four fluid ounces of the prepared dilute acid, and then sufficient boiling water to raise the temperature to 96° or 98°. The patient should remain in the bath from fifteen to twenty minutes, a can of hot water being kept at hand, and added in small quantities at a time to maintain the temperature. While the patient is in the bath, hot and dry towels should be provided, in order that immediately he leaves it, the body may be quickly and thoroughly dried; after which the patient should at once retire to a well-aired and warm bed. To prepare the second and the following baths, remove on each occasion about one third of the liquid, then add one quart bottle of the dilute acid, and sufficient hot and cold water to raise the temperature to the proper degree. Should the bath excite much irritation of the skin, less than one bottle of acid may be used on each succeeding occasion.

"*The foot and sponging bath.*—Two gallons of water are generally sufficient for an ordinary foot and sponging bath, which should be kept, by frequent additions of hot water, at a temperature of 98° to 100°. To the two gallons of water, six ounces, by measure, of the prepared dilute acid are to be added and thoroughly mixed. While the feet are immersed, a warm sheet, or some other suitable covering, to protect the patient from draughts, should be thrown over the shoulders. By means of a large soft sponge, the insides of the

thighs, the right side under the ribs (the region of the liver), and the arm-pits should be constantly bathed; at the same time several folds of flannel may be immersed in the hot acid bath and wrapped round the body. These baths should be used from fifteen to twenty minutes, night and morning, and on each occasion it is necessary to attend to the usual precautions of thoroughly drying the body and legs with hot towels before dressing or retiring to bed. Earthenware or wooden baths should be employed, as all other materials destroy the efficacy of the acid. The sponges and towels should, after each bath, be thoroughly washed in cold water to prevent their being destroyed by the acid."

The bath, or sponging, or compress, should be continued for a month or two, unless any adverse symptoms, as tenderness of gums, general derangement of system, excessive purging, should result. At times, the external use of the acid produces severe irritation of skin, and even copious papular eruption, and then it has to be discontinued. Sir R. Martin thinks that the beneficial action of the acid depends upon its absorption, and that the cutaneous irritation interferes with this, and, consequently, with the action of the remedy. My experience, however, does not quite confirm this view, and, indeed, Sir Ranald says that, in some persons who were distressed by the cutaneous irritation, evidence of the action of the remedy was manifested in biliary vomiting and purging.

For those who are suffering from frequent functional derangement of liver, or from certain forms of chronic jaundice, or torpor with or without enlargement of the viscus, a visit to some of the continental watering-

places, and a course of mineral waters, will often prove of great advantage. Change of scene, regularity of diet, absence from mental harass, are of course important elements in the success of a more or less protracted stay at such places; and, in regard to hygienic rules, it is remarkable how readily many, who are quite unmanageable at home, become submissive under fresh influences.

Of course, individuals suffering from chronic affections must not be sent to this or that spring without due consideration, or more harm may result than good. The springs of Homburg, Kissengen, Marienbad, enjoy a reputation for the relief of those who suffer habitually from hyperæmia of the liver. In jaundice that does not yield to ordinary remedies, and which depends on congestion, or torpidity, or upon catarrh of the gall-ducts, the waters of Karlsbad may rapidly prove beneficial. As Niemeyer, however, remarks, "if jaundiced patients with an incurable obstruction of the bile-ducts go to Karlsbad, their jaundice is not improved by the use of the waters, but they die sooner than they otherwise would, because the symptoms of congestion are increased, and the destruction of the liver-cells is hastened by augmented secretion."

In cases of hepatic derangement associated with anæmia, the mineral waters which contain traces of iron are indicated. Cheltenham has been a favourite summer resort for valetudinarians from tropical climates. Here a course of saline can be followed by one of the chalybeate waters. Dr. Sutro, however, remarks that the small quantity of carbonic acid in the Cheltenham waters renders them less easily digested than those of

analogous foreign spas impregnated with a great amount of carbonic acid. The consequence is that the effect is less pronounced, and that the aid of special medicines is frequently required.

In no class of diseases do general remedial or hygienic agents act more beneficially than in chronic hepatic complaints. Pure air, exercise, strict attention to the functions of the skin, suitable diet, are the means on which we must rely if a cure is to be effected. In all cases it is of moment to promote the healthy action of the skin and lungs. This is to be done by exercise on foot or horseback. The latter is peculiarly advantageous, as it stimulates directly, by a series of succussions, and by contraction of the abdominal muscles, the liver, and intestines, and may be taken by those who are not vigorous without much muscular effort. Walking promotes the general circulation, excites the action of the skin, increases the frequency and fulness of respirations, and indirectly tends materially to relieve a congested state of liver. The action of the skin must be further maintained by adequate clothing in all seasons of the year, and by the daily use of the sponge bath, followed by active friction of the whole surface of the body.

The diet, in all cases of hepatic affection, should be of a light, nourishing character, and rich gravies, sauces, made dishes, pastry, &c., should be carefully avoided. The stronger spirituous drinks are injurious for reasons already insisted upon, but the lighter wines, as claret and hock, or a pure sherry, as the Manzanilla, which contains but little alcohol, may be taken, at meals, in moderation.

CHAPTER IV.

INTESTINAL OBSTRUCTION.

WHETHER we regard the formidable symptoms which indicate its occurrence, or the various causes on which it may depend, the subject of intestinal obstruction is of considerable interest to the physician as well as to the surgeon. It is one that requires for its elucidation numerous and carefully recorded cases, by collation from which of prominent symptoms and results we may determine the relative value of different plans of treatment, and hope to arrive at more exact diagnosis in the future.

The causes of intestinal obstruction may be arranged under the following heads:

1. Peritoneal bands and adhesions; twists of mesentery or intestine.
2. Invagination or intussusception.
3. Stricture from malignant growths in the walls of the intestine, from cicatrization and thickening attending dysenteric or other kinds of ulceration.
4. Compression of intestine by tumours external to it.
5. Impaction of fæces, gall-stones, and other foreign bodies.
6. Paralysis of intestine.

Case 1. *Stricture from peritoneal adhesions and band.*—J. A—, æt. 15, admitted into Dreadnought Hospital Ship, on January 25th, 1867, under the care of Dr. Ward. The boy was sent up from the Marine Society's Ship Warspite, and the symptoms on admission were, a furred tongue, hot skin, general abdominal pain without tenderness, and confined bowels. No history of the case could be elicited, further than that these symptoms had commenced, without any apparent cause, three days before admission into the hospital. A turpentine stupe was ordered to be applied, and no medicine was given.

26th.—No relief from the bowels; a little vomiting during the night; pulse 72; tongue much furred. A placebo mixture was ordered, with diet of milk and beef-tea.

27th.—Milk vomited in small quantity once or twice; no stool; no abdominal tenderness. A simple enema was given in the afternoon which relieved the bowels slightly, but brought away no scybala.

28th.—Abdomen tympanitic and painful on pressure over the course of the descending colon; vomiting continues at intervals. Another turpentine stupe was ordered, and an effervescing saline mixture.

29th.—The abdominal pain continues, and the bowels are still confined; half a grain of opium was ordered to be given every two hours. In the afternoon of this day the vomiting increased, and fæcal matter was discharged by the mouth.

30th.—No vomiting during the morning; abdomen tense, tympanitic, not very painful on pressure. Bowels still confined. The patient has lived chiefly upon iced milk and water during the last few days.

31st.—Pulse 112, small and feeble; very little sleep; the vomiting continues at varying intervals, and is still fæcal in character; no action of bowels.

Feb. 1st to 4th.—During this period the symptoms did not materially change in any one respect. Retention of urine occurred, which was relieved by the use of the catheter; no acute pain appeared to be felt. The opium was given continuously, with small quantities of iced cream and milk, and brandy and water. He gradually sank, and died on the morning of the 5th.

Inspection twenty-eight hours after death. The abdominal viscera were glued together by, and covered with, a thick coating of lymph, showing peritonitis of a very severe and extensive character. A band of firm tissues which involved the vermiform process, was found to entangle and constrict the intestinal canal close to the caput coli, so that as much of the canal as was below the stricture, was contracted and gangrenous. The thorax and cranium were not examined. The above case is reported by Mr. H. Leach.

For the short note of the following case I am indebted to my friend, the late Dr. Ansell, of Bow.

Case 2. *Intussusception rapidly fatal.*—J. J—, a healthy infant, between four and five months old, at the breast, but occasionally fed with milk and water, was seized on Friday, in November, 1862, with violent fits of crying, lasting about two hours. He took the breast as usual, and the mother, thinking he might be griped, gave him some castor oil. On Saturday, at 2 a.m., there was hæmorrhage per anum to the extent of three or four ounces. Some ammonia and opium

were given, but the child scarcely rallied, and died at 7 p.m.

The post-mortem examination revealed no other morbid appearance save a double invagination of intestine, of twelve inches, formed by a portion of ileum and the cæcum, which had slipped into the colon. The invaginated part felt like a tumour of about the size of a hen's egg. The intestine was, of course, highly congested.

Remarks.—In the above case, the formidable nature of the attack was not at first suspected; indeed, the child did not come under medical treatment until after the loss of blood had occurred, and it was evidently sinking. There were, however, three points characteristic of obstruction from intussusception; namely, the young age of the subject, although it does not often occur in mere infants; the tumour formed by the invaginated portion, which palpation, no doubt, would have detected during life; the sudden onset of the attack, and the hæmorrhage per anum, which is said to be distinctive of implication of small intestine.

Mr. Gay, in a pamphlet comprising papers read before the London Medical Society, has ably dealt with obstruction from invagination and from peritoneal band; and has laid down the following as diagnostic symptoms:—In obstruction by band, constipation constant; in intussusception, diarrhœa occasionally; of this latter condition the discharge of blood or bloody mucus, with tenesmus, is diagnostic. In band obstruction, distension is an early and prevailing sign. In invagination, the abdomen is natural, or there is only partial distension. The latter condition may some-

times be determined by the detection of a distinct swelling in some part of the abdomen, or by the finger or instrument introduced into the bowel. The age of the patient will probably assist in the diagnosis: the band occurring in the adult, with probably a previous history of some severe abdominal affection; intussusception frequently in children, suddenly and without any previous history. In Case 1, however, the subject was young, and the disease which determined the cause of obstruction, must have been of recent date.

Case 3. *Stricture from ulcer at ileo-cæcal valve; forty-two days' duration of obstruction; death.*—An Irishman, æt. 21, of lymphatic temperament, was admitted into the 'Dreadnought,' on February 8th, 1862, under the care of Dr. Ward. The patient had just arrived in a ship from Boston, and for eight days had not had any action of the bowels. No history of any very distinct previous illness could be elicited.

On admission the symptoms were obstinate constipation, frequent vomiting, furred tongue, and coldness of skin. There was not any abdominal tenderness. He was ordered milk and beef tea, a large common enema, and a grain of opium with two of calomel, every four hours. The injection was returned after a time, but without any fæcal discharge.

On the morning of February 9th, he was ordered a turpentine enema. This brought away a very small quantity of fæcal matter, which had probably been lodged in the colon. The tongue was still furred, but there had not been any vomiting since yesterday.

10th.—There was frequent vomiting of a dark,

greenish fluid, and the common enema was repeated but without effect.

11th.—He was ordered a grain of opium every four hours, and effervescing mixture with three drops of diluted hydrocyanic acid.

13th.—Vomiting still troublesome. Ordered an injection of beef tea and brandy, with thirty drops of laudanum, to be repeated at intervals.

14th.—The first injection had been retained; the second returned after an hour unaltered. The O'Beirne tube was passed yesterday, and two pints of warm water, with some salt, were thrown up. The tube, on being withdrawn, was found to be smeared with some fæcal matter, and a small quantity of fæces were passed with the injection, which was retained for about an hour. Subsequently vomiting of stercoraceous matter set in.

15th.—He was ordered a grain of opium with two of sugar, to be placed dry on the back of the tongue, and given every four hours, and some ice to suck; beef-tea injections to be persevered with.

17th.—The O'Beirne tube was again used, and three pints of barley water, with salt and castor oil, were thrown up. This enema was soon rejected, without any fæcal matter. The stercoraceous vomiting continued.

18th.—Abdomen intensely tympanitic; the tympanitis being apparently limited to the small intestine, of which the convolutions and, at times, the peristaltic action could be traced through the parietes. The colon, on careful palpation, seemed to be collapsed, and to be overlaid by small intestine.

During the nights of the 19th and 20th, he had

several times had vomiting of stercoraceous matter; had also had straining frequently, but it appeared to be voluntary in part; tongue dry and brownish; little or no pain, but at times a sense, as he described it, of bursting.

23rd.—Little or no vomiting and not much pain. All the beef-tea and brandy injections had been retained.

24th.—Vomited about a pint and a half of stercoraceous matter; the last beef-tea injection was not retained. Has slight hiccup, and is very listless.

26th.—Stercoraceous vomiting continues, but only about once or twice a day, and he is able to keep down some light food in the intervals. The abdomen is somewhat shrunken. What is passed by stool, although for the most part resembling the injections, has a slight fæcal odour.

March 1st.—Yesterday, galvanism was applied for about twenty minutes, and caused the expulsion of some flatus, but no stool. The injections had been retained. Tongue more coated; pulse quick, small, and weak; is very listless and depressed. He vomited yesterday, but not during the night.

From the 1st until the 9th he remained in much the same state; there was not any fæcal evacuation; the débris of the beef-tea injections being all that was discharged from the bowels. The stercoraceous vomiting occurred about once in the twenty-four hours, and in the interval, the patient was able to retain beef tea, milk, and lime-water, and brandy and water, if administered in moderate quantity. He, however, became gradually more emaciated, the powers flagged, and the pulse became weaker and

more frequent. The intellect was not affected throughout.

On the 11th he was evidently getting worse, and a fatal issue appeared inevitable. It was determined therefore to give him the chance of removal of the obstruction by one more bulky injection by the O'Beirne tube preceded by a dose of croton oil. This treatment was not attended with any good effect. He sank exhausted on the 13th, the forty-second day from the commencement of the obstruction.

Inspection.—Some fæcal matter was found about the anus, and some more of semi-solid character higher up in the colon. The large intestine was collapsed through its entire length; the small intestines were intensely distended, and of purplish colour. The seat of obstruction was at the ileo-cæcal valve; the mucous membrane at this point being extensively ulcerated, and so thickened as almost completely to occlude the passage. The remainder of the intestines and the other viscera were quite healthy. The ulceration was on the ileum side of the valve, and such as might have been produced by the typhoid process; but there were not any other ulcers, nor any appearance of affection of Peyer's patches or solitary glands higher up in the intestine, and the ulcer may therefore have been of tubercular character. Moreover, ulceration connected with the typhoid process is rarely found to result in stricture.

Remarks.—The obstruction in the above case was all but absolute; although on one occasion a slight fæcal discharge had followed the action of the injection, and the forcing effect of the croton oil had driven a small quantity of fæces into and along the colon just before

death. If any curative action could have been established, nature would have had a very good chance of effecting it under the length of time afforded by the opium plan of treatment. The case is interesting as showing for how long a period life may be extended under almost complete intestinal obstruction, and also how effectively, within certain limits, either end of the intestinal canal may perform the double function of ingestion and egestion. In other recorded cases there has been greater prolongation of life than in the above, but in them the obstruction had been brought about more slowly; there had been in fact attacks of constipation, increasing in duration, but with intervals of comparatively healthy action. The subject of the present case appeared to have been in good health, doing his work as usual, and performing the functions of the body healthily but a short time before the fatal attack. Defecation by the stomach, when the system has had time to accommodate itself to the change may go on for a considerable period. Dr. Crampton, as quoted by Dr. Wood, relates the case of a young woman, who for seven years had had stercoraceous vomiting, with obstinate constipation; having had stools, at distant intervals, only two or three in one year, and none for eight months preceding the report. Dr. Bache has also reported a case (see Wood) which continued for ten months, during which period there was at times an absence of stool for more than twenty days, and once for eighty-seven days, and yet the patient recovered. These cases point strongly, I think, to one imperative indication in the way of treatment; viz., to endeavour to extend life to the utmost limit, seeing that we are often in the dark as

to the cause of obstruction, and also as to the curative process that may be going on to remove it.

Obstruction from stricture has its seat much more frequently in the large than in the small intestine. It may result, as I have shown in the article on dysentery, from the cicatrization of dysenteric ulceration in any part of the large bowel. It more frequently results from the formation of cancerous growth in the coats of the bowels, originating either in the intestine itself or communicated from contiguous glands. Or the growth may be of fibroid rather than of true malignant character. The site of the stricture may be in the cæcum or ascending colon, where I have met with it in two instances. In a large percentage of cases, however, as shown by the late Dr. Brinton, the seat is in the sigmoid flexure or rectum. The existence of stricture in the large bowel may be inferred where there has been for a long time a history of constipation, with recurring attacks of obstruction and its attendant symptoms. Sometimes a tumour or diffused hardness and thickening may be detected in the course of the colon. If the stricture is seated in the lower part of the bowel there will be a history of motions passed in worm- or ribbon-like shape. If the obstruction be due to cancerous disease, ulceration may occur, with discharges containing blood, &c. In a case which came under my notice, and where the seat of stricture was in the sigmoid flexure, there had been several attacks of alarming obstruction; and the patient had for a long time passed only stools consisting of numerous long, worm-like pieces of fæcal matter. All that had to pass seemed to be propelled into the rectum in this form, and then, once in twenty

hours, there was a sudden and impulsive emptying of this viscus. I saw, in consultation with Mr. Simpson, of Fore Street, several times in the early part of the present year, a case of stricture of bowels caused by cancerous disease involving the greater part of the cæcum and part of the ascending colon. The prominent symptoms in this case were vomiting, at one time of stercoraceous matter; frequent, painful, forcing peristaltic action, the movements of the intestine being visible externally; increasing, and at last insuperable constipation; and, on examination, a hard tumour in the right iliac region. Obstruction lasted in this case for thirty-two days, and under the influence of opium, administered every few hours, the more distressing symptoms, the vomiting and pain were relieved, and the patient was kept in a state of comparative comfort up to the fatal termination. The case was seen by Mr. Hutchinson, and the question of colotomy was entertained. The post-mortem examination showed that it would have been impracticable. The subject of the above case was a widow, æt. 51, a few years past the change of life. She was so thoroughly alive to the relief derived from the opium that she remarked on several occasions, "Whatever you do, let me have the pills."

The long duration of the affection is alone almost sufficient to distinguish obstruction from stricture from that produced by other causes; but in the earlier stages of the attack there are features in common with obstruction from peritoneal band or adhesion, and the surgeon might be tempted to propose the operation of gastrotomy. Looking at the unsatisfactory results which have attended this operation, the cases appear

to me to be very few in which it should be had recourse to.

CASE 4. *Intestinal obstruction; aneurism of abdominal aorta; death by hæmorrhage* (reported by Mr. Leach).—W. W—, æt. 23, a tall, muscular man, of African descent, but born at Bermuda, was admitted into the Seamen's Hospital on April 9th, 1863. Previous health very good in every respect.

Symptoms on admission.—Is suffering from rheumatic pains in the limbs, which commenced fourteen days ago. Bowels relieved the day previous to his admission. No abnormal heart sounds. He was ordered a mixture of potash and hyoscyamus, and placed on slop diet.

10th.—A draught of aperient medicine was given to-day in the ordinary course; no action of the bowels took place, and on the following afternoon he was ordered a drop of croton oil in sugar.

12th.—No action of the bowels has taken place, this being the fourth day of constipation. He now complains of great abdominal pain and feeling of tension; on examination, a defined mass is felt through the abdominal walls, corresponding in size and direction to the ascending colon; along this tumour the pain appears to be greatest; there is no apparent hepatic enlargement, and no tympanitis. He still has wandering pains in the limbs, and has had no sleep. The pulse is small; the tongue moist and very much furred; no anxiety of expression. Half a grain of morphia was given at once, and a simple saline mixture was prescribed. A large linseed cataplasm was ordered to be applied to the abdomen, and an enema

of warm water to be given in the afternoon. 11.30 p.m., there is much less pain, and he has slept for two or three hours.

13th.—No relief from the bowels, or perceptible alteration of any symptom. The injection to be repeated, and a grain of opium to be given twice a day.

15th.—There is less abdominal hardness and tenderness; the tongue is still much furred; the patient takes slop diet, and sleeps at intervals; the injection is given every other day, and the opium continued.

16th.—No stool; eighth day of obstruction. Three drachms of the oil of turpentine were added to the injection to-day; this brought away a small amount of fluid fæces, but no scybala therein.

18th.—Another scanty fluid stool was passed, but there is no change in the general symptoms.

20th.—The enema is ordered every day, and a grain of opium only once a day.

22nd.—On this day a copious motion was passed, consisting of many small and hard scybalous masses; this gave great relief, it being the only effective action of the bowels during the last fourteen days.

24th.—A simple injection is still given daily, as the bowels are very inactive; the opium is omitted, and other treatment continued.

28th.—He gets up regularly, has no abdominal pain, and sleeps well; the bowels act once a day, and the tongue is nearly clean. He was placed on fish diet, and will probably leave the hospital at the end of the week.

Four days after the last note the symptoms of obstruction recurred with very great severity. A

further minute examination detected a small pulsating tumour just above the umbilicus, and close to the edge of the left rectus muscle; the course of the ascending and transverse colon was clearly defined, and the intestine appeared to be filled with hardened fæces. Pain was now constant, and relieved only by frequent doses of opium. Severe paroxysms occurred occasionally, always referred to the left hypochondrium. An attempt was once made to introduce very cautiously the O'Beirne tube, but without success; and it was not repeated. The treatment was confined to the administration of simple enemas occasionally, the regular exhibition of opium, and some stimulants. The pulsating tumour became larger, but still very clearly defined, and an occasional bruit was heard over it. The patient continued in the same state for upwards of three weeks after the relapse, and died suddenly in a paroxysm of pain on June 1st.

A post-mortem was made twenty-six hours after death, and the following notes show the result thereof: Head not examined; lungs healthy, a few slight pleuritic adhesions; heart healthy. *Abdomen.*—Liver small, structure healthy; spleen very small; right kidney, a small cyst found therein; left kidney healthy. About a pint of serous fluid found in the abdominal cavity. The parts as seen *in sitû* on the left side presented the following appearances:—The descending colon was very much contracted, and filled with scybalous masses; it rested on, and in most places was firmly attached by its under surface to a large, sanguineous clot, which clot appeared to occupy the left side of the abdomen from the lower edge of the stomach to the upper border of the left iliac fossa; the

ascending and transverse colon were also contracted, and filled with hardened fæces. On removing the mesentery and part of the alimentary canal, the most prominent and depending portion of the aneurism was seen just above the site of bifurcation of the abdominal aorta. The clot, including the abdominal aorta, iliac arteries, and left kidney was removed *en masse*, the whole weighing 3 lbs. 11 ozs. The clot was washed away, and the imbedded kidney removed. The sac of the aneurism was found at the lower end of the aorta, inclining to the left side, both the iliac arteries opening into it. The rupture was found in the upper and posterior part of the sac, the opening being about the size of a threepenny piece. The vertebræ were unaffected.

Remarks.—The symptoms of obstruction in the above case showed themselves for the first time not long before death. They lasted for fourteen days, when they were removed, and soon recurred with increasing severity. There was no tympanitis; but pain of a severe and at last paroxysmal character was present during both attacks of obstruction. The rupture of the aneurismal sac had probably taken place when constipation and pain first occurred. The blood had become effused and coagulated in the sub-peritoneal tissue about the colon, and had caused compression and obstruction of this viscus. A further extravasation of blood had probably taken place when the fatal result occurred. Obstruction by compression from without is rarely caused by aneurism. It more frequently is due to abdominal cancerous or tubercular tumours, and is then associated with symptoms characteristic of such affections, and is insidious

and chronic in its course. Recurring attacks of obstinate constipation, pain, often paroxysmal, tympanitis, increased peristaltic effort, the presence of a tumour or more or less defined hardness, point to such cause of obstruction. The rectum may become obstructed by a retroverted uterus, by a fibroid uterine, or other pelvic tumour.

Case 5. *Intestinal obstruction, from large biliary calculus; recovery.*—A gentleman in his sixtieth year, of bilious temperament, and rather hypochondriacal tendency, on going to stool on Friday, January 2nd, 1862, found that he could pass but very little fæcal matter, and, after some straining, desisted from further effort. On the following morning, not having had any evacuation, and feeling uneasy in the bowels, he took an aperient. This after a time was rejected; and bilious vomiting came on and continued through the day and ensuing night. Feeling worse on the Sunday morning he sent for me, and on my arrival I found him lying on the sofa, with a basin by his side, looking haggard and sallow, and constantly retching. A careful examination of the abdomen was made, and there was not found any trace of hernia, nor tenderness or undue distension. Looking at the case as possibly one of merely irritable stomach and liver, calomel and opium, and effervescing mixture with dilute hydrocyanic acid, were ordered, and the patient was directed to keep quiet in bed. On the Monday morning he was more comfortable, free from pain, and the stomach had been quieter. Towards the evening of this day, however, the vomiting returned, and belching of gas with strong feculent odour came on.

Later, the matters vomited began to have a pea-soup-like appearance, and distinct feculent smell; the abdomen became somewhat tympanitic, but without tenderness, and the pulse increased in frequency and had a thready character. On careful percussion and palpation of the abdomen there was found to be dulness about the ileo-cæcal region; and as the intestinal obstruction, now evident, might have been due to fæcal accumulation in this part of the canal, it was thought desirable to make an examination, and to try the effect of a copious injection administered by the O'Beirne tube. Mr. Nathaniel Ward was accordingly requested to give his opinion upon the case, and to make an examination of the colon. He succeeded in passing the tube to a considerable extent up the colon, but could not find any obstruction. The injection subsequently administered was retained for a time, and then rejected, but without any trace of fæcal matter in it.

