

An account of the diseases of India : as they appeared in the English Fleet, and in the Naval Hospital at Madras, in 1782 and 1783, with observations on ulcers, and the hospital sores of that country, &c.; &c.; ; to which is prefixed a view of the diseases on an expedition, and passage of a fleet and armament to India, in 1781 / by Charles Curtis.

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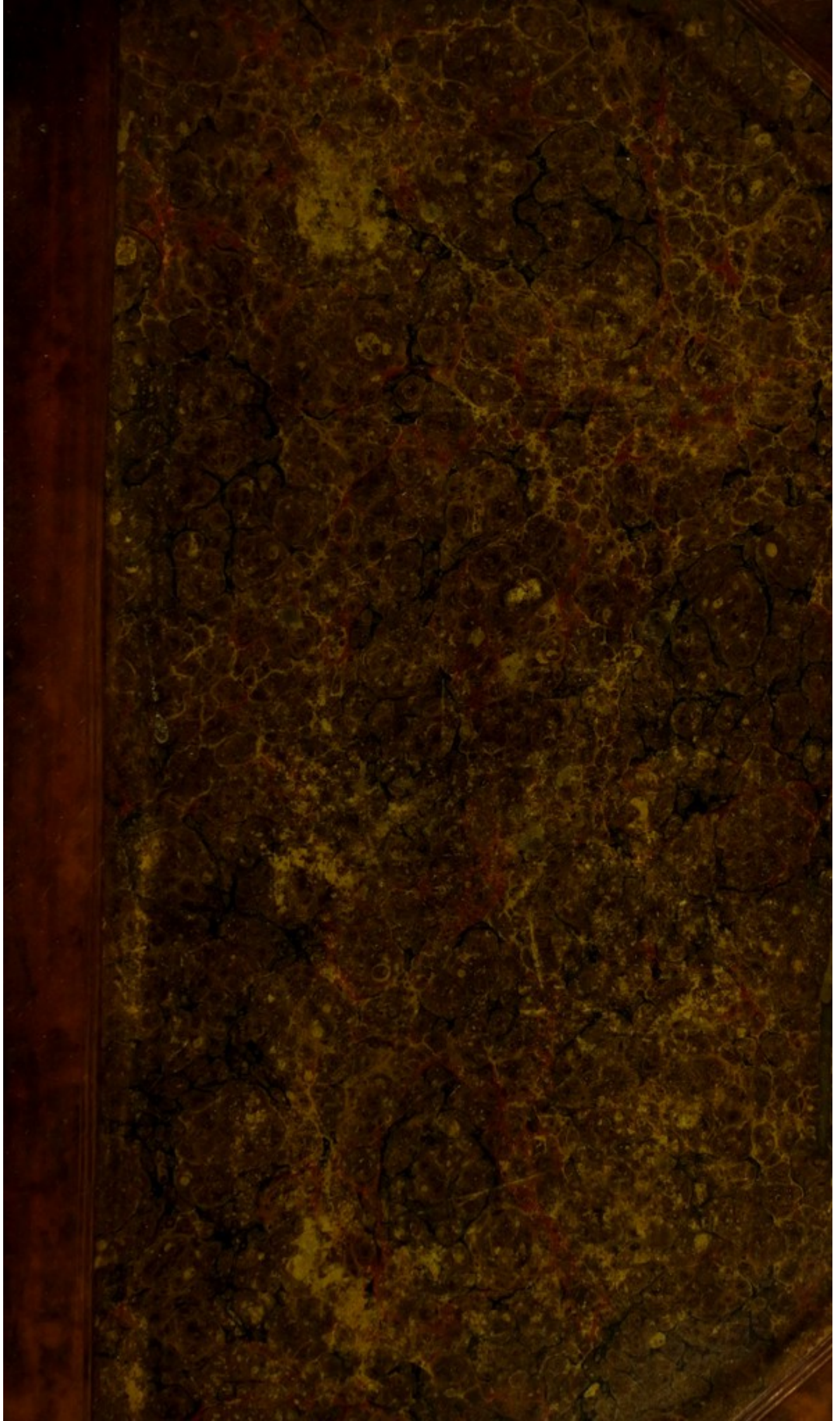
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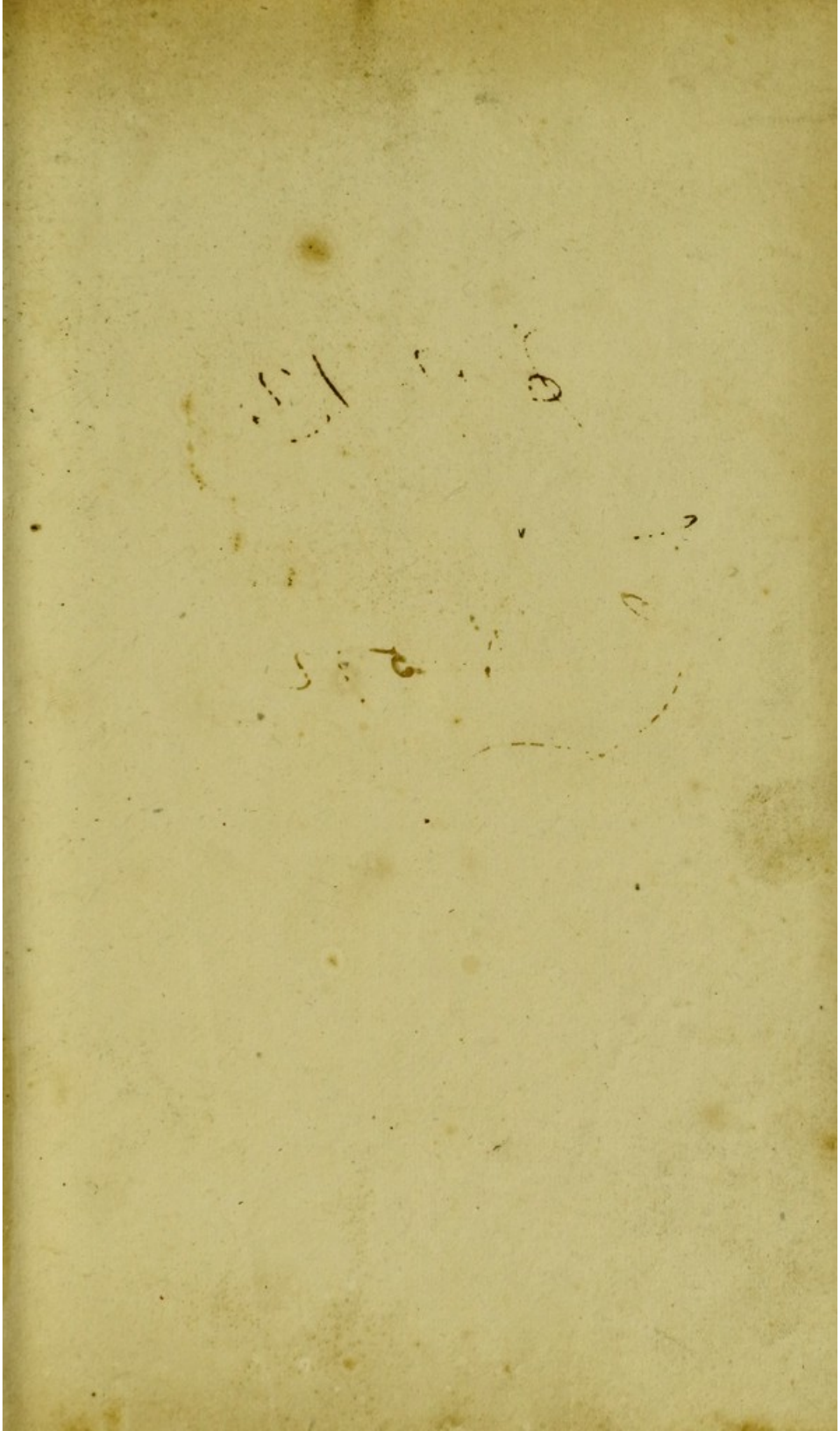
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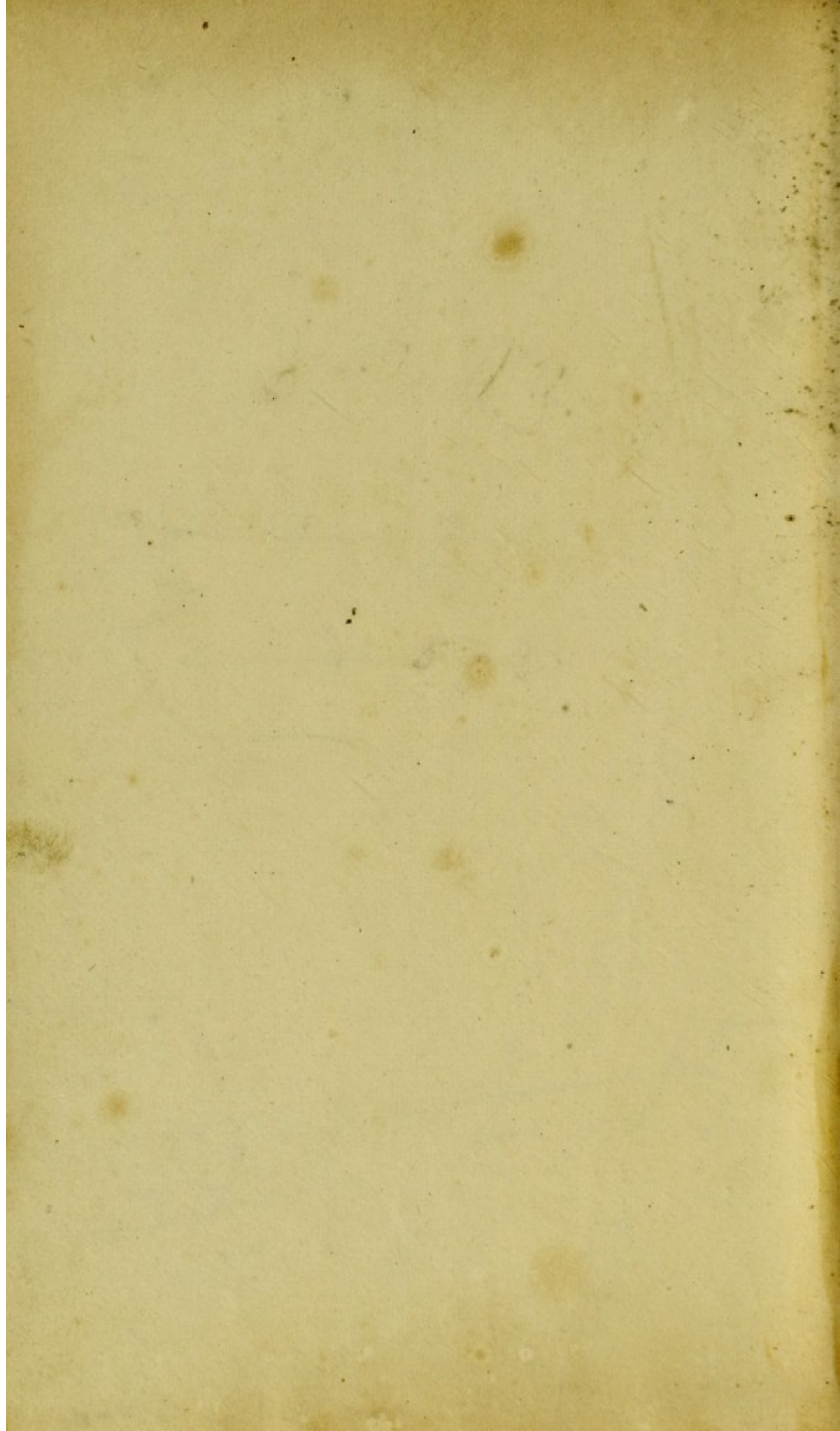


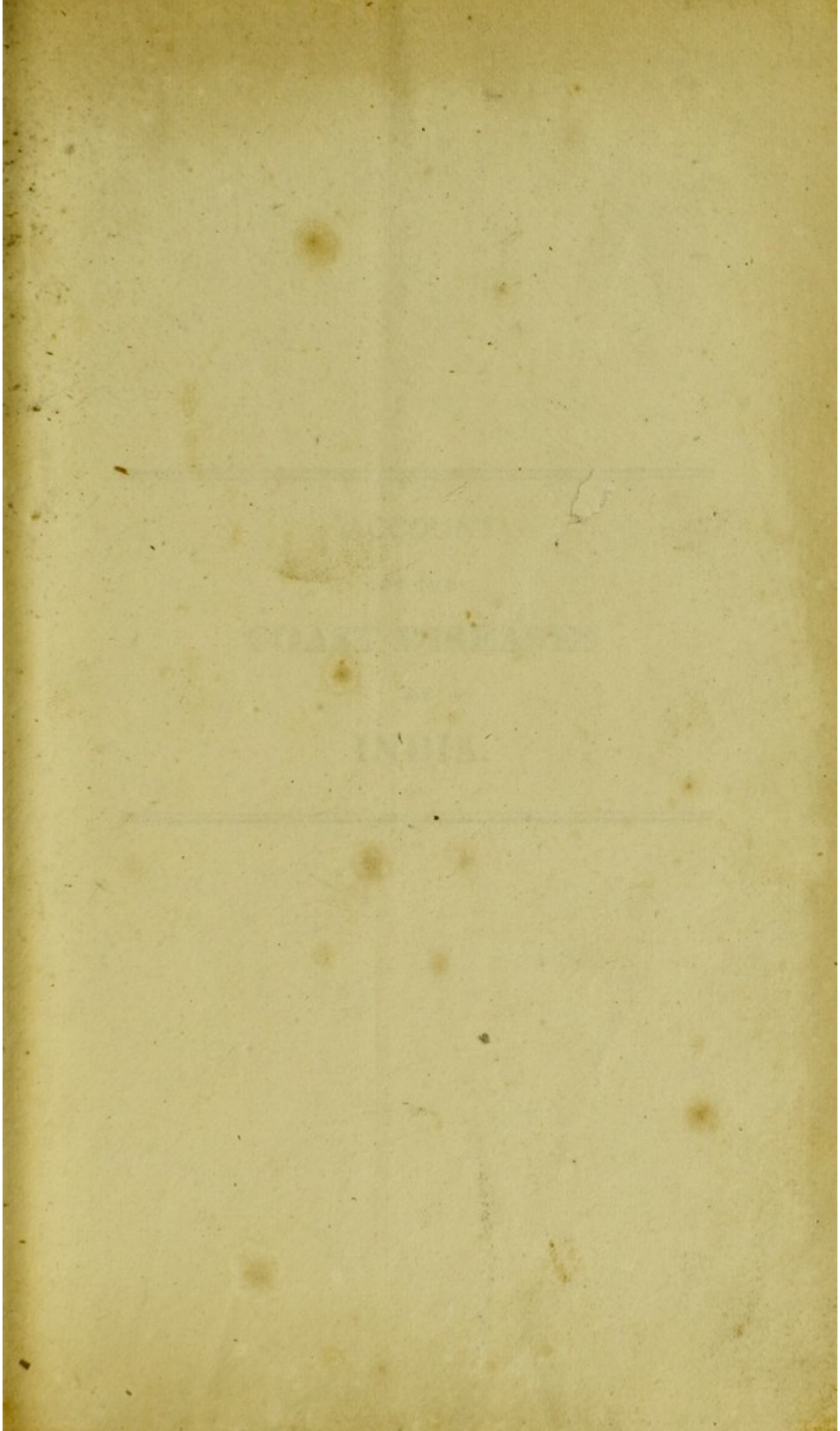
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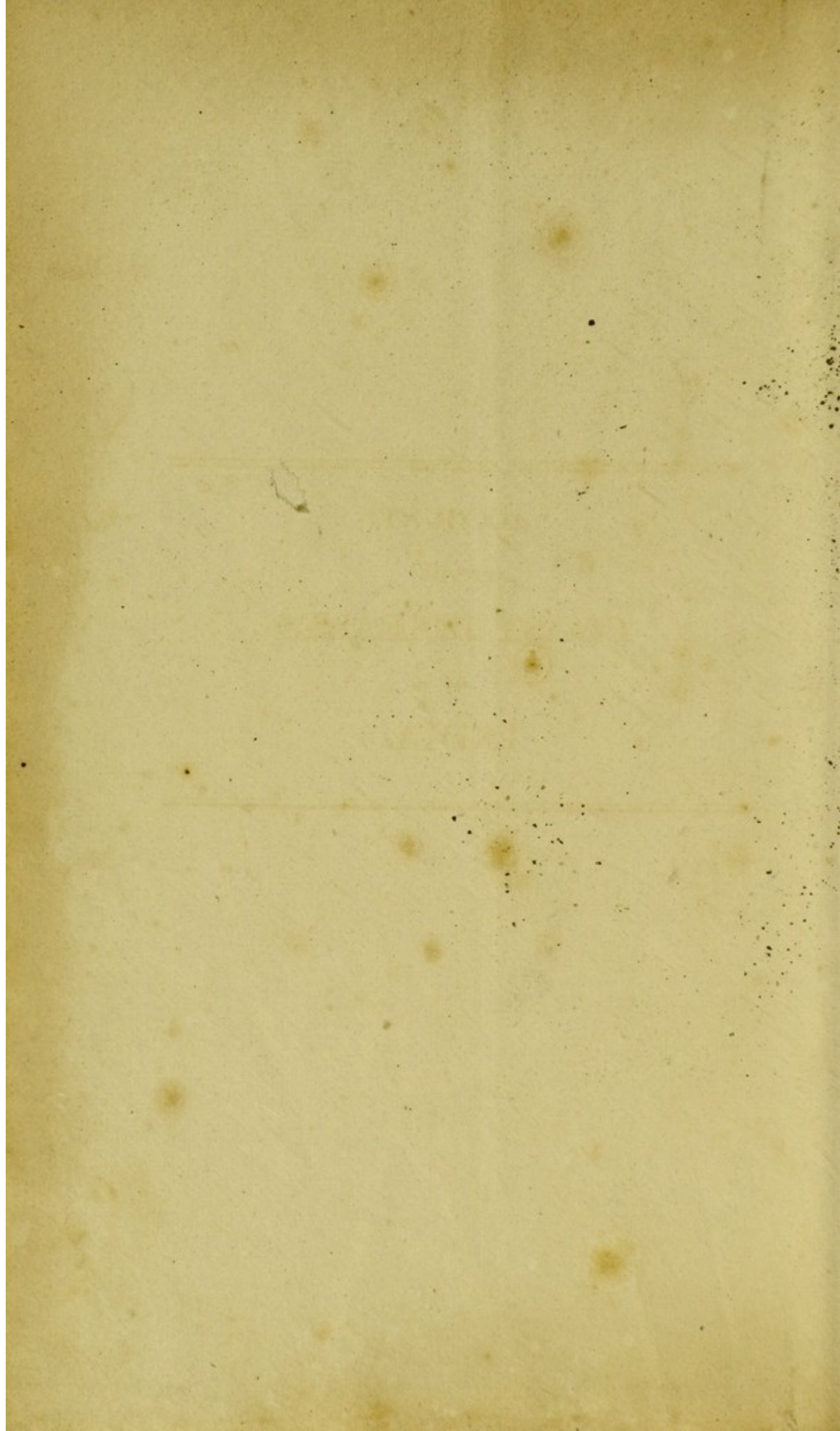
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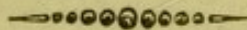
OF

INDIA.

AN
ACCOUNT
OF THE
DISEASES OF INDIA,

AS THEY APPEARED
IN THE ENGLISH FLEET, AND IN THE NAVAL HOSPITAL
AT MADRAS, IN 1782 AND 1783;

WITH
OBSERVATIONS ON ULCERS, AND THE HOSPITAL
SORES OF THAT COUNTRY, &c. &c.



TO WHICH IS PREFIXED,
A VIEW OF THE DISEASES ON AN EXPEDITION,
AND PASSAGE OF A FLEET AND ARMAMENT
TO INDIA, IN 1781.

BY
CHARLES CURTIS,
FORMERLY SURGEON OF THE MEDEA FRIGATE.

Edinburgh:
PRINTED FOR W. LAING;
AND LONGMAN, HURST, REES AND ORME,
AND J. MURRAY, LONDON.

1807.

AN ACCOUNT
OF THE
DISEASES OF INDIA

IN THE ENGLISH ARMY, AND THE NAVAL HOSPITALS
AT MADRAS, IN 1781 AND 1782
WITH
OBSERVATIONS ON THE CAUSES AND THE PREVENTIVE
MEASURES OF THEM, BY
JAMES COCHRAN, M.D.

ENTERED IN STATIONERS HALL.

A VIEW OF THE DISEASES ON AN EXPEDITION
AND PASSAGE ON A FLEET AND ARRIVAL
TO INDIA, IN 1781.

CHARLES CURRIE

NEILL & Co. Printers,
Edinburgh.

TO
VICE-ADMIRAL
SIR ERASMUS GOWER,

&c. &c. &c.