In the morning of Tuesday the condition of the patient became alarming. He was constantly vomiting matters of the consistence and appearance of pea-soup, though of brighter yellow colour from the presence of much bile, and having a strong feculent odour; and when not vomiting he suffered from constant, distressing hiccough; the abdomen was free from tenderness, but somewhat tympanitic; the pulse about 120 and thready; the surface cold and the features pinched and haggard. It was quite evident that, unless relief were procured, the case must terminate fatally before the lapse of many hours. Some hydrocyanic acid and chloric ether were given for the relief of the hiccough and gastric symptoms, and afforded some alleviation.

It was thought desirable to try the administration of opium, which drug, in conjunction with calomel, had given relief on the first day or two of the attack; but it was considered advisable to wait the result of a consultation which had been decided upon with Dr. Billing.

This consultation was held in the afternoon of Tuesday, and the following plan of treatment was resolved upon:—To give a grain of opium every three or four hours, and to administer it in the form of powder rubbed up with a little sugar, and placed dry on the back of the tongue, as being more likely in this rather than any other form to be absorbed in the then irritable state of stomach. The hydrocyanic acid and chloric ether mixture to be given occasionally; also brandy and seltzer water, and milk and lime-water, in small quantities, in the way of dietetic regimen.

Towards night the patient seemed more comfortable, the pulse was less frequent and a little fuller, the countenance less anxious and pinched, and the vomiting less frequent, although the matters ejected were of the same character as before, and there was almost continuous and distressing hiccough. He was enabled to retain the milk and lime-water and the brandy and water. The opium was given with great regularity through the next and the following days; it afforded the patient some intervals of sleep, very materially allayed the severity of the symptoms, and did not produce any unpleasant cerebral effects.

Through the Wednesday and Thursday there was no action of the bowels, although there was several times a sensation as if such were going to take place; but the vomiting was much less frequent, the matters ejected

less in quantity and not so offensive, and there were considerable intervals between the attacks of hiccough. The general condition of the patient also improved, and, throughout, the abdomen was soft and free from tenderness. There appeared, however, to be some amount of fulness and dulness on percussion about the ileo-cæcal region. A second consultation was held on Thursday afternoon, and it was decided to persevere with the opium, and in other respects not to alter the treatment. The patient passed through the ensuing night with comparative comfort. In the afternoon of Friday he felt a desire to go to stool, and after some straining passed a small quantity of semifluid fæcal matter. A few hours after he had a tolerably copious and loose motion, but nothing could be detected in these or in subsequent evacuations that could have caused the obstruction.

From this time the symptoms completely subsided, but for two or three days he was troubled at times with hiccough. The bowels continued to act once or twice a day, and, after a time, regularly every morning; but the motions remained unformed, and occupied, on and off, an hour or two in passing. They were voided in detachments and with difficulty, and it was evident that there was some obstacle to free evacuation. A dose of decoction of aloes daily and the use of an enema of tepid water every morning were ordered, with a view of bringing about an effectual emptying of the bowels; and although there was every day a sufficient discharge of fæcal matter, still it was in the tedious and annoying manner just noticed.

This state of things continued through February and March, until one morning towards the middle of April,

when the patient felt a solid substance come down to the anus, but which he could not lay hold of with his fingers. Mr. N. Ward was accordingly requested to make an examination of the rectum. He did so, and found a large oblong mass lying in the hollow of the sacrum about two or three inches from the outlet. By manipulation he succeeded in detaching from the mass a quantity of fetid old fæcal matter, which formed the outer investment of the body, and was found to contain some earthy matter and a considerable number of seeds. He subsequently, on two occasions, endeavoured by means of forceps and a scoop to remove the more solid nucleus, but failed, in consequence of the folds of mucous membrane getting in front of it.

On the morning of April 25th, however, the mass came fairly down to the anus, the narrow end first, and the patient's attendant managed to seize and extract it. On washing off the adherent fæcal matter it was found to be cone-shaped, to measure an inch and a quarter at the base, and an inch and a half in length, to float in water, and to weigh three quarters of an ounce. A transverse section gave a radiated, crystalline appearance; the vertical had a homogeneous, fawn-coloured aspect. The calculus was evidently of biliary character, and was found on analysis to consist of cholesterine with some earthy matter, the latter being confined to the outer investment, which was denser than the internal portion. After voiding it the patient passed normal, well-formed evacuations, and felt well.

Remarks.—There was no history in the above case of paroxysmal pain such as would have attended the passage of a gall-stone of large size, and such as attended in an excruciating degree the passage of a

smaller gall-stone in a lady upon whose case I was called in consultation. There is therefore but little doubt that this calculus, formed in the gall-bladder, had found its way by adhesive and ulcerative action into the duodenum. From this point it had drifted down gradually to the point, probably high up in the small intestine, at which the formidable symptoms of obstruction ensued. Under the sedative and relaxing influence of opium it passed this point, and then without difficulty drifted along the large intestine to the rectum.

Obstructions from impacted gall-stones would seem to form but a very small percentage of obstructions from all causes. Writers on the subject refer to cases, but cite either none or but one or two as having occurred under their observation. Frerichs cites two cases which were under his care, of which one recovered, the other was fatal. Three or four cases are recorded in the 'Transactions' of the Pathological, and two or three in those of the Royal Medical and Chirurgical Society.

As regards the site of impaction of these solitary gall-stones, the jejunum stands first, then the ileum; the large intestine offering obstacle only in the sphincter.

I have already alluded to the way in which these large stones get into the bowel, by adhesion of contiguous walls of duodenum and gall-bladder, and ulceration through them; such process being, in general, gradual and unattended by marked pain. The inflammation in such cases is localised and slight, and the first intimation given of it is either discharge of a large stone from the bowels or symptoms of obstruction.

The diagnosis of obstruction from impacted gall-stones is by no means easily determined. A previous history of habitually indolent liver, or, still more, of jaundice, with paroxysmal pain, would point to this cause. The age (rather over the middle period) and the habits of life would assist us in arriving at a conclusion.

It has been laid down by some writers that pain is present in impaction from gall-stones, but absent in fæcal impaction. There was absolutely no pain in the case I have just narrated. In one reported by Dr. Frerichs he states, "abdomen free from pain." In a case recorded by Mr. Pye-Smith in the 'Pathological Transactions' for 1854 it is stated that "there was only very slight pain in the abdomen." In another case reported by the late Dr. Baly there was "pain, at first severe and paroxysmal, afterwards subsiding." In other cases, however, pain was prominent. In a case of Dr. Lever's, cited by Dr. Habershon, pains are spoken of, but whether paroxysmal or continuous is not stated. In a case recorded by Dr. Abercrombie, and in another by Dr. Stewart, there was pain, at first paroxysmal, afterwards general. The result of my inquiry, therefore, is, that this symptom must be eliminated in forming a diagnosis. Tympanitis, whether partial or general, cannot be regarded as diagnostic. It was absent in my case, and in Dr. Baly's there was distension only in the umbilical region. In Frerichs' and Stewart's cases it was prominent and intense. In one or two other cases it is not noticed, so we may infer that it was not marked. Early, obstinate, and at first purely bilious vomiting may be laid down as diagnostic of obstruction from the cause we are con-

sidering. It was marked in the case I have recited. In Frerichs' case there was vomiting, at first of greenish-yellow fluid, then fluid of dirty yellow, and then fetid, stercoraceous vomiting. In Mr. Pye-Smith's case bile was vomited at first in large quantities; and in Dr. Baly's case there was constant vomiting, bilious, and ultimately stercoraceous.

The vomiting, early and severe in proportion as the lodgment is high up in the intestinal canal, and the quantity of fluid thus ejected, will go far, I think, to explain a rule laid down by Dr. Barlow—viz. that the urine is scanty in proportion as the obstruction is high up in the intestinal canal. The reported cases of obstruction from impacted gall-stone would, however, scarcely seem to confirm the statement of Dr. Barlow. In one case, where there was a calculus in the jejunum, urine was moderately secreted. In Dr. Baly's case, where impaction was at the lower end of the jejunum, it was very scanty. In two cases in which it was at the middle of the ileum, urine was free in one and scanty in the other. In my own case there was free and sufficient discharge of urine; but I cannot say where the obstruction was, although from the early vomiting and absence of tympanitis I am inclined to think it must have been high up.

There is another symptom which is usually present in obstruction from gall-stone, and not in that from impacted fæcal matter, and that is, early prostration of the vital powers, and a peculiarly haggard, pinched expression of the countenance, with sunken eyes.

Case 6.—*Obstruction from local paralysis* (?) *of muscular coat of intestine; nineteen days' duration;*

recovery.—J. M—, æt. 48, a man of lymphatic temperament, who had generally enjoyed good health, was admitted into the Dreadnought on the 13th of October, 1862. Four months ago, in Kingston, Jamaica, he caught cold from continued exposure and wearing wet clothes, and was seized with an attack the prominent symptoms of which were headache, cramping abdominal pains, slight vomiting and constipation, which continued, with intermissions, although relieved by medicines. Ten days after the commencement of the attack he was taken ashore to the hospital, where he was bled and treated by mercury, which caused severe ptyalism. Temporary relief followed the remedies, but the pains returned, accompanied by symptoms of ague, and continued, at times with much severity, during the voyage home.

Symptoms on admission.—Great pain and tenderness of the abdomen, particularly in the right iliac region, which was prominent and dull under such percussion as was practicable in his sensitive state; cramp-like pains in the chest and limbs; pulse feeble, small, and rapid; tongue clean; vomiting constant, the ejected matter having a fæcal odour. The bowels have not acted in the least degree for fourteen days. He was ordered one grain of opium mixed with a little sugar, to be put dry on the back of the tongue and repeated every four hours; a hot, large, linseed-meal poultice constantly over the abdomen, and a little brandy and soda-water at intervals.

October 14th.—Has less pain and rarely vomits, but has not had any stool. He can take slop food fairly. There is marked tenseness of lower belly of right rectus muscle.

15th.—No action of bowels; ordered an injection of gruel and castor oil, which failed to produce any effect. The opium, without producing any of its ordinary characteristic effects, had relieved both the vomiting and cramps.

16th.—In the evening of this day, as there had not been any action of the bowels, and as the tenderness, &c., had subsided, it was thought advisable by Dr. Ward's substitute to give a drop of croton oil. This produced a slight action of the bowels. It was not, however, until two days after, or nineteen from the time they last acted, that the bowels were relieved of a quantity of scybalous fæcal matter. From this time the patient rapidly recovered.

Remarks.—The case appears to have been one of inflammation of the cæcum, with attendant paralysis of the muscular coat, and consequent obstruction to the passage of the fæces; mere impaction of fæces does not excite symptoms so formidable as those under which this man laboured. There can be no doubt that the preliminary opium treatment paved the way for the satisfactory action of the croton oil, even if it would not have brought about effective action of the bowels without it.

The contraction of one segment of one rectus muscle, which was a prominent symptom in this case, is worthy of notice. Dr. Twining considered contraction of the upper part of the right rectus muscle to be almost diagnostic of abscess of the liver, but as has been remarked under the head of hepatic abscess, and as this case proves, it may be regarded as arising from a sort of protective reflex action, which may be excited in any case of in-

flammation or lesion of any part of the abdominal viscera or their peritoneal investment.

The following interesting case of intestinal obstruction may be introduced here. It was seen by me in conjunction with Dr. Warwick, of Southend, to whom I am indebted for the report.

Case 7. *Obstruction for sixteen days; death; extensive ulceration of descending colon.*—Mrs. —, residing at Prittlewell, Essex, æt. 46, well-formed, with clear complexion, and, until recently, healthy-looking.

Feb. 26th, 1867.—For the last seven or eight months has suffered pain across the lower half of the abdomen, and chiefly, says her husband, on the left side, with constipation and flatulence. Has been relieved when action of bowels has been rendered more regular. Stools, when formed, have been usually small, and often coated with bloody mucus. The bowels have not acted since the 22nd. The pain is now severe, and flatulence distressing. No hernia. Ordered light diet, and five grains of compound colocynth pill, and compound galbanum pill, night and morning, and a mixture of bicarbonate of soda, chloric ether, and infusion of cloves.

27th.—Pills were vomited; bowels not relieved. Two colocynth and calomel pills were given and repeated in a few hours.

28th.—Both doses of pills had been vomited; no evacuation; sickness, pain and flatulence increasing. Ordered three grains of calomel and half a grain of opium immediately, followed by small doses of sulphate and carbonate of magnesia in peppermint water, and an enema of turpentine and castor oil.

March 1st.—The pill gave relief for a time; the clyster brought away a great deal of flatus, which also gave relief, but the sickness, pain, and distension continue. The outline of the distended intestines can be traced through the abdominal wall; frequent tormina and roaring of wind in them; no stool. She states that the rolling of the bowels appears to stop at one spot to the left of and below the navel. From this time active aperients were discontinued. A pill of five grains of inspissated ox-gall was given every four hours, and an injection of a drachm of the same in a pint of water was administered every night and morning. The pain and sickness ceased when the aperients were discontinued, but the tympanitis increased, the bowels still rolling with noise, but with comparatively no pain. The rectum was examined, and no disease could be felt. The uterus was somewhat anteverted; the anterior lip of the os enlarged and hardened, as if from scirrhus, the os and cervix pressed backward the anterior wall of the rectum, but not so as to cause obstruction. She took liquid and a little solid nutriment, the pulse was of natural frequency, and, beyond the fact of the bowels not acting and the distension increasing, she had no urgent symptoms. She continued thus until about the tenth or eleventh day of the illness; large injections of warm water or gruel were given frequently.

The pulse now began to rise in frequency; the countenance became a little more pinched, and there was some return of pain; the belly was gradually getting larger; there was not, nor had there been any abdominal tenderness throughout the illness; the sickness did not return, she was cheerful and took

food. Fifteen minims of tincture of opium and of chloric ether were given every three hours, and the injections were continued. On the 8th Dr. Ward saw her in consultation. On the 9th he also saw her early, and the long tube of a stomach pump was introduced carefully as high as it would go, and a pint and a half of warm water was injected through it. The tube came away untinged by fæces, and the warm water returned after a time not coloured. A tablespoonful of brandy was ordered every half hour, and the opium and chloric ether were continued.

On the evening of the 9th the pulse was much smaller and more frequent, and the extremities were getting cold. No pain since the opium was given; no tenderness or sickness; increasing distension, embarrassing rather the breathing. She had not taken so much brandy as was ordered, but was enjoined to do so. Is aware of her danger, and is perfectly clear and cheerful.

10th.—No alteration of abdominal symptoms. The mind wandered, and she became restless after the brandy; the nurse, therefore, discontinued it, and she became quite collected. Pulse frequent and thready, extremities cold, countenance pinched. Died about 2 p.m.

13th.—Opened the abdomen, which was enormously distended, in presence of my partner Mr. Whiting. No evidence of peritonitis. Colon was very greatly distended. The ileum and rectum were tied and cut across, and the cæcum and colon were removed. In the act of removal, the coats of the descending colon were lacerated, without any force used, in several places, and fæces escaped. The colon contained a

large quantity of pultaceous fæces. The bowel was opened in its whole length. The mucous membrane of the descending portion was extensively ulcerated in patches over a space larger than a hand; the muscular and serous coats were very attenuated and soft. Above and below the ulcerated part the bowel appeared healthy, with the exception of some congestion of vessels. There was no contraction in any part, and the large accumulation of fæces appeared to have been caused only by inability of the ulcerated portion of bowel to propel its contents.

Remarks.—In some cases of ulceration of the mucous membrane of the large intestine, the obstruction of bowels, which occasionally ensues, is due to spasm excited in the muscular coat. It is probable that the small formed stools which the patient had usually had, anterior to her fatal attack, were the result of partial constriction resulting from spasm. From the readiness, however, with which the coats broke down under touch in the post-mortem examination, I can scarcely imagine that the final obstruction was due to muscular contraction, and must conclude, with Dr. Warwick, that it was dependent on inability of the muscular coat to propel its contents. One would imagine also that had spasm been the cause, it would have yielded to the continuous use of opium. The symptoms, nevertheless, the intense tympanitis, the pain, sickness, frequent torminæ, &c., were such as would attend on insuperable stricture. Purgatives evidently increased the severity of the symptoms; and what ease the patient had was clearly due to the use of opium. I have not thought it necessary to enumerate and dwell at length upon the symptoms common to obstructions, from what-

ever cause they may be produced. These symptoms are well known to every member of the profession, and are duly considered in medical text-books. I trust, however, that in the remarks I have appended to each of the foregoing cases I may have rendered some service to clinical medicine by elucidating the different causes of intestinal obstruction.

The first point of practical moment in the treatment of all cases of obstruction is to make a careful examination for the existence of hernia. Should none be detected, and should the patient have had one at any time, he should, if symptoms are urgent, have the benefit of an exploratory operation in the site of it. Of not less importance is it to make an examination of the rectum in order to ascertain whether or not there is any stricture or impaction of fæces, or pressure upon the viscus from without, as from displacement or tumour of the uterus.

Opium is, of all drugs, best calculated to carry out the principle of treatment enunciated by modern writers upon the subject under consideration, viz., to gain as much extension of life as possible, in order that any curative efforts of nature may have time for their operation. Whilst fulfilling this indication, opium also calms pain, and by relieving muscular spasm, may directly remove one cause of obstruction. It should be given frequently and in large doses, and where there is irritability of the stomach, should be placed dry on the back of the tongue. It is remarkable how well this drug, given every few hours, day after day, for two or three weeks in succession, is tolerated, and how rarely it produces any characteristic cerebral symptoms.

Enemata of three different kinds may be given :— 1. Large, bulky enemata of gruel or warm water, introduced by the O'Beirne tube, and administered not violently, but still with some amount of force, with a view to remove obstruction from such mechanical impediment as mere fæcal impaction, &c. They should be given with judgment, or are likely to do more harm than good. 2. Enemata of opium, belladonna, or tobacco, repeated at intervals, with a view of relieving pain and relaxing spasm. Frerichs thinks that the removal of obstruction from an impacted gallstone in one of his cases was coincident with the specific action upon the pupil of belladonna given by injection. 3. Enemata of a nutrient and stimulating character, as of beef tea, with port wine or brandy, small in bulk, given cautiously and at moderate intervals, are of service in sustaining the patient when there is great irritability of the stomach. There can be no doubt but that some of the nourishment thus administered is absorbed, and serves materially to prolong life.

A single effective purgative may perhaps be given justifiably at the outset of some cases of obstruction, but the perseverance in the use of purgatives in such cases cannot be too emphatically condemned. Nature is already, as shown by the writhing peristaltic action, doing all she can to remove the obstacle, and purgatives can only promote the tendency to inflammation and increase pain and vomiting.

Of the good effects of manipulation I have little or no experience, and artificial anus and gastrotomy fall within the province of the surgeon. I can imagine but few cases in which the latter operation would be

justifiable. Where the stricture is not the result of malignant disease, and is in the rectum or sigmoid flexure, colotomy may be had recourse to, and may be the means of prolonging the patient's life. It is less likely to be successful when the stricture is high up in the colon, and the operation has to be performed in the right lumbar region.

CHAPTER VI.

DYSENTERY; SUB-ACUTE AND CHRONIC.

I purpose in the present paper to give some illustrations of the symptoms, course, and treatment of dysentery in its sub-acute and chronic forms. I have but little that is not already known to advance in regard to this disease, but shall endeavour to exhibit it in its different phases and degrees of intensity, and to bring its pathology and treatment into practical relation. Some of the cases of dysentery which have come under my notice at the Seamen's Hospital and elsewhere may be arranged under the head of "sub-acute," having been associated with increased activity of circulation, heat of skin, general febrile condition, and more or less active progress of disease. They are usually cases in which the malady has been contracted in the West Indies, or in the passage home from the East Indies, and has gone on, uncontrolled by treatment, up to the period of arrival in the port of London; sufficient time not having elapsed since seizure to allow of the disease having merged into the more purely chronic form. My experience of such cases is opposed to an observation made by Sir J. Ranald Martin in his work, 'The Influence of Tropical Climates,' that, as seen in

this country, dysentery has ceased to possess any inflammatory character even of the most chronic nature. This observation is, however, probably intended to apply solely to the chronic dysentery of 'Old Indians.' It is to the head of sub-acute that we must refer the disease, as it is occasionally developed in this country under the fostering influences of heat, wet, and bad living. The disease so exhibiting itself may be limited to the lower part of the bowel, and attended with tenesmus, discharges of blood and mucus, and retention of fæces, or it may occupy a large tract of mucous membrane. In the latter case it is a disease of a serious character, attended with much constitutional disturbance, and smart local inflammatory action, but, of course, falling far short, in intensity of symptoms, of acute tropical dysentery.

In a large proportion of patients who come under treatment for dysentery in this country it is the purely chronic form of the disease which is met with. The extent and site of the mischief afford ground for classification into (*a*) cases in which the entire colon and rectum are more or less implicated; (*b*) those in which the disease is confined to the upper portion of the large bowel; and (*c*) those in which it is limited to the sigmoid flexure and rectum or to either of these. Whatever may be the extent of the mischief, it is important to ascertain whether we have an uncomplicated case to deal with, or one complicated with disease of the liver or other organs. In the latter instance the prognosis will be unfavorable; in the former, there is good ground for hope, however serious the disorganisation of the mucous membrane may be, that a cure, although it may be long protracted, will

be effected. The possibility of a case being modified, and the cure retarded by some taint, as of struma or scorbutus, or by the leaven of intermittent fever, and the modified treatment which such would involve, must not be lost sight of. I may state that I quite concur in an opinion expressed many years ago by Dr. Thompson. This gentleman found as the result of twenty years' experience, that in one command in the West Indies where, for five days in the week, the diet comprised salt provisions, the mortality amongst the soldiers was nine times as high as amongst the officers who were differently dieted, while, in another command, where salt provisions were issued but on two days in the week, the mortality of these two ranks approximated so as to be nearly on a par, and he concluded that, other conditions (as climate, intemperance, night-watches) being the same, diet had some influence in determining the prevailing and fatal character of the disease. In many of the cases of dysentery and chronic diarrhœa admitted into the Seamen's Hospital, and also in some which have come under my notice in private practice, there has been a history of long-continued bad diet, testified to by more emaciation than the severity of the disease in the particular cases would account for, and frequently by slight but unmistakeable symptoms of scurvy. In the history of the development of dysentery as well as scurvy, bad drinking water has played a prominent part. Without pretending to establish any closer connection between scorbutus and dysentery I merely lay stress upon their frequent association and their having to some extent common exciting causes. For the ultimate cause of dysentery we must look beyond such immediate deter-

mining influences as bad food, water, or air, intemperance, &c. The localities and circumstances under which the disease has shown itself in greatest intensity point to some atmospheric influence analogous to malaria.

The post-mortem examinations of cases that have proved fatal at the Seamen's Hospital have revealed clearly the pathology of the disease, and have shown that we may have every possible degree of mischief in the colon and rectum to contend with. In one case there was found only a peculiar ash-coloured state of the mucous membrane, occurring in patches, and accompanied by undue prominence of the solitary glands. Prominence of these glands has been met with in several cases, and the circular form of the ulcers in some cases points to the inflammatory action and ulceration having had its commencement in the glands and extended from them to the surrounding tubular structure. In some of the examinations, ulcers were found in process of healing, and also others more or less perfectly cicatrised; in one or two inspections, the entire mucous membrane of the colon and rectum was found to be covered by ulcers of various sizes, with intervening fungous elevations and thickening of coats. In one case there was complete sloughing of the mucous membrane of the ascending colon, with exposure in places of the muscular coat, while ulcers of elliptical form embraced more or less of the circumference of the gut in the transverse and descending portions, and at the angle formed by these the calibre of the intestine was diminished by thickening of its coats, and by bands passing from one ulcerated surface to the other. The last-mentioned fact shows that the

dysenteric process may bring about a contracted condition of intestine which may eventuate in intestinal obstruction. In one or two cases an enlarged and indurated state of the mesenteric gland was met with, and in some, hepatic abscess existed.

Symptoms.— The pathological state of the large intestine, the site and extent of the disease, may be diagnosed with tolerable accuracy by careful palpation of the abdomen, by the state of the secretions, and by other indications. Sometimes tenderness is marked over the entire track of the colon; at others, it is limited to the ascending or descending colon; and in some cases I have found it localised over the angle formed by the transverse with the descending colon, and am inclined to think that this point and the sigmoid flexure are frequent seats of the disease when partial. The state of the secretions, and the mode in which they are passed, also afford valuable indications of the locality of the morbid changes. When the sigmoid flexure or rectum are affected there may either be impetuous discharges of feculent matter followed by mucus and blood, or the inflammation of the mucous membrane may excite spasm of the muscular coat, and painful tenesmus result, with the discharge of blood and mucus only. In the latter case the fæcal matter is retained and passed subsequently, probably in the form of scybala, which have been produced by the retention of the fæces in the sacculi formed by the longitudinal muscular bands of the intestine. When the upper portion of the colon is implicated there will probably be a discharge of fluid feculent matter, mixed more or less intimately with blood and slime. In those very severe cases in which there is extensive ulceration

or sloughing of a large tract of mucous membrane there are discharges of sanious purulent fluid, mixed with mucus and shreds of membrane, and associated or not with feculent matter. These discharges are generally very offensive—in fact, of putrid odour. The number of stools varies, being frequently as many as twenty to thirty in the twenty-four hours, a large proportion of them being passed during the night time. Mr. Clapham ('Lancet,' July 29th, 1871), who paid considerable attention to this point, remarks, "A patient passing twenty stools in the twenty-four hours will pass sixteen or seventeen of them between 8 p.m. and 8 a.m., and then go through the day comparatively free. This nocturnal visitation some account for on the ground that the patients receive no medicine during the night, but when it is remembered that these cases were treated on the 'placebo' scheme, this theory cannot be much relied on." Mr. Clapham thinks that a more rational explanation may be deduced from the circumstance of the temperature being lower at night, cold having a very deleterious effect on patients suffering from this disease. The long continuance of purulent discharges from the bowel, the non-assimilation of food resulting from the occasional implication of the mesenteric glands, the co-operation of other prejudicial influences, as improper or deficient food, impure air, &c., induces in some of the worst cases of chronic dysentery a state of emaciation and exhaustion such as is rarely met with in any other disease. The sufferers are at times so reduced in power that the voice is scarcely audible, and they faint on attempting to stand; and the wasting is such that, as Dr. Aitken remarks, the human form is literally reduced to the

state of a living skeleton whose bones are held together by skin and ligament.

The majority of cases of chronic dysentery, however severe, ultimately recover. Some die from exhaustion, others from peritonitis from perforation of the bowels; a few from complications, such as hepatic abscess; a larger number from the super-addition of the scorbutic taint, or of the tuberculous diathesis.

The following cases, some of them reported several years back, will serve to illustrate the symptoms of the disease and the treatment then followed.

Case 1. — *Sub-acute dysentery, affecting the entire colon and rectum; tedious convalescence.*—W. B—, a Swede, of lymphatic temperament, æt. 41, was admitted into the 'Dreadnought' on July 28th, 1856. He was attacked with dysentery, off the Cape of Good Hope, in the beginning of June, and had undergone no treatment whatever. On his admission he presented the following symptoms: great tenderness on pressure over the entire course of the colon; much griping pain and tenesmus in passing evacuations, with great irritability of the lower bowel; pulse rapid, and rather sharp; face flushed; tongue red and glazed; great emaciation and prostration of strength. The calls to stool were very frequent, and the motions consisted chiefly of slime, mixed with blood and mucus. He was ordered ten grains of compound ipecacuanha powder three times a day, and to be placed on milk diet.

August 18th.—Has progressed on the whole favorably. Tenderness less marked: stools somewhat reduced in frequency, and attended with less tenesmus,

though still bloody and slimy, and with scarcely any appearance of fæcal matter or bile. Ordered mercury and chalk, three grains, every night, and half an ounce of castor oil, with ten drops of laudanum, every other morning.

18th.—The more acute symptoms having been relieved, and the stools being more bilious and healthy, he was ordered to admit the other medicines, and to take tincture of catechu, one drachm, decoction of bark, an ounce, dilute nitric acid, ten minims, three times a day.

September 6th. — More tenderness; ordered to return to the Dover's powder.

On the 8th the tenderness was relieved, but the stools were still very loose, consisting of fæces mixed with blood, and of blood shreds and sanious watery discharge, separately. Ordered an injection of starch and opium at night, and a mixture of catechu, logwood, and opium, three times a day.

On the 23rd, as he complained of much griping, and there was some amount of tympanitis, a large injection of gruel was ordered. This was followed by a copious evacuation, containing scybala, &c., and gave much relief.

On the 25th the motions were still loose, slimy, bloody, and very fetid; and a change of medicine was made to five grains of gallic acid, with half a grain of opium, three times a day, and an injection at night of charcoal rubbed up in mucilage. This latter, however, instead of relieving, produced much irritation, and a discharge of fresh florid blood after the evacuations. The starch and opium injection was therefore substituted, and for a few days from this the progress was more satisfactory.

October 3rd.—Much tenderness over the ascending colon. Six leeches were ordered to be applied, and were repeated at intervals of a few days, as tenderness and sanguineous discharges indicated, and always with marked relief.

On the 13th the stools were still loose and frequent, but less fetid and slimy, and containing more feculent matter. He was ordered some astringent and aromatic mixture, under the action of which the stools diminished in frequency, but became paler in colour; so that on the 26th three grains of mercury and chalk, with three of Dover's powder, were ordered three times a day.

On the 27th, as there was discharge of fresh blood, and the lower portion of the bowel seemed the seat of irritation, an injection of four grains of nitrate of silver in two ounces of water was ordered, and was repeated every night, until November 5th, with marked good effects; the stools diminishing in frequency, and becoming free from blood. There was now a fair secretion of bile, at times mixed with, at others separate from, the evacuation.

November 9th.—Nitrate of silver injection, of half the strength, to be continued every night, a mixture of nitro-muriatic acid, tincture of opium, and decoction of logwood to be taken three times a day; and as he had cough, and was in a very cachectic state, a dessert-spoonful of cod-liver oil every night and morning. Under this treatment the stools gradually improved in colour, character, and consistency, and although he had one or two relapses subsequently, the cure seemed by the beginning of December to be nearly effected. The last relapse was due to his being allowed to move

about, and take ordinary diet rather prematurely. He was consequently ordered again to bed, and put upon milk diet; and, although he rapidly improved in flesh and strength, and the stools were reduced to one or two in twenty-four hours, and becoming formed, he was kept upon this plan of treatment until the middle of January. A change of diet was made, first to fish and bread, then to a chop and milk, and at last to ordinary full diet. For some time he took the infusion of cusparia, and subsequently the decoction of Bael fruit. Discharged cured in the early part of February, 1857, having been more than six months in the hospital.

The above is a good illustration of severe dysentery, at first sub-acute, subsequently chronic, in character. The extensive ulceration, indicated by palpation and by the secretions, required a very long time before healthy action could be induced, and cicatrization effected. The case also shows satisfactorily that, however extensive may be the disease of the mucous membrane, a cure may reasonably be hoped for, provided there be no complication to contend with. I was induced to try charcoal, in the form of an injection, as an antiseptic, on the testimony to its good effects by Sir R. Martin, Dr. Williams, and others, but it produced such marked irritation that I did not dare to repeat it. One of the disappointing relapses, so common in the course of this disease, which occurred in this case, was evidently due to the patient having been placed on stimulating diet, and allowed to move about prematurely.

Case 2. *Uncomplicated fatal dysentery.*—A negro

from the West Indies, between 40 and 50 years of age, was brought on board the Dreadnought, on the 19th of August, 1857, in a state of extreme prostration from long-standing severe dysentery, which had not been subjected to treatment. When admitted he presented the following symptoms: great emaciation, rapid, thready pulse; tenderness over the entire course of the colon; frequent stools of blood, slime, and mucus. Diffusible stimuli were frequently administered, and astringents with opium ordered, but he died on August 23rd.

Inspection.—Entire mucous tract of colon covered with ulceration; sloughing, and more or less complete destruction of mucous membrane of cæcum and ascending colon, the muscular coat being laid bare in places, and mere irregular ridges of thickened mucous membrane being left in this part of the gut. In the transverse colon the ulcers were more defined, and generally elliptical in shape, some being large, and others small, with intervening mucous membrane. At the angle formed by the junction of the transverse with the descending colon, the ulceration had committed great ravages, and there was much thickening of the other coats, with bands crossing the gut, causing contraction of its calibre. No trace of disease in the liver, mesenteric glands, &c.

Case 3. *Chronic dysentery; thickening of coats of sigmoid flexure.*—Gustaf J—, a Swede, æt. 37, admitted into the Dreadnought on August 29th, 1856. Has been at sea eighteen years, and has always been temperate; has never had scurvy or other illnesses, and has enjoyed fair health. Three years ago, while in

the East Indies, he was attacked with dysentery, but recovered completely at the end of three weeks. About thirteen months ago, while again in the East Indies, he was a second time attacked with dysentery, and was taken into a Dutch hospital, where he remained under treatment for three months, and was then discharged "convalescent." This second attack came on after recovery from tertian ague. Six weeks ago he was again seized with dysentery.

He now appears much wasted; complains of constant vomiting, and pain shooting towards the left groin on passing urine. On examination, a hard, solid tumour can be felt, about the size of a closed first, rather painful on pressure, with a tolerably even surface, occupying the position and seeming to follow the course of the sigmoid flexure of the colon. He was ordered ten grains of Dover's powder every six hours, four drachms of castor oil with a few drops of laudanum every morning, and a starch and opium injection every night; he was also placed on milk diet, with the extras of arrowroot and beef tea.

August 30th.—Complains of still greater difficulty in passing urine and of slight scalding. He was ordered ten minims of liquor potassæ, with half a drachm of tincture of hyoscyamus, in some mucilage, three times a day.

31st.—No better. Stools attended with much pain and tenesmus; motions deficient in fæcal matter, slimy and mucous.

September 2nd.—Assuming the tumour in the left iliac region to be due in some measure to fæcal accumulation, he was ordered to omit the Dover's powder and night injection, and to have a large injection of barley-

water and oil thrown up every morning. This was attended with marked benefit, the tenesmus and diarrhœa abated, and he began to gain flesh.

On the 4th he was allowed fish and potatoes. The injection administered this morning brought away a large quantity of fæcal matter in the form of small, hard scybala, and the tumour afterwards seemed reduced in size.

5th.—Ordered to omit the oil; and as the pain and irritation on micturition were relieved, to take in place of the liquor potassæ the following, three times a day —compound ipecacuanha powder, five grains, decoction of logwood, an ounce.

From this time he rapidly recovered. The injections, still occasionally given, continued to bring away hardened fæculent matter mixed with mucus; but the bowels did not act more than two or three times in the twenty-four hours.

On the 12th he was ordered a mutton chop, on the 16th ordinary diet and a pint of porter, and on the 22nd was discharged "relieved," some hardness still remaining over the seat of the sigmoid flexure.

This case well illustrates the organic mischief that may ensue to the intestine from localized dysenteric action. There can be but little doubt that, although the more severe symptoms were relieved, the man left the hospital with a thickened state of the sigmoid flexure, which would probably prove troublesome at some future period. Sailors are impatient of a longer detention in hospital than is absolutely necessary, or it would have been well to have kept this man under treatment for some weeks longer, and to have endeavoured to remove the mischief by counter-irrita-

tion, &c. The marked dysuria in this case illustrates the not unfrequent sympathy which is exhibited between the bladder and the alimentary canal, but which is much more commonly met with in acute than in chronic dysentery.

Case 4. *Chronic dysentery, affecting the descending colon and sigmoid flexure.*—An Englishman, æt. 24, of dark, bilious temperament, was admitted into the Dreadnought on January 30th, 1859. Six months ago, when in Hong Kong, he was attacked with dysentery, for which he received no proper treatment, and which has continued, with varying severity of symptoms, up to the present time. He exhibits much emaciation and a general anæmic condition; has about ten motions in the twenty-four hours, attended with much forcing and straining, and consisting of fetid, pultaceous, feculent matter, more or less mixed with blood, and of separate blood and mucus voided subsequently. There is much tenderness on pressure over the sigmoid flexure and descending colon, and tenderness, less marked, over the transverse portion of the gut. Pulse rather frequent; tongue slightly furred; some heat of skin. Ordered an injection of acetate of lead, starch, and opium at night, and eight grains of Dover's powder with catechu and decoction of log-wood three times a day, milk diet, and to keep in bed.

February 2nd.—Much griping, with some tympanitis, and apparently retention of lumpy, fæcal matter. Ordered a large injection of gruel, which gave much relief.

7th.—No marked improvement; stools still loose, frequent, and bloody. To omit the other medicines

and take the following:—Gallic acid, five grains; tincture of opium, ten minims; mucilage, one ounce and a half; three times a day.

12th.—Stools still very loose, somewhat bloody, paler, and deficient in bile. Ordered the following pill three times a day:—Acetate of lead, one grain; powdered opium, calomel, ipecacuanha, of each half a grain. Under this treatment the stools became less frequent, more bilious, and less stained with blood; but on the 18th they were still frequent and loose, and there was more tenderness over the sigmoid flexure. He was now ordered ten grains of Dover's powder night and morning, and an ounce and a half of the decoction of Bael fruit three times a day. Under this treatment the motions which before varied in frequency from seven to twelve in twenty-four hours, were rapidly reduced in number, and in less than a fortnight he was passing but one tolerably well-formed, healthy evacuation in the twenty-four hours.

Case 5. *Chronic dysentery, prolapsus ani, and hepatic derangement.*—A Swede, æt. 22, admitted into Dreadnought on September 2nd, 1856. He is a small, square-built man of lymphatic temperament; has been usually very healthy, but not always of temperate habits. About three months ago, while at Constantinople, he was attacked with tertian ague, which lasted for more than two months, and which much reduced him. At the end of this time diarrhœa supervened, accompanied with much straining, and followed, at the end of ten days, by prolapsus ani; the diarrhœa meanwhile merging into dysentery, which has continued without treatment, increasing in severity up to the

present time. He now appears quite anæmic, is much emaciated, suffers from hectic flushes at night; pulse scarcely perceptible; countenance sunken. Placed on milk diet, beef tea, and wine, and treated for the first fortnight by opiates and astringents. The stools continued very loose, of a slimy and mucous character, though generally free from blood; he complained greatly of pain from the prolapsus ani, which, however, only occurred during defecation, and was readily returned by himself.

September 5th.—Ordered an injection of five grains of acetate of lead, forty drops of laudanum, and two ounces of starch, to be given every night; and as the stools were quite extra-bilious, it was thought advisable, notwithstanding his depressed state, to try cautiously the administration of mercury. He was therefore ordered three grains of mercury and chalk with five of Dover's powder, three times a day. This was continued, with occasional intermissions of one or two days, up to October 6th, when, his gums having become slightly tender, it was discontinued. Under its influence the action of the liver was in some degree restored, but the secretion of bile seemed very irregular, as there were observed in the stools only here and there a few patches coloured with it, the greater portion remaining as before, almost colourless.

On the 19th of September, as there was increased straining, with now and then the appearance of blood in the stools, a scruple of gallic acid was substituted for the acetate of lead in the injection. Under the action of this the bowel became less and less irritable, and by the middle of October the prolapsus entirely ceased.

The exhibition of mercury having been stopped on October 6th, the stools again became extra-bilious and somewhat looser, and various astringents, as krameria, benzoin, sulphate of copper, were tried without benefit. He was, however, greatly improved in aspect, having gained flesh and being less anæmic.

On October 22nd he was placed on a course of nitro-muriatic acid and opium. From this time he rapidly improved, the stools becoming formed and being passed only once or twice a day, and the secretion of bile gradually returning.

On December 9th he was ordered quinine and iron, full diet and porter, and was discharged cured on December 22nd.

In the above case there was but little, if any, ulceration, the condition of the mucous membrane being probably one of relaxation. The prolapsus ani and hepatic derangement proved troublesome complications. They were, however, removed by treatment specially directed to them, and the nitro-muriatic acid did good service in restoring and altering the secretions of the liver.

Case 6. G. W. D—, æt. 24. Last voyage was from China. Was admitted into the Seamen's Hospital on April 3rd, 1871, suffering from looseness of the bowels, pain in the abdomen, &c. He had ague six years ago. Had been ill for ten months before admission with dysentery, and for the last three months had been passing blood in the stools, and had suffered from tenesmus.

Symptoms on admission.—Pale and wasted in appearance. Appetite good; tongue glazed; bowels

loose; stools numerous, coffee-coloured, and shreddy. Respiration and heart's action healthy; pulse 78. Sleeps fairly. Urine yellow, acid, and free from albumen. States that he has some difficulty with his water, which stops suddenly sometimes when passing it; pain at the end of the penis after micturition, and pain on change of position; no stone present.

The stools gradually decreased under a 'placebo' treatment as far as special medicine was concerned, and the patient went out cured towards the end of April.

Case 7. P. M—, æt. 30. Last voyage from Sidney. Was admitted April 18th, 1871, suffering from looseness of the bowels, tenesmus, &c. Had been ill three months at date of admission, and had previously enjoyed good health. On examination his skin was found yellow and unhealthy looking; appetite good; tongue glazed; bowels loose; twenty-two stools a day, containing blood and attended with straining. Respiration, action of heart excited, but regular; pulse 120, bounding; skin hot and dry. Sleeps badly. Urine clear, acid, free from albumen.

This patient was treated with 'placebo mixture,' milk, beef tea, and arrowroot, and improved rapidly, from having twenty-two stools on April 21st to having only one natural motion on the 28th of that month. The cases just narrated are two of a series reported by Mr. Clapham, and which were treated under Mr. Leach's direction, solely by strict attention to general principles, as regards rest, temperature and diet, without any but 'placebo' treatment in the way of special physic.

I have endeavoured, in the above selection of cases, to give illustrations of the different varieties and degrees in which dysentery may be met with in this country. I shall now proceed to make some observations in reference to treatment. I would remark, in the first place, that slight cases get well rapidly under rest, diet, &c., which, if neglected, would under the least exciting cause assume a more acute and unmanageable character, and that, consequently, it is important not to allow any individual to go about with a half-cured dysentery. I have found the truth of this statement confirmed by the fact that patients who, contrary to advice, had left the Dreadnought before a cure was quite established, had returned in a week or two with considerable aggravation of symptoms. I would observe, in the next place, that the worst cases, when not complicated with incurable organic disease, generally do well, even although the period of cure may, as in Case 1, be extended over many months. The great amount of mischief that has to be repaired renders it evident that the cure must be very protracted. There are two other practical points to which I would direct attention, viz. the suddenness with which certain cases that up to a time have proved most troublesome, begin to mend, and the importance of not giving up the treatment prematurely.

In the treatment of sub-acute and chronic dysentery the first thing to be insisted upon is *rest;* a position—the recumbent—in which the bowels are best supported and kept quiet. In the sitting or standing posture there is no support of the bowels: in walking, the peristaltic action is increased, and the bowels are

directly irritated by the action of the abdominal muscles. Position alone produces most beneficial results. I have found patients, who had previously been travelling or moving about, at once relieved by rest, their stools diminishing in frequency even before any medicine was given. The action of the skin, which it is so desirable to promote, is also more evenly maintained in bed. The application of a broad flannel roller carries out the indication of support and local surface warmth. Next in moment to rest is *diet*. The invalid should be placed upon that kind of diet which gives least work to the bowels, and which is most likely to be assimilated, should there be any mesenteric complication. Drs. Abercrombie and Jackson, and Sir R. Martin, insist strongly upon this point. The latter says: "There is no consideration of more serious importance than the diet, a diet which barely sustains the system, and which is bland and unirritating, being all that ought in any case to be allowed. Neglect of proper diet not only retards the progress of cicatrization, but it tends to reproduce and to extend ulceration and thus to cause dangerous and even fatal relapse. A deprivation to the verge of starvation would, in many cases, prove salutary, by calming peristaltic action, and thus affording time for the healing of ulcerated and abraded surfaces." My own experience is in entire accordance with the above, and I cannot indorse the opinion of Dr. Graves, founded on the results of his own practice, that meat is far too much abstained from. I have invariably found the too early recourse to meat diet to be followed by marked irritation and griping, and aggravation of symptoms. I am, of course, speaking of cases where

there is more or less extensive ulceration. Milk is the best form of nourishment in these cases; farinaceous articles are also admissible. Wine is necessary where there is much prostration.

The above observations upon rest and diet were made many years ago ('Lancet,' Nov. 14, 1857), and they express the views which I entertain at the present time in reference to the value of these general remedial agents. The position which I formerly took, however, in respect to the use of various special medicines, especially the astringents, mineral and vegetable, the experience of later years has gradually led me to abandon; and in the following remarks, made by Mr. H. Leach in the 'Practitioner' for December, 1870, I now entirely concur:—"The resources of the Pharmacopœia have, I believe, been fully and fairly tried in the Seamen's Hospital; diaphoretics, astringents, animal and vegetable, calomel, castor oil, ipecacuanha, simple and compound, and a host of other so-called remedies have been prescribed, as well as opiates, blisters, suppositories and enemas, and it is agreed by Dr. Ward, senior physician, and all others who have had medical experience in this institute, that failure has been the rule rather than the exception. I ventured, indeed, four years ago (having watched upwards of 200 cases of dysentery) to record that they who, having lingered the longest, at length do well are those with whom therapeutics have little or nothing to do."

Special remedial agents, if but of little use in the control or cure of the disease, render important service in the relief of distressing symptoms. An occasional dose of castor oil, guarded by laudanum, or an in-

jection of gruel with oil will bring away scybalous fæcal matter that may have been retained and caused annoyance for some time. For the distressing tenesmus an injection of starch and opium is unquestionably of service.

The possibility of a case being complicated with and irritation kept up by hæmorrhoids must not be lost sight of. Prolapsus ani also, which results occasionally from the severe and oft-repeated straining in the earlier stages of the disease, becomes, in the more advanced stage, itself a source of irritation and consequent diarrhœa. It may be relieved sometimes by strong astringent injections; sometimes by removing portions of the loose external integument with which it is associated, or by the direct application of the nitrate of silver or nitric acid to the portion of thickened and relaxed mucous membrane which is prolapsed.

In the treatment of any case of old standing dysentery we must look to the possible modifying action of some other morbid influence. Indications of scurvy, or the pre-existence of this at some recent date, must be met by the administration of lime or lemon juice. When there are evidences of tuberculous diathesis as cough, hectic, bad family history, &c., cod-liver oil should be given in conjunction with the mineral acids. Quinine is indicated when there is history of previous ague, or evidences of ague cachexia. A course of iron, generous diet, and change of air are necessary, when the dysentery has been cured, in order to remove the depressed, anæmic state associated with the more severe and protracted cases.

CHAPTER VII.

PERITONITIS.

The form of the above disease which I select first for illustration is chronic peritonitis—an affection generally very insidious in its onset and development, protracted in duration, and, in one form at least, almost certainly fatal. It may be either of the tuberculous variety, or non-tuberculous, but yet stealthy in course and essentially chronic in character.

Tuberculous peritonitis is but an expression of the tuberculous diathesis; in attending, therefore, to the local disorder, the constitutional character of the malady must not be lost sight of. Case 1 may be taken as a good typical specimen. An individual about the age of puberty, with unfavorable antecedents in the way of family history, and perhaps early indications of struma, such as enlarged glands, characteristic aspect, and imperfect or irregular development, and who has been exposed to exciting causes, as bad diet, impure air, malaria, protracted illness inducing cachexia, &c., complains of a series of symptoms which at first are not treated with much consideration, but which as they become more pronounced give rise to anxiety and call for medical aid. More or

less constant uneasiness in the bowels, occasional griping pains, a sense of discomfort from the weight and pressure of ordinary clothing, sometimes distinct tenderness over some part of the abdomen, a variable appetite, nausea, or a feeling of distension after meals, an irregular but usually relaxed state of bowels, an habitual acceleration of the pulse, increase of temperature, evidences of impaired nutrition, are amongst the early symptoms of the disease in question. At this stage the treatment may be followed by a fallacious appearance of amendment. There is, however, after a time, a fresh outbreak of the disease, followed probably by another lapse into a comparatively quiescent or latent state; and this alternation of illness and health may go on for some months or a year or two. Recurring and rather intractable diarrhœa is in my experience the most characteristic feature of the disease in its earlier stages. The symptoms may for a considerable period be slight; but serious mischief is going on in the peritoneum, secondarily implicating the intestines and their functions, until at last the disease exhibits itself more actively, and leaves no doubt as to its real nature. In the advanced stages of the malady there are various local, functional, and constitutional symptoms by which the diagnosis may be established. There is more or less tenderness over the abdomen, limited sometimes to either or both iliac regions, or some other point, and perhaps not to be detected save on deep and somewhat sudden pressure. The cavity is generally distended, the distension being at times partly tympanitic, but chiefly due to the presence of solid morbid products and fluid effusion. On examining the abdomen its

surface will be found to be irregular or lumpy, and palpation will detect fluctuation, either general or localized by adhesions.

Dr. Symonds has well described the peculiar doughy feel of the abdomen, and the movement *en masse* of parietes and viscera, frequently met with in this form of peritonitis. A rigid state of the recti muscles has been noticed as occurring in this disease. I have observed such, but have not found it to be persistent. It may be due to irritation reflected from the seat of pain, or may be induced, almost unconsciously, by the patient, in order to ward off pressure. On engaging the patient in conversation, I have often found such rigidity disappear. Functional derangement of the alimentary canal exhibits itself in impaired appetite with uneasiness after food, nausea or vomiting and diarrhœa, which become more and more constant and intractable. The motions are usually copious, of pulpy consistence, bilious or of pale yellow colour, slimy, and generally very offensive. The tongue is either red or furred at the margin, or glazed and dryish. As the disease progresses, the constitutional character of the affection becomes more evident; the pulse increases in frequency and becomes weaker; the skin is usually harsh and dry; the pains in the abdomen and the diarrhœa are now also most troublesome. The effects of exhausting discharges and impaired nutrition are shown in progressive emaciation and debility, and at length the patient sinks exhausted, but with full possession of the intellectual faculties to the last. Sometimes acute inflammation is suddenly set up, and a more rapid termination then ensues. There is not usually any disease in the lungs, at least, not of an active

character. Indications of disease in the latter organs materially facilitate the diagnosis.

On inspection after death we find the effects of peritoneal inflammation in lymph-products, causing perhaps the gluing of the intestines together and to the abdominal parietes, and in more or less effusion of serum, which is generally turbid, at times sanguineous, or puriform, variable in quantity, and affected in position by the nature and extent of adhesions. Deposits are found in one of three forms: either as gray, semi-transparent miliary tubercle, or cheesy masses, low inflammatory products, or older lymph-exudations. Rokitansky considered tubercle, in the first of these forms, to be the primary deposit; in the second, to be the result of a conversion of inflammatory product; whilst in the third he thought that an exudation originally free from tubercle became, under the tubercular diathesis, a nidus for it. There is generally, in this disease, a pale and friable state of the coats of the intestines. There may also be tuberculous disease of the mesenteric glands, or of those of the alimentary canal, or of one of the abdominal viscera, or of the lungs. The disease usually attacks individuals in the earlier periods of life, and, not infrequently, is met with in strumous females in whom menstruation has not occurred at the proper age.