AS a tribute of respect to his virtues, and in gratitude for many acts of kindness experienced under his command, in the Medea Frigate, this small Tract on the Diseases of India, is humbly and most respectfully dedicated, by

His most obedient

Humble Servant,

The Author.

EDINBURGH, }
19th Jan. 1807. }

TO

TO
VICE-ADMIRAL
SIR ERASMUS GOWER,

&c. &c. &c.

As a tribute of respect to his
virtues, and in gratitude for many acts of
kindness experienced under his command, in
the *Albatross* frigate, this small tract on the
Disease of India, is humbly and most re-
spectfully dedicated, by

His most obedient

Attendant

The Author

Edinburgh,
1767.

TO

DR JAMES HAMILTON PRIMUS,
EDINBURGH.

SIR,

THE benefit derived from your assistance, in many difficult cases of Medical Practice, and the instruction I have received in regard to the treatment of others, from your late publication On the Use of Purgative Medicines;—in particular, with respect to Chorea Sancti Viti,—a well marked case of which came lately under my care, and has been perfectly cured by an adherence to the plan laid down in that excellent work;—renders it a duty, and seems also to confer a kind of right, to inscribe to you this short Treatise on the Diseases of India.

It pretends to little more than to give a history of facts, with a few observations relating to foreign practice; of the accuracy or importance of which, those only who have had some medical experience in

India can judge correctly. In taking the liberty, therefore, of presenting to you this Publication, it is obvious, I cannot have so much in view to procure for it your patronage, as to testify those sentiments of personal esteem with which I have the honour to be,

SIR,

Your most obedient Servant,

C. C.

EDINBURGH, }
19th Jan. 1807. }

CON-

CONTENTS.

	Page
INTRODUCTION, - - -	xv-xxxv
DISEASES OF THE EXPEDITION.	
Equipment and state of it, - - -	1-3
TYPHUS FEVER,—Cases of it on the passage to St Jago, - - -	4
Fleet attacked in Port Prayo Bay, by a French squadron,—and departure from the island,	5-6
Fevers begin again to prevail—at first anomalous, but end in Diarrhœa and DYSENTERY, -	8
First accession of SEA-SCURVY, - - -	9
Description of its symptoms and appearances under different conditions of the system, -	9-12
Progress of dysentery and scurvy in the fleet,	12-15
Expedition divides off the Cape of Good Hope.— The greatest part of the men of war, and all the transports with troops make sail for the island of Johanna, - - -	15
	Arrives

	Page
Arrives at that island, and lands the greatest part of the crews and troops highly scorbutic,	19-21
Account of the island, and of the accommodations it affords for a sickly fleet.—Speedy recovery of the crews from scurvy,	21-25
Singular case of land-scurvy, (foot-note,)	24
The fleet reimbarcs, and quits the island of Johanna,—Its condition at that period,	26
 BILIOUS REMITTENT FEVER caught at the island, and carried to sea.—Two cases of it on board the Manilla,	 26-32
Bilious remittent fever continues to prevail in the transports containing the 42d and 98th regiments,	33
The fleet becalmed on its passage to Bombay—carried out of its course, by currents, and anchors in the Bay of Moribat, on the coast of Arabia Felix—but continues healthy.—No disorders caught here except bowel-complaints from fish-diet,	33-37
Fleet leaves the Bay, and arrives at Bombay harbour.—Slight bilious fevers on the passage.—Re-appearance of scurvy.—Singular case of ophthalmia.—Part of the expedition leaves Bombay, and arrives at Madras, after a voyage of eleven months, from England.—General account of the loss by sickness,	37-40
Reflections on the modes of sea-victualling.—Transports.—Means of preventing sea-scurvy, and preserving the health of seamen on long voyages, &c.	40-44

INDIA DISEASES.

Two naval actions between the French and English fleets, on the coast of Coromandel.—The English fleet anchors in Back Bay, Trincomalé.—State of the weather, and the nature of the climate and coast, - -	46
SPASMODIC CHOLERA, or MORT DE CHIEN, frequent in the fleet, and at the hospital on shore,	46-48
A number of cases occur on board the Seahorse.—Full account of the disease.—Varieties, and fatality.—Method of cure, &c. -	48-67
More cases of it met with in Madras Hospital.—Cases and dissections, &c. -	67-68
Its analogy with some European complaints.—Is often to be met with under its true form in Scotland.—Statement with regard to this,	80-85
Copy of a letter on the subject, by Dr PAISLEY, Company's physician at Madras, -	85 <i>et seq.</i>
HEPATITIS.—Full account of the disease.—Frequently ends in suppuration and abscess of the liver.—Numbers of cases occurred at the hospital in the years 1782 and 1783.—Method of cure—and a particular case of, -	89-117
BILIOUS FEVER AND FLUX.—To be distinguished from dysentery and other disorders.—Pathology.—Description.—Different stages.—Cure.—Dissections.—Case of Enteritis, -	117-148
Case of separation of the whole Rectum in a putrid bilious flux, - -	150
JAUNDICE,	

	Page
JAUNDICE, INTERMITTENTS, and DISEASES OF THE THORACIC VISCERA, as these appeared in the hospital, - - -	155-158

RETURN FROM INDIA.

Diseases in the Medea, on her passage to England. Complicated case of India disease,	158-161
---	---------

GENERAL OBSERVATIONS on the Diseases of In- dia, and on some accounts that are given of them.—Distinction between Dysentery and the Bi- lious and Hepatic Fluxes of India.—No general contagious diseases supposed to prevail in that country.—A comparison between some India diseases, and similar disorders in Europe,	161-188
---	---------


BILIOUS DISEASES IN EUROPE.—Imported bili-
ous diathesis.—Fits of the bile.—Bilious cholic,
as distinguished from enteritis or ileus.—Bilious
diseases of infants and children.—The *bowel-
bive*, a bilious inflammatory disease.

Copy of a LETTER from Dr PAISLEY, on the pe- culiar diseases and morbid constitution of India,	188
---	-----

ULCERS, and HOSPITAL SORES of INDIA, &c.

Description of the Naval Hospital at Madras, and
state of the town and settlement, in 1782.—
Supposed peculiarities in the condition of ulcers
in India.—Supposed causes of this.—General
tendency to gangrene, and to a diseased state of
the periosteum.—Remarkable case of the sepa-
ration

	Page
ration of the greatest part of the thigh-bone, after amputation.—General treatment, and particular applications for fores and ulcers, &c.	211
TETANUS.—Account of its fatality, -	244
BURNS from explosion of gunpowder, -	248
FRACTURE OF THE CRANIUM.—Proposed alterations on trepanning instruments, - -	251



APPENDIX.

No. I. Remarks on some diseases of infants in Scotland, -	261
II. On the disease called Cholic, -	268
III. Diseases at the Naval Hospital, Madras, compared with those at the Company's Hospitals, - -	275
IV. On preserving health in India, &c.	278

CORRIGENDA.

- Page 5. line 2. from the bottom, *for at read with*
17. 2. *for inversion read invasion*
31. 7. from the bottom, *add Cort. Peruv.*
46. 15. *for fever-diseases read liver-diseases*
83. 4. *for ease read care*
Appendix, No. IV. p. 172. l. 10. *add certain*

INTRODUCTION.

WHEN we consider the great extent, and flourishing state of the British possessions in India,—the splendid establishments for the improvement of science, and the success with which many branches of it have been prosecuted there; and when we observe, that military and municipal hospitals; with able and skilful practitioners, have long been established, and are to be met with in all the principal stations of the Company in that extensive region, it may be a matter of some surprize to observe, that so little on the subject of MEDICINE, has been communicated from that quarter.—And that no good account has yet been given of the *morbid* constitution

stitution belonging to the country, or of the diseases peculiar to it; so that strangers, and the younger part of the profession, often prematurely enough called to practise there, under very important trusts, might be enabled to undertake it with tolerable facility to themselves, or with safety to those under their care,—may well be matter of regret.

Placed in similar circumstances, it required no long time to make the author fully sensible of this want; and to convince him, That European nosology and definitions, would, in India, prove but uncertain or fallacious guides; that a stranger in short, with a good deal to unlearn, would have his way at every step to feel and trace out for himself. Nor is this perplexity, and the difficulties which we have to encounter, to be wondered at, on entering to practise in a country, where scarce a single production, whether of the animal or vegetable kingdom, is to be met with, bearing a true resemblance to its prototype in Europe; where, except for two or three weeks about
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the shifting of the monsoons, especially of that which happens in the month of October, (I speak of the Eastern Coast only), a shower of rain, or a breeze of wind, are almost unknown; where scarce ever a haze or cloud appears upon the horizon, to mitigate the dazzling ardour of an almost vertical sun; and where the thermometer, through the whole 24 hours, seldom or never points under 80° of Fahrenheit, but generally far above it.

At no period of life is *diagnosis* an easy part of the medical profession. In the outset it is always difficult. The author of the following sheets had experienced this difficulty fully; and this had led to an early habit of taking cases, or notes of such diseases as had fallen under his observation, adding such reflections as were suggested to his mind, from symptoms and events as they occurred.

On being appointed, soon after his arrival in India, to do duty in the Naval Hospital

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at Madras, during the active service of the fleet in the years 1782 and 1783, this practice was regularly continued: Not, however, to the extent of a full case-book and perfect tables, such a task being too burdensome for the laborious duty of this station in such a climate. Regular entries were made of the principal cases only; and a general minute-book recorded the material circumstances in such as were of less importance. Full opportunity was enjoyed for dissections, and many were accordingly performed, and the appearances recorded at the moment.

From such materials, the following histories of the principal and prevailing Coast Diseases of India in those years, are, with much diffidence, presented to the public. Not that the author by any means presumes they will be found an adequate supply for the want that has been noticed. Superior abilities, a longer residence in the country, a more full acquaintance with the nature of the climate,

mate, and its influence on the European constitution, than he enjoyed, would have been necessary for such an undertaking. If what is here attempted, shall in any degree contribute to direct the inexperience of others, and preserve them from falling into errors and mistakes, which unavoidably occurred to the author in his own practice, by pointing out the illusive and varying forms under which the symptoms of known diseases present themselves in this climate, some part of the difficulty at least will be removed, and personal industry and experience will the sooner supply what may still be wanting. Let it be observed, however, that what is here stated, applies properly to *maritime* India only, and not to all the variety of inland country comprehended within that vast peninsula.

The classification and nomenclature of diseases, is a necessary measure to facilitate the study of them; but we ought always to keep in view, that the best nosology is in

some measure an artificial, often a fanciful arrangement, and behoves of necessity to be always more or less a local one. And hence, in relation to diseases of foreign countries, there arises a danger of our being led into error, by the misapplication of names, or by the inaccuracy of writers, in using these in a sense different from that adopted by nosological and systematic authors.

To rectify what appears to me, to be an error of this kind, to be met with in more than one communication on the subject of India diseases, is one object of the observations contained in the following sheets.

Thus the name of *Dysentery* has been uniformly made use of to distinguish an affection, which, from the accounts that are given of it, appears to be nothing different from that which takes place in the *bilious* and *hepatic fluxes* of India; both very generally attended, like dysentery, with some fever in the beginning, and seldom without a considerable degree of dysenteric affection in some parts of their course;

course; but easily distinguished from dysentery, by the train of symptoms, by the nature of the evacuations, and by what has even been taken notice of, without leading to a correction of the error,—the circumstance of their never being in any degree infectious. Were there nothing but a *name* concerned here, the matter might be considered as exceedingly trivial. But when we find mercurial frictions, pushed the whole length of a salivating course, recommended by one, and doses of calomel, to the extent of 10 grains every night, by another, as a safe and effectual mode of cure for what they term *dysentery*; it is evident, if this practice were to be adopted in the treatment of *real* dysentery, in many of its combinations, as with scorbutic diathesis or typhus fever, much mischief might undoubtedly follow;—and hence the importance of the distinction being made, becomes evident.

Of the spasmodic disease known, when I was in India, under the name of *Mort de Cbien*,

no particular account has yet been given to the public. It is spoken of by BONTIUS, and has been mentioned by Mr GIRDLESTON; and it is more particularly referred to in a late academical thesis on the subject of *Tetanus*, of which it is considered as a species or variety*.

Tetanus, under what I have always understood to be its true and proper form, appeared on one occasion at the hospital, and is taken notice of in some of the following communications. It was in every instance the consequence of external injury, and preserved throughout its course, a character so determinate, as to distinguish it completely from every other disorder. It did not appear to me to have any agreement with the *mort de chien*, except in the single circumstance of external spasm, and even in this there was a material difference. In tetanus, the spasms are not attended with much pain
in

* CONSIDEN *De Tetano*.

in the affected muscles, scarcely indeed with any. It is far otherwise in the *mort de chien*. In tetanus, there is no contraction or gathering up of the belly of the muscle into a hard knot, but rather a fixed rigidity, over-tone and tension of the whole muscle, or of a number of the external muscles at the same time; especially of those that serve to close the lower jaw, than what may be called a cramp or spasm. Spasm was, in the case of tetanus, the great and principal symptom of the disease, and its progress was regular and uniform. Whereas, in the *mort de chien*, it neither began nor finished the malady. It was moveable and variable in every degree, and the disease was accompanied all along, with symptoms of far more serious importance than even spasm itself. In fine, spasm appears in tetanus as the radical affection: In the other it is only symptomatic.

Obstructed perspiration, and the retention of acrimony supposed to be eliminated by the skin, and the application of cold, especially

cially when joined with hard exercise, and debilitating exertions, are supposed to furnish an easy explanation of many diseased phenomena, and have been adduced as the causes of tetanus, and of the disease under consideration. It may, however, be observed, that, on reviewing the provisions made by nature for correcting irregularities, or supplying the defects of this discharge, and the great inequalities to which it is daily and hourly subjected with impunity,—as in the practice of many nations inhabiting the hottest countries, in having their bodies constantly besmeared with oil or grease; we will find ourselves beset with difficulties in explaining diseases, by referring them to this source, in the same manner as we find these difficulties in most of our pathological inquiries.

Much will depend on idiosyncrasies and peculiarities of habit, which we cannot always understand or explain. Accordingly, I recollect to have observed several persons of a spare and thin habit of body, with dark
hair

hair and swarthy complexions, who preserved a degree of health and vigour in India quite inconsistent with the debilitating operation of the climate upon the generality of European constitutions; and these persons sustained the heat, without any sensible perspiration at all: while others, again, enjoyed neither health nor spirits, nor vigour, but while under a continual vapour-bath of this exhalation. Whether the one or the other description of persons were most liable to the spasmodic diseases of the country, I made no observations to determine. Certain it is, that the lower classes of the natives, whose skins are very black, and who perspire but little, are equally sufferers by them as the Europeans, or perhaps more so.

Hepatitis, which occupies some room in the following work, has been so often treated of before, that little or nothing new can be added to the subject; unless it may be in what relates to diagnosis,—or to the importance

portance of distinguishing between symptoms that are primary and characteristic, and those that are only accessory or accidental; and the difficulty that frequently attends this distinction in India, from the general promi- nency and violence of the accessory symp- toms there. On this subject, we have been somewhat particular, and have given several important and striking examples.

On the subject of *Bilious Diseases* and *Ab- dominal Affections*, so uncommonly prevalent in India, a very few preliminary observations may be perhaps introduced here without im- propriety.

Redundancy and disorder in the bilious secretion, is a diathesis in some measure com- mon to all tropical countries. But in India, I am disposed to believe, that the constitu- tional temperament peculiar to the country extends to something further; namely, san- guineous plethora, with increased mobility and irritability over all that portion of the system comprehended within the extent of
the

the cœliacal and portal circle ; and that from this source are derived redundancy of bile and acrimony of secretions, tendency to disorder, disease, and derangement of functions over all this portion of the body, excessive fluxes, and the whole train of topical affections, to which the liver, intestines and mesentery are so constantly subjected in India. Hence diseases that depend on a rigid or tense fibre, or any other determination of the circulating fluid ; such as rheumatism, catarrh and catarrhal affections ; pleuritis or pneumonia, headachs or toothachs, are wholly unknown. Febrile diseases are confined to exanthematous, symptomatical or hectic, and the nervous affections to the spasmodic. Intermittents and remittents are, in Lower India, at least, only symptomatics, arising from diseased bile in the first passages. Renal or urinary affections we had none ; and of all our numerous cases of obstruction of the liver or mesentery, and of cachexy from fluxes and impaired habit, not one ever ended

ed in any species of dropfy. The stomach and intestines, the liver and mesentery, are here the grand sources of almost every disease that occurs; or, what amounts nearly to the same thing, in every standing complaint, if the radical affection does not lie in these organs, they are sure to become the principal sufferers in the issue.

At the time the observations on the *Ulcers* and *Hospital Sores* of India were made, I had seen no treatise on these subjects, or on hospital gangrene. Of course, the conjectures here stated concerning them may appear but crude and little satisfactory; and what has been viewed as peculiarities, resulting from climate or situation, may be thought rather imputable to a general source of such malignity, viz. foul and contaminated hospital air.

But whatever may be in this, I am persuaded that those we have stated were not without their influence, and that we were well founded in supposing the presence of a greater degree

gree of acrimony in all secreted fluids, together with torpor, inactivity, and want of tone in the extreme vessels, as unfavourable to the healing process, in a degree far beyond what takes place in more temperate latitudes : And the facts on which we built this conjecture, were the following : That instead of a hard or full pulse, with heat and rose-coloured redness of parts, indicating an active inflammation, that soon terminates either in the establishment of a good and plentiful suppuration, or in rapid and destructive gangrene ; whenever external inflammation was any how induced, its characters were,—little heat or tumour of parts, inflammation of a pale or purplish hue, with a quick and feeble pulse, indicating a feeble creeping kind of disease, terminating most commonly in an equally inactive sort of gangrene, which it was yet extremely difficult to correct or resist ; and this was often the result from wounds, fractures and contusions received in action, as well as in established sores ; and

was

was observable in ships, whether they had been a long or short time at sea, as well as at the hospital. True phlegmon, or any thing of the nature of erysipelas, we never saw. This last is indeed a frequent hospital disease, and some people have assigned to it a bilious origin; but it never appeared with us.

Expeditions, so tedious as that under the command of Commodore JOHNSTON, can but seldom happen. Passages to India are seldom extended to the length of eleven months; but they are sometimes sufficiently protracted, to give rise to a variety of ship-complaints. An account of the kinds and succession of diseases, likely to be met with in similar circumstances, it is conceived, may be of some use to those who have not been accustomed to such kind of service.

Sea-scurvy, which was formerly the bane and scourge of many a hopeful undertaking, is now, from the reforms in sea-victualling, a much less frequent occurrence than formerly.

merly. Slighter degrees of it, not very easily detected, unless by some acquaintance with the disease under its proper form, and which never fail to give a covered and latent malignity to many other disorders, will, however, now and then occur. The short account of it here given will serve in some measure to detect these, and may perhaps supersede the necessity of consulting older, more minute, and tedious descriptions.

Two letters, published in this Collection, may seem to require some explanation, and perhaps an apology. The longest and most important of them has already been communicated to the public by Dr CARMICHAEL SMYTH in Dr DUNCAN'S *Annals of Medicine* for the year 1801. This, it may be thought, ought to have superseded the necessity of a republication. But the subject, and the sentiments contained in it, do so much elucidate and confirm the doctrines here delivered, as to render it a very important and necessary addition. Copies of both letters were in the
hands

hands of most of the older surgeons of the fleet under Sir EDWARD HUGHES; and they were deservedly valued, as containing by far the best general information on the India diseases, to be procured in the country. Although they were but private letters, the hand of a master is visible in both. The author has printed from the copy of them, which has been in his private possession for above twenty years. The letter which relates to the *Cholera Morbus* or *Mort de Chien**,

as

* It is printed *Maux de Chiens*, in Dr SMYTH's copy of the other letter. In India, I know, dogs are subject to the liver-disease, but never that I heard of to any thing like the cholera morbus or cramp. The name does not stand in my copy of the second letter at all; but the *mort de chien* is undoubtedly the disease pointed at in the place where Dr SMYTH's copy has *maux de chiens*. *Mort de chien* was the name in the fleet; and it may have been of ship-coinage originally, importing the pitiful manner in which a brave and boisterous seaman was condemned to lose his life;—to die like a dog!

as appears from the style and manner, has been written in much haste; yet still it contains so much information on the subject, and points out such distinctions, in relation to cases and symptoms, as to shew of how great value a more finished account from the same hand would have been.

In this publication, the author has not thought it of much consequence to be very particular in stating forms of prescriptions, and doses of medicines,—as being in a great measure unnecessary to the class of readers for whom it is intended. Nor is there in fact much variety or elegance of prescription, to be expected in a detail of foreign hospital practice. Every thing in such a situation comes necessarily under some general plan and system of management; and no where is this attended with less inconvenience than in India, where diseases are at bottom so simple, and so little varied in their essential characters, that a short experience enables a practitioner to

treat a number, that would be thought in any other country quite incompatible with any sort of due attention or care.

To exhibit useful facts, and to state only such as came under the author's own observation, without indulging in theoretic disquisition, or laboured speculations, has been his object throughout.

By examining memoirs, reports, and accounts in periodical works, he could have swelled this small volume to a more respectable size; but this, except in so far as appeared necessary to the rectification of what was deemed erroneous, has been purposely avoided.

All the diseases here treated of, came under the author's own care; not in single or solitary cases, but in classes and whole wards together; and they include all the diseases of any consequence that were met with in the country. Errors and mistakes in the treatment of them he was often sensible of
himself;

himself; but he has made no attempts to palliate or conceal any of them. Those who have had some experience of the difficulties which frequently occur in the profession, will know how to make reasonable allowances.

He has much to fear, should the reader be inclined to exercise the severity of criticism with respect to imperfections and defects in point of composition to be found in this publication. Accustomed to commit his thoughts to writing for his own perusal only, the author is sensible he may have contracted an abbreviated form of diction, less suited than he could wish to a public appearance; and a desire of adhering closely to the statements in his original notes, may doubtless have infused too much of the journal style into his work. But in all other respects, he is desirous rather to solicit correction, than to deprecate or shun it.

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 error.

MEDICAL OBSERVATIONS

ON AN

EXPEDITION AND PASSAGE

TO

INDIA, &c.

13th March 1781.

ON this day, a fleet, under the command of Commodore Johnstone, failed from St Helen's, consisting of the following ships, Hero, 74; Monmouth, 64; Ifis, 50; Romney, 50; Jupiter, 50; Jason, Active, Mercury, and Diana frigates; Rattlesnake and Lark cutters; Terror bomb, and Infernal fireship; with five King's transports, several storeships and victuallers; having under convoy a fleet for the West Indies and thirteen East Indiamen. On board the

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transports,

transports, storeships, and in the East Indiamen, were embarked the 98th, 100th, and the 2d battalion of the 42d regiments, with four independent companies of additional.

In the King's transport ship the Manilla, were embarked the hospital staff and stores, with two companies from the 98th and 100th, hospital surgeon, and two mates, under whose care the troops were. The ship's complement, consisting of the Lieutenant commander, master, warrant-officers, and forty seamen, being all the people whose health I had in charge.

From the ship being put in commission to our sailing from St Helen's, no disease had appeared among the seamen, excepting one case of synochus fever. The pulse, from the first, was frequent and feeble, with pain of the head and back. The antimonial solution * *ad vomitum*, was given him in the beginning; but by his taking it, through mistake, in too large doses, it brought on continued vomitings and singultus. After trying different anti-emetics and antispasmodics, without effect, these were completely removed by a large blister *inter scapulas*, which raised his pulse, and relieved

* Solutio Tartritis Antimonii.

lieved the anxiety and oppression of breast he had complained much of for some days before. After this, his recovery was easy and rapid, with the assistance of wine and cordials only. When we left St Helen's, the ship's company were all in perfect health, and there were few or no complaints among the troops; but they were new raised, and poor looking men; many of them mere boys, and a number much over the proper age for service in hot climates: several only in a state of convalescence from fevers, which had infested them much in Hilsa-barracks, where they had been quartered.

On the 10th April, the whole fleet anchored in Port Prayo Bay, in the Island of St Jago, lat. $15^{\circ} 30'$ N.

The weather, from our leaving England, down Channel, and across the Bay of Biscay, was clear and moderate for the season; with light winds and calms in the Bay. By the 25th of March, the increase of heat and change of climate had become perceptible. When we reached this island, the heat, from a nearly vertical sun, was excessive; yet the evenings and mornings were cool.

For nearly the last fortnight, we had found a steady wind at N. E.; the air dry and clear, without night-dews or damps. Among the seamen, we had only a few slight rheumatic complaints down Channel; and two or three febrile disorders in the latter part of the passage. One of them, however, turned out continued and fatal. The patient complained, in the beginning, of much pain in the head, great lowness and depression of spirits, with a quick small pulse. His skin soon became dry, and his tongue parched. Belly natural, but he had much thirst, and all along an unpromising cast of countenance. An antimonial emetic and neutral mixtures, with blistering, procured no relief. A dose of opium and camphor, on the 10th day, brought out a moisture on his skin and tongue, which promised to be of service; but in the end afforded none. The sweating became profuse and cold, and he died on the 12th. Our seamen slept at this period in the fore hold, under the platform for the troops, which was exceedingly ill-aired and hot; and I had no doubt added to the malignity of this man's disease. Two soldiers also died of similar fevers during the passage.

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The event of this case, and the increase of sickness among the troops, rendered it extremely necessary to provide a better sick-birth for the accommodation of the seamen; and every part of the deck below being taken up by the soldiers' platforms, foreseeing a sickly passage, I took the first occasion to pre-occupy for this purpose the stern-sheets of a flat-bottomed boat, carried on the ship's deck under the booms. An awning being spread over these, covered in the whole, and served our purpose most excellently; while the fore part of the boat, also covered by the awning, but left open at the sides, afforded a sheltered sleeping-place for the rest of the sailors. Of this station, they kept possession through the whole voyage; even during the cold weather we experienced in doubling the Cape, so far south as 42° , and was without doubt a principal means of preserving them from the influence of contagion often raging among the troops below; or at least rendered the effects of it much less fatal than otherwise it might have been.

May 1.—Lat. 9° N. At sea, steering south at a steady light breeze at N. E.; weather exceed-

ingly hot, but the atmosphere dry and clear. No complaints occurred among the seamen at St Jago; and the troops got free from the fevers which had affected them on the passage to the island. The fatigue of watering there was great, and exposure to the heat of the sun constant; the water being to roll in casks a considerable way to the beach, and to raft off through a heavy surf and swell above a mile and a half to the ships. The people in general slept exposed to the night-air both on shore and on board, yet no injury to health was sustained. Fresh meat, vegetables, and the tropical fruits were procured in great plenty, especially where old clothes could be given in barter for them; and the water was good, though somewhat brackish at the nearest well.

While at anchor in the bay, the fleet were attacked by a French squadron, commanded by Monsieur Souffrain. None were killed or wounded on board the Manilla; but some days after the action, fourteen soldiers wounded by musket-shot, were put on board, under the care of the hospital-staff. They were mostly flesh wounds, chiefly through the limbs; only two had the bones fractured. They all healed easily; nor was there in any of them

them a necessity for counter openings, except in one case, for the extraction of a button or piece of cloth. I did not observe, either in these, or in some cases I saw on board other ships the day after the action, so much blackening and scaring as ball-wounds are in general said to exhibit; but I observed in all the cases, that the ball had made a much larger opening on the side by which it passed out than that by which it entered. Fomentation and poultices, or embrocation with saturnine solution, light rolling and dressings, with occasional laxatives, and an opiate every night, till the suppuratory process was completely established, and after that wine and bark, were the only means of cure employed, and in all with full success.

June 1.—Lat. $12^{\circ} 15'$ South.

Before the end of last month, fevers had begun again to prevail in many of the transport and troop ships. In the Manilla, out of about 180 soldiers, 56 are now in the sick-list, under fever of considerable variety of form; and two have died of it since leaving St Jago. Some way before we reached the Line, we were deserted by the N. E. trade-wind; and near it, were frequently becalmed for

two or three days together ; with now and then hurricane squalls, tornadoes, and gusts of wind ; with occasional loud thunder, and heavy falls of rain.

The troops now begin to have a pale, squalid and sickly appearance. The fever begins with pain in the head and back ; some have also pains in the limbs ; and in others, it is attended with diarrhœa. Generally the tongue is yellow, and the urine high coloured ; but without bilious vomitings or yellowness of the skin. The army surgeons consider this as an ardent, rather than a bilious fever, and say, that bark has been generally successful in removing it. Towards the end of the month, the genus of the fever became much better distinguished, and, in most of the troop-ships, took on the dysenteric form,—severe diarrhœa, gripes, tenesmus, with mucous and bloody stools. We have now, among the seamen, fluxes, with a slight evening fever, but with the dysenteric affection very mild. They complain more of pains in their limbs, owing to their sleeping in a cooler situation. One or two of them have, however, complained of some tenesmus ; but none have had as yet mucous or bloody stools. All of these have yielded easily

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to small doses of neutral purgative salts, with gentle diaphoretics.

July 1.—Lat. 29° 13 South. Weather rather cold, with frequent squalls and rain.

Dysenteric fluxes are now, in a manner, common throughout the whole fleet; and rage, especially in the troop-ships. The fever among the soldiers in this ship, is of a very malignant kind; and the disease has proved fatal to great numbers through the fleet in general.

Scurvy now also begins to make its appearance; attacking those first who have been reduced by previous fevers or flux. In such cases, the patient goes off in a sort of general cachexy, rather than with the symptoms of true formed scurvy. They continue pale and fallow, with very little appetite; a low latent state of fever remains, and they never recover any strength, but complain much of torpor and weakness, with difficult or oppressed breathing. The flesh wastes away, and they go off under a slow marasmus, without the external symptoms of scurvy being very remarkable. When this disease began to shew itself in those who had been previously healthy, and of a
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found constitution, the first appearances of it were, a stiffness, with some swelling about the sides of both the ankle and knee joints, affecting the tendons chiefly. By degrees the swelling increases, and pits a little, but never becomes very considerable. The parts around the joints become discoloured,—of a dusky yellow, then livid, at last black; with extensive yellow suffusions under the skin, along the back-part of the leg and thigh; but affecting much more the tendinous parts about the joints, than the soft and muscular parts, or the middle of the member, running along and spreading in exanthematous patches, streaks and blotches, each with a yellow margin extending far around it. Soon after these begin to appear, the gums swell, become spongy and livid, and bleed easily. The whole skin, but especially the face and eyes, becomes dun and yellowish. A great degree of listlessness and of languor supervenes; though they have a tolerable appetite, are at times cheerful when not pressed to action, and have a flow of spirits.

Wherever this diathesis prevails to any considerable degree, the slightest sore or ulcer soon puts on a particular appearance; the edges become tumid,

mid, livid, or black and retracted. This colour diffuses itself some way round the fore, declining to a dun yellow of much larger extent. A spongy flesh, of a fibrous consistence, resembling cruor or gore, springs up in the middle of the fore, preventing all discharge, except perhaps of a little sanies, which often issues from it. Sometimes it dries and hardens with the air, so as to afford no discharge whatever; and in this state the fore continues without any change till the habit is corrected; for such fores never run into spreading gangrene. Where there are no open fores or ulcers, there often appear a number of lumps on the skin, owing to the effusion of blood, especially where any bruise or hurt has been received; yet, when opened, these emit nothing, but consist of a hard coagulum, like that which takes place on the open fores. Neither sometimes do the exanthematous blotches about the joints, bleed upon being opened with a lancet, and the whole parts become hard, dry and contracted, rather than swelled.

Where fever or flux had preceded and exhausted the habit, the external scorbutic appearances were in a much inferior degree; but the symptoms

toms of internal oppression and putrescency of the fluids were more remarkable. The gums became early more swelled and spongy, and bled more. The breath became fœtid, and stank; and every thing about them had a cadaverous smell. Respiration became difficult and laborious; extreme weakness and fainting fits came on; and in one or other of these fainting fits it was that all our scorbutics who died were carried off. Our seamen in the Manilla have as yet exhibited no appearances of scurvy, though some seamen in the larger ships are beginning to be tainted; but numbers of the troops are daily falling down with it; and it has already proved fatal to many.

Our most severe and fatal disease in the Manilla, continues to be the fever and flux, with the symptoms exceedingly severe, and marking a high degree of malignity. The disease is strongly infectious. Where it arose, does not well appear; but an epidemic dysentery now rages through the whole fleet, though in very different degrees in different ships. Almost the whole of our seamen have had more or less of it; but the degree and malignity of the disease, and especially of the febrile affection, has with them been greatly milder than

than among the troops ; owing, I presume, to their sleeping in a freer and purer air than any other description of persons in the ship. The greater part of those seized lately, have had some fever during the first stage. Some of them with griping and tenesmus, mucous and bloody stools of considerable extent and continuance. Of those first attacked, the recoveries were easy ; and little beyond some regulation of their diet, a purge or two of some mild neutral salt, with gentle diaphoretics occasionally ; such as Pulv. Jacob. gr. x. *, night and morning ; or if there was any degree of griping or tenesmus, after giving one saline purgative, a pill composed of Pulv. Ipecacuan. gr. i., and two or three of Rhubarb twice or thrice a-day, with a bolus at bed-time, composed of ten grains of Pulvis e Scordio cum Opio, *Ph. Lond.*, and a few grains of James's Powder, answered exceedingly well. But when the disease became more severe, and came on with more fever in the beginning, I began by giving them an emetic of Ipecacuan., and for some days following, Pulv. Ipecac. gr. i. ; Pulv. Rhei et Pulv. Jacob. a gr. v. terties

* Pulv. Antimon. cum Phosph. Calc. *Ph. Edin.* Pulv. Antimon. *Lond.* Pulv. Stibiat. *Dub.*

terties indies. When griping became fevere, a dose of Sal Glauberi *, with an opiate at bed-time, generally gave much relief. I made it, however, a rule, to give no opiate till two or three purgatives had been first premised, and then only to relieve tenesmus, and procure ease through the night; never when there was considerable griping; unless several free stools had been procured through the day: whenever this was fevere, a laxative was always given an hour or two before the exhibition of the opiate.

The practice with the troops in the ship consisted more in an alternation of laxatives and astringents, or opiates,—salts every day or every other day, and an opiate, or a dose of Confectio Japonica † at bed-time. But among them the feverity of the disease, and malignity of the fever attending it, was much greater than among the seamen. With the latter, the fever generally came to a termination by the time the bowel-disorder was removed; sometimes sooner. It was very different among the soldiers; with them, both generally ran on to a great length. The recoveries

* Sulphas Sodæ.

† Elect. Catechu.

veries were much less perfect ; and though the dysenteric symptoms might be abated, a wasting flux and low hectic fever remained ; or they fell into a scorbutic state, from which they never could be recovered while the fleet remained at sea.

With the seamen, I thought much benefit was derived from paying strict attention to their diet. Taking away their ships' provision entirely, and feeding them on rice-gruel, with portable soup dissolved in it, and sago, with Port wine. After the severity of gripes and tenesmus had been pretty much abated, I gave them twice a-day a large bolus of *Conserv. Rosarum* *, with fifteen or sixteen drops of Elixir of Vitriol mixed up with it, and found it grateful, and useful as an astringent, and for recovering the tone of the stomach and bowels.

In the course of last and this month, we have buried fifteen soldiers from dysenteric fever and flux, or cachectics from these combined with scurvy. The excessive heats, the length of time spent near the Line, from calms, and light or baffling winds, has undoubtedly contributed much to so great a sickness through the whole fleet.

July

* *Conserv. Rosæ, Dub.*

July 20.—Fleet at anchor in Saldanha Bay.
Lat. $30^{\circ} 14'$ South.

The weather has now become rather cold, hazy and cloudy, with frequent rains. Intelligence being obtained from the papers of a Dutch vessel taken on the passage, that five sail of their East India ships, with some small craft were lying in this bay, covered from all view from the coast by a ridge of high land, the Commodore entered it on this day, and made prize of the whole, except one ship set on fire and blown up by the Dutch sailors, before she could be reached by the boats of the fleet.

Fluxes continue with increased malignity and fatality, in almost all the troop-ships. Several of the officers and surgeons have also caught the infection, though it has not yet proved fatal to any of them. None have proved obstinate among our seamen, except in one instance, wherein relapses have been frequent; nor has his medicines procured him much relief, till of late that some benefit has been obtained, from small doses of James's Powders through the day, in a large draught of saline mixture, with an opiate at bedtime. His habit is thin, and his constitution puny. His look gets fallow, and he has become feeble and emaciated;

emaciated; with dry skin, thirst, and a quick and feeble pulse. Most probably from the inversion of scorbutic diathesis, though there are no external symptoms of that disease as yet.

August 20.—Lat. 42° South. Rounding the Cape of Good Hope at all this distance. Wind variable, and frequent gales. The weather cold and wet, with fleet and snow showers.

The object of the expedition was now known to us to have been an attack upon the Cape; but intelligence was procured at Saldanha Bay, that Monfieur Souffrain with his crippled fleet which had attacked us at Port Prayo, had arrived there long before us. Commodore Johnstone detached the expedition, with the Indiamen, transports and men of war, for India; returning himself to St Helena, with the prize ships, the Romney and most of the frigates. The India division made sail through the inner passage, between Madagascar and the Main, for the Island of Johanna, where it was intended we should refresh and water. Since our advance to colder latitudes, the frequency of fluxes has diminished, and many who had laboured long under them have begun to

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recover.

recover. But those who have had frequent relapses, or previous fevers, do not return to a state of health. They continue to have a pale and fallow look, and do not acquire strength or flesh. The disease degenerates into a colliquative diarrhoea, without gripes; and they complain of oppression about the breast, with extreme weakness; the sure symptoms of the accession of sea-scurvy in such exhausted habits, and which soon proves fatal to such subjects.

In some of the ships, fevers of the bilious and remittent kind have been very prevalent, and many have been cut off by them.

Scurvy advances with a rapid course, without our having it, in our power, either to check its progress, or give much relief to those labouring under it. Neither medical prescription, nor the scanty allowance of sick provisions hitherto provided to the navy surgeons, have been found of much avail against this disease. Fresh meat, the stock of vegetables and fruit laid in at St Jago, have been long exhausted; and most of the ships have long since expended their stock of English beer; nor do I understand that essence of spruce, or of malt, have done much, even in those ships
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which had the greatest store of these articles to issue out. But it is worthy of remark, that in some of the India ships, also carrying troops, where these were served out early, so soon as the ship's beer was all expended, scurvy has been later in making its appearance, and has not made so much progress as in other ships, even where these were served in the greatest plenty, after it had begun to shew itself. So that it would appear much easier to guard against the accession of this disorder, by such diet and drinks as lay in a provision against the septic process in the habit, than to counteract and resist its progress, after it has once begun.

In nearly four months after leaving St Jago, the fleet reached the Island of Johanna, Lat. 15° South.

In this tedious voyage, no supplies of fresh meat, vegetables, or even of fresh water, were obtained, except indeed of tea, which the wreck of one of the prize-ships in Saldanha Bay afforded to the whole fleet in great plenty. But sugar was become a scarce article even among the officers, and the men had none. Its place was, however, supplied with molasses, and contributed somewhat, no doubt,

to resist the scorbutic diathesis. Neither seamen nor soldiers ate the four-crust in sufficient quantities to do much good, though plenty of it was served out to them; and the scorbutics, from the condition of their mouth and gums, could not, unless when boiled, which spoils it much. A draught of water, with elixir of vitriol, or vinegar and water, three or four times a-day, after washing the gums with a part of it, was all we could do for them in the way of medical assistance.

The cold weather in passing the Cape, rather changed our dysenteric fluxes into chronic diarrhoea than removed the disease; and this becoming combined with scorbutic weakness, proved very generally fatal. Before reaching this island, many even of the petty-officers, who had been reduced to the same provisions with the common seamen, began to exhibit the symptoms and external appearances of scurvy; but this was only in a mild and slight degree.

Baffling winds, calms and currents, kept the fleet for several days from reaching the anchoring-ground, with the island constantly in view; and during these melancholy days, the ships were every now and then committing to the deep some unfortunate

fortunate scorbutic, whom a few cocoa-nuts and the tropical fruits, which were there in great plenty, might have preserved to reach the much wished for shore.

The green and picturesque appearance of this island affords a prospect peculiarly interesting to every ship's company who have been any length of time at sea. To us, (at least to all our scorbutics), it presented something more. To them it was like the hope of a resurrection from the dead: and in fact, one-third of all the troops and ships' companies, were transported to its shores in a condition, in which a jolt, or a rude motion, was in danger almost to prevent their ever reaching them; and above another third more than half way to the same condition.

This, like most of the tropical isles, is composed of high land, running towards the centre in irregular ridges: The hills, covered to the top with the green and spreading cocoa-nut tree: Some level land upon the shores, and deep and narrow valleys running backwards with more or less ascent among the hills. On the north side, where the fleet anchored, a border of low land, in some places of half a mile or more in breadth, forms the beach;

while three fresh-water streams, of considerable size, furnish easy and plentiful supplies of that article for any fleet. Farther back the land begins to rise in irregular elevations, and the valleys, which are wide and open to the beach, narrow and contract as they recede from it, and soon begin to be covered with shrubs, bushes and underwood. The cocoa-tree seems to thrive alike at all the heights in the island, from the top of the highest hills to within a few yards of the beach. On the banks of the middle rivulet, among the cocoa-tree groves, but where there is a firm and dry sward, and on the open beach near it, the greatest number of the ships pitched their sick tents, while some of the troops, the 98th and 42d regiments, went farther back into the opening of the valley, and towards the rising grounds, farther off from the reach of the sea-breeze, where there were fewer trees, but more bushes and underwood. Frequent rains, which fell out before we left the place, rendered their situation still more unfavourable, from the ground being more imperfectly dried, while near the shore, or among the cocoa groves, there was much more ventilation, and a much better shade from the excessive heats. From the last report, on
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the 20th August, to our reaching this place, the deaths at sea were ten soldiers and one seaman.— The last was the case mentioned in the former report, as not recovering from dysentery. Symptoms of scurvy, or rather of scorbutic diathesis, became more and more apparent, and the patient went off in a low oppressed wasted state some days before we reached this. All the soldiers, except one, (who died from drinking spirits to excess), were affected with scurvy, combined with cachexy, and died in the same way.