Case 1. *Tuberculous peritonitis.*—H. T—, a Welshman of lymphatic temperament, æt. 20, was admitted into the Dreadnought on December 1st, 1856. His family history was unfavorable, some immediate relatives having died at an early age, but of what disease he did not know. In 1855, when at Con-

stantinople, he had fever with enteric complication; and six months after, in returning from Archangel, he suffered from diarrhœa. When admitted, he was in cachectic condition, somewhat emaciated, and suffering from diarrhœa; passing rather bulky, spongy evacuations, which were slimy, and exhibited a deficiency of bile. He says that he is usually well at sea, but always suffers from diarrhœa when on shore. He was ordered diluted sulphuric acid with opium three times a day, gray powder with Dover's powder night and morning; milk diet and beef tea, and to remain in bed. After a few days the stools were improved in character, but still frequent and loose; and tincture of catechu and decoction of logwood were substituted for the acid.

December 17th.—Stools less frequent and more bilious, but still relaxed. The patient exhibits a marked anæmic and cachectic condition, with loss of flesh. Ordered ordinary diet, the compound iron mixture, and a pill of acetate of lead and opium three times a day.

20th.—Bowels still relaxed, especially at night, with griping pains. Ordered a starch and opium injection, to be administered at night. This was repeated every other night with marked relief.

January 18th, 1857.—Stools less frequent, but fœtid, slimy, and deficient in bile. Little or no improvement in flesh and power. Ordered full diet, a few ounces of wine, and the nitro-muriatic acid with chloric ether and infusion of gentian three times a day.

20th.—Has a distinct febrile action, hot dry skin, hectic patch on the cheeks, rapid and rather sharp

pulse, and complains of more diarrhœa, much griping pain in the bowels, and general tenderness of the abdomen. Being unable to take solid food he was put upon milk diet. A linseed-meal poultice sprinkled with mustard was directed to be applied over the entire abdomen; and he was ordered ten grains of Dover's powder at night, and the acetate of lead and opium pill three times a day.

22nd.—Febrile symptoms, griping, and diarrhœa relieved, but there is still distinct tenderness over the entire abdomen, more especially over the hypogastric and iliac regions, where there is also hardness and irregularity of surface. Ordered citrate of iron and quinine and cod-liver oil twice a day; to keep in bed, and a hot linseed-meal poultice to be applied by way of fomentation to the entire abdomen. He continued on this plan, being one day better, another worse, the stools continuing loose, fœtid, slimy, and irregularly bilious until February 15th, when the peritoneal symptoms became more distinct and acute. There was now considerable tenderness on pressure, especially over the regions already indicated, and there was also a circumscribed, hypogastric tumour, presenting the appearance of a distended bladder, but which was proved not to be so by catheterising. There was dulness on percussion over this, but deep-seated fluctuation on palpation, and some bulging in the right lumbar and iliac regions.

February 22nd.—In no respect better, save that he was not suffering so much peritoneal pain; hypogastric hardness more extended; pulse rapid and weak, hectic fever, increasing emaciation and loss of power. From this time he continued to get worse;

suffering from wasting, hectic, diarrhœa, &c. The symptoms were met by different remedies, chiefly by opium, and his powers sustained by beef tea, wine, brandy mixture; stupes, sinapisms, poultices being applied to the abdomen, but without any advantage occurring. The soothing treatment was alone adhered to, as matters were drawing to a close. He died on March 19th, having been nearly four months in hospital.

Inspection.—Body much emaciated; thoracic viscera healthy.

Liver.—Peritoneal covering studded with miliary tubercle in several places; substance congested and mottled, but without any distinct deposit of tubercle. Gall-bladder full of viscid black bile. The omentum and intestines were firmly glued to the abdominal parietes and to each other, and thickly crowded with patches and nodules of cheesy, yellowish matter. In the right iliac fossa and extending over the hypogastric region was conglomerated a bundle of small intestines, feeling like a solid mass and accounting for the hypogastric tumour. Between the adhesions, fluid of a turbid and puriform appearance was effused. The coats of the intestines, and especially of the colon, were softened and very lacerable.

That there is a *non-tuberculous* form of peritonitis, essentially chronic in its character from the outset, there can be no doubt, although it is scarcely recognised by some systematic writers on medicine. Most of the cases recorded by Dr. Abercrombie are of the tuberculous variety, or of the disease in connection with tabes mesenterica. Andral alludes to cases of chronic peritonitis, in which the abdomen retains its

softness, and in which there is perhaps no pain, so that the nature of the disease is overlooked, until the occurrence of ascites. Dr. Hodgkin long since remarked that the form of the disease in question, which is accompanied by copious effusion, simulating ascites, occurs without any appearance of tubercle. Dr. Morehead, in his valuable practical work, 'Researches on Disease in India,' introduces an account by Mr. Scott, of the Bombay army, of a form of chronic peritonitis which occurred in a regiment stationed at Aden, "at a time when from defective dietetic and other arrangements a scorbutic taint was prevalent amongst the native classes there, and rheumatic affections were common." The form of disease observed under these circumstances was characterized by pain in some parts of the abdomen, increased by pressure, but never amounting to great tenderness; sometimes merely a pricking or burning sensation over the fore part of the abdomen: want of appetite and distension of stomach after the slightest meal; a natural or slightly relaxed state of bowels, absence of febrile symptoms. After a time ascites occurred, and in some cases there was anasarca of the face and limbs. The liver was occasionally congested and enlarged. The cases lasted for a few months, and generally terminated fatally. On inspection the peritoneum was found to present an opaque white appearance, and there were extensive deposits of coagulable lymph between the intestines. The coats of the stomach were usually thickened, and the liver was frequently diseased.

One of the peculiar features of the non-tuberculous form is, that it may run its course with very little or a

complete absence of pain. Andral notices this peculiarity, and likens cases in which it is met with to certain cases of pleuritis, which commence, become developed, and terminate in vast collections of purulent matter, without the patients having ever felt any pain. In illustration of this point, I may remark that, some years ago, Mr. Corner directed my attention to a case under the care of Dr. Barnes, of typhoid fever, with enteric ulceration and hæmorrhage from the bowels which ended in death. There was no cerebral implication. The patient had no pain or tenderness on pressure prior to death; yet, on inspection, there was found some turbid fluid effused into the peritoneum, the intestines were glued together by recent lymph, and there was a coat of soft cacoplastic lymph over the serous investment of the ulcerated portion of ileum. The non-tuberculous variety of chronic peritonitis would appear to be distinguished from the tuberculous by some or all of the following peculiarities:

1. It is not associated with the external indications of the tuberculous diathesis.

2. It is more insidious in its commencement and course than the tubercular variety, and up to its later stage is unattended by any material constitutional disturbance.

3. The intractable diarrhœa which is generally a prominent symptom of the tuberculous variety is absent.

4. It generally results in much more extensive fluid effusion, in fact, in ascites.

Case 2. *Chronic peritonitis; ascites.*—M. S—, a Dane, æt. 26. admitted into the Seamen's Hospital on

September 6th, 1871. Had syphilis six years ago. Used to drink hard three or four years ago, but since then has been tolerably temperate. Had jaundice about a year back, but otherwise has never complained of anything the matter with his liver. Has never had hæmorrhoids. Two months since he was attacked with diarrhœa and pain in the back, and about a month since his belly began to swell.

Symptoms on admission.—Is weak and emaciated, with an anxious countenance expressive of distress; has small purpuric spots on the legs; his skin is dry and harsh. Abdomen much distended with fluid in the peritoneum; its girth measuring just below the cartilages 37½ inches, and at the umbilicus 36 inches. Fluctuation is evident; tympanitis at the most elevated part, but bulging at the sides. The skin over the abdomen is tense and shining, and is traversed by large blue veins which extend up over the chest. Has dingy, sallow conjunctivæ. There is no pain in the liver, and it does not appear enlarged, but it is difficult to define its limits below, owing to the effusion. The stools are pale-coloured; urine free from albumen and from bile. Has no œdema of face or extremities. He was ordered milk, strong beef tea, and brandy, a drachm and a half of compound jalap powder every other morning; and diluted nitro-muriatic acid, taraxacum, and infusion of gentian three times a day. In a few days after his admission the ascites was evidently increased, the breathing became much embarrassed, and on the 21st of September the abdomen was tapped, and nine pints of clear, yellowish fluid were removed.

22nd.—Fluid has been flowing out ever since the

operation; his breathing is relieved and he feels better. The improvement was, however, but transient, and he sank a few days after the operation.

Post-mortem examination twelve hours after death.—Rigor mortis very feeble.

Thoraæ.—Pleuræ adherent, lungs congested, collapse of a few lobules here and there. Heart small, but healthy; clots in the cavities.

Abdomen.—Liver large and friable; bile ducts so full that the secretion oozed out on section; portal system much congested; no trace of cirrhosis. Spleen large and tough; kidneys congested. The peritoneal coat of the intestines presents rose-coloured arborescence in various places; peritoneum generally white, glossy, with œdematous condition of the subperitoneal tissue; adhesions with the abdominal walls; gastric omentum much thickened.

Case 3. *Chronic non-tuberculous peritonitis.*—Thos. S—, æt. 50, an Englishman, admitted into the Dreadnought on August 5th, 1857. Has been at times very intemperate; has never had dysentery, nor any symptoms indicative of any acute attack, either peritoneal or hepatic, although he says that he has suffered occasionally from slight pains in the bowels. He was discharging his duties as usual up to a few weeks back, when his belly began to swell. Fourteen days previously the legs were somewhat swollen, but the swelling soon subsided. Abdominal cavity much distended, and dull on percussion over its entire extent, the sense of fluctuation on palpation being very distinct; no tenderness on pressure at any point; superficial veins gorged; no jaundice; no bile or

albumen in the urine; stools bilious, and though loose, healthy in appearance; no undue frequency of pulse; complexion clear, with a slight flush on the cheeks; much emaciation and loss of strength. Ordered extract of taraxacum, ten grains, sweet spirit of nitre, fifteen drops, compound decoction of scoparium, an ounce and a half, three times a day; a drachm of compound jalap powder every morning, milk diet with beef tea, four ounces of gin.

August 19th.—Ascites but little if at all relieved. Ordered a third of a grain of elaterium, which produced several evacuations, but not of the free, fluid character to be desired.

On the 24th he was ordered a grain of iodide of mercury, night and morning.

On the 28th there was much irritability of stomach, with rejection of food, and vomiting subsequently of mucus and bile, and he was prescribed the alkaline effervescing draught with five drops of diluted hydrocyanic acid. This gave relief for a time, but the sickness again returned, his powers became more and more reduced and emaciation more marked, and he died on September 6th, the intellect remaining clear to the close.

Inspection.—Lungs on both sides congested and œdematous, but with no trace of tubercle; pleuræ slightly adherent. Peritoneal cavity contained about two gallons of clear serum. Parietal layer of peritoneum much thickened; visceral covered with a thin layer of lymph, gluing together the small intestines, which were of a dark colour and deficient in resiliency. The great omentum was contracted, and contained old lymph effusions. Liver and spleen healthy, but con-

nected with the diaphragm by old lymph bands. Coats of stomach much thickened by lymph exudation. Other viscera normal. No appearance of tubercular deposit anywhere.

The intemperate habits of the individuals, the absence of abdominal pain and tenderness, the readily detected fluctuation and extensive effusion, and the unyielding character of the latter, rendered it difficult to diagnose the above from cases of cirrhosis of the liver, with which it appeared we had to deal. In the first case, the difficulty of diagnosis was increased in consequence of the adhesions of intestines with the anterior part of the parietes causing on palpation a tympanitic sound at the upper portion of the abdomen of the patient when in the recumbent position. In the second case, the uniform dulness on percussion, with an amount of effusion, which, though extensive, would not have prevented the intestines from giving resonance at the most elevated part, had they not been bound down; the total absence of any functional hepatic symptoms, or of local indications of contracted liver, and the clear complexion, were features diagnostic of effusion from chronic peritonitis.

Before I consider the treatment of the chronic varieties of peritonitis, I shall give illustrations of the disease in its acute form.

More or less severe pain, increased by pressure and by the movement of breathing and coughing, by the passage of flatus, &c.; a small, sharp, rapid pulse; a hot, dry skin; peculiar decubitus; an anxious, collapsed countenance, are ordinary features of acute peritonitis with which every medical man is familiar. Looking at the anatomical relations of the peritoneum,

it will be readily understood how inflammation of it may, from contiguity of structure, implicate functionally one or all of the abdominal viscera, or may simulate disease of any organ when localized in its serous investment. By bearing in mind the relations of the membrane, the vomiting or hiccup, constipation and tympanitis, the hepatic symptoms, the partial or complete suppression of urine, the frequent or difficult micturition, which may accompany an attack of peritonitis, are explained. The disease, in its idiopathic form at least, is generally preceded by malaise, chills, or rigors. After a more or less rapid course, it may end fatally or yield to treatment, or may merge into a chronic state. Bright injection of the peritoneum, adhesions of omentum to the intestines, or of the convolutions of intestines to one another, deposits of soft lymph or pus, a greater or less effusion of clear or purulent serum, are the appearances met with on inspection after death.

Case 4. *Acute peritonitis, neglected at the outset.*—Mr. C—, admitted into the Dreadnought on February 2nd. He had been suffering for five days from pain in the abdomen, and vomiting of all ingesta. He presented on admission a dusky, haggard look; his skin was clammy, pulse rapid and scarcely perceptible, and his tongue covered with a thick, brownish, and dry fur. He was ordered warmth to the surface and diffusible stimuli.

February 3rd.—Has passed a restless night, although he has been easy compared with his previous state. Has not been sick, his bowels have acted, and there has been copious micturition. Two p.m.—Is

troubled with constant hiccup and vomiting; there is increased pain and tenderness in the abdomen, and tympanitis; he has rallied from the state of collapse, and the nature of the attack is now evident. Pulse 98, and still thready. Ordered some leeches to the abdomen, and opium and calomel every four hours. At 7 p.m., as the vomiting was unabated, the quantity of opium was increased. At 11 p.m. vomiting continued. Ordered a blister to the abdomen, and ice *ad libitum*.

4th. Nine a.m.—Vomiting has ceased; pulse very small and compressible; skin colder and moist; pupils contracted; some rambling, but no drowsiness. The quantity of opium was diminished; ordered brandy every two hours. No urine had been passed since the night of admission, and but only half an ounce followed on the introduction of the catheter. Slight reaction followed the administration of the brandy, but collapse soon after succeeded, and he died at 6 o'clock, his faculties being clear to the last.

Inspection.—Body in good condition. Chest viscera healthy. A quantity of sero-purulent fluid in the abdomen; peritoneum exhibits vivid inflammatory injection, and in either inguinal region has a velvety appearance. Intestines slightly adherent from recent lymph, and the omentum glued to the intestines. Other viscera healthy.

The following peculiar case was communicated by my brother, the late Mr. Nathaniel Ward, to the Pathological Society. I introduce it here, in illustration of acute peritonitis.

Case 5. *Perforating ulcer of vermiform process,*

caused by a bristle; violent peritonitis; death.—A gentleman, æt. 27, of temperate habits, on his arrival home, five miles from London, was seized with violent rigors. Having accidentally gone by the wrong train, he had been exposed some time on the railway platform, and had felt cold and chilly prior to what he termed this attack of ague. The rigors occurred on the following day, and he then complained of pain in the belly. These symptoms continued during the next day, and on the fourth day after his seizure he was seen by Dr. Jackson, of Tottenham, who, on careful examination of the abdomen, detected a peculiarly tender part in the vicinity of the right iliac region, and which yielded a duller sound on percussion than the remainder of the abdominal walls. The patient, on this occasion, complained of great debility, great pain in the right iliac region darting through to his back, and he vomited on several occasions dark-green, bile-like fluid. On the fifth day the symptoms had become more severe; the pain in the abdomen amounted to agony; he was restless; the breathing was hurried; and the only position he could keep himself in was the sitting, with the thighs drawn up. The treatment, which consisted in the use of leeches, calomel, and opium, occasional injections, and surface counter-irritations, produced no appreciable relief, and the symptoms rapidly augmented in intensity, with the addition of constant hiccup. He was seen by Dr. T. Blundell and Mr. Ward. He died on the seventh night from the onset of the attack; excessive restlessness, dyspnœa, profuse perspiration, increased abdominal tympanitis, and suppression of urine for two days, having preceded dissolution.

Inspection.—Escape of a quantity of thick, purulent fluid on opening into the abdomen. Parietal peritoneum adherent to viscera, and these to each other. Peritonitis most intense over cæcum and lower part of ileum. On turning aside the former, a small abscess was exposed between it and the loose tissue in the iliac fossa. Protruding through that part of the wall of the abscess in relation with the cæcum was a small, worn-down bristle, about the third of an inch long, that had apparently belonged to an old tooth-brush. This bristle was found to have ulcerated through the vermiform appendix, a probe passed through the appendix coming out where the bristle was in the centre of the abscess. Beyond this, for a quarter of an inch, the coats of the vermiform appendix were sloughing, and the appendix was behind and adherent to the cæcum.

An individual who has been suffering from more or less prominent symptoms of gastric disorder, or from dysentery, or is in the advanced stage of phthisis, or has had severe intestinal complication in connection with typhoid fever, is suddenly seized with excruciating pain in the belly. When seen by the medical attendant, his abdomen is found to be exquisitely tender; there is, perhaps, painful micturition; the pulse is rapid and sharp at first, but soon becomes thready, and the countenance is intensely anxious. The previous history and present symptoms point to peritonitis from perforation. The disease thus lighted up runs rapidly on, in a few hours, or a day or so, to a fatal termination. After death the peritoneum is found to exhibit signs of acute inflammation, and to contain serum rendered thick and turbid by the

escaped contents of the perforated intestine. Any sudden movement, as coughing, sneezing, or straining, may determine the rupture. In one of the following cases it would seem to have been caused by the movements of an ascaris.

Case 6. *Peritonitis from perforation; ulceration of entire tract of large and small intestine.*—Thomas L—, æt. 22, was brought on board the Dreadnought in an emaciated and exhausted state, and with symptoms of acute peritonitis, which had come on suddenly. He was ordered immediately an injection of starch and opium, a grain of opium to be repeated at short intervals, wine and beef tea; but he rapidly sank, and died a few hours after admission. He gave a history of old-standing dysentery and constant diarrhœa, and considered his condition to have been aggravated by exposure to weather during his passage home from the East Indies. The provisions on board his ship were good, but there was a deficient supply of lime-juice.

Inspection.—Body wasted; lungs crowded with miliary tubercles. Peritoneal cavity contained about a quart of turbid fluid, and a round worm which had escaped through a perforation in the small intestine; recent peritonitis causing adhesion of the small intestines, and bands passing between the two layers of peritoneum; stomach healthy, but containing another ascaris; duodenum the seat of a number of small circular ulcers, about the third of an inch in diameter, with black bases; along the entire course of the jejunum and ileum, at intervals, were similar ulcers, and others of elliptical form, situated on the ridges of the valvulæ conniventes, one having perforated the

coats. Three cicatrices of oval ulcers occupied the site of Peyer's glands. The mucous membrane of the commencement of the jejunum was blanched and softened, looking as if it had been macerated. The large intestine contained numerous ulcers, irregular in outline, some with inflamed, everted edges, others evidently cicatrizing, the surface of all the ulcers being covered with a soot-like carbonaceous deposit, through which could be seen, here and there, the circular muscular fibres. There were also several minute circles of black pigment, surrounding a white centre, which did not appear to be one of the solitary glands. The cæcum was most affected with ulceration, the rectum least so, and in this portion of intestine was a third ascaris. The black bases of the ulcers along the entire canal were prominently visible through the serous coat before the intestines were opened into. Liver rather pale, but healthy; spleen somewhat engorged and friable; other viscera healthy.

The above case is valuable, not merely as illustrating the subject in connection with which it is introduced. It presents other features pathologically interesting. It exhibits the dysenteric process in its more severe form, and in the large ulcers with carbonaceous bases, shows the analogy of this process, as pointed out by Rokitansky, with the corrosion and destruction of mucous tissue by caustic acids. From the history that could be elicited from the man of his previous ailments, he did not appear ever to have suffered from typhoid fever, so that the ulceration in the small intestines may have been of tuberculous character. This view is strengthened by the extensive tubercular deposit met with in the lungs. The process of

cicatrization was well exemplified in some of the ulcers, and the completed reparative process in the cicatrices occupying the site of Peyer's patches. It is scarcely worth while entertaining the question whether or no the ascaris was the immediate cause of rupture.

Case 7. *Peritonitis from perforating ulcer of the stomach.*—W. H—, a carman, æt. 40, who had suffered from rather obscure symptoms of gastric affection, was seized a little before one, on a Tuesday morning, with excruciating pain in the abdomen, more especially referred to the epigastric region, but attended by so violent a spasm of the abdominal muscles as greatly to mask the more immediate seat of pain. These symptoms were accompanied by incessant vomiting, constipation, a small, frequent, rather wiry pulse, and general coldness of the surface. His countenance was expressive of great distress, and he could scarcely attend or reply to questions put to him.

When first seen, a full opiate was administered with a view of relieving the spasm, and was repeated in two hours. Some blood was abstracted, and with relief for a time to the spasm. The opium was repeated by mouth, and an injection of opium and gruel given, but without more than transient relief. He continued in the greatest agony during the day, and expired between 11 and 12 on the Tuesday night, about twenty-three hours from the commencement of the attack.

Inspection.—The abdominal cavity contained about a quart of fluid, of the colour and consistence of thin pea-soup. The peritoneum exhibited marks of recent inflammation; and the intestines were slightly adherent

to each other and to the abdominal parietes. The stomach was collapsed, and exhibited in its greater curvature, towards the pylorus, an ulcer of irregular shape, but with smooth, thickened edges. This had destroyed the inner coats, leaving only the serous investment, which had given way, forming an aperture through which the contents of the stomach had escaped, and which was sufficiently large to allow the introduction of a finger.

In cases such as the two last cited there is but little to be anticipated save a speedy termination in death; and all that can be done in the way of treatment is to alleviate by full and frequently repeated doses of opium the suffering of the patient. When there is severe spasm and the prostration is not too great, relief is sometimes obtained by the abstraction of blood. That there is a faint prospect of cure would seem to be proved by the cases narrated by Dr. Stokes, of Dublin, and Dr. Wood, of Philadelphia. Such cure could only be effected by localization of the effusion, and adhesion of the perforated bowel to contiguous structure; and this would be best brought about by the opiates which are freely administered for the relief of pain.

In an attack of acute peritonitis leeches may sometimes be applied to the most tender part with benefit; or, at any rate, the application of hot fomentations or a thin linseed-meal poultice over the abdomen will be attended with benefit. Formerly, I used to administer calomel in conjunction with opium, and to order also mercurial inunction, with a view to bring about, as speedily as possible, the specific action of mercury. Larger experience has, however, taught me to depend almost entirely upon the administration of opium, in

grain or half-grain doses, every few hours. The effect of this drug is to relieve pain, to quiet constitutional irritation, and to allow nature to carry out the necessary curative process. I cannot give my assent to the administration of a sharp purgative at the commencement of the attack, which has been advised by some practitioners, in order to effect revulsion to the mucous membrane. Nor can I consider the early exhibition of a purgative justifiable even when there are distinct indications of considerable fæcal accumulation calculated to keep up irritation. The constipation is due to spasm of the muscular coat, induced by inflammation of the contiguous serous structure; when the inflammation and consequent spasm are relieved by the remedies alluded to, the bowels will act without aid. Purgatives indiscriminately given increase the peristaltic action of the intestines, and thus irritate the inflamed peritoneum, and may cause the rupture of recent adhesions. If the bowels do not act when the more acute symptoms have been relieved, especially if there be tympanitis, an injection may be administered with advantage. If there be any localized tenderness, blistering, which is objectionable at first, may be used with good effect in the more advanced stage. The symptoms resulting in the course of an attack of acute peritonitis, from implication of any particular viscus, as vomiting, difficult micturition, &c., must be met by appropriate remedies. Ice is a valuable remedy where there is distressing vomiting and hiccup. The diet must consist solely of fluid articles, in small quantities at a time, as milk, beef tea, arrowroot, &c.; but if the pulse becomes thready, the surface cool, the tongue

dry and brownish, and other indications of prostration ensue, we must have recourse to diffusible stimuli.

In the chronic peritonitis resulting from the acute attack, and in that form which I have designated as non-tuberculous, the treatment must consist in remedies best calculated to arrest insidious inflammatory action, and to promote the absorption of effused serum.

Repeated blistering, careful friction with stimulating liniments, the application of turpentine stupes or mustard plasters from time to time, or the continued application of the compound iodine ointment, are the local remedies by which inflammatory action may be arrested or diverted from the serous membrane, and the action of absorbents stimulated. The indications of treatment will be further fulfilled by the internal exhibition of the milder preparations of mercury and iodine, either singly or in combination. Opium is a valuable remedy for the relief of pain, and the arrest of excessive alvine evacuations; where the skin is dry, the best form is the Dover's powder.

The treatment of the local affection in tuberculous forms differs in no material respect from that of the preceding variety. Mercury must not, however, be given save for its alterative action. Where there is anæmia, the iodide of iron is a valuable preparation. The intractable diarrhœa frequently requires attention; the mineral astringents, especially the sulphate of copper, have more control over the symptom than the vegetable. Opium is, of course, a useful and necessary adjunct. When the functions of the liver are sluggish, small doses of mercury and chalk in conjunction with Dover's powder may be prescribed, or the nitro-

muriatic acid may be given internally, or applied in diluted form, over the abdomen.

It must be remembered, however, that the peritoneal affection is, as I have already remarked, but the expression of a constitutional malady to which our efforts are to be directed. We must endeavour, therefore, to arrest the progress of the disease in its earlier stages by having recourse to measures calculated to improve the constitutional condition. We must bring to our aid those influences, the exclusion of which acts so largely in determining the development of hitherto latent tuberculosis. Foremost amongst such influences is pure air. When the means of the patient permit, residence during the winter months in the comparatively mild climate of some of our southern watering-places is desirable. If this is impracticable the air of the room in which the patient is to pass his time should be kept at an equable, but not too high, temperature, at from 55° to 60°. There is no greater mistake than that which is often committed, if patients, or those about them, are left to act on their own suggestions, of converting a room into an oven. An over-heated, close atmosphere not only relaxes the strength, but favours materially the formation of low inflammatory products, and tends to promote the disorganization of tissues. The local affection renders active exercise impracticable, but that involved in steady gestation over a smooth road is generally pretty well borne, and is attended with benefit. The patient, in the finer seasons of the year, should be much out of doors, not only for the sake of the pure air, but that he may be exposed to the vivifying and invigorating influence of light. The remedial action of light has

been much overlooked, simply, I believe, because its ordinary action as a vital agent cannot be exactly reduced to some chemical rule-of-three. In Southey's 'Memoirs' a pertinent anecdote is related of a little girl who, after an attack of smallpox, exhibited symptoms of struma, with a paralytic affection of one side. On the advice of some friend she was daily placed outside the house in the sunshine; and one day when she had been carried out as usual in her little arm-chair, and left there to see her brothers play, she rose from her seat, and, to the astonishment of every one, walked into the house. From this time her recovery was rapid. "It is by no means improbable," adds Southey, "that the sunshine really effected the cure."

The diet in tuberculous peritonitis should be simple and nourishing. In the early stage of the disease, if the appetite is good, meat well divided and masticated may be given with advantage. If there be any indications of disease in the mesenteric glands, nourishing fluids, as milk, beef tea, arrowroot, yelk of eggs stirred up with milk, will be more likely to be assimilated than food of a more solid character. Cod-liver oil, given in gradually increased doses, is a most valuable remedy, and is much better tolerated than might be expected. Sometimes the empty stomach rejects it, and it may then be given soon after meals. But little need be said in regard to clothing, beyond insisting upon the importance of flannel next the skin, in order to promote the functions of this and determine to the surface. In the advanced stage of the disease, when the hope of curing or even arresting it is excluded, we must deal with symptoms as they occur,

vary our treatment with the varying state of the patient, and by timely administration of anodynes prevent any avoidable suffering.

Perityphlitis.—This affection may be fairly classed with peritonitis. The following cases will serve in illustration. The first two occurred at the Seamen's Hospital, and are reported by Mr. Leech.

Case 8.—*Perityphlitis; tenderness and tumefaction over the cæcum; obstinate constipation; treatment by leeches, opium, and injections; recovery.*—F. W—, æt. 26, admitted on January 19th, 1863. He states that fifteen days ago he caught cold at Dunkirk, having slept for two or three nights in a wet berth. The attack commenced with slight, cramping pains in the abdomen and lower part of the body generally. He was constantly thirsty and could get no sleep, and observed that from the commencement of the illness the bowels were obstinately confined. No remedial treatment was sought for, and on his arrival in England he came to the Dreadnought. His antecedents, as regards health and habits, were good; and, indeed, he had been a total abstainer for more than two years. The symptoms, on admission, were severe cramping abdominal pain, especially marked across the ascending and transverse colon; a defined prominence simulating a tumour, over the site of the cæcum, with dulness on percussion, and marked tenderness on pressure; no fæces had been passed for fourteen days; the tongue was dry and slightly furred; pulse feeble and frequent. He slept but little; but there was not any very marked anxiety of countenance. He lay on his back, with some inclination to the right side.

He was ordered a linseed-meal poultice to the abdomen, a full dose of opium at night, and milk and beef tea.

Jan. 20th.—The pain continues, and there is no relief from the bowels. The urine has passed twice only in the last twenty-four hours, but in sufficient quantity. Twelve leeches were ordered to be applied over the cæcum; a simple enema to be given, and the opium repeated at night.

21st.—The leeches appear to have afforded some relief. There is still tumefaction over the cæcum, but the tenseness and tenderness are less. Two scanty fluid stools passed during the day, containing very little fæcal matter. The poultice to be continued, and half a grain of opium to be given every four hours.

23rd.—Pulse 76; feeble; has slept well; has very little pain; no stool; urine passed but once in twenty-four hours, normal, and in large quantity.

25th.—One scanty stool passed yesterday; tongue nearly clean. The opium to be reduced in quantity, and a simple enema to be administered.

27th.—No further evacuation; gurgling is detected over the cæcum; the tumefaction is reduced, and there is very little tenderness. To repeat the enema.

28th.—A larger free evacuation took place to-day, with scybalous masses; there is much less tenderness, and great general relief. The enema to be repeated daily.

February 1st.—Up to this date there has not been any further evacuation of the bowels; a scanty stool was, however, passed on the evening of this day.

5th.—The treatment has continued without variation up to this date, and the symptoms have not

materially altered. There is still distinct tumefaction and some tenderness over the cæcal region; another copious stool, containing scybala, was passed in the course of the day, being the second effective action only since admission. Ordered half an ounce of olive oil daily.

9th.—Three liquid stools have been passed during the last twenty-four hours; the patient is perfectly easy and the tumefaction reduced. A more solid diet is prescribed.

10th.—Three more stools since yesterday; tongue moist and slightly furred; hot skin; pulse 80; he complains of general debility. Ordered eight ounces of wine daily.

11th.—Four scanty stools during the last twenty-four hours; no heat of skin; has slept well; tenderness gone, but still some tumefaction. Ordered to have quinine and iron, and iodine to be applied over the cæcum. To have mutton diet. From this date he rapidly improved, the bowels regained their normal action, and he was discharged quite well on the 23rd.

Case 9. *Inflammation of cæcum; tumefaction; vomiting; constipation; complication with pneumonia.*—A. B—, æt. 25, an able seaman, of negro parentage, was hoisted on the deck of the Dreadnought in a state of great prostration on the 15th July; his pulse was thready and could scarcely be counted; tongue dry and parched; countenance expressive of great pain. He was unable to give any coherent account of the illness. It was afterwards elicited that he had returned from New York about a month ago; that the illness commenced suddenly, about six days previously, with

diarrhœa, followed by great abdominal tenderness and pain; that the prescription of a medical man at the East End of London had relieved the diarrhœa, but the pain continued. After he had in some measure rallied from the state of collapse in which he was when admitted, a more careful examination was made. The abdomen was found to be very tympanitic throughout; there was great pain on pressure over the cæcum, and prominence simulating a tumour, and there was also tenderness along the colon. There were the signs of consolidation over the base of the right lung and absence of chlorides from the urine. Hot-water bottles were applied to the feet, and a large linseed meal poultice to the abdomen. He was ordered a mixture containing five grains of sesquicarbonate of ammonia three times a day, and a grain of opium every eight hours; strong beef tea and eight ounces of wine daily.

16th.—As he had vomiting, brandy and soda-water were substituted for the wine, and the mixture was discontinued.

18th.—There is much less pain and tenderness over the cæcum; he has slept at intervals, and the vomiting has ceased; pulse 74, of fair volume; chlorides in urine scanty; no action of bowels. Opium reduced to two grains daily.

20th.—A copious, dark-coloured evacuation took place to-day, with expulsion of a great quantity of flatus, being the first action of the bowels for seven days. The pain has almost disappeared; cæcal prominence diminished.

23rd.—From this date the patient improved rapidly; the bowels were regular; the tympanitis and tume-

faction of cæcum gradually diminished; vesicular breathing became re-established in the right lung. Ordered meat diet.

There was no drawback to the recovery save a slight accession of diarrhœa, which yielded to an ordinary astringent dose, and he left the hospital well on the 30th. For the notes of the following case I am indebted to Dr. Sturges, with whom I saw it in consultation.

Case 10. *Perityphlitis; simulation of typhoid fever.*—A young lady, æt. 8½, returned on August 14th by steamer to London from Harwich, having had rather a rough passage. She was poorly before leaving, and the indisposition hastened her return. On arriving home her medical attendant, Dr. M. J. Sturges, was sent for. Of the symptoms and progress of the case he reports as follows:—"I found her feverish with a white-coated tongue, and no appetite, a hot skin, and pulse over 100. She complained of pain, with very slight tenderness on pressure in the right iliac region. Had had her bowels relieved on the previous day by a powder procured from a chemist. There was no vomiting. She was ordered the acetate of ammonia with the nitric ether, and aromatic spirit of ammonia; a mustard and linseed-meal poultice to the abdomen and farinaceous diet. She remained about the same on the 15th and 16th, still complaining of pain in the same neighbourhood, with, however, apparently trivial tenderness. On the 17th, the pain and tenderness having spread upward over the ascending colon, and the restlessness having increased, while neither the characteristic spots nor the diarrhœa of typhoid fever

had set in, the diagnosis of the case, at first somewhat obscure, became manifest as one of circumscribed peritonitis. She was accordingly given small doses of Dover's and gray powder; the mustard and linseed applications which had been used from the first being still continued. On the 19th, the bowels not having been relieved since the 16th, she took some castor-oil, which acted freely, bringing away motions well coloured with bile. On the 19th, too, the quantity of Dover's powder was slightly increased; and on seeing her on the morning of the 20th the tenderness had diminished, though the pulse was about 120. On the same day Dr. Ward saw her in consultation. There was then the tenderness and pain, with tumidity pretty well circumscribed over the cæcum, though extending somewhat along the colon. An increase in the quantity of Dover's powder and the omission of the gray powder was suggested, and also the administration of an enema in a day or two. These suggestions were carried out, the treatment in other respects persevered in, and the little patient continued to amend. On the 26th, the fever, pain, and tenderness having entirely subsided, she was ordered bark and diluted nitric acid, and made a satisfactory convalescence."

Remarks.—Inflammation of the cæcum is described under various titles, according to the implication of one or more of its coats; *typhlitis* being the term used when all the coats are affected; *typhlo-enteritis*, when the mucous membrane is more especially the seat of inflammation; and *perityphlitis* when the external investing cellular and peritoneal tunics are involved. These distinctions are perhaps rather too fine for practical purposes; but still there are one or two

features tolerably characteristic of perityphlitis in particular—such as cæcal tumour, tenderness on pressure, constipation, and tendency to end in suppuration of the cellular tissue; while in inflammation of the mucous coat only there will probably be diarrhœa and, not necessarily, pain. Speaking, however, of inflammation of the cæcum generally, the following are the more diagnostic symptoms:—The disease is usually ushered in by fever, which, as in the third of the above cases, is at times well pronounced. There is local pain and tenderness, varying in intensity; dulness on percussion, and the simulation, more or less striking, of a tumour in the site of the cæcum, resulting partly from the impaction of fæces in consequence of the inability of the muscular coat to propel the contents, and partly from the products of inflammation. There may be diarrhœa at the outset, but obstinate constipation usually attends the malady when fully established. Vomiting is not necessarily a symptom, but may readily be induced by the injudicious use of purgatives. The position of the patient is usually on the back, with an inclination to the right side, and not unfrequently the right thigh is drawn up so as to relax and take off pressure from abdominal muscles.

The disease may go on to general peritonitis and enteritis, and end in prostration and death; or it may end in local abscess, or become chronic; or, as in the above cases, it may terminate, after a not very protracted course, in convalescence.

The diagnosis of the disease is not always very easy. I believe that when occurring in young people the affection is often confounded with typhoid fever; and I know of one instance where it presented itself in the

more chronic form, in which the question was entertained whether the cæcal tumefaction, as it proved to be, was not an ovarian tumour. The disease seems to be generally excited by cold; but sometimes there is no definite cause to which it can be referred.

The treatment in the above cases consisted in—

1. Absolute rest in bed, in the recumbent position, as that in which the affected viscus would be best supported, and the natural curative efforts carried on undisturbed.

2. Opium, administered in sufficient and repeated doses, with a view of carrying out the indication of rest, and of relieving pain and tenderness and any spasm which might interfere with the action of the bowels, and continued until active inflammation had subsided.

3. Local applications—as leeches, which in one of the above cases afforded decided relief; counter-irritants, as mustard plasters and turpentine stupes; and soothing fomentations, especially in the form of a hot linseed-meal poultice, frequently renewed. In any case, when the inflammation is relieved, if the bowels still remain inactive, simple enemata may be administered with advantage. The diet must consist of light, simple, fluid articles of nourishment.

CHAPTER VIII.

AGUE, AND THE SEQUELÆ OF IT AND OF MALARIOUS REMITTENT FEVER.

ALTHOUGH ague no longer prevails in London and its vicinity as it did when Shakespeare, who in his historical plays has frequent allusions to it, made his 'Falstaff' die of a quotidian-tertian, or when a king, a protector, and many other notabilities fell victims to the malady, it still is to be met with in the metropolis, especially in the eastern districts and those adjacent to the river, more frequently than is generally supposed. I have among the out-patients at the Hospital for Diseases of the Chest, Victoria Park, and also in private practice, frequently had cases, either of acute ague, or in which the malarious influence, to which the individuals had been exposed some time previously, had left its mark in distinct organic mischief, in peculiar cachexia, or in imparting a periodicity to other diseases.

It is at the Seamen's Hospital, however, that I have constantly had opportunity of studying malarious fever in its acute and chronic forms.

Some years back I made an analysis of 1000 consecutive cases which had come under my care there, and I found that 102 were cases of ague and of the

resulting cachexia and sequelæ of it, and of malarious remittent fever. These affections still constitute about one tenth of all the cases admitted into the medical wards. Although I have notes of several hundred cases, an analysis of two hundred will suffice in elucidation of the more important points connected with the subject.

Looking at their source, I find that about one fourth of the cases came from different ports in the Baltic, and especially from Dantzic; another fourth, from the West Indies, Demerara, and Central America; a smaller proportion from the East Indies, China, and the West Coast of Africa; and that a fourth at least came from the low districts contiguous to the Thames, and from different ports in Great Britain.

It is either a low, marshy, undrained soil, or coast alluvial soil, and evaporation therefrom under the solar rays that furnishes the exciting ague malaria. Still the system, if well supported and placed under favorable hygienic conditions in other respects, will long resist this. Other causes, therefore, which operate especially in sailors, must be glanced at as predisposing. Such are—continued exposure to wet; sleeping in wet clothes, or in a wet, overcrowded forecastle, bad or deficient provisions, &c., all which lower the tone of the system, and render it liable to succumb to ague or any other malady.

Analysing the cases in reference to their duration, I find that 109 may be regarded as recent, not having lasted for more than a month, and 91 as chronic, having been protracted beyond, and many much beyond this period.

From May to September, inclusive, has been the

period of the year which has furnished the largest number of cases. It is during these months that evaporation from malarious as from other districts is at its maximum. A much larger number of recent cases has been admitted in September than in any other month. In all the months of the year we have had cases, but those admitted in the colder months have generally been chronic, and in which the fever has been developed in distant quarters.

I have endeavoured to determine the type of the disease in each case at the onset, seeing that it would lead to erroneous conclusions to take it at any subsequent period, when it might have been changed by treatment or duration. I find that out of 197 cases the type was tertian in 114, quotidian in 62, quartan in 9, irregular in 6, and that 5 cases were what is termed masked ague. The proportion of quotidian to the entire number is far too large to lend any countenance to the notion, entertained by some observers, that the only normal type is the tertian. Another point which I endeavoured to determine was the period of accession of the paroxysm. This could only be taken in recent cases at the onset, because quinine will postpone, and chronic cases, when not modified by medicine, are apt to become irregular. It was in scarcely half of the cases that I could satisfy myself upon this head. I found the onset of the paroxysm in both quotidian and tertian occurring at nearly all hours of the day and night, a larger number of accessions occurring in both types at 12, noon, than at any other hour; and in both, the period from 11 p.m. to 2 a.m. being free from them. The paroxysm in quartan is recorded as having occurred in the morning,

in three out of four cases. My experience, then, is opposed to the dictum still laid down in most text-books, that quotidian occurs in the morning, tertian at noon, and quartan late in the afternoon. I have no belief in double tertian, or literally quotidian tertian, as though two distinct waves of malarious influence coexisted in the same individual. I would call such cases irregular quotidian. With regard to the merging of one type into another, the rule, not without exception, is that, under favorable circumstances, an irregular form of ague, with two or more paroxysms daily, will merge into a quotidian, and a quotidian into a tertian; the reverse taking place under unfavorable circumstances. The time of accession of paroxysm may be either anticipating or retarding, coming on earlier or later each successive fit, according to whether the patient is improving or otherwise.

An ague may appear to be cured, but it has a tendency to return; and when it does so after a short interval we have what is called relapsing ague. Dr. Graves—to whose admirable 'Clinical Lectures' I am always pleased to make reference—was the first, I believe, to establish, from a long series of observations, the law that the periodicity of ague applies not only to the succession of paroxysms, but to the free intervals. My own experience leads me to confirm this view, the period of relapse, in the few cases in which I could determine it, having occurred on the day on which the fit would have taken place had the disease not been arrested. Thus, I find in one case of tertian the fit occurring on the eighteenth day after the last, and, in other cases, on the twelfth.

About a fifth of recent cases of ague were ushered

in by rigors, pain in the head and back, and by more or less gastric derangement, indicated by furred tongue, pain in the abdomen, bilious vomiting, and diarrhœa. In other cases there were merely the phenomena of the recurring paroxysms, upon which I need not dwell more than to recall the checked action of skin, the sense of chilliness, with increased temperature of surface, the pinched aspect, and arrested secretions of the cold stage, and the then powerful determination of blood to the internal organs; the reaction characterizing the second stage in the effort of the heart to throw off the blood from the centre to the surface, the intense heat of skin, and the still congested state of viscera; and the resolution, marked by re-established secretions, especially by action of skin and relief of internal organs, which is distinctive of the third stage. The paroxysm over, the patient generally remains well until the next accession, but not always so. In about a fifth of recent cases there is more or less gastric irritation continued through the intervals of the paroxysms. In a not very small proportion of cases the liver and spleen, especially the latter, are enlarged during the paroxysms, and sometimes they remain so during the intervals. There is also more or less tenderness over these viscera, and indications of congestion and functional disturbance of the liver, in the shape of bilious vomiting and diarrhœa. But during the cold and hot stages congestion is not limited to the abdominal viscera. Delirium not unfrequently shows that the brain is temporarily implicated. Cough, hurried breathing, and a sense of tightness over the chest, tell of a congested state of lungs. In one case of quotidian that was under my care, the patient had

had hæmoptysis every morning during the cold stage. In two or three cases pain over the loins and albuminous urine showed that the kidneys were congested.

The variation which occurs in the temperature of the body in acute ague is interesting and instructive. The heat of surface begins to increase some time before the commencement of a paroxysm; it sensibly increases in the cold stage, seems to attain its maximum of intensity in the hot stage, and when sweating commences, declines, but does not generally return to the average of health for some hours. I have found it as high as 107° in the hot stage, but it does not usually exceed 105° to 106°. When the paroxysms have been arrested, it is difficult to retain patients under notice so as to take the temperature day by day at the time at which the fits would have occurred. It would appear, however, from the few satisfactory observations I have been able to make, that antiperiodics really do subdue the disease effectually for a time, and so long as they are persevered in. I have taken the temperature at the time of expected attack, when a full dose of quinine given previously had checked it, and have found no appreciable increase of heat. If, however, the patient feels chilly at the time of the expected attack, there is generally a rise of a degree or two in the temperature. Believing, as I do, that ague once contracted is seldom really cured, but remains latent in the system, I can readily understand the occurrence at any subsequent period of attacks of chilliness, of imperfect paroxysms, with increase of temperature.

The following case, in which no medicine was given for ten days or more, will throw some light upon the

subject of temperature, although this was not taken as often and regularly as it might have been. It also illustrates the uncertainty, as to time, of accession of fits.

Case 1.—A. J—, æt. 18, admitted into the Dreadnought Hospital Ship on January 16th, 1868. His history is as follows:

In August, 1867, whilst at Panama, he was attacked by intermittent fever, the ague fits coming on at first every day, but afterwards every third day. He was then ill only fourteen days, being cured by quinine.

Fifty days before his admission, he arrived in England from New York, and has since been living on board his ship in the Victoria Docks.

Ten days before he was admitted the ague returned, the fits coming on every third day.

Condition on admission.—He is a fairly-nourished lad; ague cachexia marked; tongue clean; bowels regular. No enlargement of spleen. Ordered milk diet, and to take camphor mixture.

Jan. 17th.—Yesterday evening, about six o'clock, an ague fit came on, his temperature, which was taken just as he began to sweat, being 102°. This morning he feels well; temperature $98\frac{2}{5}$.

18th.—In the morning he felt quite well; temperature $98\frac{4}{5}$. In the afternoon, between 4 and 5 o'clock, an ague fit came on, which lasted altogether about three hours, temperature during hot stage being $103\frac{4}{5}$; after sweating profusely his temperature came down to $97\frac{1}{5}$.

19th.—Feels well; temperature $98\frac{2}{5}°$.

20th.—About 12 o'clock this morning he felt cold, but did not distinctly shiver; temperature 100°. This

was not followed by a hot stage or by sweating. From this time until the 26th he felt quite well, his temperature being normal.

26th.—This morning, at 11 a m., he felt cold, but did not shiver. This was followed by a hot stage and sweating. Temperature 102°, rising to 103°.

27th.—Another attack came on this morning; temperature $101\frac{1}{5}°$.

28th.—This morning he had another and much more severe fit, his temperature, taken whilst he was shivering, being 105°. In the evening, after very profuse sweating, the thermometer stood at 96°.

He was now ordered—Magnesia sulphitis, gr. xx; aquæ, ℥j, to be taken every six hours.

29th.—He has taken four doses of his medicine, and says he feels quite well; his temperature, taken at 11.45 a.m., was 100°.

30th.—He did not feel the ague in the slightest degree all day yesterday. This morning, at 10 a.m., he felt a little cold, but this feeling lasted only ten or fifteen minutes. It was not followed by sweating; temperature $100\frac{3}{5}°$.

31st.—Is quite well; temperature $98\frac{2}{5}$.

Discharged on Feb. 10th. No more attacks from Jan. 30th.

It has been the custom at the Seamen's Hospital, when a patient has been admitted suffering from intermittent fever, to defer treatment until after the occurrence of a paroxysm, in order to determine, first, the existence of the malady; secondly, its type. In cases where there is much gastric derangement, one or two doses of calomel, followed by a purgative, have preceded the special treatment, and the patients have

been placed on fluid diet. Generally the liver and stomach have responded readily to this treatment; the tongue has become clean, and vomiting arrested. But this is not always so, and there has been, especially in recent cases occurring along shore, some obstinacy in the gastric derangement. I have not usually given quinine until the tongue is fairly clean, and the stomach free from irritability. When the gastric irritation is relieved, or when it has not existed, a full dose of quinine has been given about three hours before the time of the expected paroxysm. I have, after some pains to ascertain it, fixed three hours before the attack as better than a longer or shorter time for the administration of the drug. I have also endeavoured to determine the minimum dose required, and this I have fixed at ten grains. Where the paroxysms are irregular in their character, I have found five grains of quinine, given every four hours, generally answer well. Out of 109 recent cases, 102 yielded at once either to ten grains, or to five grains every four hours, and in but seven was a continuance of large doses required. For the removal of cachexia and to guard against a relapse, quinine was generally continued in two-grain doses three times a day for a week or two, and the patients usually had a bottle of quinine mixture to take out with them.

The quinine, even when administered in large doses for some consecutive days, seldom produced any more serious effects than singing in the ears and temporary deafness. In one instance, however, more serious symptoms ensued, which might have been caused by the remedy. These occurred in a man who was admitted for tertian on October 29th, 1863, who had

been suffering from ague for a month, but who had not had any indications of head affection during the attacks. He was ordered ten grains of quinine before the expected paroxysm, and three grains three times a day. When seen on November 1st he had impaired motion of the right side of the face and right arm, with mouth somewhat drawn to the left side, delirium, pupils contracted, pulse weak, surface moist; had passed urine unconsciously and stools twice in bed. Ordered a blister to the nape of the neck, and the omission of the quinine. He was much relieved on the following day, and at the end of a week all the cerebral symptoms had disappeared. Although these symptoms appeared during the administration of quinine, and disappeared on its discontinuance, yet it would not be quite logical to regard the quinine and the attack as cause and effect; for the cerebral affection occurred on the day when the ague fit was due, and may have been a masked form of it.

I have given a fair trial to the liq. arsenicalis in doses as full and frequently repeated as I dared to venture upon, and have continued it until irritation of the mucous coat of the intestines rendered desistance imperative; but have not succeeded in checking the paroxysms as with quinine. In cases where quinine fails, or is not tolerated, I have frequently found the liquor arsenicalis to answer very well. I have, however, found the quinine, when not tolerated in large doses, or in solution, to be well borne and produce satisfactory results, if given in grain doses in the form of a pill, every half hour or hour. Some physicians, admitting the greater efficacy of quinine in arresting the paroxysms, have claimed for arsenic and also for

strychnia greater power for preventing a relapse. I believe, however, that quinine is most effective for the purpose if continued in small doses for a considerable time, and also that it is the best prophylactic against the disease. A captain who consulted me some years back said that he was on the point of sailing for Jamaica, and that he had never been there without contracting severe ague. I recommended him to take quinine in small doses, two or three times a day, all the way out. He did so, and on his return to England reported that for the first time he had enjoyed immunity from the disease.