A very few days on shore made a remarkable change on the condition of our people. Tropical fruits, pot-herbs, and fresh beef, were procured in great plenty, and the cocoa-nut was in such abundance, that both officers and men diluted their spirits with no other liquor; and at a certain period of its growth, it yields a clear subacid sweet juice, which, with a due proportion of spirits, is made into excellent punch at once. On such diet and drinks, recoveries from the severest degrees of scurvy were rapid. The spongy gums, black vibices and exanthematous blotches, very soon began to disappear: The colour first changing from purple or black, to a dirty yellow, and this also vanishing altogether in a very short time longer; so that it

was very common to see men, who had been carried on shore in their hammocks, walking about with crutches, or the help of a single stick, in three or four days. Some stiffness and a degree of swelling, however, remained about the joints for a longer period.

Some of the seamen had a fancy of sitting with their legs buried in a hole dug in the earth, for an hour or two at a time: I did not perceive with any effect. In fact, fresh vegetable provisions in sufficient plenty were perfectly effectual; nor did it seem to make any difference at all of what kind these were, provided they were in sufficient quantity*.

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* The nature and causes of Sea-scurvy are now so well understood, that it would be entirely superfluous to offer any explanation on the subject. But the following shore case of it, if an Ironicism may be allowed, goes so directly to point out the nature and proximate cause, that it may be worth while, for the use of such as have few opportunities of seeing the complaint, to put it down.

J. P. an inhabitant of Edinburgh, complained to me, some time in the winter of 1795, of pain and stiffness of his ankle joints. I did not look at the condition of the parts, but gave him some Liniment. Saponaceum* to rub on them. In four or five days he called again, to say his complaint was increasing, and affected the knee-joint also. He had mentioned no discolouring,

* Liniment. Saponis, *Ph. Edin.*

No new diseases arose among our people at the island, except trifling fluxes, from a too liberal use of vegetables, and drinking too freely of the cocoa-nut liquor, which is readily fermentable. But a fever, said to be of the bilious remitting kind,

louring, and I was a good deal surpris'd, on inspection, to see on both legs the distinct and well-marked appearance of sea-scurvy, such as it has been described. On desiring him to shew me his gums, they were spongy, swelled, and full of purple mulberry-like lumps, from which blood issued. He said also he was weak and breathless, and could not support his usual exertions. On inquiring into his diet, and way of life, I learned that he was a remarkable dyspeptic, and could not use a single article of vegetable food except tea and bread, nor make use of any malt liquor, and drank only spirits and water after his meals; that his employment was in a rag warehouse, picking and sorting woollen rags for navy beds, and that he slept in a room immediately over his warehouse. From this account the nature of his complaint became very evident, even though the appearances had been less decisive. Notwithstanding his aversion to vegetables, and his account that every thing of that sort gave him stomach complaints, he was directed to eat as many oranges, either bitter or sweet, in the day, as he should find upon trial his stomach would bear, and also to try the usual articles of vegetable diet, and porter for drink. This sort of food he now found to agree with him perfectly well; and what is remarkable, his dyspeptic disorder was removed by it, as well as the scurvy. He has become lusty and full, and enjoys very good health, though he continued his employment in the rag warehouse for two or three years afterwards, only changing his place of sleeping for one much better aired and healthy.

kind, had appeared among the troops of the 98th and 42d, stationed in the mouth of the valley, and some had died of it before our embarkation.

After remaining about three weeks on shore, the whole expedition was again shipped and prepared for sea, with a plentiful store of every edible vegetable the island afforded, pumpkins and coconuts, which keep for any length of time, and as many live bullocks as every ship could find room to stow on their decks. With such provision for the voyage to India, we flattered ourselves with a healthy and prosperous passage. But in this we were disappointed. The fever which some of the troops had caught on the island, was carried with them on board, and continued to spread, and proved fatal to many.

CASES OF REMITTENT FEVER.

Two days before our embarkation, the commander of the Manilla, Lieutenant R —, who had lived on shore very intemperately, continually rambling about through the whole encampment; often

often in a state of intoxication, and frequently lying down to sleep in the open air, had caught the same kind of fever which prevailed in the valley among the 98th regiment.

The attack began with pain of his head, with excessive heat of the skin, and also in the internal parts; quick and small pulse; nausea and sickness at stomach. On his first complaint, or as soon as it could be distinguished from the effects of debauch, he was vomited with repeated small doses of tartar emetic solution. This also operated as a cathartic, and discharged much bilious stuff. This was in the afternoon, and relieved all his complaints; and next morning he thought himself perfectly well. The remission, however, was but short; and, during it, he repeated the same sort of excesses that had brought on the disease. The fever returned after dinner, but remitted again in the evening. The bilious purging continued, but not severe. On the following morning, he complained again as before; but there was a considerable remission, and he walked out freely, though his tongue was white, and his pulse too quick. This day he had some small doses of rhubarb and ipecacuanha to promote his stools. He had from
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the first refused to take bark, which was strongly pressed upon him ; and in the evening he went on board the ship. He had a restless night, moaned much in his sleep ; and next morning, the fourth of his illness, all the symptoms were worse. He had a wild delirious look, and was not distinct in his answers. Pulse very quick and catching ; looseness gone ; skin and tongue dry and parched. Had this day Infus. Tamarind. cum Senna, which operated three times : Rice-water with tamarinds boiled in it for drink, and several glasses of Madeira wine.

On the fifth, looks more unpromising ; pulse quick, small, and very frequent ; skin dry and parched ; constant jaçtation and uncovering his breast. At night, very indistinct ; moans much in a wild and altered tone of voice ; and refuses his wine and drinks.—Applic. Emplast. Veficator. inter scapulas, et habeat Haut. Anodyn. h. f.

The sixth ; had sweated much last night, but without any relief. General appearance no better ; still refuses his wine and drinks, but takes some at times when much pressed. Is perfectly restless and delirious ; attempting often to get out of his cot. Sleeps, but moans greatly ; and when
awake,

awake, seems much distressed. Pulse very frequent, contracted, and irregular. At night cannot be got to swallow any thing.—Applic. Cataplasmata cum Sinap. aliquantum pedibus.

On the seventh, pulse feeble and irregular. Has had a stool both yesterday and this morning. Extremities cold; cannot be got to swallow any thing; respiration quick and interrupted; cadaverous smell; voids urine and fæces insensibly: by all which a speedy dissolution was to be expected; and this accordingly took place about five o'clock P. M.

The servant of the mess, a stout young lad, who had all along attended Lieutenant R., about eight days after his master's death was attacked with the same disease. He had been observed drooping for a day or two, before he made any complaint, but denied there was any thing the matter with him. When he was forced to make known his ailment, he complained only of pains in his limbs, want of appetite, and uneasiness at the pit of his stomach. He was vomited with tartar emetic solution* in the forenoon, and found himself bet-
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* Solutio Tartritis Antimon.

ter towards night. Next day, he thought himself much easier, and continued to go about the decks, though his pulse was somewhat quick and small; but the fever returned again in the evening. A few small doses of antimonial solution had been given him through the day, and procured some stools.

On the morning of the third, pulse still small and frequent; skin hot, and breathing quickened.—
Capiat Pulv. Cort. Peruv. ʒss. quatuor indies.

The fourth, complaints the same. No remission yesterday; tongue much furred; pulse small, and very frequent. Capiat statim, Pulv. Sal. Nitri, gr. xv.; Tart. Antimon. gr. i., in Aq. fontan. ʒij. After this, he vomited much green stuff, and had a remission in the afternoon. Cont. Cortex Peruv. ad ʒi. quatuor indies.

The fifth, all his symptoms aggravated. A number of angry-looking pustules this day broke out about his lips. Pulse regular and free; says he throws up his drinks, which have been barley-water, or Infus. Althææ with tamarinds: This to be changed for weak tea. Has had a stool every day, and several after the last emetic. To take his bark in Julap. Salin.

The

The sixth, general appearance the same as yesterday. Tongue covered with a black dry crust; skin dry and parched. Cont. Cortex, and to have Madeira and water for drink *ad libitum*.

The seventh. This morning, symptoms still more aggravated; only his pulse is fuller: says he throws up the Madeira and water. To be changed again for the weak tea, cold; and to have a glass of claret, unmixed, five or six times a-day. Countenance retains a natural appearance, and the eruption about his mouth keeps out. Sleeps much; and when awoke, seems startled, and requires some time to recollect himself, and give pertinent answers; but is otherwise free of delirium. Passes at times both urine and fæces insensibly. Cont. Cortex et Vin. rubr. At night, pulse continues regular, but quick and feeble; is not sensible of his want of drink, but takes it when offered him; still retains the bark on his stomach.—Capiat omni quartâ horâ ad ʒi. in Julap. Salin.

The eighth. This morning, looks worse; is more insensible and oppressed; breathing very quick; strong throbbing pulsation of the temporal arteries, and a few drops of blood have issued from his nostril; still he is sensible at times, and has
regular

regular passage of his belly. Continues to take his wine and bark. Applic. Emplastra Veficator. brachiis et cruribus. About eight at night, his pulse became so low and feeble, as hardly to be felt at the wrist; his hands and feet rather cold, with a cold sweat over his breast. In this state, he lay for a considerable time in a kind of stupor, without paying any attention to what was said to him, and appeared so low as to render it doubtful whether he might survive till morning. After some hours he began to recover a little; a degree of heat spread itself over his limbs, and he was able to swallow some warm wine. By next morning, a crisis was plainly distinguishable, by a fuller pulse, and softer skin, with a redness and moisture on the edges of his tongue. From this period the fever abated gradually, and he recovered strength enough to walk the decks in less than a fortnight, with the assistance of bark and wine, and light diet.

These two appear to have been fevers of the Bilious Remitting kind, pretty distinctly marked; and the event of the last case affords a presumption,

tion, that in Lieutenant R's, where the early remissions were more perfect, bark might have had good effects. But as the fever spread no farther in the ship, we had no further means of putting it to proof. Had the disease once got among the troops under the deck, we had no reason to suppose it could have soon subsided, or that many would not have been cut off by it; but the seamen's sick-birth being on the open deck, secured them from this danger. It continued to prevail in the transports with the 42d and 98th regiments for a considerable period; and a number both of officers and men, fell a sacrifice to it; while it deserves to be remarked, that all the troops and ships' companies who were encamped upon the beach, or on the dry and firm soil near it, have continued perfectly healthy.

After a tedious and painful passage of many weeks, arising from calms and excessive heats in recrossing the Line, with short allowance of both water and provisions, and a constant current setting us to the westward, out of our course, the whole fleet came to anchor in the Bay of Moribat, on the coast of Arabia Felix, without the Straits of Babelmandel, in Lat. $17^{\circ} 30'$ North.

On this passage, the fleet in general suffered comparatively little from sickness or disease, except those ships which brought the fever from Johanna. After the two cases of it in the Manilla, we had only a few slight and short fevers among the soldiers, from exposure to the excessive heats, attended with a redundancy of bile, distinguished by a loaded yellow tongue, headach, oppression and sickness at stomach. A gentle vomit, followed by a purgative, if given early, was generally sufficient for removing the symptoms, or a repetition of them, if necessary, was constantly successful. It took on no regular type or duration, where there existed no infectious miasmata to combine with it.

What contributed to the healthiness of this part of the voyage, was the complete washing and cleaning of the ships and soldiers' births while they were emptied at Johanna; while the bedding, linen, and every part of the clothing, underwent the same process on shore; so that not only did the people return to them in good health; but the ships themselves, and every part of the clothing, were in much better condition than when we first embarked.

On this passage we lost the ship's master, who was found one morning dead in his cabin, most probably from an over-dose of brandy, as he had no known complaint.

The air at Moribat appears to be very pure and dry. The heat at this season was great, both with sea and land breeze. The soil is rocky and sandy, without vegetation, or the least vestige of tree or shrub within view of the shore. About a mile back, the land rises in a high precipitous craggy ridge, which faces the coast for a considerable length. Behind this, it is more elevated, and vegetation much greater. No water was found here, except a little, very brackish, near the shore. The inhabitants of a fishing village, from which the bay derives its name, bring all they use from wells several miles inland, on the backs of camels. Of course our supply here was very scanty; nor could we procure any article of fresh provisions, except a few lean goats; nor any vegetable, but some preserved dates. Fish, in great plenty and variety, were indeed procured in the Bay; in so much, that a single draught of a ship's net, would sometimes procure sufficient to serve for a meal to the whole fleet.

Before we left this station, the fevers which had been brought from Johanna had entirely subsided in all the ships, and no new diseases were caught by communication with this shore. A number of our ship's crew and soldiers, indeed, got bowel disorders, from eating too plentifully of the fish, sometimes not in the soundest state of preservation. Similar disorders were imputed, by some of the surgeons, to using the brackish water; but it was clearly owing to the fish diet.

The complaint was attended with griping, purging, and an inflated belly; very often with rashes and efflorescences on the skin: and our people had more of it after going to sea than while at anchor, from attempting to cure and preserve the fish, by rubbing them with washed salt from the pickle tubs, and drying them in the sun,—a process in which they were not very successful; but they ate them imperfectly cured, rather than the salt beef and pork, so long as they lasted. A purge or two, with plentiful dilution, and abstaining from the fish, was sufficient for removing all the disorder. The fleet were, in a manner, tide-bound in this bay for some weeks, by the current setting towards the Straits. As soon as it began somewhat to abate,

abate, the Monmouth, Hero and Isis attempted the passage to Bombay, working as much in-shore along the coast as they could, where the current was flacker. The only other ship that at this time attempted the passage, was the Manilla, and she was enabled to keep up with the men of war, by the advantage she had in her less draught of water, whereby she could work her course much more in-shore. In less than three weeks we made the harbour of Bombay, and the other division of the fleet, which had been left at Moribat, arrived in a short time after. Among the troops scorbutic diathesis had begun again to manifest itself, and some who had suffered much by fluxes formerly, were again attacked, but not in the dysenteric form. Of such cases, two were lost on this part of the passage.

At this time a soldier's wife, of a fair complexion, and delicate habit, was, without any known cause, attacked with inflammation in one of her eyes, attended with dimness of sight, and pain over that side of the head. A thick speck, of a dead white, soon appeared on the lower edge of the cornea, but, what was rather curious, was not fixed exactly to one place, but rose higher or fell

lower at different times of the day. In the forenoon, it was sometimes so high as to obstruct the passage of light through the pupil entirely: in the evening it was often lower than even the cornea lucida. At other times it was more fixed to a spot, but increased in size; was more painful in the forenoon, and became easier, and diminished towards night. Doses of cooling physic and saturnine lotions gave little or no relief. The means of topical bleeding were wanting, and her habit was too delicate to admit of any considerable evacuation of blood from the arm. A blister over the temple and forehead of the affected side soon relieved the pain, and diminished the general inflammation; and the speck gradually disappeared, and left the eye perfectly sound. As we advanced to the northward, the coast consisted of a dead flat, covered with a barren white sand, as far inland as the eye could reach; and we were always within view of the shore, and generally very near it. Whether this case of ophthalmia might have been occasioned by a fine drift sand from the beach, or the uncommon glare of light reflected from it, I did not then conjecture; but from what I saw afterwards in India, I rather suspect the lat-

ter. These were cases of nyctopia, or perfect vision only in the evening, and were most common in subjects who had been long in the country. The eye appeared sound, but they had commonly pain in the head, saw very imperfectly in the day-time, and the pupil appeared contracted to a perfect point; whereas, in the twilight, it was much more dilated, and vision was much better. After refreshing for about ten days at Bombay, the Manilla, with the men of war, and part of the India ships, sailed again for Madras, which we reached in five weeks, and landed all the troops and stores from the ships. Thus finishing, in exactly eleven months, a tedious and suffering passage from England. In the latter periods of this, I was not furnished with the number of deaths among the troops as they happened in the ship; but from the account of the hospital mates, and the officers returns, I learned, that out of the two companies embarked, with some occasional fillings up from the other ships as the numbers decreased, they had lost, upon the whole, 75 men. Forty from fevers; 18 from dysenteric flux; and the remainder, from scurvy and cachexy. Of the ship's company, we lost the lieutenant and one seaman from fever; one

seaman from flux combined with scurvy; and the master, accidentally. From the best accounts I could procure, the deaths in some of the India ships and transports had been in a similar proportion. In others of the larger transports, and in the men of war, the losses were greatly inferior.

By stating a comparison between the mortality among the seamen and the troops in this ship, nothing more is intended than to point out the good effect of the pure and free air, in which the former were kept above deck, both through the night and day, over that in which the latter were below the hatches, for preserving the health, and in resisting contagion and disease at sea.

On this subject, the following observations may not be irrelevant.

Since the date of this expedition, many and great reforms have taken place in the modes of sea-victualling, and in the supplies for the sick. Much more attention has been paid to cleanliness, and to the means for correcting foul air in ships; and for resisting contagion by fumigation, &c. How far these

these meliorations have been extended to the transport service, I am ignorant. In the manner in which those employed on our expedition were fitted up, with standing platforms for the soldiers' beds, many of them were rendered impracticable. In the latter part of the voyage, we became so sensible of this in the Manilla, that these were all cleared away, and the soldiers supplied with hammocks. The ship was also much overcrowded for her size, whereby all these things are rendered tenfold more difficult than where there is more room. With regard to sea-scurvy, reports and accounts have been published, as if this had been cured at sea, by lime or citron juice, lemon rob, nitre dissolved in vinegar, nitric acid, &c. all which I would suspect to be rather something of the hyperbolical. But there is a plan for this purpose recommended by a Mr Young of the Navy, which, from its practicability, and perfect conformity to known and established principles, is highly deserving of attention, and of being recorded in such a publication as this. It proceeds upon the well known fact, that nothing more is necessary for the cure of this disease in any situation where there is a tolerably pure air, than,—not dead and
dried,

dried, but fresh vegetable diet, greens or roots, in sufficient quantity. To be sure, we cannot have a kitchen-garden at sea, and a short and scanty crop of greens can only be raised on board a ship; but beans and pease, and barley, and other feeds, can be carried in any quantity; and as Mr. Young has very justly stated any kind of esculent seeds brought under the malting or vegetating process, are converted into the state of a growing plant, with the vital principle in full activity throughout the germ and pulp: and if eaten in this state without any sort of preparation, except that of separating or rejecting the husks, cannot fail to supply precisely what is wanted for the cure of scurvy, viz. fresh vegetable chyle. For this purpose, besides the articles already mentioned, which may all be employed, he gives the preference to *gram*, an East India grain, chiefly used in the feeding of horses. The malting process is to be performed in shallow frames of wood, constructed so as to preserve the water for successive operations; and a little experience will readily lead to the proper degrees of heat and moisture for conducting it successfully.

We

We have only further to observe, that in all long voyages, it ought to be our object, not only to find out and employ the most effectual means to prevent or cure this disease, as one that proves fatal by itself, but also to guard as far as possible against the taint; as that which never fails to give a fatal or malignant tendency to other disorders incident to this way of life; as ulcers, fevers, fluxes, &c.; and, in order to this, our preventive plan ought to commence from the first day on which the failing stock of fresh vegetables, and ship's beer, is expended: Since, from many examples it appears, that much greater success is likely to attend our endeavours in this way, than by reserving them for the period in which the marks of scorbutic diathesis begin to manifest themselves. In other words, every healthy seaman carries with him to sea a certain quantity or proportion of antiscorbutic humours. The stock may be preserved, if husbanded with care; but cannot, in that situation be easily recovered, if once it is suffered to run down.

INDIA

INDIA DISEASES.

SPASMODIC CHOLERA,—THE CRAMP,—OR, MORT
DE CHIEN.

IN the beginning of the year 1782, the *Hero*, *Monmouth*, *Ifis*, and several of the King's transport ships, joined the fleet under Sir Edward Hughes at Madras. He had just returned from the capture of several Dutch settlements on the coast. The accession of three ships of the line, gave activity to his preparations for further and more important conquests, when the arrival of *our* old acquaintance, the French Admiral Souffrain, with twelve sail of line of battle ships, cut out for us other employment, and put an end to our dreams of bloodless victories and further acquisitions.

The first meeting between the fleets took place to the southward of Madras, and ended in a drawn battle. On this occasion, I was on board the *Ifis*,
whose

whose surgeon was unable to act at the time; and on the return of the fleet, was appointed to do duty on board the Seahorse 20 gun ship.

In this station, I had the first opportunity of becoming acquainted with this fatal and untractable India disease. Of the names here given to it, the two last only were employed in the country. How far the first may be strictly appropriate or scientific, is submitted to the judgment and opinion of others.

On the 12th of April 1782, the day of Rodney's splendid victory in the west, a second meeting, and a battle of five hours continuance, took place between the fleets. But *so* it did not end with us, but in hard blows and bruises only. This happened some way to the southward of Trincomalé; and was fought so near the shore, that both fleets came to anchor in the evening in the same place where it had been contested, scarcely out of reach of gun-shot from each other.

Here they both remained for more than a week, repairing damages, and looking at each other. The French ships had suffered least in action; they were the first to put to sea; and offered us battle for a whole day in vain,—not from any

want

want of courage, either of the Admiral, or of the fleet, but blundering and mismanagement had tied up our hands. The strength of the two fleets had been nearly equal; and whatever might be reported in gazettes at home, *we* certainly claimed no victory. When the French had left the coast clear, the British fleet made sail for Trincomalé, and anchored in Back Bay. An hospital was established on shore for the sick and wounded; but the Seahorse being for some time detached on service within the Great Bay, I had but few opportunities of seeing what was going on in it. Wounds, ulcers, and burns from the explosion of gunpowder, made up the bulk of surgical cases: Fluxes and fever diseases, the chief part of the remainder. The *mort de chien*, or cramp, I was also informed by the attending surgeons, had been very frequent and fatal among the seamen, both at the hospital and in some of the ships, particularly in the Hero and Superb.

The Seahorse did not join the fleet in Back Bay till the 14th of May, when the disease had become much less frequent, nor had we any men attacked with it till the 21st of June.

Previous

Previous to this, our ship's company had been very healthy, though they had been a good deal exposed and employed in severe duty within the great harbour; only a few slight fluxes had appeared, and which we imputed to the water at Fort Osnaburg, which is somewhat brackish, and apt to occasion bowel disorders. One, however, turned out differently, and ended in a way which gave me much uneasiness. This case is added after the liver-diseases, with a view to shew the necessity of making ourselves well acquainted with the peculiarities and symptoms of diseases that are varied by the influence of climate, in order to practise with safety or success in a foreign country.

The weather was at this period rough and blustering. A constant land-wind, blowing sometimes in gusts and squalls, and without any sea-breeze, had already set in. A strong and constant land-wind prevails during the months of July and August, along the whole eastern side of the coast; but here it sets in much earlier; and by coming over a country thickly covered with bushes, trees and underwood, feels much colder. This is never heated by the sun so much as a bare and sandy foil;

foil; but when rain or dews fall, a copious and quick evaporation takes place, whereby the air becomes loaded with moisture, cooled down to a considerable degree.

Early in the morning of the 21st of June, we had two men seized with the *mort de chien*, both of whom we lost in a few hours; and in the course of the two following days, three more in the same complaint, without meeting with one fortunate case. To the 25th, when we sailed for Negapatam, we had three new cases of the same kind; all of whom were saved, but two of them with great difficulty. Besides these, we had several others which were of a nature considerably different, being evidently combined with bilious colic in the first passages; a circumstance not at all discoverable, either in the first five cases that ended fatally, nor in two of the others that succeeded. All these were found to be much more tractable, easily removed, and attended with but little danger.

In every one of the eight cases, the symptoms were so much alike, both in order and degree, that a description of any one would answer almost equally well for every other. Any difference that
took

took place was in the suddenness of the attack, or the rapidity with which the symptoms succeeded each other. In all of them the disease began with a watery purging, attended with some tenesmus, but with little or no griping. This always came on some time in the night, or early towards morning, and continued some hours before any spasms were felt; or these were confined to the toes and feet; and slight affections of this kind being very common in the country, the patients seldom mentioned them till they began to be more severe, and extended to the legs or thighs. This purging soon brought on great weakness, coldness of the extremities, and a remarkable paleness, sinking and lividity of the whole countenance. Some at this period had some nausea and retching to vomit, but brought up nothing bilious. In a short time the spasms began to affect the muscles of the thighs, abdomen and thorax, and lastly they passed to those of the arms, hands and fingers; but I never saw, then or afterwards, those of the neck, face or back at all affected. The rapidity with which these spasms succeeded the first attack, and their severity, especially as affecting the muscles of the thorax and abdomen, denoted in general the de-

gree of danger in the case. The affection is not as in tetanus confined to a single muscle, or to a certain class of muscles only. Neither does it, as in the spasmus clonicus, move and agitate the members. It is a fixed cramp in the belly of the muscle, which is gathered up into a hard knot, with excruciating pain. In a minute or two this relaxes, is again renewed, or the affection passes to others, leaving the miserable sufferer hardly an interval of ease; and, lastly, it passes from one set to another; from those of the inferior extremity to those on the upper parts, leaving the former free. The patients complain much of the pain of these cramps; think they obtain some relief from friction of the parts, and cry to their companions to rub them hard. As the disease proceeded, the countenance became more and more pale, wan and dejected; the eyes became sunk, hollow, and surrounded with a livid circle. The pulse became more feeble, and sometimes sank so much, as not to be felt at the wrist, in two or three hours after the spasms came on. But so long as it could be felt, it was but little altered in frequency. If the spasms happened to intermit, it would sometimes rise a little, and the countenance

assume

assume a better look. The tongue was generally white, and more or less furred towards the root; and the patients had all great thirst, or rather a strong desire for cold drinks; but there was no headach or affection of the sensorium commune throughout.

The coldness of the extremities, which was perceptible from the very first, continued to increase, and spread over the whole body, but with no moisture on the skin, till the severity of the pain and spasms forced out a clammy sweat, which soon became profuse. The hands now began to put on a striking and peculiar appearance. The nails of the fingers became livid, and bent inwards; the skin of the palms became white, bleached, and wrinkled up into folds, as if long soaked in cold water; the effect, no doubt, of the profuse cold sweat, which is one of the most pernicious and fatal symptoms of the disease; both from the effect it has in such a climate, of exhausting the strength, and in abstracting heat from the system. In some of the present cases, and in many others after this, we had recoveries from the severest degrees of spasmodic affection; even where the pulse had been for hours completely lost at the wrist,

and the body perfectly cold ; but never of any who had these profuse cold clammy sweats, and where the hands had put on this appearance.

All this while the purging continued frequent, and exhibited nothing but a thin watery matter or mucus. In many, the stomach became at last so irritable, that nothing could be got to rest upon it ; but every thing that was drunk, was spouted up immediately, without straining or retching. The countenance and extremities became livid ; the pulsations of the heart more quick, frequent and feeble ; the breathing began to become laborious and panting ; and, in fine, the whole powers of life fell under such a great and speedy collapse, as to be soon beyond the power of recovery. In this progression, the patient remained from three to five or six hours from the accession of the spasms ; seldom longer. These began at last to abate, but with more internal oppression, great jactation, panting and gasping for breath ; from the diminished action of the respiratory organs : for there were no marks of oppression or effusion on the lungs ; and the motion of the heart, so long as it could be felt, became more and more quick and irregular,
till

till death came at last to the relief of the miserable sufferer.

Some time before that event took place, the spasms, gradually abating, left the sufferers entirely; and so much possession of their faculties did they retain, that they would continue to talk sensibly to their messmates, to the last moment of their life, even when the whole body had become perfectly cold, and all pulsation at the heart had ceased for a long time to be distinguishable.

A variety of opinions were entertained about the proximate and exciting causes of this disease; some imputing it to the influence of cold and damp winds, especially the land-winds of the night*,

D 3 in

* The prevailing winds along the coast of Coromandel, from the middle of July to the end of August, are from the land; and they blow often strong; feel hot, sultry and parching; have much effect in checking perspiration, during even the great heat of the day; render the skin hot and dry, with an uneasy sensation in the nostrils, lips and eyes; render the respiration unpleasant, and sometimes occasion nausea and sickness at stomach. At Trincomalé, the land-wind sets in earlier in the season; and owing to the circumstances formerly noticed, gives rather an uneasy sensation of coldness. On the coast, the soil is generally bare, dry and sandy, which affects the winds blowing over it very differently.

in giving a sudden check to perspiration; whereby something deleterious, that ought to have been thrown off by the skin, was retained in the system; and without doubt the state of the weather, while the fleet were at Trincomalé, and the circumstance of almost all the attacks being in the night-time, gave some countenance to this opinion. That which prevailed among the older surgeons on the station, led, as I know it was, by a deservedly great and high authority at Madras, but taken from a hasty and imperfect letter on the subject, still more loosely and imperfectly taken up and understood;—ascribed the proximate cause to the action of diseased bile in the first passages: considering it in the same light as the true Cholera Morbus of the systematic writers.

Others, again, by observing it to prevail more in certain seasons than in others, or in certain tracks and spots, or in ships anchored in the same line of direction, while others, placed at no great distance, kept entirely free from it, imputed the complaint to some deleterious exhalations passing through the atmosphere, in certain tracks and lines of direction, in the manner of the *simmoon* or *sanial* blasts of the Desert.

It was a common opinion among the surgeons, that it attacked most readily the most irregular and worst clothed men; but in the Seahorse, some of the best clothed and orderly men in the ship were affected with it.

In whatever the proximate cause might consist, two distinct and seemingly opposite affections were observable at the same time. Great debility and irritability of the whole alimentary canal, with impaired action of the heart and arteries, along with a violent increased action of the voluntary muscles; but how connected as cause and effect, or depending both of them on some particular affection of the nervous system, may be difficult to explain. The most striking and alarming symptom is, the great and sudden prostration of strength, and depression of the powers concerned in carrying on the circulation and in maintaining the vital functions, without being the effect of great depletion, or of *exhausted excitement*, as the Brunonians speak; for the evacuations are, from the first, a thin watery mucus in trifling quantity. Little or nothing is ejected by any retchings that happen; and it is observable from the very first, before the system has suffered much from the stimulus of pain, or the se-

verity of the spasms. In the Seahorse, it attacked some remarkably robust, powerful and muscular men, who had been in perfect health immediately before. Neither in all our class of bad and fatal cases, did there appear any marks of bilious collu-
vies, either in the colour of the ejected matters, the state of the abdomen, or in the appearance of the tongue, eyes and urine. There was neither pain nor griping, nor soreness or tenderness on pressing the belly. We had indeed another set of cases, where the presence of this was distinguishable by all these characters; but these were of a far slighter nature, and none of them turned out any way untractable or fatal.

By this time I had both learned the general opinion about the disease, and seen the source of it in the letter mentioned; imputing the proximate cause in a general way to the action of putrid and diseased bile in the first passages; and the influence of certain occasional or exciting causes, putting it into motion and activity. But I had met with a case on our passage from Madras, which, in perfect ignorance of all these theories, and even of the name of such a disorder, I had cured by opium alone, and I determined to follow what I
thought

thought the guide of experience. A stout healthy man was suddenly seized with the symptoms of this disease, which soon became severe. The spasms appearing the most alarming and urgent part of the complaint, and the patient being in the vigour of life, and of uncommon muscular strength, four grains of solid opium in two pills, were given him on his first complaint, and two or three tea spoonfuls of a mixture of equal parts of laudanum and ether were rubbed into the pit of his stomach. In half an hour the spasms not abating, his pulse becoming weak, his heat diminishing, and his countenance pale and sunk, after fomenting his legs with cloths rung out of warm sea-water, and rubbing them well afterwards with dry flannel, four grains more of opium were given him in a small glyster. In about two hours after this, the spasms began to abate; he recovered more heat, and looked better. An ounce and a half of Glauber's salt was given him, to counteract the astringent effects of so much opium; after which he vomited a little, was well covered up in his hammock; soon grew hot, and sweated some. The cramps left him, and he recovered the natural firmness of his pulse, and a natural look; slept well through the night, and was

was perfectly well the next day, except a watery looseness, which continued for a few days after.

Recollecting the success of this case, our first patient at Trincomalé, had, on his first complaint, four grains of opium in two pills, and his stomach was well rubbed with laudanum and ether. Sometime after this, a laxative glyster was administered; and he was put into a warm bath of sea-water, where he continued about fifteen minutes. On coming out of this, he was well rubbed and covered up in bed, and had for drink warm wine, well mulled with spices. The spasms did not abate, and his stools continued thin, watery and frequent. The laxative glyster, and warm bathing were both repeated without any good effect. A cold clammy sweat came out, and he died in about four hours after the cramps came on.

The event of this case unsettled my opinion as to the efficacy of opium, and threw me back to the authority already mentioned. I had heard much of latent and lurking bile, as the general source of India disease, and resolved to seek for, and hunt it out by the means employed by others, viz. repeated small doses of Sal. Glauber in Aq. Menth. Pip. and sharpened with a very small proportion of

Emetic

Emetic Tartar, such as an eight part of a grain to each dose, with a view to quicken the operation of the salts downwards*. This plan was accordingly tried with our next patient. He threw up a very small quantity of greenish-coloured bile, and the solution operated much downwards: but without any relief or discharge of bilious matter. I next gave him three grains of opium dissolved in a small mucilaginous glyster, and as soon as it settled in his bowels, he was put into the warm bath; after which he was well covered up in bed, with warmed cloths constantly applied to his stomach and limbs; and he drank hot wine, mulled with spices. No relief appearing to follow these measures, a warm purgative glyster was given him, but was followed by no bilious discharge. No vomiting continued after the first exhibition of the purgative; but a repetition of it, to see if any bile lurked still in the stomach, and could be solicited downwards,

* How such a laxative had ever come into use, I do not now conceive. None could have been less suited to the state of the disease, in any form in which it occurred. Both of the articles are by far too irritating, and debilitating in their operation, to be adapted to any of the bowel disorders of India, and they were accordingly soon entirely discarded from use.

downwards, brought on continued retching, and he threw up after this every thing he drank, till his death, which happened in five hours after his first complaint. In neither of these two patients, had the opiate the smallest effect, either in restraining the purging, or in abating the spasmodic affection. At this time, by desire of the captain, we were visited by the admiral's surgeon. The flag-ship had been the severest sufferer by the disease; and this gentleman disapproved entirely of the use of opiates, and recommended the employment of purgatives;—the purgative antimonial solution, castor oil, rhubarb and calomel, with purgative glysters; and what was of really more worth than all of them, warm stimulating cordials, and the application of heat in every possible way.

This plan was accordingly followed in the two succeeding cases, one of them ill at the time; all with the same ill success. One of them died in seven, and the other in eight hours illness.

In the case of our fifth patient, after giving the solution, till it operated both ways a little, and he had been in the warm bath, I had recourse again to opium. Two grains were first given him, and repeated in an hour, with the addition to each of

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six grains of camphor, and as much aromatic powder*, made up into a bolus. He was covered up in bed, and had warm tea, made strong with arrack, for drink. After this, he sweated some; his heat and pulse were restored in some degree; his countenance assumed a better look, and the spasms had nearly left him. But his breathing became catching and laborious; and he had a strong craving for cold drink, which, however, was withheld from him, and he was half-forced to drink warm wine, mulled with spiceries. Heat was applied to his body in every possible way; but nothing had any further effect in recovering this, or in raising his pulse; and he died in five hours after the spasms had reached the abdomen. This patient was evidently dozed with the opium, and afforded the only instance where this effect was perceptible from it.

The symptoms in the case of our sixth patient differed in no respect from any of the foregoing, except that the spasms were never so general or severe. His pulse was at one time so weak, as not

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* Pulv. Aromat. *Pb. Lond.*

to be felt at the wrist ; but after being in the bath for twenty minutes, it could be again distinguished, and never became so quick as in the advanced stage in the other patients. A part of the notes relating to his case having been lost, I cannot say what was done for him in the first instance ; but the sequel begins with observing, That he had all along complained of some pain and confusion in his head ;—that the pupils of his eyes were dilated. Some hours after being in the bath, his heat and pulse returned in a tolerable degree, and the spasms left him. A glyster, with some Ol. Ricin. was given him, and repeated again in the evening, without producing much discharge. Next day, he still complained of weakness, confusion in his head, and the pupils still kept dilated. His pulse was rather frequent, and his appetite was bad ; but he mentioned no other complaint. Wine and nourishing diet was prescribed for him, and he had some doses of calomel and James's powder at night. In this way, he lingered on to the tenth day from the first attack, when he died in a low dozing stupid state*.

Along

* See a similar instance in the letter subjoined. This was the only case I knew of, where the patient survived the first attack,

Along with the last case, we had two strong and healthy seamen attacked in the night, in the usual manner.

I had by this time begun to conclude, that the proximate cause of the disease was not to be sought for in the state of the bile, nor of any of the alvine secretions, and that without any reasoning concerning this, our remedies ought to be directed more to obviate or remove the most urgent and dangerous symptoms,—to support the *vires naturæ*; the circulation and heat in the external parts, and that evacuations were not to be urged any further than merely to clear the stomach and bowels once. Accordingly, our two patients had each, as soon as I was called in the morning, a single dose of the purgative solution. It only produced in one some retching, and brought away some phlegm. Both were put immediately into the bathing tubs, which were now kept ready for use. After remaining there for a quarter of an hour, they were well dried, and rubbed all over with

attack, and did not fully recover from the effects of the disease. This case appearing, by its termination, somewhat different from all the rest, stood single in the notes, and has been accordingly left out in the general enumeration.

with warm arrack, and well covered up in bed with warm blankets rolled up and laid along their sides and between their legs, with plenty of warm tea and arrack for drink. In an hour, the spasms not abating, the coldness of the extremities, sinking of the pulse, and the sinking and lividity of the countenance rather increasing; they were again put into the bath, and the same course of frictions and covering up in bed repeated. One recovered his heat a little while in the bath, when he ate some food, and his pulse, which was scarcely distinguishable before, could again be distinctly felt at the wrist. He took, in two portions, after being covered up in bed, Sp. Minder. ℥i. *, Sp. Lavend. comp. ℥ij., Aq. Fontan. et Arrack a ℥ij.. Fell soon into a warm soft sweat; recovered his usual heat and firmness of pulse, and was well next morning, except that he had a watery purging, which continued some days, but went off under the use of mulled claret, and a dose of castor-oil. The other took, after coming out of the bath the second time, Ol. Menth. Pip. gtt. iij., Spt. Corn. Cervi

* Aq. Acetitis Ammoniaë, *Pb. Ed.*

Cervi gtt. lx. * in divided portions of rice-water, and afterwards warm tea and arrack for common drink. His pulse, which had been completely gone at the wrist, did not return, but the spasms had abated while in the bath. A cold sweat came out on his extremities, and every part of the body became perfectly cold; nor could the pulse be distinguished for two hours after this. His countenance became exceedingly wan, sunk and livid. with general oppression, anxiety and jactation. He drank much of the warm tea with arrack; his pulse began at last to be felt, trembling at the wrist, and the spasms gradually went off. He fell into a sound sleep, and was next morning free from all complaint, except languor and weakness, some pain of his head, and a watery looseness, which remained some days; and for which only a dose of rhubarb and calomel was prescribed for him. Both these patients had, during the complaint, glysters of plain rice-water warmed, two or three times thrown up, merely to supply heat internally.

A seaman, who had been for some days affected with a severe flux, attended with griping, straining,

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* Aq. Carbon. Ammoniacæ, *Pb. Ed.*

ing, mucous and bilious coloured stools, and for which he had taken several evacuant medicines, was at this time attacked with the usual symptoms of the *mort de chien*. Two grains of opium were given him on its first invasion. This in a short time carried off the spasms, and his pulse, which had begun to sink, was restored to the natural state. He sweated some, slept well through the night, and was well next day, but low and weak, and his flux still remained unabated and of the same appearance, but was removed for the time by the ordinary medicines; at least he had made no further complaint, or I had neglected to take any further account of him. But it soon after appeared it had not been cured; that the source of it had been deeper in the system, and that, from the beginning, it had been the liver-flux, though he had not at this time any pain in the side. Symptoms of inflamed liver, however, soon took place, of which he was effectually cured under my care in Madras hospital, by a mercurial course.

The cases that appeared after this, were all of a different nature, much less severe, and none turned out fatal. They were all of them combined with bilious accumulations, and in patients where this
diathesis

diathesis was visibly present at the time. There was a load and oppression about the stomach; the evacuations, both by stool and vomiting, were bilious, and the purging was attended with griping rather than tenesmus. The countenance, in place of becoming pale and livid, was fallow, and the tongue and eyes tinged with a yellow colour; the feet and legs were very apt to become cold, but the spasms were never severe, and did not advance beyond the legs and thighs. The disease was easily and safely cured in all these, by gentle laxatives, joined with aromatics, warm glysters, warm wine, and cordial diet and drinks.

Upon the whole, the disease presented itself under two distinct and different forms, and required a treatment that behoved to embrace a considerable variety.