I have found the sulphite of magnesia, in twenty to thirty grain doses, act well in some cases, but not likely in any way to supersede quinine.

The following cases will serve to illustrate the sequelæ of ague and malarial remittent fever.

Case 2.—J. W—, æt. 32, married, and has two children; is regular, but the catamenia are deficient. Had ague when ten or eleven years old at her home, near Rochford, in Essex, and the fits recurred every other or third day for between one and two years. They went off for a time, especially when she went to stay on higher ground near Rayleigh, but even then if she got out of order they recurred in a modified form. Seven years ago she married and came up to Limehouse to live. From this time she had no ague until five years back, after the birth of her first child. Three or four days after this event, having lost much blood in her confinement and become much reduced, the ague returned, and continued in the quotidian type for nearly three weeks. She then went into the

country, and the ague left her. She got out of health in August, 1867; the ague returned and her liver began to be affected. She became jaundiced, had constant retching, and confined bowels; the stools became perfectly white and continued so. About this time I first saw her, in conjunction with a medical man in the East End of London. I found her deeply jaundiced, the liver extending considerably beyond its limits, and the spleen somewhat enlarged. She was relieved to some extent by quinine, saline aperients, &c., but the jaundice did not pass off entirely, and she had shivering on and off up to February, 1868, when her husband having lost his situation, and their means having become much straitened, her medical man sent her to be an out-patient under my care at the Hospital at Victoria Park. She then was jaundiced, had lost flesh and strength, and complained of attacks of shivering, once or twice a week, at different periods of the day, followed by heat and ending in slight perspiration. There was tenderness over the liver and distinct enlargement of the organ; the motions were white and the urine was charged with bile. I ordered her three grains of quinine with fifteen drops of diluted nitro-muriatic acid three times a day, and a pill of blue pill and rhubarb every night.

March 17th.—The jaundice has nearly disappeared; the stools and urine are nearly as they should be; she looks better and is gaining flesh. Has only once, viz., when last regular, suffered from agueish symptoms.

April 7th.—Has quite lost the jaundice, and has had no symptoms of ague since I last saw her. She has cough, but there is no evidence of pulmonary mischief.

Ordered cod-liver oil, in addition to the quinine and acid mixture.

May 1st.—After depression from severe cold, about a fortnight since, she was seized with pain and tenderness in the pit of the stomach, with retching and vomiting of bile, but was not jaundiced. A similar attack recurred twice at intervals of about four days, and on each occasion was preceded by pain in the back and some chilliness, but not positive shivering. In addition to continuance of medicine, I suggested change of residence to some high and dry locality. I saw her some time after this and she was then fairly well, and about to leave the damp locality in Limehouse in which she had been residing.

Case 3. *Chronic ague; enlarged spleen and liver.*—T. M—, æt. 35, was admitted into the Seamen's Hospital on September 13th, 1870. Said he came last from St. Kitt's and had been ill four days, but on inquiry it appeared that he had been ill for months. Four months ago when in London, on his return from the River Plate, he suffered from chills, on and off, for three weeks, and since then has suffered from piles.

Has marked ague cachexia, looks sallow and worn, has lost flesh and strength, and is very anæmic. There is considerable abdominal prominence and resistance, due to enlargement of spleen and liver. The former extends downwards nearly to the crest of the ileum and across beyond the mesial line; the liver is two or three inches below the ribs. There are numerous hæmorrhagic spots over the body and legs. He has hæmorrhoids, with frequent discharges of blood per anum. There is some œdema of the lower ex-

tremities; no albumen in the urine. As there was much tenderness over the spleen when he entered, a linseed-meal poultice was applied, and a grain of opium given three times a day. In a day or two the pain was relieved, and he was then ordered—Quin. sulph., ferri sulph., āā gr. iij, magn. sulph. ʒss, acid. sulph. dil. mvj, aquæ ℥j, three times a day. Some but not marked improvement followed, and on October 11th the bromide of potassium, in scruple doses, was given three times a day, and subsequently in half-drachm doses, but without any diminution of the spleen or improvement of general condition.

On October 26th five grains of quinine were given three times a day, and a flannel roller was applied round the abdomen, with a view to warmth and mechanical support of the viscera. The latter gave the patient much comfort, and enabled him to move about better than he had been able to do. Under the action of the quinine the spleen became gradually reduced, and the patient after a week or two left the hospital materially relieved.

Case 4.—Thomas J—, æt. 17, was admitted into the Dreadnought, on February 23rd, 1868, and gave the following history:—Eleven days after his arrival at Berbice, a year ago, he was seized with yellow fever, and was seriously ill for a fortnight. He had what he was told was ague, afterwards, in the form of attacks of shivering three times a day, viz. at 8 a.m., 7 a.m., and 2 p.m., followed by sweating. At the same time his belly began to swell, and he noticed a tumour in his left side, extending from the ribs to the navel. He also had pain in his left side. After six or eight

weeks the fits came on only once a day, at about 11 a.m. From that time to the present he has continuously suffered from ague, the fits coming on sometimes daily, at others every third day.

The symptoms on admission were—face tolerably full, body thin, complexion anæmic and clayey; lungs and heart normal; abdomen swollen and tender; liver dulness somewhat beyond normal limits; spleen considerably enlarged, extending downwards to nearly the left iliac region, upwards towards the left nipple, and transversely as far as the umbilicus, near which the notch can be felt. He was in an ague fit at the time of his admission; it did not clear off for three hours and a half, and on the following day he had another fit. He was ordered, three times a day, thirty grains of sulphite of magnesia, which drug was being tried at the time against quinine as an antiperiodic. When seen on February 25th he had taken four doses, and had had no shivering, but there was in the afternoon an increase of temperature up to 100°, which was followed by some sweating. Was unable to take the beef tea which had been ordered.

26th.—A very slight attack this morning, temperature rising to 102°; abdomen much less tender.

27th.—Fit rather more severe; temperature rising to 105° in hot stage.

28th.—Did not feel ill all day; temperature did not exceed 101½°.

29th.—Slight chilliness followed by some action of skin; irritability of stomach; unable to take beef tea, and ordered arrowroot and milk.

March 1st.—Feels well. Has had no shivering and has not been sick since the change of diet. No

tenderness over the abdomen. The splenic tumour appears to be somewhat reduced; bowels regular; appetite good. Has some cough and expectoration, and there are râles scattered over the chest.

3rd.—Appears fairly well; temperature 90°; splenic enlargement decidedly less.

7th.—Cough troublesome; temperature still high at times. His conjunctivæ are yellow, and the skin has a jaundiced hue. Urine contains bile and is charged with lithates. Has no pain in right side or shoulder. Splenic tumour again somewhat larger, about the same as when he entered. Ordered a mixture of quinine, sulphate of iron, and small doses of sulphate of magnesia.

About March 10th the cough increased and was accompanied by rather free expectoration of mucus; he also had increasing dyspnœa and complained of much uneasiness in the left side of the chest. On examination there was found to be marked dulness on percussion, and entire absence of vocal fremitus and of breath sounds over the lower half of this side, and pleuritic effusion was diagnosed. He was more prostrate than he had been, and brandy was ordered in addition to the wine he had previously been taking. For the week or ten days following, his symptoms increased in severity; breathing rapid and shallow, pulse weak and very frequent, hectic towards night. The quantity of stimulus was increased.

On the 21st, at 10 a.m., he had an attack of ague, and on the evening of this day erysipelatous inflammation appeared on the right cheek, and extended gradually, in the next day or two, over the head and face. His prostration became more marked, delirium ensued,

and he died exhausted, and at the last conscious, on March 26th.

Inspection twenty-four hours after death.—*Thorax.*—A large collection, about a quart, of dark fluid blood in the left pleura, which had compressed the lung to about one fourth of its normal size. The right lung was healthy in structure, but bound down by many pleuritic adhesions. Heart normal.

Abdomen. — Liver large, of a slaty-black colour throughout, and very friable; the spleen was of the same colour as the liver, was very large, weighed nearly two pounds, and was almost rotten in texture. On examining the fluid from the cut surface of these organs under the microscope, it was found to contain abundance of granular pigment. The kidneys were large, but normal in structure.

Case 5. *Yellow fever merging into intermittent, with usual sequelæ.*—J. C—, æt. 33, sailor, was admitted on board the Dreadnought on August 12th, 1867, from Demerara, where he had yellow fever, three months back. On being closely questioned as to the nature of the case, he said that yellow fever was prevailing in Demerara at the time, and the doctor who attended him said that he was suffering from it. He was for seven days in a private house, and when well enough was removed to the hospital, where he remained for a month. He only remembers that when first taken ill he was delirious and had severe vomiting. When he left the hospital he shipped for the voyage home at £2 a month, but was only able to do a week's work. The vomiting and prostration returned, and he kept to his berth until his arrival in port.

The symptoms on admission were constant vomiting and inability to retain anything on the stomach, the matters vomited being chiefly bile and mucus; tongue much furred; considerable prostration; rapid pulse; marked cachexia, with aspect not appreciably differing from that of protracted ague. The liver, although much deranged functionally, did not exceed its normal limits, but the spleen was much enlarged, and its border could be felt below the false ribs. He was placed on light fluid diet, and ordered saline effervescing mixture every four hours. In two days the gastric irritation was subdued, the pulse reduced in frequency, and the tongue nearly clean, and he was ordered full doses of quinine and sulphate of iron, with a little sulphate of magnesia, three times a day. By the 21st of April, when he left the hospital of his own accord, the spleen was considerably reduced in size, and his general condition much improved.

Case 6. *African Coast fever merging into regular intermittent; enlarged spleen, &c.*—John T—, æt. 19, admitted March 16th, 1867. Had bilious remittent at Lagos, West Coast of Africa, in December last. Fever at first was in fits, without any marked intervals: then it became irregular, with marked intermission, and lastly assumed the tertian type. It was the first time he had been on the Coast of Africa, and he had previously enjoyed good health all his life. Has now marked cachexia and anæmia; enlargement of spleen. The urine is free from albumen. Ordered mutton diet, with three grains of quinine, two of sulphate of iron, and a drachm of sulphate of magnesia three times a day. Under this treatment the spleen dimi-

nished rapidly, his general condition improved, and he was discharged in fair health at the end of the month.

The above cases illustrate most of the sequelæ of ague; the congested and enlarged spleen and liver, the gastric derangements, the cachexia, the tendency to the recurrence of ague fits under fresh exposure to malaria or ordinary depressing influences, as, for instance, in Case 2, on the occurrence of a severe cold, on the exhaustion produced by flooding in confinement, and even after the slight depression caused by ordinary menstrual discharge. About a year back (February, 1871) a lady was brought to me by her husband, who had driven down in a hansom cab. When she entered my room she was shivering severely. She was of Indian extraction, had had ague in India in early life, and was now in the ninth month of her first pregnancy. I saw at once that she was in the cold stage of ague, and ordered the husband to put some extra wrappers round her, and take her home in a closed vehicle. I saw her several times at her house in Westbourne Grove. The ague continued in the quotidian type for nearly a fortnight, resisting the influences of such doses of quinine as her irritable state of stomach could tolerate, when her confinement ensued. Dr. Dale, who attended her in it, informed me that from the moment of the delivery she threw off the ague, and had no other unfavorable symptom.

The cases cited, especially 4, 5, 6, forcibly lend support to the view entertained by many medical men, though questioned by others, of the identity of the ague-poison with that which induces the severe remittent fever of the coast of Africa and the malarial form

of yellow fever, as distinguished from the contagious; the difference in the exciting causes being one of intensity, not of kind. The proof of such identity rests, first, on the fact that the sequelæ, as regards visceral implication, cachexia, &c., are the same; secondly, on the even more conclusive fact, shown by my cases, that, as the patients improved, the remittent ran into the defined intermittent form.

I will now glance at the sequelæ of these malarial fevers.

The most prominent is congestion of the abdominal vessels and viscera, evidenced by tumefied abdomen due, as Graves long ago noticed, not to serous effusion into the peritoneum, but to enlarged spleen and liver, and perhaps also to accompanying tympanitis.

The spleen is at first simply distended with blood and enlarged to some extent in consequence. This state is for a time transient, and will be removed under appropriate treatment after repeated attacks of intermittent fever. At last, however, the organ becomes persistently enlarged, and to such an extent at times, that it can be felt considerably below the left ribs, and towards the mesial line of the abdomen. It then constitutes the ague-cake, and is hypertrophied and indurated. From this condition it may rapidly recover under appropriate remedies for a time; but at last the blood, constantly pent up in the distended vessels, finds its way through the walls of these, becomes extravasated, and induces a rotten, friable state of tissue, as shown by inspection after death. Sometimes rupture occurs of the viscus itself; at other times suppuration takes place.

The large quantity of blood received by the spleen,

not only in ague, but also in typhoid fever, and even in health during the digestion of a full meal, proves that one function of the organ is merely mechanical, and that it would in these cases seem to play a salutary part in affording a reservoir for some of the blood so powerfully thrown from the surface, and thus lessening the congestion of other and more important viscera. That the spleen has some higher function in reference to the blood is shown by the damaged condition of this fluid as attested by cachexia, anæmia, &c., when the organ is permanently impaired.

The liver is at first merely congested, and this state may go off with the ague attacks. But if these are repeated, the congestion becomes more intense, the organ enlarges, and we have evidence of interference with its function in jaundice, in pale or over-dark stools, in urine charged with bile. Or inflammation of the diffuse kind may ensue, and, if the patient dies, the organ will be found much enlarged, of deep hepatic hue, and highly charged with blood, especially in the portal system. If the inflammation has been recent the tissue will be probably indurated; if, as is more likely, it has been of some standing, the hepatic tissue will be soft and readily broken down.

The obstructed condition of the portal system of vessels is shown in acute ague by the disturbed state of stomach and bowels, the furred tongue, bilious vomiting, and diarrhœa. Ascites is not usually met with, even in conjunction with the great congestion of spleen and liver of chronic ague, but, of course, it may result.

The pigment liver and spleen, of which Case 4 affords an instance, is rather a sequel of the severe "pernicious" remittent fever of tropical than of the

ordinary intermittents of this and other temperate climates. It was, however, noticed as a frequent result by Frerichs in an epidemic of malignant intermittent fever which occurred at Breslau some years back. In the case I have cited the liver and spleen were almost black; in cases cited by Frerichs they were either black, steel-gray, or of chocolate colour, generally uniform, but sometimes disseminated over the organs in spots. The pigment consists mostly of amorphous granules, but partly also of pigment-cells containing black granules. It results from the transformation of the hæmatine of the blood-discs, which may occur anywhere in the tissues as well as in the vessels, and is a physical rather than a vital phenomenon. This destruction of blood-globules by conversion occurs primarily in the spleen. It probably takes place, although we seldom have the opportunity of verifying it, in most cases of protracted ague, and would explain the anæmia and peculiar hue of skin which are among the most marked of the sequelæ.

Frerichs advances an hypothesis that the severe organic and functional disturbances which follow especially the pernicious forms of marsh fever, are due to blocking of the vessels of the organs affected by a sort of pigmentary embolism. Against this view Trousseau opposes the fact of the intermittence of symptoms, which would be persistent if embolism had transpired. He also advances against it the therapeutical objection of the powerful effect of quinine, &c., and he concludes that the pigmentation is effected in the organs themselves from repeated congestions, and the changes induced thereby in the blood.

The kidneys become at times so congested during

the ague fits that albuminuria results. This at first will pass off with the fits, but as these become repeated, and the ague becomes chronic, it may persist and the patient may ultimately succumb to Bright's disease. A lad who came under my care at the Dreadnought had had ague, and a month before admission had been suffering from albuminuria and dropsy of the scrotum and lower extremities, and had been successfully treated at the Ipswich Infirmary. On leaving this the ague returned, and with it the dropsy, and when admitted into the Dreadnought he had anasarca of the scrotum and legs, and the urine was highly albuminous. He became rapidly better under the action of quinine and hydragogue cathartics, and when discharged had scarcely any albumen in the urine.

Many of the cases of dysenteric diarrhœa brought to the Seamen's Hospital have unmistakeably the malarious stamp upon them; being marked by periodicity in the severity of the symptoms, either at some period in the twenty-four hours or on every other or third day. Quinine, in addition to the treatment usually adopted, is essential to the relief of these. On eliciting the history of such cases, the patients are found at some period of their lives to have had ague. "The cachectic state of system," remarks Dr. Morehead, "engendered by the fever is one particularly predisposed to local inflammatory and congestive attacks under the influence of external cold. The structure most likely to be thus affected is the mucous lining of the alimentary canal, and the diseases induced are classed in our returns under the heads 'diarrhœa' and 'dysentery.' There can be no question that much of the mortality recorded in India under the head 'bowel complaints' is, though

indirectly, yet fairly chargeable to the account of malarious fever."

Not only the abdominal but the thoracic viscera also become implicated in protracted ague. I have already cited a case in which hæmoptysis occurred daily during the cold stage of a quotidian, and I have the record of complication of bronchitis and pneumonia in several cases. My experience is therefore opposed to the view that ague affords immunity from other diseases, and from phthisis in particular. A captain of a vessel trading from the West Indies came to consult me some years back for incipient phthisis. He told me that he first had cough and difficulty of breathing during the cold stage of an ague fit; that for a time these symptoms disappeared during the intervals between the fits, but that at length they became persistent. A tailor, who some five years back made his appearance amongst the out-patients at the Hospital for Diseases of the Chest, Victoria Park, said that about three months before he had contracted ague in a part of Old Ford contiguous to the marshes. The ague was of the tertian type, and lasted for six weeks. After it had lasted a month he began to cough and expectorate. When I saw him he had the marked ague aspect, was emaciated, had night sweats, and on examination I found the upper part of the left lung in the second stage of phthisis. One would suppose *à priori*, what my experience proves, that an affection like ague, which damages the blood and depresses vital force, would act as a predisposing cause of instead of affording protection against phthisis.

I have known individuals who were liable at times to spasmodic asthma, and who were sure to have an

attack if they remained for any time, particularly if they passed a night, in a district where malaria prevailed. Dr. Morehead cites the case of a Hindoo drummer, who had suffered for eight months from intermittent fever and asthma, which returned at intervals of fifteen days. He was admitted into hospital on August 2nd, 1850. The physical signs of emphysema of lungs were present. The paroxysms of fever and of dyspnœa recurred together at night and ceased towards the morning. He was treated with quinine in four-grain doses, at first uncombined, then with a grain of sulphate of iron and dilute sulphuric acid. No treatment, except rubefacients to the chest, was directed against the asthmatic symptoms. On the first and second day after admission the fever and asthma were much less; they ceased the third day, and he was discharged on August 8th. Dr. Morehead adds that the "case is interesting from the fact that spasmodic asthma in India is occasionally most successfully treated with quinine and small doses of iron given during the absence of the paroxysms. In such cases it is reasonable to infer that the asthmatic symptoms are related to a malarious cause. So satisfied am I of the accuracy of this observation that I hold it an important part of the examination of asthmatic patients in India to determine the probability or not of malarious influence."

A systolic bruit may frequently be heard at the base of the heart in patients suffering from ague cachexia, and enlarged spleen. It is, however, merely of anæmic character.

Affections of the nervous system, particularly in the form of intermittent neuralgia, are common as conse-

quences of ague. Of the neuralgias, brow-ague is the most common, but the fifth nerve is not the only one affected. I have frequently had cases of severe neuralgia of intercostal nerves, and also of some of the nerves supplying the extremities. Neuralgia of the liver or spleen is not uncommon.

I seldom have to ask a patient suffering from chronic ague what ails him; the aspect speaks for itself. In Shakespeare's 'King John' Lady Constance talks of her son getting to look "as dim and meagre as an ague's fit." In chronic ague there is a lack-lustre, pinched, meagre look. The sallow, bloodless complexion and worn, fatigued expression, are quite characteristic of the affection. The aspect tells not only of deficient but of damaged blood-corpuscles.

Trousseau remarks that, in those who have once had severe ague, a diathesis becomes established, which he calls "diathèse palustre," which I will call the ague diathesis, and which differs from other diatheses, as the gouty, rheumatic, &c., only in being acquired, not hereditary. It resembles these in exhibiting a morbific cause, which may remain silent for a time, for months or years, but which frequently expresses itself in various ways, in the tendency to visceral complications already noticed, in a peculiar cachexia, in the character of periodicity it imparts to other diseases, and in the tendency to the recurrence of ague fits, when the system has from any cause become depressed, without fresh exposure to malarial influence.

A few remarks may be made here in reference to *irregular* and *masked* ague, which forms may occur in connection with the disease either in its acute or chronic stage. By *irregular ague* is meant that form where,

instead of a regular paroxysm occurring every or every other day, we have a series of small but properly developed fits occurring two, three, or four times in twenty-four hours; or where the paroxysm, occurring with regularity, is imperfectly or irregularly developed; as when we have the cold, or hot, or sweating stage alone, or where the hot precedes the cold stage. Thus I find one of my patients having fits several times a day at first, the disease afterwards assuming the quotidian type; in another there was merely an attack of rigors every morning; in a third, rigors two or three times a day, followed by heat, but not ending in sweating.

The term *masked ague* is applied to attacks of paroxysmal character occurring daily or every other day, and simulating various diseases, but having intervals of perfect health. Some writers consider that such attacks ought not to be regarded as ague. But it must be remarked that they usually occur under exposure to malarious influence, that they follow, in some respects, the course of ague, and yield readily to antiperiodics.

Dr. Graves cites a case in which apoplexy was so completely simulated that he did not detect the true nature of the complaint until the third attack, after which it was at once arrested by quinine.

A gentleman, some time back, came to consult me for attacks of intense præcordial pain and uneasiness which came on every afternoon about two and lasted with more or less intensity for several hours. He had been under treatment, had been ordered diffusible stimuli, anodynes, &c., and had been treated by one medical practitioner for dyspepsia. As, however, when

I saw him, he had a clean tongue, and healthy secretions, as the periodical character of the affection was well marked, and he had come from a district in which ague occasionally occurred, I was led to regard the case as one of this disease in the masked form, and prescribed five grains of quinine three times a day. The following day the paroxysm occurred with much less severity, and after that he was well. A medical gentleman called upon me one morning, a few years since, requesting my advice. He said that for three or four weeks he had had sickness on first sitting up in bed in the morning, that he then threw up mucus, but no bile; that distressing flatulence attended the attack and some shivering. On getting into bed again he usually fell into a perspiration, and afterwards was well for the remainder of the day. He lived on a gravelly soil in a healthy neighbourhood, but said that he had been much up at night, especially in houses situated in a low, clayey district. Regarding the case as one of masked ague, inasmuch as the tongue was quite clean, and the bowels were regular, I suggested quinine in fair doses. Under it he got rapidly well.

The indications in the treatment of chronic ague and its sequelæ are:

1. To counteract special malarious influence.
2. To relieve visceral complications.
3. To restore the blood and the system to their normal state.

The first indication is carried out by the administration of anti-periodics. Arsenic, bibeerine, and other drugs of this class have been fairly tried, but not one of them with the success that has attended the exhibition of quinine in sufficient doses. And here I

must protest against that false economy which regards the relative value of drugs. Efficacy, not expense, should be regarded. It is always the best economy in a hospital to cure as quickly as possible, and there is the higher consideration of not allowing the patient's constitution to be under a damaging influence longer than we can help. Quinine alone, given in five-grain doses three times a day, is quite adequate to the removal of the cachexia and enlargement of spleen and liver which characterize chronic ague. The second indication, the relief of visceral complications, seems carried out by the same drug. Whilst I object to the frequent admission of hydragogue cathartics as tending still further to vitiate the damaged blood, I am satisfied that the moderate use of saline aperients tends to relieve the congested portal system. In hospital cases I generally combine a small dose of sulphate of magnesia with each dose of the quinine. In private practice the Friederichshall or Püllna waters will be found very serviceable.

I have tried preparations of iodine both externally and internally, and also the bromide of potassium, for the relief of the splenic enlargement, but with far less satisfactory results than have attended the line of treatment just laid down. Dr. Maclean says that the ointment of red iodide of mercury rubbed in, in small quantity, daily over the region of the spleen before a fire has proved very efficacious in reducing the size of the organ. This remedy has been fairly tried in India, and also at Netley Hospital, and he adds that in no case in his own experience has it produced unpleasant constitutional symptoms.

The third indication is to be fulfilled by the administration of iron and quinine, by change of air and generous diet. Individuals suffering from ague cachexia are remarkably sensitive to cold and atmospheric changes. They should at all times be adequately clothed, and wear flannel next the skin, especially in winter.

In speaking of the treatment of acute ague I remarked that it was our practice at the Seamen's Hospital to allow patients who were admitted with this affection to have paroxysms before we prescribed quinine. It has, however, not infrequently happened that individuals who have had paroxysms regularly up to the time of their admission have had none afterwards, and it would seem, therefore, that favorable conditions as to locality, rest, and diet only are adequate at times to the arrest of the malady. I am indebted to my friend Dr. Bradford, who was formerly the medical superintendent of Sandhurst College, for the following memorandum :—

"I have long entertained a belief that in a large proportion of the attacks of intermitting fever as it occurs in European soldiers in tropical climates the practice of administering large and repeated doses of quinine is unnecessary when opportunities exist of placing the sufferers under favorable conditions of rest and regimen in hospitals. I by no means seek to depreciate the efficacy of quinine when these advantages are not to be obtained; but I am convinced that in a large number of cases it is not essential.