In what might be taken as simple and uncombined cases, where no symptoms of bilious collu-
vies were distinguishable, from the appearance of the ejected matters, or from the state of the abdomen, or the colour of the tongue, eyes and urine I came at last to conclude, that all kinds of evacuants were not only useless but hurtful; and that they only tended to increase the prostration of

strength, the sinking of the pulse, and severity of the spasms; which, in all such cases, formed the most dangerous and alarming part of the complaint; and although, in such circumstances, there was no contra-indication to the use of opiates; yet, unless they were given early, before much sinking of the pulse, and failure of the *vires naturæ* had come on, their effect was but transient or uncertain, or only trifling and temporary; so that no benefit was likely to be derived from them, unless when given on the first accession, in full dose, and joined with some stimulus that acts speedily and powerfully; such as hot and cordial spiritous tinctures, the aromatic oils, or the volatile alkali. That in all such cases, the spasmodic affection was only to be considered as symptomatic, depending perhaps on some of these latent and inexplicable operations and sympathies of the nervous system, about which it is of little use to puzzle ourselves in practice; and that we had little to do with the discussion of proximate or other causes, any further than to obviate or remove, by change of place or otherwise, such as might be unfavourable to the main object, viz. that of supporting the strength, restoring the activity of the moving powers, and
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the healthy action of the stomach and intestines, by such means as experience teaches us, are best adapted to excite the vitality and action of these organs.

In cases where the existence of bilious colluvies and diseased secretions was to be distinguished, a good deal of purging was always necessary, with cordial diet and drinks, but opiates never.

About the middle of July 1782, I entered on duty at Madras hospital. Here, again, I had occasion to see many more cases of the *mort de chien*. It was frequent in the fleet in the month of August, and beginning of September, the season at which the land-wind prevails on this part of the coast. We had some cases in the hospital in the end of October, and in November, after the monsoon, but few in comparison. Here the deaths were much fewer than on board the ships. Out of about twenty under my care, only three were lost. In general, the cases were milder than at Trincomalé. About a third were evidently connected with bilious colluvies; and in these, there was no great sinking of the pulse, or diminution of heat; and the spasms were confined to the legs and feet: there was some fever, and the

pulse was frequent as well as feeble. The tongue was commonly foul, and the countenance fallow. The abdomen tumid, or tender to the touch, with more or less griping, and bilious discharges by stool.

These all did well under the use of gentle purgatives and glysters frequently repeated, such as decoction of Manna, with Cream of Tartar*, Decoct. Tamarind. cum Senn. and plentiful dilution with rice-water, with Cassia boiled in it. When part of the bile was thus carried off, we sometimes employed those that were more active, as Ol. Ricin: and when the stomach was very irritable, Rhub. and Calomel †, made into small pills, staid better on it than any thing we tried, procuring free stools with as little griping as any. The saline or more active purges we entirely laid aside. When the patient appeared to be too much weakened by the use of laxatives, we intermitted them, and gave warm wine with spices; often punch or toddy, till the strength was recruited; but we never employed opiates, or astringents. In this way, the bile was by degrees safely abstracted. The feverishness

* Supertartris Potassæ.

† Submurias Hydrargyri.

feverishness abated, the patient soon recovered strength, and the natural tone of the stomach and intestines; but the state of these behoved, for some time, to be well looked after. The cases that terminated fatally were all exactly of the same kind as those we had at Trincomalé. A watery purging, but without any appearance of bile in the discharges, always preceded the cramps. This was soon followed by a great sinking of pulse, pale and livid countenance, and coldness of the extremities. This appearance of countenance was sometimes so remarkable, even before any cramps had come on, that in going round the hospital, I sometimes observed it, and foretold the accession of spasms an hour or two before any were felt; and in one or two instances, the disease was prevented from getting its full length, and the symptoms easily removed by applications made at this early period. In such cases, our treatment was somewhat different from that practised on board the ships. Rubbing the stomach, legs and feet with flannel sprinkled with warm arrack, fomentations with large pieces of blanket applied as extensively as possible, without exposing the body to the external air, were preferred to the warm-bath, and warm wine was given,

made hot with *chillies*. Draughts, with Sp. Corn. Cerv., Lavender and Ol. Menth. Pip., made as strong as the patient could possibly swallow them, were given frequently, and glysters of plain warm water frequently thrown up. No evacuants of any kind, or opiates, were made use of. In this way, almost all of them were recovered, even in cases where the symptoms were exceedingly severe and unpromising. The patients who died were soon after opened: In two, there was nothing uncommon with regard to symptoms; nor were any morbid appearances found on dissection. There was no bilious accumulations found anywhere, and the internal organs were all in a sound state; only there was more water than natural in the pericardium, and the vessels of the lungs, liver and mesentery, appeared to be very turgid and full of blood. In the following cases, the circumstances of disease, and appearances on dissection were particular.

CASE.

John Holland, soldier in the 98th regiment, doing duty as marine, æt. 30., was received into the hospital about the latter end of July, with
symptoms

symptoms of inflamed liver, attended, as usual, with a flux, and short dry cough. Towards the end, the flux had been accompanied with severe straining and gripes felt in the lower part of his belly, which was sore and tender to the touch; and blood commonly followed his stools.

His side was early blistered, and cooling laxatives were given him; after which he went through a course of mercury, which removed all his complaints, except the griping pains felt in the lower part of the belly. But these were effectually relieved by the application of a blister over the part, and he never passed blood with his stools after this. He was considered as convalescent from hepatitis, and was put upon soap and squill pills, with doses of castor oil occasionally, to relieve costiveness, (a common consequent upon liver obstruction, or inflammation imperfectly removed;) but in other respects he had no complaint, and he had nearly recovered his former appetite, strength and flesh. On the 30th of August, he had liberty to walk out of the hospital; ate a hearty dinner in the Black Town, and drank a good deal of spirits. He was seized in the evening with looseness and gripes; and, by midnight, severe cramps
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in his legs and feet began to come on, and his countenance was pale and livid. Such was the account brought by the attendant of the ward, who received directions to administer some glysters, and a gentle laxative infusion of fenna and tamarinds. On visiting him a few hours afterwards, I found his pulse scarcely to be felt at the wrist; his eyes sunk and hollow; his whole countenance livid; his hands and fingers contracted by the spasms, with the nails livid and bent inwards; the whole body perfectly cold, with great jactation, panting and gasping for breath. From his messmates I learned he had drank several times of cold water through the night; a fatal piece of imprudence in such complaints. All the ordinary remedies were employed for his recovery, but without effect, and he died early in the forenoon.

On opening his body in the evening, we found marks of inflammation, and even that some degree of suppuration had taken place in two or three places on the surface of the liver, though all had been healed up. Large cells, of a white colour, but containing no matter or fluid, penetrated to the depth of a quarter of an inch, in certain spots or patches of some extent; and over these

these places the covering membrane was thickened, puffy and white. In many places it adhered to the diaphragm and side; but its substance, when cut into, presented every where a natural appearance; nor was it in any part, or the gall-bladder preternaturally large. The mesenteric vessels were turgid, especially towards the lower part of the ilium, and the glands enlarged. This enlargement of the glands was more remarkable upon the rectum. The coats of this gut were much inflamed and thickened. The diameter of the canal was in some places much contracted; the internal coat spongy and ulcerous in many portions, and, in some spots, had even a gangrenous look. Where the ilium enters the colon, there were similar affections, but in a much inferior degree. The colon appeared to be pretty sound, except that the glands of the mesocolon were enlarged and hard.

About four ounces of water were contained in the pericardium; and two soft polypous concretions adhered to the left ventricle of the heart.

The right lobe of the lungs adhered almost every where to the diaphragm and side; but there
was

was neither inflammation nor ulceration in any part of its substance.

This case of mort de chien seems to have been excited by topical irritation; and there were no marks of bilious colluvies, or that bile had been any way concerned. But it furnishes a serious caution against irregularity and intemperance in such a country as India; it marks the strong disposition to inflammatory disease of the abdominal viscera, and the rapidity with which it proceeds to a gangrenous termination there.

CASE.

John Giggs, seaman, a young man belonging to the *Magnanime*, was in the other division of the hospital for an ulcer on his leg, and was of a weak and reduced habit. On the 21st of November, he first complained of a purging, with some gripes and straining, which, he said, had affected him only for two days. Pulse somewhat quick. Tongue foul. The gentleman who prescribed for him, ordered him a gentle vomit in the evening, and through the night and next day small doses of Glauber salts, in divided portions, dissolved

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ved in rice-water, made hot with Spir. Menth. Pip.

On the 22d, he was attacked with spasms in his limbs, though not at all severe. Pulse small and quick; countenance pale and sunk; general pain and some spasms in the abdominal muscles. Belly rather tense and retracted, than tumid or full. He was supposed now to have that terrible disease the *mort de chien*, and latent and lurking bile at the bottom of it; and so a repetition of the Glauber salts, with a grain of emetic tartar in the whole solution, was prescribed for him in divided doses. This produced many motions downwards, but brought away little, except discoloured watery stuff. Glysters of plain rice-water were thrown up the rectum two or three times through the night, and he drank plentifully of warm rice-water with some nitre dissolved in it.

On the morning of the 23d all his spasms had left him; he had but little pain in the abdomen, and looked better. But he became much worse in the afternoon; for, though he continued free from cramps, his pulse was very weak and quick; his countenance pale, sunk and dejected; and the
heat,

heat, tension and retraction of the abdomen, were greater than ever, with much pain on pressing the umbilical region. His extremities became cold; and he was somewhat delirious, with constant jactation and restlessness; but had no vomiting or retching. On repeating the purging mixture, however, it was thrown up; but glysters and fomenting the abdomen were substituted in place of it. Warm wine with spices were frequently given him; and a large blister was applied in the evening over the middle of the abdomen.

On the morning of the 24th, he was not relieved, he complained much of his belly and right side; and the prostration of strength was greater. Blister had risen well: an opiate and some mulled wine were given him without any relief, and he died early in the forenoon.

On opening the body the following morning, the caput cœcum coli and about three inches of the colon were found in a completely mortified state. On cutting into it, a putrid sanies, perfectly black, and in the highest degree offensive to the smell, flowed out. Inflammation, and thickening of the processus vermiformes of the colon, and about ten inches of the ilium, were very visible.

The

The gall-bladder was much enlarged, and full of very dark-coloured bile. The liver adhered every where to the diaphragm and side: the left lobe was much enlarged, extending all the way to the top of the spleen, where it also adhered slightly to the peritonæum of the left side. (The state of its substance, if examined, has not been marked.)

The stomach was very much contracted; and the intestines, near the mortified portion, were much inflated. There the diameter was rather contracted. A portion of the upper part of the ilium had pushed through a rent or opening of the omentum, but there was no strangulation of the gut. Nothing further preternatural was observed, only there was about an English pint of greenish water in the pelvis.

This appears a complicated case. The pathology of it is, however, exceedingly simple. A diseased liver was the foundation of the whole. Acrid bile was derived from this source; and from the irritation occasioned by it, and other putrescent fordes in the alimentary canal, arose inflammation and gangrene of the intestines. Could the inflammatory affection of the gut have been moderated, and a little time obtained to draw off the putrid bile and fordes with
which

which the bowels were loaded, there is no ground to doubt the disease could have been corrected at its origin in the liver, by a mercurial course. For this purpose, milder and less irritating evacuants, perhaps, ought to have been employed; with warm cordials, and perhaps opiates occasionally, to moderate irritation; and, above all, the early application of a blister to the abdomen, where it was strongly indicated by the presence of topical pain, tension, and retraction of the parietes,—appearances that are never equivocal in the abdominal disorders of India. In this Case, also, the spasmodic affection seems to have arisen from irritation; occasioned by topical affection, rather than from diseased bile; and it was but slight, and easily removed.

THIS variety in the appearances, on dissection, —topical disease in the abdominal viscera evidently connected with it in some instances, bilious redundancy appearing in others; while in some of the worst and severest cases, neither one nor the other could be reasonably presumed, created a complete

plete puzzle in all our speculations about the proximate cause,—or to what we ought to impute the spasmodic affection, and great irritation on the nervous system, which made so conspicuous a part of the disorder. But about its essential character, in all the varieties, as a disease of extreme debility, we had little doubt. From what cause, or how induced, might be difficult to explain, as well as to account for the other phenomena. In whatever way this may be done, or whether we are able to do it satisfactorily or not, the thing itself is no way different from what I believe will be found a general rule in all cases of irregularity and overaction in particular portions of the nervous system: That they are all but diseases of debility at bottom. Thus epilepsy and hysteria (where they cannot be traced to a distinct irritation) are most effectually cured by tonics; and even tetanus itself, if we may believe some late accounts, has been cured by constant libations of wine.

How far the combinations between depraved or redundant secretions of bile and the *mort de chien* might be accidental, or how they might stand in the relation of cause and effect, antecedent or consequent, is not easy to say. We know that cer-

tain impressions of short and transient operation are often followed by remarkable effects upon this and some other secretions. Thus, sudden passions, or a short over-exercise in the heat of the sun, or lying down to sleep upon damp grass after fatiguing exertions, will, in certain seasons, bring on, in our own country, cholera morbus or a bilious fever, even where there were no marks of an increased secretion of bile previously existing. We have many examples, again, to shew, that certain stimuli excite their effects neither on that part of the system, to which they are directly applied, nor in proportion to their ordinary force, but according to pre-existing tone and pre-disposition. Thus, during the teething period, almost every exciting cause of disease produces in children a complaint that soon terminates in a bowel-disorder, and so of many others.

Since returning to Europe, I have had occasion to see many cases of the disease called in India *mort de chien*, similar in all respects to those we had at Trincomalé, only that they were much milder, and attended with less collapse of the *vires naturæ*. The spasms were exactly of the same kind, but confined to the feet, legs and thighs. All
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of them happened in the summer or autumnal season, and none of them proved fatal, except in the case of a poor pedlar at Dumfries, for want of proper accommodation and ease. One instance was in the case of Mr J. G., tanner in Edinburgh, whom Dr James Hamilton *primus* was also called to see.

In all these cases, warm fomentations with cordials were effectual; and the Pil. Opii comp. *Pb. Edin.* were retained on the stomach, and answered well. No evacuants were made use of in any of them. A disease often to be met with in children during the period of dentition, although it be without cramps, appears to me to partake of the same nature with this. It prevails most in the summer months, and has done so more in the course of this warm summer (1803) than common. They fall into it in the course of teething and weaning illnesses, but often without these causes being present*. The purging with which the disease commences, becomes frequent and excessive; perhaps it is bilious and disordered at first, but at length becomes thin and watery. Constant vomitings come on. The feet, legs and hands, are

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very

* See Appendix, No. I.

very apt to become cold. The countenance becomes sunk, wan, and, if the weather is cold, livid; and the eyes appear hollow, and are surrounded with a livid circle. The pulse is weak, but little altered in frequency. There is the utmost degree of flaccidity, relaxation and weakness. The child lies in a kind of comatose state, with the pupil dilated, and the eyes half-closed, and, when roused to sit up, is not able to support the body or head.

Cordials and stimulants are in these cases the only remedies that avail any thing. Wine never answers this purpose with them, but punch does. Bathing the feet and legs in warm water, rubbing them afterwards with warm spirits, and wrapping them up in warmed flannel; rubbing brandy or Liniment. anodyn. (Linim. Sapon. cum Opio) warmed, on the stomach, and covering it with warmed flannel, and administering, after every fit of retching, a tea-spoonful or two of an adonyne cordial and astringent mixture, if long enough persisted in, seldom fail to remove the complaint. Where we are sure directions will be properly followed, the better mode will be to administer an opiate daily, or oftener, by glyster, and to give the cordial and astringent mixture the other way. This, however, is seldom complied with to our wish, and
cannot

cannot be long persisted in, or perhaps be often enough repeated. Emetics and laxatives, except in the very beginning of the complaint, infallibly do harm.

COPY OF A LETTER, &c.

DEAR SIR, *Fort St George, Feb. 12. 1774.*

I am favoured with yours, and am very happy to hear you have occasioned the army to change its ground; for there can be no doubt, from the circumstances you have mentioned, that their situation contributes to the frequency and violence of the attacks of this dangerous disease, which is, as you have observed, a true cholera morbus, the same they had at Trincomalé*.

It is often epidemic among the Blacks, whom it destroys quickly, as their relaxed habits cannot support the effects of sudden evacuations, nor the more powerful operation of diseased bile.

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In

* This must refer to some occasion long anterior to the war of 1782.

In Europe, this disease is produced by an increased acrimony, and increased secretion of bile, which operates both ways severely; but it seldom there brings on sudden weakness at the first onset. On the contrary, bleeding is often necessary in the beginning. But when it is epidemic here, it is totally a disease of highly putrid bile, which operates on the system as poison, and brings on sudden prostration of strength, and spasms over the whole surface of the body.

It is a very untractable camp disorder. A warm bed, diluting and blunting medicines, being wanting, and likewise fomentations, &c., and almost every means to draw the circulation to the surface that are necessary. However, what can be done under such circumstances, should be attempted.

In strong habits, therefore, when the pulse keeps up, evacuations should be promoted both ways, by a vomit of two or three grains of tartar-emeti-
c to a quart of warm water. After the stomach seems sufficiently washed, a solution of manna and tamarind-water, with Spirit. Nitri dulc. or Cream of Tartar and Manna, largely diluted, should be given every half-hour, till it evacuates effectually.

After

After these operations, saline draughts, in a state of effervescence, with Spirit. Lavend., if necessary, are material, and should be repeated, like other medicines, as often as they are vomited; warm fomentations of salt and water to the belly and legs, and hot bricks to the feet, or a bottle filled with warm water, are very useful; and the legs should be rubbed every half hour, to bring on external heat, which ensures the patient, and gives time to complete the cure. In relaxed habits, where the pulse sinks suddenly, and brings on immediate danger, the same method must be pursued, but with more caution. The emetics and purges must be gentle, and made cordial with wine and Spirit. Lavend. Laudanum must be at hand to gain time; and though it is a dangerous expedient to suspend evacuations where putrid bile lurks, yet of two evils the least is to be chosen; for the patient must sink to death in such a case, if a respite from evacuations, pain and spasms, is not procured. But if a little time can be gained, stools can be promoted again. In these severe cases, wine and water acidulated, for common drink, will be necessary; and should a fever arise, purging will remove it. In general, nothing that ruffles is safe,

where putrid bile lurks in the habit ; and much attention and attendance is required. This disorder originates in the liver. The secretions are disordered. The bile becomes altered in quality and consistence, and the digestion is impaired, until the foundation of some illness is laid. An accumulation of gelatinous stuff in the flexures of the duodenum and colon takes place, which locks up putrid bile, until some additional cause sets it in motion. Bleak winds, dews, and insalutary exhalations, from cold, unventilated, and damp situations, give a sudden check to perspiration, which proves a ferment to attenuate and set in motion this latent mischief. This is the source of the disease you have in camps, and of all the putrid fluxes and putrid remittents common in the country where hills and woods are. As the disease often leaves liver-obstructions behind it, which bring on fluxes, when the men have picked up strength, doses of rhubarb and calomel will be necessary afterwards,

The first campaign made in this country, the same disease was horridly fatal to the Blacks ; and fifty Europeans of the line were seized with it. I have met with many single cases since, and many
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of them fatal or dangerous, of different kinds, arising from putrid bile being disturbed by accidental causes, or by emetics or purgatives, exhibited before it had been blunted or corrected.

These loose remarks, in answer to yours, I have thrown together, without correctness, being hurried at the time with Europe letters. Farewel. I am, Sir, &c. J. PAISLEY.

N. B. I have seen a comatose disposition ensue, after the patient has been greatly reduced from the severity of the symptoms, and die.

LIVER DISEASES.

HEPATITIS.

EVERY where on the coast of Coromandel, and, I believe, every where in Lower India, and especially in camps, fleets and hospitals, diseases of this organ, under one form or other, prevail so much as to entitle them to be considered as the grand epidemics of the country.

From the month of July 1782 to March 1783, I believe they constituted at least one-third of our whole

whole hospital cafes. In the fummer months of 1783, they were ftill more numerous.

When we confider the importance of the organ, and the functions it performs in the fyftem; together with the variety and delicacy of its ftructure, we cannot be furprifed to find it on many occafions, the feat of extenfive and dangerous difeafes. But what the circumftances are that lead to this in India, fo much more than in all other countries under a fimilar latitude, will not be eafily fpecified. All the inflammatory affections of this organ are denominated here, as well as in Europe, by the general name of *Hepatitis*. But *India Hepatitis* includes a variety of affections of this bowel, different in their nature, extent and termination.

From what I obferved in the courfe of attending a very great number of cafes, three different ftates of it were fufficiently diftinguifhable: *Hepatitis*, with inflammation more or lefs acute: *Hepatitis*, with chronic inflammation; and *Hepatitis* with chronic obftruction. The firft runs readily into fuppuration, and at an early period. The fecond only accidentally, or in confequence of neglect, or improper treatment. Both lay the
foundation

foundation for long and obstinate fluxes, but are almost always easily cured by the proper exhibition of mercury; but now and then terminate in what may be called the third form; a state of chronic obstruction. This is always the consequence either of previous inflammation imperfectly removed, or of the healing up of extensive abscesses, whether by incision or otherwise, and is always attended with a costive belly.

The cases that terminated fatally with us, were chiefly those that were sent on shore in an advanced state of disease; and who had, perhaps, been negligently or improperly treated in the beginning. At least we attributed to this the great number of patients sent us from the ships, with large suppurated livers, during the summer months of 1783, when we had a large fleet in the country; many of the ships lately from England, and, of course, the surgeons but little acquainted with the India Hepatitis, which differs in many circumstances from that of Europe.

What constitutes the chief danger and difficulty in managing the complaint, is, that the symptoms which are primary, and indicate inflammatory affection, are often but very slightly
marked;

marked: even where it is in such degree as to run with great readiness and rapidity into supuration. The pain felt in the side is not at all constant or acute; the patient himself takes little notice of it: seldom mentions it unless he is asked about it; and, when you do so, he tells you only, he has felt at times slight pains about the pit of the stomach, or about the right side. And it is only from observing the secondary symptoms, such as a flux, or a short dry cough, and pain felt at the top of the shoulder, or that there is a degree of fulness or tenderness on pressing the region of the liver a little hard, with some yellowness of the eyes and countenance, that the true state of the disorder is to be ascertained.

In about four or five cases only, out of a great number, the commencement was attended with symptoms of pyrexia, *i. e.* heat, thirst, quickness of pulse and rigors, with an acute pain in the side, extending to the top of the shoulder. This last, which is considered in Europe as a constant and pathognomonic symptom of the disease, is far from occurring in every case in India. It is not always, when it does occur, in proportion to the degree of fever, or pain of the side. It is often
felt

felt feverely when the last is but inconsiderable, and sometimes continues long after it is gone off; or it frequently remains during the whole time the liver is in a state of ulceration, or of much obstruction.

Whether it be a more constant attendant on the membranous or parenchymatous inflammation, I was unable to determine. But in several cases that ended in large and deep-seated ulcerations, it never took place: while it was common in others that were only slight, and easily removed.

Whenever it did occur, it served to render the nature of the disease very certain. It is most distinctly felt at the very point of the shoulder, rather behind; and is aggravated on moving the arm. In some cases, where the left lobe of the liver was known to be affected, the same thing was felt at the top of the left shoulder. And in one case, the patient complained of a similar pain in both.

Though the disease commences often without much pain, heat, or quickness of pulse; yet this is not universal; for sometimes there is both quickness and fulness in the pulse; and in two cases there were considerable rigors: but most commonly

monly these leading circumstances were wanting. We only found that the patient had had a flux, which had lasted for some time, with more or less straining and griping; and perhaps passed some blood with his stools, which were slimy and bilious; and that this flux had resisted the common remedies, or had been but little relieved by repeated evacuations. And when we came to examine him about the state of his liver, he would say he had at times felt pain in his right side. And on examining the part, a fulness could perhaps be observed under the ends of the false ribs, towards the pit of the stomach; and that he complained of some pain upon pressing the part a little hard, or upon taking in a full inspiration. By these symptoms, the nature of the complaint was rendered fully certain, though he had formerly observed no pain there, or had but little or no fever, nor ever felt any pain in the shoulder; especially if to these were added a fallow look, and yellowish cast of the tunica albuginea, which never fail in some degree to attend every liver affection in this country. The flux very often precedes every other symptom of the inflammation, and is the most constant attendant upon it: except in a few cases where the attack

tack is more sudden and acute, and then a short dry tickling cough is often present. Both are symptoms only, and are cured along with the inflammation itself, and by the same means.

In some cases the flux remains long, and proves obstinate; most probably in consequence of topical affection of some part of the intestine, occasioned by the irritation of diseased and acrid secretions. This appears evident in the advanced state of liver-fluxes, by the bloody stools and griping felt in the lower part of the abdomen. Fluxes, we found to be so constant attendants in this country upon a diseased state of the liver, that after a little experience, whenever they resisted even for a short time the ordinary methods of cure, we became immediately suspicious of the state of that organ,—that it was affected either with inflammation, or ulcerated, or in a state of inflammatory obstruction. We knew from dissection that obstructed mesentery had also sometimes a concern; especially in those cases that were of long standing, and attended with relaxed habit, and a debilitated state of the organs of digestion: Such patients are here called *Lienterics*. We had at all times a great number of cases that were simple, arising
from

from a superabundant or disordered state of the bilious secretion; and we had some occasionally from irregularities, and from cold and obstructed perspiration. But we found so often affections of the liver at the bottom of the complaint, or appearing in the course of it, as to make us cautious and distrustful in almost every case. True dysentery never appeared in the hospital; nor do I believe it is ever to be met with in Lower India: at least without being imported thither. We had enough of fluxes from diseased bile; with highly putrid and dysenteric symptoms as the disease proceeded in its course: but these were of a nature totally different from true dysentery, and began in a different quarter,—in the upper part of the intestinal canal.

In some cases, after all the symptoms of inflammation in the liver had been removed, and the patient had been restored to his former state of health, appetite and strength, and a clear countenance, slight pains of the side would continue to be felt at times, and a hardness of the bowel could be perceived; but I never saw any very remarkable enlargement of it—Large Scirrhus Liver, or, what is called, *Liver-grown*.

While

While this state of hardness and pain continued, it was easily aggravated by any irregularity; particularly in drinking, and it was always attended with a costive belly; so that it was difficult to get any thing to purge the patients freely, except castor oil. The same thing was observable in several cases where abscesses of the liver had been cut for and healed up. But there were not many instances of relapse in the hospital, where the disease returned again, or advanced to the state of ulceration, (though some pain might remain at times), after the patients had gone through a proper course of mercury.

The period of the disease was of no certain extent or duration. If the accession was with pyrexia, or acute symptoms, the progress was more rapid than where it was slower, and where these were wanting. If it was neglected, or wrong treated in the beginning, it sometimes ran very suddenly into suppuration, even where there were no acute symptoms. Persons who had been long in the country, and lived irregular, were more subject to it than the more temperate.

Occasional causes were not very distinguishable; but I sometimes imagined, that long-standing bilious

lious fluxes had the effect of inducing disease in the liver itself; for certain appearances of this sometimes took place in cases of such fluxes so long after they had come on, and where nothing of the kind was observable at first, as could not have subsisted where we were so much on our guard against this affection. The disease in the organ is, perhaps, excited by the acrimony of its own secretion.

When the inflammation was not soon resolved by the exhibition of mercury, the substance of the liver ran speedily into a state of suppuration. An abscess formed, too often of very large extent. A great deal of the substance of the liver came to be broken down and destroyed; the matter sometimes finding its way by the gall-ducts, which soon brings on a putrid flux, and destroys the patient. When the abscess was on the convex part of the liver, the matter not unfrequently made its way through the diaphragm, eroded the lungs, and came to be spit up. In two cases of this sort, where the ulcer had extended deep, and eroded the gall-ducts, much bile was brought up by coughing mixed with sanious matter, plainly distinguishable, not only by the colour, but the bitterness of taste.

tafte. One patient was opened after death, and we found the passage through the diaphragm not larger than would allow a very small quill to pass. The liver was a mass of ulcerations and putrid matter, and almost the whole of the right lung was obliterated; the space filled up with a spongy loose membranous substance, disposed in thin layers. What remained of the lung was shrivelled up to the top of the thorax, and very knotty and hard. There must be very few instances of suppurations of the liver healing up in this way. We had seven or eight of these cases at the hospital, but all of them proved fatal.

When the abscess forms on the fore part of the liver, and is not seated very deep in its substance, the matter frequently points outwards, forming an indistinct kind of tumour; which appears oftenest just under the ends of the first false ribs, or between them and the pit of the stomach, sometimes right over it; and one was opened near to the ends of the false ribs on the left side. In other cases, the tumour forms more backwards within the ribs. One was opened between the fourth and fifth false ribs.

This

This tumour sometimes appears suddenly, and, when the ulcer is not deep-seated, is tolerably circumscribed and prominent. But unfortunately the seat of the matter, in many instances, is not exactly pointed out by such a tumour at all. There is only a fulness and hardness, or rather a general swelling, which pits a little on pressing it with the points of the fingers: or, before any external tumour is formed, by which the seat of the matter can be exactly known, it has spread too far below; has formed a large abscess within the substance of the liver; and, when at last an incision is made, and the matter is let out, it has spread and destroyed much of the substance of the organ; or it has found, or afterwards finds its way by the gall-ducts, and brings on a fatal putrid flux. The ulcer does not fill up and heal; the matter furnished becomes acrid and stinking, and produces new inflammation, and spreading ulcerations. This was the unfortunate course of a great many cases we had in the year 1782. Out of ten patients in which the abscesses were opened, we only saved two. In one of them, the tumour was distinguishable the first time he complained of any pain in his side; and he never felt any in the
shoulder.

shoulder. He was in the hospital for the cure of an ulcer, and only had a slight flux for six or eight days; for which some evacuating medicines had been given him. The tumour in two days was prominent enough to be opened. The ulcer in the liver was of no great extent, and the matter was white, and without any bad smell. The other had complained longer, but the tumour was not at all elevated nor circumscribed. An incision was, however, made near an inch into the substance of the liver; but no matter being come at, and a considerable hæmorrhage ensuing, it was thought unsafe to proceed farther. The matter, in two or three days, made its way to the opening. It was in no great quantity, and the patient soon got well upon a mercurial course*.

G 3

In

* A similar instance came under my care at Dumfries, in the year 1785. A boy about eleven years of age, had evident symptoms of inflamed liver, and of suppuration having taken place within the false ribs, pretty far back, where they were evidently pushed out and elevated; forming at one place a kind of indistinct tumour. With some difficulty I persuaded the boy himself, and his parents, to submit to have an opening made at this place; and proceeded so far as to cut through the skin, and divide the intercostal muscle, meaning

In the summer months of 1783, still a greater number underwent this operation, and only three or four were recovered by it.

There never was any danger in making the incision. The nature of the complaint had always become clear enough before any thing of this kind was resolved on; and if there was any thing of a tumour at all, we were sure that, previous to the formation of this, the inflammation had produced adhesion between the membrane of the liver and peritoneum, so as to exclude all the contiguous organs from coming in the way of the knife. I never saw either the stomach or colon, the only organs that could possibly interfere, affected by the inflammation, or that the matter had made its way into either of them. In several large suppurations of the liver, we sometimes
found

to push a lancet into the tumour; but the boy himself got frightened, as well as the people about him, and would submit to nothing farther. In the course of a week, however, matter in considerable quantity began to appear; but the opening being by this time contracted, it insinuated itself several ways under the skin, and formed several new openings for itself; whereby, in the course of some time, the disease of his liver was completely removed, and the openings all healed up.

found the dressings tinged with bile, but never any appearance that a communication had been formed with the colon or stomach; even where the patient survived the opening a long time, and the disease proved fatal at last.

The external incision was generally made near to and parallel with the ends of the ribs, and this was sometimes undertaken, and the matter found where no distinct fluctuation could be felt. Caution was always observed in making it; to proceed slowly, to wipe away the blood, and examine the parts before every stroke of the scalpel, until the matter was found. It was necessary to carry the incision of the teguments much farther than was required for giving vent to the discharge, as the opening was very ready to close up, unless kept open by tents, which were hurtful, by confining the matter, and causing it to spread within. Of whatever kind this was, it very soon became exceedingly acrid and stinking, soon after it was exposed to the access of the air. Generally it was so at the very first discharge; commonly of a thick greasy consistence, of a liver-colour, full of red lumps swimming in it, and of a peculiar smell. This we thought the worst kind, as

none recovered where it was of this appearance. In others, it was more thin and pale-coloured, but equally acrid and ill-smelled. All of it tinged the probe with a brown colour. Seldom, indeed, was there any thing like good pus. In one case it was a clear fluid, resembling the water of an hydatid.

It was common to throw in injections, with Mel Ros. or Tincture of Myrrh, three times a-day, and to give bark. In only one case did the bark seem to produce any favourable change in the condition of the matter. In all the rest, it did no manner of good. In by far the greatest number, the ulcers were of very great extent. Two, three, or even more pounds of matter, were sometimes discharged at the first opening; and often the finger could be turned all round within it, without reaching any part of the substance of the liver. Where there was so great a destruction of substance, the prospect of recovery could be but very small.

CURE.—Whenever the disease came on with a considerable degree of fever, with acute and constant pain in the side and shoulder, some bleeding was practised: but in other cases it was never
done;

done ; and indeed to the extent to which it could well be carried in a warm climate, and in relaxed habits, it seldom procured much relief. A large blister, applied over the part affected, had much better effects. Oftener than once it appeared to have removed the inflammation entirely. When it was intended to follow the mercurial course by frictions upon the side, this came to be in the way of that ; but was never without effect in relieving the pain of the side and shoulder ; and cough, when these were present. Whether bleeding or blistering were employed, it was always of consequence to clear the bowels, and carry down the diseased secretions, by a purgative or two ; salts and manna, in gentle doses, or Decoct. Tamarind. cum Sen. ; or if a stronger was wanted, castor oil. Sometimes a few cooling powders, composed of nitre, gum-arabic and Cream of Tartar, were given for a few days at first, along with the mercurial frictions ; especially where there was heat, thirst and pyrexia, with a view to abate these, and render the operation of the mercury milder. Some thought this rendered the exhibition of it more successful and safer ; and I have observed relief obtained from the use of these before the mercu-

ry could have entered the system in such quantity as to produce it.

In all other circumstances, or as soon as the pain of the side, heat and fever, had been a little abated by the use of these remedies, mercury was immediately had recourse to, and the course pushed on, as quickly as possible, without any regard to the state of the bowels, even where there was a constant flux, with bloody stools and tenesmus; sometimes where even a good deal of heat, thirst and general fever were present, provided the pulse was not hard, and the pain of the side had somewhat abated, or was not very constant and acute. Our dependance upon it was so great, unless where it was supposed the disorder had already advanced to suppuration, that the more pressing the symptoms seemed to be, we were the more anxious, with the precautions already mentioned, to get the system speedily and fully charged with it. Its good effect in every species of liver disease, except in the state of ulceration and simple disorder of its secretion, viz. simple bilious fever and flux, were so apparent, that we had recourse to it with the same confidence as in lues venerea. Scarcely was it ever observed to increase the heat
and

and fever, or to aggravate the pain of the side or cough; and the bowel disorder, flux and bloody stools, were often removed by it alone, or they disappeared under its use without any other remedies; so that I began sometimes to suspect that our precautions and apprehensions about its aggravating effects in certain circumstances of the disease, had been imaginary only.

A flux is so constant an attendant upon inflammation and inflammatory obstruction of the liver, or obstructed mesentery, that very often, when it proved obstinate, we had recourse to mercury for its removal, when we had no other foundation for suspecting an unsound condition of these organs than merely the flux itself; and generally, if the constitution was sound, with perfect success. Often, while we were going on with our mercurial courses for the cure of inflamed liver, and supposed it to be nearly, or fully removed, a return of the flux would take place on our abating the mercury, and we were obliged to push it on again, and continue it longer, for the removal of this symptom, after all pain of the side had been long removed.

The

The preparations of mercury most generally used, were a pill composed of a grain and a half of calomel, and two of rhubarb and soap. Of these, two were given every night and morning, and if it was thought necessary to have the mouth soon affected, a drachm of mercurial ointment was also rubbed in along the side every night. The blue pill was sometimes used in place of the calomel, and answered equally well, especially where it was wished the mouth should be soon affected, and the bowel disorder was not great; but where this was the case, I was certain the rhubarb and calomel pills sooner corrected it. It may be thought, much of the mercury would run off and be lost in this way, but this did not appear; for the mouth became as soon affected with either of these, as by the mode of friction. This, however, is not so easily excited in India, and goes sooner off than in colder climates. After the mouth became sore, the mercury was continued in smaller doses for two or three weeks, or until every symptom of the disease had disappeared; and we had reason to suppose the inflammation quite removed, and the liver restored to a natural healthy state; not merely till the pain of the side was removed, and the
bowel

bowel disorder had been fully corrected, but till the patient recovered his natural appetite and strength, and the fallowness and yellow colour of the countenance was exchanged for the clear look of returning health. Few other medicines were, in general, necessary during the use of the mercury; except now and then some easy laxatives, such as small doses of Rhubarb and ipecacuanha; or Rhubarb and Cream of Tartar, when the other was not sufficiently active to carry off the irritating matters; or emollient glysters to remove tenesmus.

Such is the history of the acute state of liver inflammation as it appeared with us; and such was the general mode of treatment. Where the circumstances were tolerably favourable, we succeeded, in almost every instance, in curing it. But very often the patients were too far gone before they came under our care. The disease had run on to a state of suppuration, or was too far in progress towards it, before mercury could be introduced to check and prevent it. Whether ulcerations of any considerable size were healed up by it, I could not be very certain. But from what we saw on dissection, in some cases where the patient died afterwards of other complaints, and had
been

been under disease of this organ, I was pretty certain, that small ulcers on the external surface had been healed up under its use. (See the case of John Holland.)

Besides the acute, there was another inflammatory affection of the liver, of a more chronic nature, which laid the foundation for fluxes of a more obstinate and intractable kind than those we have mentioned: Or, we had a number of fluxes, attended with griping and straining at the beginning, but which in the end became mere lienteric diarrhœas, without being attended with either; until the last stages, when the rectum came to be affected by the constant deposition of acrid bile and undigested aliments, and then pain and tenesmus became again very troublesome. In these kind of fluxes, the liver always felt tender to the touch; but the affection seemed to be different from the acute inflammation, and did not run so readily into a state of suppuration, except through neglect, wrong treatment, or great irregularity. Obstructions of the mesentery appeared, in several instances, to have occasioned fluxes of a familiar nature and obstinacy. We were certain of this in three different patients that were
opened

opened after death. The liver was found to be in a sound state; but the mesentery was thickened, and full of hard knotty enlarged glands, some of them of considerable size, with its vessels enlarged and turgid: the coats of the intestines also, in many places, thickened and contracted.

In these, as well as in those that depended on acute inflammation of the liver, it was a common thing for the patients to pass blood with their stools, sometimes in considerable quantities. But I constantly observed, where it was not merely the effect of straining, it was passed pure and unmixed; and was most probably the consequence of congestion, and rupture of some small blood-vessel low down in the canal. In other cases, arising from chronic inflammation, the stools were much tinged with green, or a green mixed with a yellow colour, or of a dark-red approaching to a black; and whenever they continued long of this appearance, and the patient had a fallow look, and yellowness of the albuginea, even although there were no symptoms of acute inflammation of the liver present, no sort of benefit was derived from any course of medicines that were only palliative or corrective. And if we had no success by mercurial

curial alteratives, pushed perhaps beyond that degree so as to affect the mouth for a while at first, and continued for some time in gentler doses, we infallibly lost our patient. The flux became more and more frequent; brought on a total relaxation of the intestines; and the functions of digestion became totally lost; every thing they took ran through them, in an undigested state; a slow fever and wasting came on, which in the end proved fatal.

Where the constitution had not been much impaired, the bloody stools and bilious fordes began to disappear on the use of mercury; the patient regained some appetite and strength, which enabled him to bear the operation of the medicine, until health was gradually restored by it. But in the beginning occasional laxatives behoved to be joined with it, for keeping the intestines clear of accumulation of diseased secretions, more than in the case of acute inflammation.

For restoring the tone of the stomach and intestines, light infusions of bitters, the Margosa leaf and Elix. Vitriol. were employed. But bark and astringents were cautiously avoided.

There

There was a state of obstruction in the liver, which sometimes succeeded both the acute inflammation and the cure of those ulcers that had been healed up after incision. Costiveness in these cases, was always troublesome. Castor oil was the most effectual in overcoming this. When pain became considerable, if the patient had tolerable strength of constitution, the repetition of a mercurial course, in several instances, removed this entirely. Blisters over the part, gave temporary relief; and a seton over the region of the liver, was found, in some instances, of great benefit.

CASE.

The following case, which occurred on board the Seahorse soon after my arrival in the country, and which was recorded on the event, well deserves to be hung up *in terrorem* against the attacks of this insidious disease, and pointedly shews the danger of being misled, by attending to symptoms that are but secondary, while we overlook those that, though they may be more slightly marked, are primary and pathognomic.