"In the year 1856 the charge of the European Military Hospital at Kandy, in Ceylon, devolved on me, and I determined to test this opinion by experi-

ment. It had here been the practice to administer in all cases of intermitting fever (and they were very numerous) doses of five grains of quinine and upwards, three or four times daily, and certainly with perfect success. I ceased to prescribe this medicine, and persevered for several months, adopting, of course, the usual hospital diet and regimen. Little or no difference resulted. The cases which came under treatment recovered quite as steadily as those which took it freely. The rest and diet of the hospital seemed to suffice. It cannot be doubted, however, that the results would have been different had the men continued to be exposed to night duty and to fatigue."

The following case may be introduced here as illustrating a serious but rare affection, in which malarious poison does not appear as the exciting cause, although enlargement of the spleen is usually the most prominent symptom.

Case 7. *Leucocythemia; enlargement of spleen and of inguinal lymphatic glands.*—J. P—, a Dutch Jewess, by occupation a cook, æt. 21, was admitted into the Hospital for Diseases of the Chest, Victoria Park, on October 24th, 1870, when she gave the following history. Her father died many years ago; cause of death unknown. Her mother is healthy; never had any brothers or sisters. She never had rheumatic fever or ague, or any glandular swelling in the neck or elsewhere, and until the last nine months had always had good health. On the 26th of last December she was taken with a severe pain in the left side, which was relieved by poultices. She was in bed a fortnight, but did not lose her flesh or colour.

On getting better she went out for a long walk, but felt very weak when she returned, and was taken very ill in the night with a fearful pain in the left side and also in the head. She had no cough. Was in bed at home for three weeks, and was light-headed the greater part of the time. She was then taken to the London Hospital, and was in bed there for six weeks with an attack of typhus fever. While at the hospital she lost much flesh, became very pale, and her breath became very short. It was not noticed that her abdomen was swollen while she was in the hospital. After leaving the hospital in April last she felt rather better, but did not gain flesh, and her breath remained short. About seven weeks later she had sudden swelling of the face, hands, and lower extremities, and, to use her own words, "was quite a sight." She was very weak, and remained in bed. One morning the dropsy had quite disappeared; she got up, and whilst dressing found she was unable to fasten her clothes, and then for the first time discovered a hard swelling in the left side of the abdomen. From this time she suffered a great deal from pain in the region of the lower ribs on the left side. She remained much the same in general health, got up for a short time occasionally, but could not remain up long owing to her breathlessness. About a month back she had several attacks of epistaxis, followed by hæmatemesis several times, but not severe. Had almost constant vomiting from the beginning of her illness until the period of her admission.

Symptoms on admission.—Has very dark hair and eyes, which contrast markedly with her intensely anæmic appearance. The anæmia is shown not

merely in the skin but in the mucous membrane of the mouth. The symptom of which she complains most is breathlessness. Has a furred tongue and constant vomiting; bowels regular. Has no cough to speak of and no expectoration. The cardiac sounds are normal, and there is no evidence of anything abnormal in the lungs, except that the breathing is everywhere rather harsh. The left side of the abdomen is occupied nearly to the pubes by a firm, resisting tumour, the dulness being continuous with that of the spleen; a notch can be felt in the right edge of the tumour just below the umbilicus. The urine is free from albumen. The catamenia were absent from December, 1869, to April last, when they reappeared and continued regular to the end of June, since which time she has seen nothing. Has had disturbed sleep throughout her illness; is very weak; her eyesight is good, but she has dimness of vision on attempting to move about. Her pulse is 132, very small and feeble. Later in the day the pulse was 135; respirations 36; temperature 103·7. On the morning of the 25th the temperature was 101·7, and the pulse 129; in the evening there was increase in temperature and in frequency of pulse. On the morning of the 27th the temperature had fallen to 98°, and the pulse to 116. She was ordered for diet milk, beef tea, and eggs; and for the irritable stomach an effervescing mixture with hydrocyanic acid. After a few days the tongue was cleaner, and the vomiting had ceased, and she was ordered quinine and iron. The medicine was continued until November 4th, when, as she had been complaining of headache for a day or two, the quinine was omitted.

November 5th.—Has lost the headache, but her tongue is furred and she complains of a bad taste in her mouth. Pulse 140, sometimes intermitting; temperature 100°.

9th.—Was very sick last night, is a little better this morning. Pulse over 140. Does not take her food well. This patient remained in the hospital for some weeks longer. The enlargement of the spleen became in no degree reduced; the hectic fever, weakness, and hurried breathing continued; and the medicines tried appeared to have no effect whatever on the disease. The blood was examined under the microscope on two or three occasions, and the white blood-cells were found to be very numerous, about one to ten red corpuscles or more, and to be larger than normal. The report of the case thus far is from the notes made by Mr. W. H. Power, the resident medical officer at the Victoria Park Hospital. I saw the patient at her home in the East End of London, on March 3rd, 1871, and found her condition as follows: — Spleen more enlarged and resisting; liver extending to more than two inches below the ribs; lymphatic glands in left groin much enlarged, and one slightly so in right groin; urine high-coloured, free from albumen; no menstruation. The pulse was 140 and very weak; respirations 48. The patient died within a fortnight of my visit from gradual exhaustion. No post-mortem was allowed.

It would have been satisfactory to have had a post-mortem examination in the above case, but the parents were of Jewish race, and it would have been useless to have urged it. The spleen must have been enormously hypertrophied, and would probably, on micro-

scopic examination, have presented only normal elements densely and firmly packed. In the above case its structure was evidently denser and more resisting than usual. There would probably have been thickening of its capsule. The liver may have been merely ordinarily hypertrophied, or it and other organs might have exhibited depositions of lymphatic elements as observed in one or two cases by Virchow. The microscopic examination of the enlarged lymphatic glands in these cases by different observers has shown merely a great increase of normal elements of cells, nuclei, and granules.

In one or two recorded cases the patients had been exposed to malarious influence, but in mine and in other cases there had been no exposure to such influence, and it cannot be regarded as an exciting cause. Moreover, the blood in chronic ague with splenic enlargement does not present an excess of white cells, but a deficiency and damaged condition of red corpuscles. Further, quinine, which is so powerful a remedial agent in ague, is useless, as indeed are all other remedies hitherto tried, in leucocythemia. That malarious fever may by its depressing action act as a predisposing cause is probable; other exhausting affections would act in the same way. In the case I have narrated typhus fever immediately preceded the more marked development of the disease.

From the time that the subject of my case came under observation up to her death there was continued hectic fever, evidenced by elevation of temperature and increased frequency of pulse, attaining their maximum towards night-time. Breathlessness was throughout a distressing and prominent symptom,

and as in other recorded cases was not to be explained by any abnormal condition of lungs. The pressure upwards on the diaphragm of enlarged spleen and liver may in some degree account for it. The case just cited exemplifies what Virchow calls *leuchæmia splenica*. The following case, which has just terminated fatally at the Seamen's Hospital, is a good example of the affection when it involves the lymphatic glandular system, the *leuchæmia lymphatica* of the same pathologist.

Case 8 (from notes taken by Mr. Young, the House Physician).—L. M—, æt. 24, admitted into the Seamen's Hospital on March 20th, 1872. His mother died fifteen years ago; does not know of what. Cannot say whether his father is alive or dead. Has very light-coloured hair. He has always enjoyed good health, and been, he says, of temperate habits. Four months ago he noticed some enlarged glands in the left axilla. About a week afterwards the glands in the right axilla became enlarged, and a week or two later those in the neck and round the jaw became affected. He attributes these growths to his having been over-worked and scantily fed. He had not had any sore or other affection that could have acted as exciting cause. The swellings did not cause him any pain when they first appeared, except when he used his arms in his work. Five weeks ago he went into the Cork Hospital. About that time his breathing became hurried and he was troubled with a constant tickling cough.

Symptoms on admission.—Is rather emaciated and strikingly anæmic. The glands in the neck and those

about the lower jaw constitute a huge and rather symmetrical mass in which the head appears partially buried. The glands in the axilla, especially on the left side, are considerably enlarged, and would materially interfere with the free action of the arms. There is no other external glandular enlargement. The walls of the chest are œdematous, and so is the prepuce. There is dulness on percussion at the back of the chest, on either side of the spine, pointing to enlarged bronchial glands; and the abdomen is somewhat tumid and resisting, as if it were also the seat of glandular enlargement. The liver extends to some little distance below the ribs; but there is no evidence of any material increase of the spleen. The face is somewhat livid, and when the patient lies on his back it gets extremely so, and the breathing becomes very embarrassed. There is frequent cough, and he says he feels as if his windpipe were blocked up. He complains of pain when he attempts to swallow solid food, but he can take liquids without difficulty. Respirations 48; pulse 86; temperature 105° at night.

The blood was examined on several occasions, and there was found to be a great increase of the white cells; as many as from 100 to 200 or more being counted in the field of the microscope. The urine was 1034° and contained abundant urates, but no sugar or albumen.

For a few days after admission his condition did not materially alter, except that at times his countenance was very anxious, his breathing hurried, and pulse much increased in frequency.

On March 29th his breathing was less embarrassed. He had had a good night. Swallows with greater ease. The measurement round the head in a line with the

chin was 1 foot 11 inches; the measurement with a tape passed under the chin and over the vertex was 2 feet $3\frac{1}{2}$ inches.

There was no material change in the symptoms until April 6th, when the patient died, death being caused by increasing exhaustion and by passive effusion into the pleuræ and pericardium. The patient was well sustained by wine and fluid nourishment throughout. The only medicine that was ordered was the syrup of iodide of iron in drachm doses.

Post-mortem examination forty-eight hours after death.—Body not so much emaciated as might have been expected.

Thorax.—The right pleura contained five pints of clear, straw-coloured fluid; there were numerous glandular nodules seen on the under side of the ribs. The left pleura contained serous fluid in smaller quantity than the right. Numerous nodules of the same character as those on the right side were seen in the same position. The anterior mediastinum contained numerous enlarged glands. The pericardium contained a considerable quantity of serous fluid. The right lung was compressed against the spinal column; on its surface were numerous hard glandular growths. The left lung was healthy; on its surface was one growth of the same character as those on the right. The posterior mediastinum contained enormously enlarged glands, and a large cluster of greatly enlarged bronchial glands surrounded the bifurcation of the trachea.

Abdomen.—Much enlargement of mesenteric and lumbar glands. Kidneys healthy. Spleen about the normal size and appearance. Liver congested, weighing 4 lbs. $1\frac{1}{2}$ oz., and showing traces of cirrhosis.

Œdema of cellular tissue of face, neck, chest, and arms, and also, to a slight degree, of lower extremities. Axillary glands greatly enlarged. Cervical glands, submaxillary, parotid, and the string of glands accompanying the sheath of the carotids, were greatly enlarged.

On section the glands presented a clean, yellowish surface, resisting to the touch, and from which no milky fluid escaped on pressure. Careful microscopical examination revealed neither cancer cells nor nuclei, but merely the ordinary elements of lymphatic gland tissue.

One might be disposed to class the above case as one of lymph adenoma, agreeing, as it does, in many essential features, with that affection. In all the cases, however, of adenoma reported by Trousseau, Wilks, Murchison, Ogle, and others, there was no increase in the white corpuscles of the blood. In this respect the above case differed, for several examinations of the blood showed a large increase of white corpuscles, a proportion of one to, perhaps, ten of red discs. In all the cases of adenoma, there were also more or less enlargement of and morbid appearances in the spleen. In the above case this organ presented a normal size and appearance. The case must, therefore, be regarded as a good illustration of the leuchæmia lymphatica of Virchow.

CHAPTER IX.

SCURVY.

The physiognomy of disease is scarcely made the subject of such careful observation by men of the modern school of medicine as it was by practitioners of a former day, from Hippocrates downwards. It is related of some of the physicians of a past generation that, on being called to a case for the first time, they stood for some time in silence by the bedside, studying the aspect of the patient before they entered upon special inquiries. To the practised eye the external appearance frequently reveals at once the internal derangement; and yet how difficult it is by any word-painting to convey an accurate notion of the many subtle elements —the smooth or contracted brow, the passive or acting nostril, the parted or compressed lips, the dull or brilliant eye, the many varieties of complexion, the expression derived from mental action intermingled with that resulting from perverted organic function—which combine to constitute the distinctive external aspect of any disease.

My subject has led to the above remarks, seeing that the brilliant eye, and pale or hectic flushed face of the consumptive, the puffed, waxy look of the victim of

Bright's disease, the general capillary injection of the face in pneumonia, the greenish-yellow aspect of chlorosis, the sallow complexion and tired look of the sufferer from ague, do not tell their tale more effectually than does the aspect of a patient affected with scurvy. The face of an individual suffering from intense scurvy speaks unmistakeably of damaged as well as deficient blood. It is of a dingy earthy hue, and looks, in some cases, as if it were dirty; the conjunctivæ in advanced cases are generally clear and transparent, the eye usually of bright expression, with dilated pupil, the lips bloodless. In the earlier stages of the affection, however, the face has often a bloated appearance, there is a tumid bruised-like circle round the eyes, and the conjunctiva over the sclerotic is swollen and red. The countenance is generally passive and devoid of expression, although sometimes it conveys a sense of dread. At times projection of one or both cheeks indicates the enlarged condition of the gums beneath. A peculiar, fœtid emanation, something like that of putrefaction, but distinctive, is the next, if not the first and most striking characteristic of the worst forms of scurvy. It comes out with the breath, and does not result from, though it may be aggravated by, a sloughy state of the gums. Scorbutic patients are generally found lying on the back, with the head rather depressed, the position in which the weakened heart can best do its work. Frequently the bed-clothes are seen to be elevated by the raised contracted knees.

On looking into the mouth the gums are found, in a large proportion of cases, to be more or less involved, from a slightly projecting, spongy state implicating the free

margins, to an extremely hypertrophied mass extending over and between the teeth, tender to the touch and inclined to bleed. The colour of the gums, which varies from a deep red to a livid blue or black, abruptly terminates with them, and forms a striking contrast to the pale, anæmic appearance of the tongue, and the inside of the lips and cheeks. At times there is ulceration and sloughing of the gums, and consequent loosening of the teeth. It is curious to note that where any of the teeth have been lost the gums are no more implicated than the mucous membrane in any other part of the mouth. I have generally found the tongue to present a clean and smooth surface. On removing the bed-clothes, and examining the surface of a scorbutic patient, we find evidences of the damaged condition of the blood in the exudation of its constituents—the blood-discs, the fibrin, and, more rarely, the serum. The extravasation of the coloured corpuscles occurs either in the form of small, hæmorrhagic, purpuric spots, or larger bruise-like stains. The hæmorrhagic spots vary in size from that of a mere point to that of a small pea, and in colour from a vivid claret in the more recent to a faint reddish-brown in the more advanced cases. The large, bruise-like stains, as also the small petechial spots, are usually to be found on the lower extremities, the stains varying in size from that of a crown-piece or less to a stain involving the entire length of one of the legs, from the upper part of the thigh downwards. These stains, like ordinary bruises, pass through various stages of colour; from being at first blueish black, they become purplish, green, yellow, &c. From the fact that they affect by preference the inner side of a limb, it would seem that

they are readily produced even by the pressure of one limb resting on the other. They frequently appear first and are most marked around the cicatrices of old ulcers or wounds. A slight blow or pinch, which would have no effect on the skin of a healthy subject, will readily produce them. Niemeyer says that in an epidemic of scurvy which occurred in the House of Correction at Prague, and was described by Cejka, the influence of mechanical action was strikingly apparent. In most patients the hollows of the knees were most affected, but in wood-cutters and persons who worked at the spinning-wheel the right arms were attacked. Wool-combers and laundresses suffered in their fore-arms; women in the place which their garters pressed.

Not less distinctive of scurvy than the affection of gums and the subcutaneous hæmorrhages are the effusions of fibrin which take place in various parts of the body. Like the hæmorrhages, they usually select the lower extremities. The fibrin is either poured out beneath the skin and about the muscles, or between the tendons and bones which enter into the formation of the knee and ankle-joints, preventing the usual flexion and extension of the latter. Effused around the knee and into the popliteal space, the fibrin produces the characteristic contraction of the joint, with inability to extend the leg, which is sometimes the earliest and sole evidence of the scorbutic taint. Effused beneath the skin, and forming a sheath around the muscles, it renders the fleshy portion of the leg or thigh indurated, and imparts to it a resistance like that of a board, without elasticity. Effused upon the surface of the tibia or of other bones, beneath the periosteum, it gives rise to node-like swellings which are often extremely

tender, and simulate those of syphilis, save in the fact that there is no exacerbation of pain at night. The skin is freely adherent to the effused fibrin, and cannot be pinched up; it is also generally of a brownish hue. There is usually much pain and tenderness in the site of these effusions; and, of course, from the way in which they involve the joints, lameness, when the legs are affected, is a common result.

The analysis of one hundred cases of scurvy recorded by me, or by the resident officers, in order to determine the relative frequency of the more prominent symptoms, gives the following results:—In seventy-four cases the gums were more or less affected. In thirty-four there were present the small hæmorrhagic spots; these were generally limited to the legs, sometimes to one leg; they at times extended to the thighs, and in several cases were scattered more or less over the body. In thirty-six instances the larger ecchymoses were present. They varied in colour, as do bruises in their different stages, and in site as the smaller hæmorrhagic spots. In fifty-eight cases there was more or less effusion of fibrin; the knees were the most constant seat of this, then the hams, the calves of the legs, the ankles, the dorsa of the feet, the back of the thighs. In a few cases there were syphilitic-like nodes on the tibia, and in one case on the clavicle. In one instance there was much effusion about the biceps; in another about the elbow, preventing flexion of this joint; and in five cases the back of the hand was swollen up into a hard, resisting, conical tumour. In three cases there was effusion of serum only in the legs, coupled with other scorbutic symptoms.

Further evidences than those already afforded of the

damaged condition of the blood were given in the occurrence, in several cases, of passive hæmorrhages from different cavities. These bleedings came from the mouth, nose, or bowels; never from the lungs, stomach, or bladder. Passive hæmorrhages, of more serious character, may take place in some of the cavities. In a case which came under my notice some years back, cerebral symptoms of a serious character were suddenly lighted up; the patient died comatose, and, after death, an extensive clot was found beneath the arachnoid, and there was general engorgement of the vessels of the brain. In another case indications of mischief manifested themselves rather suddenly in the chest; there was dyspnœa, gradually increasing in intensity; dry cough; much pain and uneasiness in the left side; and, on examination, physical signs of pleuritic effusion to a great extent. The patient died, and, on inspection, there was found a large quantity of blood in the left pleura.

Dr. Buzzard notices a condition of lung which occasionally is met with in scurvy, but which has not fallen within my experience. "When the lung is thus invaded," he says, "the expectoration after a short time is dark and sanious, with all the horrible fœtor which is ordinarily associated with gangrene of the lung, but which is here dependent upon decomposition of the bloody fluid poured into the lung substance. There are now cold sweats, increasing dyspnœa and anxiety, a pulse small and frequent, softer than in inflammatory pneumonia, and death takes place. In other cases there is no pain or cough; but the breathing rapidly becomes short and laborious, and death occurs suddenly."

Breathlessness, without any abnormal condition of lungs, is a frequent symptom in the worst forms of scurvy.

Dysenteric diarrhœa is a frequent concomitant of scurvy, and is characterized by stools of colourless, or dirty, or dark sanguineous fluid, and by the readiness with which it yields to treatment, directed to the general rather than the local affection.

Scurvy is usually ushered in by a sense of debility and pains simulating rheumatism; and, when established, there is much listlessness and depression of spirits, tendency to vertigo in some cases, and, in others, affections of the special senses, as tinnitus aurium, deafness, muscæ volitantes, &c. In cases recorded by Dr. Bryson, as quoted by Buzzard, hemeralopia was the first symptom of the disease noticed. The patients could distinguish objects well enough during daylight, and at night could read a book held close to a candle, but the moment they passed from the influence of the light they became absolutely blind, and required to be led about. The intellect is usually unaffected in scurvy.

A tendency to fatal syncope is one of the most striking symptoms of scurvy, and is not limited to the more serious cases. Scorbutic patients not particularly emaciated or reduced in strength will, on any sudden exertion, especially on suddenly assuming the erect posture, sometimes fall down in a swoon from which they do not recover. This fact is one of the most important to be borne in mind in the treatment of this disease. When the Dreadnought was the Seamen's Hospital the patients were always hoisted on to the deck in the recumbent position. One of the few fatal

cases which have occurred during my connection with the hospital was that of a man in the prime of life, and who appeared to be in a very fair condition as regards flesh and power. He had been chatting in a loud and cheerful voice to those near him, on the evening after his arrival, when suddenly, while the nurse's back was turned, on getting out of bed to go to the night-stool, he fell down in a state of syncope, and before the medical officer could get to him, was dead.

What is the composition of scorbutic blood? The general anæmia, the pale colour of the muscles and viscera as seen after death, the free effusions of fibrin, tell us, what chemical analysis confirms, that it is deficient in red corpuscles, and abounds in fibrin. The former were found in one instance to be reduced to forty-eight parts in one thousand, and the latter to be increased to three times the normal quantity.

There is not much to say in regard to the general symptoms of scurvy. The state of the tongue has been noticed; the appetite is generally good; the alvine evacuations have usually been healthy, and in some cases there has been diarrhœa. The urine has been examined with reference to specific gravity, alkalinity, or acidity, freedom from albumen, &c., but has not been found to present any material deviation from the healthy standard. In the severe cases there is almost always sleeplessness at night, but not any delirium. The pulse also, in bad cases, is very rapid—130 or 140—and there is increased temperature of body, with some febrile excitement, followed by free perspirations,—a state of constitutional disturbance resembling hectic. When these symptoms are present there is always, as far as my experience goes, fibrinous

effusion. I have not noticed, even in the more severe cases, the dry, harsh skin which has been spoken of as characteristic. The amount of emaciation, even in extreme cases, is not always great.

Morbid anatomy.—Notwithstanding the many and severe cases of scurvy that have been admitted into the Seamen's Hospital during the sixteen years of my official attachment to it, but very few deaths have occurred. In one case, already alluded to, the result was brought about by the patient not attending to orders; in another, a mild case, with ulceration of cervical glands, death resulted from tetanus, two or three cases of which occurred in the hospital about the same time; in a third case there was the complication of protracted ague and its consequences. In the first of the above cases a careful post-mortem examination was made. The body was well covered with flesh. The heart was very pale and flabby; lungs healthy; some effusion of serum in the pleuræ, but without any traces of old or recent inflammatory action. Abdominal viscera generally in an exsanguineous condition, but not presenting any abnormal appearances. There was no effusion of fibrin beneath the skin or between the muscles of the lower extremities; but corresponding to the bruises over the tibiæ and on the inner sides of the calves, there was extensive extravasation of blood into the subcutaneous cellular tissue. A very careful examination of the body of the scorbutic patient who died from tetanus was made, but, beyond some subcutaneous extravasations, nothing could be detected. The third of the cases noticed was that of a man who was admitted in a state of extreme anæmia and prostration, with projecting, ulcerated, purple gums, much

ecchymosis on the under surface of both thighs, epigastric tenderness with enlargement of the liver, and who had been suffering from ague, on and off, for twelve months. Milk, beef tea, wine, and lime juice were ordered; but two days after his admission his surface was cold, pulse thready, and prostration extreme, and he was ordered mistura vini gallici every hour. On the following day he had great pain over the kidneys and passed urine charged with blood. He died on the fourth day after admission, and, unfortunately, no post-mortem examination was allowed. In the museum of the Seamen's Hospital there is an interesting preparation made by Mr. Busk, showing the belly of the gastrocnemius muscle enveloped in a sheath of fibrin nearly half an inch thick. The fibrin is distinctly vascular, and well illustrates the fact that these morbid products must, through a process of modified nutrition, become organized in order to their removal. The preparation shows further what we might expect to find on post-mortem examination of the contracted knees and brawny limbs of the scorbutic patient. In cases of scorbutic dysentery patches of ecchymosis are frequently found in the coats of the intestines. Patchy congestions may be met with in any of the abdominal viscera, in the lungs or brain; and effusions of serum or blood or both in any of the serous cavities. In one of three post-mortem examinations minutely recorded by Dr. Budd the following is his account of an examination of a node on the tibia: "On cutting down over the tibia there was found, under the fascia, a thin layer of coagulated blood, but no sensible extravasation of the size (which had been injected) and no injection of the clot. On cutting

deeper the periosteum was found to be separated from the bone to the extent of six or seven inches, by solid, fibrinous effusion or clot, of chocolate colour, and a line or two in thickness. On the periosteal and osteal surfaces of this clot there was a slight extravasation of the size, but the clot itself was beautifully injected. Small injected vessels could be seen in the clot by the naked eye, and by the aid of the glass they were very manifest. When the periosteum, which was itself thickened and infiltrated with blood, was gently stripped from the clot, many threads were seen to pass from one to the other; these were evidently vessels, and some of them filled with size. On stripping the clot from the bone some vessels were also seen filled with size, coming from the former and entering the latter; but the vascular connection of the clot and bone was much less than that of the periosteum and clot." The following remarks may also be introduced in reference to the state of the jaw in the same case: "The periosteum was separated by a clot from the bone of the lower jaw in its whole extent, except at the attachments of the temporal and pterygoid muscles; at the neck of the bone on each side, and also in a space about an inch in breadth, inside and out at the chin. The attachments of the genio-hyo-glossi were preserved; those of the mylo-hyoid on both sides destroyed. Where the periosteum was detached from the bone the intervening clot was black, and a line or two in thickness. A considerable portion of the gum immediately surrounding the teeth had sloughed. The bone had a dark stain in a space extending three or four lines from the edge of the alveoli. On the upper jaw the periosteum was separated from the bone

by a dark clot, which extended as high as the zygoma. There was no caries."

It is needless for me to narrate the history of scurvy. I cannot do better than refer those who wish to be acquainted with it to the admirable article by Dr. Budd, in the Library of Practical Medicine, in which they will find this portion of the subject fully dealt with, copious extracts given from the graphic account of the disease by Lind more than a century back, and ample illustrations from the records of battles and sieges at different periods, and from the experiences of our royal navy before those hygienic regulations were adopted which have now, for some years, extinguished the malady in that service. In Dr. Buzzard's article in 'Reynolds's System of Medicine,' the history is taken up where Dr. Budd left it, and the writer introduces his own observations of the disease as manifested in the British troops and their allies during the Crimean war.

The records of the Seamen's Hospital, now ranging over more than half a century, contain full materials for the history of the disease in relation to the mercantile marine of this and, indeed, of other countries. Although, as far as our own commercial marine is concerned, scurvy may be said to be sensibly on the wane, cases are still brought to the hospital, at times from British, more frequently from the ships of other nations, exhibiting the disease in all its most formidable features.

From whatever source it may be culled, the history of scurvy throws ample light on its predisposing and more immediately determining causes. It shows that, however varied the predisposing causes may be, the

sole exciting cause is the absence from the diet of those ingredients of which lime and lemon juice are the analogue. All other influences may be eliminated but this dietetic one. Alike under the use of fresh meat and bread, as of salt provisions, of rice, dried peas and milk, of water deteriorated by various ingredients (as salt, animal *débris*, earthy matters) under exposure to wet, cold, and fatigue, from the cachexia induced by various protracted maladies, as ague and dysentery, scurvy will occur, but *only on condition that fresh vegetables are excluded.* Add these or their equivalent, and the disease will not be developed. For the following remarks on predisposing causes and the position of the mercantile marine of this country in relation to scurvy, I have to thank Mr. Harry Leach, to whose continued exertions and representations extending over many years, we are mainly indebted for the stringent hygienic regulations which are now enforced by the Board of Trade.

"The predisposing causes of scurvy have been so variously and often so vaguely interpreted that, at this time, when the disease is undoubtedly much less common than formerly, they are not easy to define with accuracy and precision. I am, however, justified on the authority of Lind and Budd in assuming that a cold damp atmosphere predisposes to scurvy, that those suffering from any other sort of sickness are likely to be soonest affected with the disease, and that those who have on some previous occasion been attacked are most liable to a recurrence of the malady if placed in circumstances favorable for its development. We may safely assert, with reference to the first predisposing cause above mentioned, that scurvy,

whether it occurs on land or at sea, is almost invariably associated with a humid heavy atmosphere, often with intense cold. Thus Lind tells us, with reference to his experience in the Channel in 1746-7, that "after great rains, or a continuance of close foggy weather, especially after storms with rain, the scorbutic people generally grew worse, but found a mitigation of their symptoms and complaints upon the weather becoming drier and warmer for a few days." Cold appears also to exercise an unfavorable influence, in proof of which I may cite that the cases of scurvy lately imported from the Greenland Whale Fishery (and notably those from the Steamship Diana) some four or five years ago were unusually severe. The fact that patients affected with other disorders soonest become victims to scurvy is undoubted. Indeed, I may safely affirm that since the Merchant Shipping Act 1867, came into operation, all single cases of scurvy admitted into the Seamen's Hospital have been the subject usually of syphilis, and less frequently of some organic disease, and I have little doubt a previous attack of scurvy renders the patient less able to resist so-called 'scorbutic' influences at any future time. I desire to call the attention of my readers to another probable predisposing cause, viz. the use of condensed water for drinking purposes. I submit it as a theory only, and think that it should be received with caution, but there are several facts that lead me to view the hypothesis favorably. It has been found, in the course of official inquiries instituted by the Board of Trade during the past five or six years, that a large proportion of ships that have returned home with scurvy-laden crews have had in use rain or condensed

water almost exclusively; and it is a noteworthy fact that, although the disease appears to be at a minimum in the British mercantile marine, it still exists (often with all its old severity) on board ships bound from Aden to other parts. Aden is not only ill-provided with vegetable food, but the town and district is most notoriously deficient as to water supply. Condensed water is therefore supplied to most ships arriving at and sailing from this port. The question must be regarded as unsettled, but is well worthy of practical attention and consideration in connection with an inquiry which, as I am informed, the President of the Board of Trade is about to institute respecting the continued prevalence of the disease in connection with this port.

"Eight or nine years have now elapsed since the attention of the medical officers connected with the Dreadnought Hospital ship was directed to a considerable increase in the number of cases admitted into that institution. The result of a statistical inquiry showed that during thirteen years previous to 1866 no less than 1230 cases of the disease had been admitted, that the annual total varied but little until the year 1865, when the admissions were 20 per cent. over most of the previous ten years. As it is a well-known and generally admitted fact that the provisions given on board most ships had, in that interval, improved both in quality and quantity, it became a duty to find out the reason why this increase had occurred. The cause was not far to seek. It was found that in many instances the so-called lime juice furnished according to Act of Parliament to all long voyage ships was a vile and worthless composition, containing no

juice at all, or so plentifully diluted as to render it entirely innocent of antiscorbutic properties. A bill was therefore brought forward and passed in 1867 under the auspices of the Duke of Richmond, then President of the Board of Trade, by the terms of which all lime or lemon juice taken on board ship for the use of crews at sea shall be bonded in a customs' warehouse, examined by a government inspector, mixed with a certain proportion of spirit, and bottled under supervision. The quantity ordered to be taken by each man was doubled, and other clauses inserted in the bill tending to lessen the personal responsibility of the captain, if when the lime juice was provided and served out any of the crew declined to drink it. This Act came into operation on the 1st of January, 1868, since which time a progressive and steady decrease has occurred in the number of cases admitted yearly into the Seamen's Hospital. We are not prepared to say that this favorable change is wholly due to the introduction and use of genuine lime and lemon juice. It is very probable that owners and masters of vessels have lately taken more pains in victualling their crews and in the berthing arrangements, but there can be no doubt that the (so-called) anti-scorbutic clauses of the Act have largely contributed to the above-mentioned results. But many legislative changes are still required before it can be honestly recorded that the safety of those who "go down to the sea in ships" is cared for equally with that of those who travel by land. No provision is made to secure for the shipmaster a sound and healthy crew. No material alterations have been made for many years in the scales of diet commonly used at sea, most

of which are still, to use the words of the 'Lancet,' costly, unpalatable, and provocative of scurvy. It may indeed be positively affirmed that a list of rations could be readily framed and adopted, so as to render use of lime or lemon juice totally unnecessary. Meanwhile much can be done by individual exertions on the part of captains and mates. Clean berths, garments suited to the weather, and tea and coffee soon after the morning 'turn out,' are all items in connection with the health far too little thought of by many who are responsible for the charge of ships and their crews. Much good has already been done in the way of preventing scurvy, and we may be sure that those who study the sanitary condition of our sailors, will greatly assist commercial as well as humane interests, and will also aid in maintaining and increasing the prestige of the British mercantile marine."

In the preceding observations the preventive treatment of scurvy has been summarily dealt with; I may now notice the plan of curative treatment adopted at the Seamen's Hospital. From two to three ounces of lime juice, qualified by a proper amount of sugar, are given daily; oranges occasionally when in season; milk and beef tea when the state of gums is such as to render solid food inadmissible; otherwise the ordinary diet, consisting of potatoes, vegetable soups, fresh beef and mutton, and bread. In all severe cases, and in slighter cases where there is marked anæmia, the recumbent position is strictly maintained. This is indeed the point of treatment of most immediate moment; the main risk being from fatal syncope induced by suddenly giving the heart more to do than it can accomplish. Proper diet and rest are alone perfectly

adequate to the cure of the worst forms of this disease. Special medicine is, however, not quite useless. My friend, Mr. Corner, when resident medical officer, reflecting upon the service rendered by chlorate of potash in other forms of mouth affection, was led to infer that it might be equally beneficial in the scorbutic affection of the gums. He accordingly gave it, and tested cases in which it was administered against others in which it was not, with the result of decided testimony to the efficacy of the drug in facilitating the cure of the mouth affection. A positive advantage is gained by the rapid cure of the gums, in enabling the patient to take sooner than he otherwise could have done the more nutritive solid diet. Another drug, opium, is useful at times for the relief of sleeplessness and irritability. The chlorate of potash did not seem to have any influence upon the other symptoms of scurvy. Doubting the soundness of the premises upon which their exhibition was based, and satisfied with their failure in the hands of others, I have not cared to make trial of the salts of potash in this disease, to the exclusion of lime juice. The certainty with which, under this remedy, the physician can predict recovery of the very worst cases of scurvy, even of those in which life is all but extinct, is very satisfactory, inspiring confidence in himself and enabling him to impart it to the patient.

The following case, reported by Mr. Leach, is a good illustration of scurvy in its severe form.

J. H—, æt. 56, a seaman, was admitted, with two others from the same vessel, into the Seamen's Hospital on the 1st of April last, with the following characteristic symptoms of scurvy. Sallow anæmic

aspect, pale and pearly conjunctivæ, walking with difficulty, and affected with dyspnœa on the slightest exertion, pulse thin, wiry, and feeble, tongue pale and clean, body somewhat emaciated, but not markedly so. The gums were spongy, venous in hue, dirty, and, in some places, ragged, and some of the teeth were loose, but there were no signs and no history of salivation. Both arms exhibited slight ecchymosis. The right leg, from the middle of the thigh downwards, was dotted profusely with hæmorrhagic spots, and presented also a series of irregular bruise-like discolorations. The left leg was semiflexed at the knee-joint, and could not be extended perfectly, because the tendons of the muscles surrounding the joint, as well as the striæ of the muscles themselves, were abundantly infiltrated with that imperfectly organized fibrinous deposit peculiar to scurvy, and the leg from knee to ankle presented all shades of ecchymosis. These last symptoms (referable to the gums and legs) were, indeed, so well marked as to be typical and pathognomonic of the disease. No other marked symptoms existed. Appetite and digestive powers good, bowels regularly open, urine normal in quantity, free from albumen and deposits, and containing an abundance of chlorides; heart and lung sounds normal, no enlargement of liver and spleen, no hæmorrhage from any of the natural outlets.

History.—This patient has been the subject of four attacks of scurvy (including the last) during the past fifteen years, one attack of delirium tremens, two of ague, and two of dysentery. He has, according to his own account, escaped all varieties of venereal disorders, except a mild gonorrhœa some thirty years ago. The

passage home (immediately preceding his admission into hospital) from Calcutta occupied four months and a half, and it appears that he had previously lived at least seven months in the latter city. The first two months of this period were spent in the General Hospital at Calcutta in recovering from the third attack of scurvy, and the rest of the time at a lodging, where, having little or no money, he was fed almost exclusively on rice, tea, bread, ghee, and curry, so that, having regard to this last fact, and the length of the homeward passage, this man was living on a scorbutic diet continuously for nine and a half months, varied only by the lime juice issued on board ship, and by an occasional ration of soup and bouilli. The predisposing and exciting causes of the disease here existed in full force, and we may fairly anticipate that he would have been much less seriously affected if, during the stay at Calcutta, he had fed on yams, bananas, potatoes, or milk, and may also assume that his former illnesses greatly intensified the severity of the last attack.

It may be remarked that another patient of about the same age occupied the same ward, who has been rendered helpless from scurvy three times during a nautical career of some thirty years; and from experiences gleaned at the Seamen's Hospital there can be little doubt that repeated attacks of this disease destroy physical stamina, and render seamen liable to inroads of other and more fatal maladies.

It is also worthy of record that both the men above quoted had night-blindness immediately before or during their scurvy attacks.

CHAPTER X.

PURPURA.

Scurvy has been regarded by some pathologists as identical with purpura, and in classified arrangements of disease is placed side by side with it, exhibiting, as it does in common with it, a tendency to hæmorrhage beneath the skin and from the mucous surfaces. These affections in other respects differ. The hæmorrhagic spots on the skin have at the outset usually a less vivid colour in scurvy than in purpura; the hæmorrhagic tendency in the latter affection being often of an active character, and associated with a plethoric state of system. The swollen, spongy state of gums, the contracted painful joints, periosteal swellings, and brawny state of the fleshy parts of the lower extremities which characterize scurvy, are wanting in purpura. The aspect also of the sufferer from the former affection tells of a far more damaged state of the blood than is met with in the latter. The peculiar dirty aspect and marked anæmia of scurvy are absent in purpura. The diseases also differ in their exciting causes; scurvy resulting, as we have seen, from a special defect in diet; purpura from deranged digestion, malassimilation of food, and defective nutrition,

induced frequently by depressing mental and moral causes. The treatment which proves so rapidly and certainly successful in scurvy does but little good in purpura, which is often very intractable.

The following cases, shortly reported, illustrate, the one a mild, the other a severe form of purpura.

Case 1.—J. S—, a corn-chandler, æt. 34, was seen by me in conjunction with Dr. Taylor, of Camberwell, in the summer of 1870. He was quite well up to three months before, when he lost his wife, and was, in consequence, much depressed in spirits. He lost his appetite, and ate but little, although he took mixed animal and vegetable food. Derangement of the digestive organs and malassimilation of food ensued, and he began to lose flesh and strength. Six weeks ago he was seen by Dr. Taylor, and then had numerous spots on his legs, of the fine, hæmorrhagic character; his tongue was furred, appetite bad, bowels irregular, and secretions unhealthy. The spots became more copious, but were almost limited to the lower extremities, which were abundantly covered. There was no hæmorrhage from the gums, nose, stomach, or intestines. The man was thin and had an anæmic look. Viscera all apparently normal; no history of previous illness. Ordered mixed diet, claret, lime juice, and tonics, and aperients when required. The lime juice disagreed with him, and he had to discontinue it. He, however, gradually improved, and change of air and scene, and persistence in a tonic plan of treatment, ultimately restored him to health.

Case 2.—The subject of the following case was seen

by me in consultation with his medical attendant on three or four occasions.

A. B—, about 40 years of age, married, of lymphatic temperament, with light hair and blue eyes; a man of considerable means, but engaged in large commercial undertakings, and always under pressure from business. Had recently been much worried by a law-suit instituted against him by a near relation. Thinks that he has usually taken a mixed animal and vegetable diet; but has constantly neglected his meals, taking them hurriedly and at irregular intervals. His recreation has been yachting; he has frequently been out at sea for weeks together, and may then not always have had suitable food. He says that from childhood he has frequently had a tendency to bleeding from the nose and gums.

He was first seen by me in the early part of 1869. His symptoms then were, an anæmic and sallow aspect; bloodless lips, eyes glistening, perfectly white conjunctivæ; legs covered from feet to knees with fine hæmorrhagic spots; there was a bruise on the inside of each knee, the remains of similar ecchymoses on the chest, and a few bright purpuric spots about the body. He had recently, on several occasions, had more or less extensive hæmorrhage from the nose, and oozing of blood from the gums; one of the nares was filled with a plug of coagulated blood, around which a little was oozing; the gums were prominent, but had not the livid colour and spongy character of scurvy; there were one or two small hæmorrhagic patches on the mucous membrane of the hard palate and of the fauces. The tongue was moist and furred; the breath offensive from derangement of the stomach, but not

having the characteristic scorbutic fœtor. The bowels were irregular.

I saw the patient some weeks afterwards. His aspect was then less anæmic; the bruises on the knees had disappeared, the spots on the legs had lost their purple colour, were brownish, and evidently disappearing. There were a few fresh bright spots on the chest. On his removing his coat, that I might examine his chest, I found a sanguineous stain on the shirt around each axillary region, due to the perspiration. Since I last saw him he has had one or two smart attacks of epistaxis which had been preceded by, and had given immediate relief to, a sense of oppression and distress in the region of the heart. The heart beats were about 100 per minute, of sharp, irritable character, with occasional intermission; but there were no signs of organic mischief. The treatment in the above case consisted in such abstinence from work as the patient could be induced to practise, in a mixed generous diet with the use of wine, particularly of the French wines, in careful attention to the state of the stomach and bowels, and in the use of astringents and tonics. The special remedies which seemed most to hold the malady in check, and under which the patient certainly improved, were the tincture of perchloride of iron, given in full doses; and when this ceased to do good the diluted sulphuric acid given in twenty drop doses three times a day. The subject of the above case has enjoyed a fair state of health during the period which has elapsed since I first saw him; but there is a ready tendency of the disease to relapse under favouring circumstances.

The division into purpura simplex and purpura

hæmorrhagica seems to me needless, and conveys the erroneous notion that the disease is hæmorrhagic in the latter form and not in the former. In mild purpura there are usually merely the smaller subcutaneous hæmorrhages in the form of small spots which do not disappear under pressure, and which are more or less numerous; sometimes sparsely scattered over the body or a limited portion of it, at others thickly studding the surface, especially of the lower extremities. The colour of the spots varies according to duration, being at first bright red, and then passing through a deep purple to a dark brownish hue. In addition to these smaller spots there are occasionally ecchymoses, which, as in scurvy, may be readily produced by a slight blow or by pressure. In the severer forms of the disease hæmorrhage takes place also from the mucous surfaces; from the nose, the gums, under the mucous membrane of the palate or fauces, or from the ears. In still severer cases there are hæmorrhagic discharges from the stomach and bowels, from the kidneys, the lungs, &c. Purpura is sometimes unattended by any constitutional symptoms; at others it is ushered in by pains in the limbs, a sense of weariness, depression of spirits and prostration, and may be attended by excitement of the circulation and increase of temperature. In many cases there is marked disturbance of the digestive function; furred tongue, nausea, vomiting, and an irregular state of the bowels. When the malady has been severe and has lasted for any length of time, there ensues anæmia with its train of symptoms, as affection of sight and hearing, palpitations, tendency to faintness of an alarming character.

But little is known in regard to the nature and

causes of purpura. It seems to occur not so much from any special dietetic defect as from deranged digestion and impaired nutrition, induced by various depressing causes, physical, mental, or moral. Errors and irregularities in meals, the abuse of spirituous liquors, over-fatigue, protracted exposure to cold and wet, mental anxiety, moral emotions, may, severally or combined, induce defective nutrition and an altered state of blood, which may result in purpura. The disease occurs in connection with certain chronic affections in which the blood is damaged or charged with abnormal materials; in cirrhosis and in amyloid degeneration of liver, in chronic ague with enlarged spleen, in jaundice, syphilis, &c. It occurs also in the malignant forms of smallpox, measles, and typhus, when the eruption is more or less suppressed, and where "the life of all the blood is touched corruptibly." The following case will serve in illustration of this most intense and formidable expression of the malady.

Case 3 (reported by Mr. W. C. S. Clapham).—G. S—, æt. 20, a fisherman, was admitted into the Seamen's Hospital May 16th, 1871, complaining of dizziness, pain in back, vomiting, and dimness of vision. Stated that he left Grimsby for fishing-grounds off Holland seventeen days ago, and was taken ill after being at sea seven days. Had been exposed to no infection that he knew of, no one else in boat ill. Returned to Grimsby on the 15th, and came direct here by the steamer. Previously enjoyed good health. Does not know whether he had been vaccinated; no vaccination marks.

Symptoms on admission.—Patient is a strong, well-developed man. Bright scarlet rash was seen over chest and abdomen, which did not disappear on pressure, nor ecchymose on pinching. Skin of face, chest, and arms darker than the rest of the body, and dotted here and there with small bullæ, containing black fluid blood. Legs were covered with purpuric spots and patches: a few large pustules on ankles not umbilicated. Legs and arms œdematous. Rash principally on outer side of limbs, and thickest at flexure of joints. Pupils contracted, but equal; conjunctivæ injected and painful. Purpuric spots on lips which were covered with sordes; tongue swollen, white and dry; white exudation on palate; gums spongy and bleed profusely. Pulse 108, heart sounds natural but indistinct; respirations laboured, stertorous, and interrupted by short, frequent cough; sputum copious, consisting chiefly of blood; small crepitations over both lungs, anteriorly and posteriorly. Urine large in quantity, dark port-wine colour, with deposit of pure blood, acid; sp. gr. 1018, albuminous; chlorides increased, sugar present in considerable quantity; microscope showed blood-corpuscles and vesical epithelium. Temperature at night 104·2, pulse 110. Ordered sesquicarbonate of ammonia, milk diet, eggs, and eight ounces of brandy.

17th.—Bowels smartly moved this morning; motion loose, no blood; expectoration still bloody; bullæ on chest more numerous, dyspnœa increased; rash deeper in colour; lips swollen and covered with black sordes; quite sensible, but drowsy; temperature 103·8; complains of feeling chilly; pulse 128. In course of afternoon dyspnœa increased, and death took place at

5 p.m., patient retaining his consciousness until the last.

Post-mortem examination twenty hours after death.—Rigor mortis considerable. Thorax :—Lungs free; patches of ecchymosis on surface of both. Right lung extensively engorged with blood; middle and lower lobes soft and easily broken down. Left lung in same condition, but to a less degree. The heart contained a little dark fluid in both ventricles, but no coagula; valves healthy; muscular structure firm. The gall-bladder contained three ounces of dark, viscid bile. The spleen was firm, kidneys large; pelvis filled with closely-adherent blood-clots; capsules stripped off easily. The intestines were healthy throughout; mesentery of cæcum filled with blood.

The above case agrees with two others, which were brought to the Seamen's Hospital at about the same period, in the character of the eruption and excretions, with the exception that in the other cases the stools also were bloody. Not one of the three cases survived the sixth day of the rash. Post-mortem appearances were the same in all three cases, except that in the other two there were ecchymoses scattered over the intestines. All three may have been cases of suppressed malignant small pox, but there was no characteristic eruption, or proof of exposure to the specific poison.

The treatment of purpura has been indicated in the cases first cited. It consists in strict attention to the stomach and bowels, in proper mixed diet, with the moderate use of alcoholic stimulants, in removal of all causes which may tend to depress the system, and in the administration of astringents and tonics. As a

combined tonic and astringent in passive, chronic cases, no remedy equals the tincture of perchloride of iron, given in large doses three times a day. In some of the more active cases the diluted sulphuric acid given every few hours in twenty drop doses seems to exercise a marked effect in restraining the hæmorrhagic tendency. Gallic acid in doses of fifteen grains or more may be given when the hæmorrhage is copious and other drugs have failed. The oil of turpentine has proved very successful in the experience of some practitioners, and may be tried where other remedies are unsuccessful. In all severe cases perfect quiet and the maintenance of the recumbent position must be firmly enjoined, and the patient should have a free play of fresh air about him. The diet should consist of fresh meat and vegetables, with the moderate use of the light astringent wines.

The following case of acute yellow atrophy of the liver is introduced as an addendum to the chapters on hepatic affections (reported by Mr. Leach) :

J. K—, æt. 15, admitted into the Seamen's Hospital on May 14th, 1872, at 4 p.m., under the care of Dr. Thompson. Walked, or rather was carried, in a kind of stupor; intensely jaundiced; dilated pupils; cool skin. He dropped off into a heavy sleep in the waiting-room, but could be roused sufficiently to reply to questions, and did so in a rational manner.

History.—Previous health good; brothers and sisters all healthy; father died from the result of an accident; mother healthy. He was put on the sick list on board the Warspite school-ship, seven days back, on account of jaundice. Some ordinary purgative was given

because constipation and vomiting occurred, but these symptoms abated; the boy was declared convalescent, and had a cold bath, after which he had a relapse of the vomiting with rigors, and gradually drifted into the state in which he was admitted.

After being put to bed the same drowsy condition continued; there was tenderness on pressure over the hepatic region, and resonance on percussion two inches above the lower margin of the right costal cartilages, with no marked general tympanitis. He was ordered a dose of calomel, to be followed by a senna draught. As evening advanced delirium commenced, the pupils were widely dilated, occasional vomiting of mucus occurred, no action of bowels, urine passed in bed, no heat of skin, pulse varying from 96° to 120. An injection was ordered at 9 p.m. which produced no result, and at about 2 a.m. he became noisily and at times furiously delirious. As the morning advanced he commenced to vomit coffee-ground fluid, and had severe and oft-recurring convulsive twitchings with violent action of the flexor muscles of both extremities; respirations full, frequent, and sometimes stertorous; he winced and sometimes cried out when pressure was made on the hepatic region; the pupils continued dilated, the convulsions increased in intensity, and he died at 4 p.m. on the day following admission.

Post-mortem examination twenty-three hours after death, performed by Dr. Swan.—Marked rigor mortis; body, head and limbs intensely jaundiced; ecchymotic discolorations about posterior aspect of trunk and limbs. *Brain* congested, and a small quantity of bile-stained serum effused into the lateral ventricles. *Thorax.*—Lungs crepitant throughout, much congested,

ecchymosed on the surface, and in the upper parts mottled in the substance, with numerous, dark, circular patches. *Heart.*—About two ounces of bile-stained fluid in the pericardium. Ecchymoses at the root of the pulmonary artery, and in front of the right ventricle; valves healthy, cavities empty, muscular tissue fatty. *Abdomen.*—All tissues, as also those of the thorax, jaundiced. Stomach partially filled with a dark grumous fluid, some of which was found also in the small intestines. Peyer's glands slightly congested. The large intestine contained many masses of scybala, and the solitary glands were very prominent. A large patch of ecchymosis was found on the external coat of the anterior surface of the rectum. *Spleen* not increased in size, soft and friable; a reddish isolated mass being seen in the centre on section. *Kidneys* much injected; substance fatty. Bladder filled with saffron-coloured urine. *Liver* thrust up under the diaphragm; only 21½ oz. in weight, soft and flabby in its texture, presenting externally the normal aspect and contour, except that it was thinned and flattened. The surface of a section was of yellow-ochre colour, which rapidly became dull on exposure to the air. The gall-bladder contained a small quantity of glairy mucus. The microscopical examination of the liver showed oil and fat globules, and destruction of secreting structure; the urine contained abundance of leucine and tyrosine.

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