H

William

William Quail, seaman on board the Seahorse, on the 6th of June 1782, complained of slight flux, without much straining or gripes. Having been on shore for the cure of a scorbutic ulcer, his complaint was imputed to some irregularity; to drinking too much of the cocoa-nut juice, called *toady*, or too free a use of vegetables; and a slight purge or two were only prescribed for him. On the 9th he was suddenly seized with a cold shivering fit, which was severe, and followed by heat and sweating. This was repeated four times in forty-eight hours, but the periods were not perfectly exact. During the fit, his pulse was quick, and his skin was hot; even when he was under the rigours. In the intervals, he was free from fever, and in all respects pretty well. He said he had felt at times pain in his right side, but it was not constant or severe. He mentioned also his right shoulder, which, though I had then never seen hepatitis, suggested a suspicion of his liver being affected, and I knew that it was a frequent disease in India; but he mentioned also that he had a pain across his loins, and, at times, felt pain in the left shoulder; and supposing that hepatitis was always to be distinguished by acute and constant pain in the side
and

and shoulder, with a constant state of fever, and the fits, though somewhat irregular, resembling those of intermittents, the idea of hepatitis was given up, and the complaint was supposed to be of the *aguish* kind, arising from some foulness in the *primæ viæ*. He had an emetic and laxative, and, after the second fit was over, bark in pretty large doses. This was continued for two days. The fits went off, but he had more fever. On the 13th he again mentioned pain of his side, and that his flux, which had been relieved, was returned. It was now intended to put him on a course of mercury, and, preparatory to this, his side was fomented and a blister applied over it; which removed the pain entirely. He had nitrous powders in his drink, a dose of soluble tartar, and some small doses of rhubarb and ipecacuanha to the 17th, when he complained of a fulness and oppression at his stomach. On inspection, there was no appearance of swelling, but it was painful on being pressed. A small dose of tartar emetic was given him, which evacuated him downwards. On the 20th, he complained of oppression of breathing, and began to cough. The emetic tartar was repeated *ad vomitum*. Next day he began to spit up bloody stuff

with his cough. This soon changed into pure pus, and in a short time to pure bile, which continued to the 25th, when he died. He passed also yellow purulent-like matter downwards, in considerable quantity. After the blister, he never complained of any pain of his side or shoulder, but at the pit of his stomach. And the true nature of his disease was not fully understood till it shewed itself too plainly, and too late, by the spitting of bile.

The liver had been inflamed from the beginning, and the diseased state of this organ had been at the bottom of the flux and fits of pyrexia; yet all this while the pain of the side and shoulder were but slight, never constant, and were easily removed. But there is not the least doubt, if he had been narrowly questioned, a degree of pain in the region of the liver, would have been found to exist from the very first accession of the flux, though he had attended but little to it himself; or, at least, he would have been sensible of some foreness or tenderness to the touch, on pressing the part a little hard, or in making a full inspiration, or some fulness at least would have been discovered; and the early exhibition of mercury would, in all probability, have succeeded in saving him.

This

This was an instructive case, although at the poor man's expence. More experience, acquired in a short time, removed all risk of similar blunders, and rendered the diagnosis in such cases much more easy and certain.

BILIOUS DISEASES.

BILIOUS FEVER AND FLUX.

By this title is not to be understood any determinate species of fever necessarily connected with a bowel disorder, as in dysentery; or any species of idiopathic disease of the febrile kind whatever. The fever, on the contrary, is purely and perfectly symptomatic; and I am indeed doubtful, whether, on the coast of India, there be any other. Typhus, synochus or synocha, scarlatina and erysipelas, were unknown to us; and both remittents and intermittents appeared only at the hospital as symptomatics, depending on disordered and superabundant bile, and other vitiated accumulations in the first passages.

But, although the fever makes no necessary or essential part of the disease, it is seldom entirely wanting where the bowel-disorder has been of any standing; and the symptoms of it often run so high, as to create no small additional danger, and render the management of it a matter of much delicacy: So that it becomes highly necessary to have a particular eye to it, both in the description and treatment of the complaint.

This kind of fever and flux was not attended with more yellowness of the skin, eyes, or urine, than commonly accompanies all the India diseases where the liver or its secretion are concerned. The flux frequently precedes the accession of fever, or the latter only appears occasionally or transiently, according to the degree of acrimony and accumulation of disordered secretions in the stomach and upper part of the intestinal canal; and its exacerbations and alleviations follow pretty exactly the degree of these. The fever never remains a day after the bowel-disorder is fully corrected, but for the most part terminates sooner, or is only occasionally renewed and lighted up by the renewal of fresh accumulations.

That

That both flux and fever are produced and maintained by a superabundant and vitiated condition of the bilious secretion, in the first instance, is abundantly plain from the nature of the discharges, and the disorder induced on the alvine functions.

In relation to the stomach, it is evinced by nausea and sickness, bitter taste in the mouth, loaded yellow tongue, and want of appetite.

In the upper part of the intestinal canal, it is shewn by anxiety, sense of weight, and fulness about the præcordia, pain, tumour and fulness, with some foreness and tenderness on pressing the part with the fingers.

In the middle portion of the tract, it is evident by the tumid abdomen, with tenderness and uneasiness on pressure, gripes, flatus, borborygmi, spasmodic and shifting pains; and that uneasy sensation which may be called *bowel-sickness*; distinguishable from stomach affection, as consisting in that sensation that arises in cholick, or whenever acrimonious or irritating matters are put into motion in the intestines by the action of their coats, whether from the addition of a purgative stimulus or otherwise.

In the lower portion of the intestinal canal, especially in the rectum, and particularly in the latter stages of the disease, it is testified by griping, straining, tenesmus, mucous, and bloody stools, of a deep bilious, or of a sanious or putrid appearance. More or less of the same appearances are to be found in the discharges by stool in every stage of the complaint. But unless where topical affection has early taken place, the first discharges consist more of slime and bilious matters, and in larger quantity, than in the subsequent periods.

The cause from which the disease had its origin, always appeared to be superabundance and acrimony of bile, inducing disorder in the stomach, and in the secretions of the upper part of the canal. But the disorder was not long confined to this portion, but made its way downwards by degrees, whereby it had the appearance of being divided into different stages; which, however, had no other distinction, nor any certain periods of duration.

The occasional or exciting causes were, in general; irregularity in living, great exertion and fatigue under exposure to the heat of the sun. Of this we had frequent experience among our convalescents

valescents who were allowed to walk out of the hospital: and in the number of patients received from the ships, parties employed in watering, and other duties on shore. In most of these, the attack was sudden and severe, and attended with a high degree of fever. The pulse sometimes hard, but always very frequent; tongue and skin dry, hot and parched; and the patient very soon became delirious. By far the greater number were sent us from the ships with the disease in a more advanced state; with the tongue thickly covered with a yellow crust; with a small and quick pulse, pale sunk or fallow countenance; great heat, pain, tension and tumour of the abdomen; stupor and insensibility; now and then with wild phrensy and delirium; and sometimes with cold extremities, hiccup, and cold sweats.

In this state, it is hardly necessary to say, they generally died. Inflammation and gangrene of the intestines soon came on. The mildest evacuants were either rejected from the stomach, or before it could be brought to bear such as could be any way effectual, the disease had made too great progress to be arrested by any remedies; or the mildest laxations we could employ, brought on so much irritation as greatly exasperated all the symptoms;

symptoms; and cordials, diluents, fomentations and glysters, were sometimes all we had to trust to.

In many instances among those taken ill at the hospital, the accession of the disease was observed to be much more gradual; and it sometimes affected those of the most careful and regular modes of life.

A purging, with more or less griping and straining, would begin to come on, attended with an uneasy sensation of weight about the præcordia; anxiety, depression and lowness of spirits, with stools of a bilious colour, a dark-yellow, with a mixture of green; and this would continue sometimes for weeks, the patient all the while going about, and enjoying a tolerable state of appetite and health; till at last the bilious secretion came to be so increased and vitiated, as to disorder all the functions of the stomach and bowels, and to bring on fever, with an amazing redundancy of bile, which would often continue long after the fever was removed. In most cases, the degree of fever was pretty much in proportion to the cumulation in the upper part of the alimentary canal, and kept pace pretty exactly with the state of evacuation

evacuation made from it; sometimes disappearing in a short time, or being only renewed at intervals in the progress of the complaint, or when new accumulations had taken place.

In this, which might be called the *First Stage* of the disorder, there was generally more or less fulness at the pit of the stomach, with some soreness or tenderness on pressure there, or rather between the pit of the stomach and right hypochondrium; or between it and the umbilicus, towards the right side. And so much suspicion and anxiety being necessarily attached to the state of the liver in every India flux, much perplexity was apt to arise from this feeling in simple bilious disorders. But in general the true index was to be found in attending to the circumstances of the case, and the concomitant symptoms.

The pain here was more dull, deep-seated, and lower down, farther from the ends of the ribs than where the liver was concerned; and where the fever and bowel irritation was not so great, as to prevent a brisk purgative from being given, so as to carry down a load of diseased congestions from the turns of the duodenum, the pain and
uneasiness

uneasiness in this case will be greatly relieved by it. But no such relief is obtained from them in hepatic affection.

Pretty acute pains are also sometimes felt in the course of the disease in various places of the abdomen. Some portion of the intestine becomes affected with pain of the spasmodic kind; perhaps with stricture and accumulation of the contents: and this not unfrequently happens in some part of the arch of the colon. In one case, where a pain of this kind kept pretty much fixed about the edge of the liver, much suspicion was occasioned by it about the state of that organ: but from observing, that it alternated with similar pains in other places of the abdomen, and from the relief obtained by purgatives, or from the motion through the intestines being free, the true nature of the case was ascertained; and fully confirmed in the event, by the complete recovery of the patient, without any one remedy for the cure of liver-disease being employed.

Another symptom, often attendant upon the febrile state of this disease, and indeed very commonly felt by some persons in India, whenever bile predominates in the first passages, is a torpor or
numbness

numbness in some of the limbs, arising in some cases to a degree of paralysis. The right arm is often affected in this way; sometimes only the outside of the hand, or two or three of the outer fingers are only affected. Others have spasms and cramps in the legs or feet.

The horridly-fatal disease, commonly known, when I was in India, by the name of the *Mort de Chien*, which has been already described, was considered by some of the first practitioners there, as entirely a disease of putrid bile. Though I did not at all embrace this opinion, but considered the two disorders as specific and distinct in their nature, though frequently in accidental or occasional combination; yet both at Trincomalé, when we had the disease in the Seahorse, and in the summer months of the year 1783, while it was frequent in the fleet, we had patients sent to the hospital from the ships, under bilious fever and flux, affected with the same sort of external spasms and cramps as take place in that disorder. But then, in all these cases, the spasms were much milder; the disease much more tractable; the spasms appeared to be only secondary; and the existence of bilious plethora was perfectly conspicuous.

The

The same spasmodic affection occurred also in some instances among our people at the hospital in the course of bilious and liver fluxes of some standing.

In the first stage of bilious fever and flux, along with some pain, tumour, and fulness of the abdomen, with preternatural heat of the part, and foreness on pressure; the tongue was dry and yellow, and the eyes and urine had some tinge of the same colour. The latter sometimes tinged the linen with a dusky brown or yellow; but this was very unsteady and variable.

Very often there was little purging or griping when the patient lay still in bed, or while the contents of the bowels were not disturbed, and put into motion by laxatives; but as soon as their action was excited by this means, violent pain and griping were produced, with a constant redundancy of bile and disordered secretions, which often continued for an indefinite period; and if these were not as constantly carried forward by promoting the action of the whole intestinal canal, a return, or aggravation of the fever, and all the symptoms, was the infallible consequence.

The

The state of the abdomen was a pretty sure index of the quantity and degree of these accumulations ; but this was by no means to be taken from the patient's own description or feelings, but from the degree of fulness and tenderness on pressure ; from the effect the first exhibition of purgatives or glysters had in exciting pain, griping and sickness ; or from the appearance of the discharge produced by them. This indeed was varied at different periods of the disorder. Constantly there was a greenish colour, varying from a dun and dusky yellow, to a dark and dirty black. The last predominates during the febrile period. I have seen them, for weeks, of the colour of moss-water. Sometimes there was more of a red colour, like chocolate or coffee grounds ; and when this was the case, with much pain, tumour, and tension of the abdomen, the disease often ended in topical inflammation and gangrene of the intestines.

When the stomach and upper part of the intestinal canal had been pretty well cleared, and the diseased secretions carried downwards by repeated evacuations, what may be called the *Second Stage* of the disorder commenced. Partial accumulations

tions of diseased matters still continued to be renewed from time to time ; and the disorder settled lower and lower down, accompanied with much griping and straining to stool ; often with some blood in the stools, and frequently with some degree of dysuria,—pain and difficulty of voiding urine ; but with intervals, and a considerable abatement of fever, pain and general disorder of the abdomen : or, instead of being tumid, the abdomen rather became shrunk and retracted, with the skin tense, dry and hot, and the pain more confined to a particular spot, indicating more of topical affection ; which we found on dissection to have affected in several instances the sigmoid flexure of the colon, and upper part of the rectum.

Irregular spasmodic contractions of the lower bowels, especially of the rectum, frequently took place ; preventing the free and regular propulsion of the contents of the intestines ; and rendered the frequent exhibition of glysters and purgatives necessary, even though the stools were perfectly liquid, and in large quantity, whenever the mildest of these were given.

If

If the disease continued long in this state, especially if the patient was of a reduced habit, or much debilitated by long residence in the country, it ended in what was considered as its *Third and Last Stage*,—a lienteric or colliquative diarrhœa. This was often of long standing, and terminated fatally, long after fever and redundancy of bile had entirely disappeared. The patients continued to be harassed with frequent watery and liquid or mucous stools; whatever they took by the mouth passed through them in a half-digested state, till a kind of low hectic, and wasting marasmus, concluded the scene.

In this state of the disease, the belly always became collapsed and hollow, with the skin wrinkled up into folds, and dry; the intestines felt through it like a mass of soft clay, or inelastic substance; and their contents could be pushed backwards and forwards through them, with a rumbling noise, indicating such a relaxed and torpid state of their coats, as no means could recover, if the habit had not been remarkably strong and good before.

Several of the cases ending in this way were opened at the hospital, and the general appearances were inflammation and thickening of some part of the

intestinal canal. Sometimes a degree of ulceration of the internal coat of the rectum, and adhesions of it to some of the neighbouring parts, and most commonly obstruction, and enlargement of the mesenteric glands, or enlarged and obstructed liver.

The rationale of this disease is perhaps as clear and satisfactory as in any we meet with. It is a matter well established from extensive observation, that in all hot climates, and in India more than any, a superabundant and vitiated condition of the bilious secretion, is in a manner a constitutional temperament. In what manner this is produced, whether from a diseased state of the organ itself, or from an alteration produced upon the fluid after its separation in the liver, may not be so easy to determine. Perhaps both may have a share. A quantity of this diseased bile getting into the stomach very readily produces disorder there, and disturbs the functions of digestion; and this, together with the accumulation of bile, and undigested and disordered fluids, lodging in the turns of the duodenum, we considered as sufficient to account for the symptoms attending the
first

first stage of the complaint ; while irregular spasms, which generally affect the intestines, interrupt or prevent a free and regular passage downwards ; and unless some purgative stimulus has been early and regularly employed, to carry off this load of bile, slime, and colluvies of diseased secretions, they soon run into a state of putrescent fermentation, which produces an acrimony sufficient to kindle up fever, and produce all the consequences we have mentioned. While this bilious redundancy continues, the functions of digestion, both in the stomach and upper tract of the intestines, are very imperfectly performed ; and the long-continued irritation to which the intestines are subjected, comes at last to debilitate their tone and action, whereby they do not sufficiently propel their contents ; and fresh accumulations and congestions are again and again formed, which, as they settle lower down, bring on a diseased state of the lower portion of the tract, particularly of the rectum, with topical affection of the gut. Though bilious plethora and fever, with the first set of affections have been all reduced ; yet the long-continued irritation, together with debility and relaxation arising from the heat of the climate, has

in a great measure destroyed the powers of digestion and chylification, so that no sound and healthy nutriment is produced ; or an obstructed state of the mesentery, or perhaps of the liver, has come on, which lays the foundation for marasmus and a continual flux.

From this simple view of the disease, our plan of treatment was deduced, and consisted chiefly, or almost entirely, in the choice and exhibition of *evacuants*, adapted as well as we could to the condition of the disorder, the strength and constitution of the patient, and the irritability of the stomach and bowels, without a specific regard to the fever, which we considered as symptomatic only. Notwithstanding, however, of this simplicity of plan, it required all our caution and judgment to adapt these properly to the varying circumstances and conditions of the patient, as well as in the proper choice of matters.

CURE.—The state of the pulse never seemed to indicate the necessity of letting blood. This was a remedy almost unknown with us ; nor do I recollect ever to have wet a lancet in India, except in some cases of acute hepatitis, or on account of
some

some external injury. Inflammatory diathesis, or a rigid and tense fibre, which Europeans may be supposed to retain for some time in hot climates, never appeared at all distinguishable in India. The long voyage, the greatest part of it within the tropics, perhaps takes off that constitution by the time the India shores are reached.

When the fever was moderate, and the disease was not attended with much irritation of the stomach, pain, tension, or fulness of the abdomen, pretty brisk purgatives might be employed at first, and were necessary to unload the upper portions of the alimentary canal. But those of the least irritating sort were always chosen, such as Soluble Tartar*, with Manna; sometimes with the addition of Tinct. Sennæ Comp., or, where more freedom could be used, Decoct. Tamarind. cum Senn.; or, in very irritable states of the stomach, a saline mixture, with a large quantity of magnesia diffused in it, and three or four drachms of Tinct. Rhei, given by divided doses. This made a very pleasant and agreeable laxative, and always rested on the stomach, especially if made

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warm

* Tartris Potassæ.

warm with Ol. Menth. Pip., or with peppermint water. When the stomach had become settled and steady, and sickness was abated, castor oil did as well as any. Emetics were never thought of, or the neutral salts, on account of their nauseating effect. Weak chamomile tea, or rice-water only, were given to wash the stomach when spontaneous vomiting took place. Perhaps, after bilious redundancy had been removed, and the disease had come to settle upon the colon and rectum, emetics, in mild and nauseating doses, or in full action, might have been useful, with a view to revulsion of secretions, and to promote the discharge by the skin, which, in these circumstances, was always dry; but this was not tried.

Plentiful dilution with farinaceous drinks, such as rice-water, and frequent glystering, were very useful in relieving irregular spasms and tenesmus, especially on the days in which no purgative was used. Some purgative medicine, however, behaved to be given every second or third day at least, till the fever and griping, tumour and fulness of the abdomen went off, and the stools put on a healthy colour and appearance, or at least nearly so; for frequently a greenish cast
of

of colour would remain in them, long after these symptoms were in a manner removed. In this condition, castor oil was frequently employed as a purge; and not only operated with as little ruffle and irritation as any, but brought off, perhaps, a fuller discharge from the upper part of the intestines than most. Decoction of Senna and Tamarinds, with a drachm or two of Sal Rochelle* dissolved in it, was sometimes employed. (The Soda Phosphorata † was not then known at the hospital.) Some aromatic oil or seeds were generally added to whatever purge was made use of.

What I thought answered best, where a constant course of purging behoved to be kept up, either for the removal of bilious accumulations, or for counteracting irregular spasms interrupting free passage, was about two drachms of cream of tartar ‡, with half an ounce of manna, boiled for some time in a considerable quantity of water, and some aromatic spirit added afterwards. This, taken in divided doses, acted with less irritation,

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and

* Tartris Potassæ et Sodæ.

† Phosphas Sodæ.

‡ Supertartris Potassæ.

and weakened the patient less than most we employed.

Under this treatment, the greatest number of our milder cases recovered in the course of three weeks or a fortnight, without any further assistance than perhaps some light infusion of aromatics and bitters, after the bowel-disorder had subsided.

When the attack was more sudden, with more fever and general commotion in the system, with greater irritability of the stomach, bowel-sickness, full, tense or tumid abdomen, severe griping, heat, thirst and prostration of strength, we thought it necessary to proceed with much greater caution.

For if, under such circumstances, any purge that acted briskly was given, it was either rejected by the stomach, or it brought on so much retching and irritability, as was very difficultly allayed, or the fever, griping and pains of the abdomen were greatly exasperated by it. Often those of the mildest kind could not be ventured on, till a quantity of the putrescent fœces had been drawn off by the use of glysters and plentiful dilution. But these; to be effectual, behaved to be given frequently in the same day, and of considerable quantity; using at first plain rice-gruel, which we had
always

always at hand, and afterwards adding a little Sal Glaub.*, as we saw needful. Rice-water was what we always gave for drink, with a little cassia, sometimes with tamarinds boiled in it; and often a quantity of magnesia was diffused in this, with directions to stir it when used.

If the patient was very hot and feverish, or had a vomiting, with some delirium, with much tension, fulness, and pain of the abdomen, or a weak and faltering pulse, with coldness of the extremities, (in which state we often found them), we thought it necessary to desist, for some time, from giving any laxatives by the mouth, and trusted entirely to the use of glysters: but then it was doubly necessary to be constant in the use of these, to support the patient's strength, and allay the irritability of the stomach, by such cordials and anti-emetics as the little variety of a foreign hospital dispensatory put within our command; a little Madeira wine, boiled with cassia, and given warm, or a little strong tea, with Ol. Ment. Sativ.; or what answered as well as any thing, a mixture of Aq. Ment. Pip. or Sativ. with Tinct. Rhei and Magnesia,

* Sulphas Sodæ.

Magnesia, after every fit of retching ; and in cases of extreme irritability or weakness, 50 or 60 drops of laudanum, in a small glyster. Given by the mouth, opium never appeared to be used either with safety or advantage, or for any other purpose, than merely as a palliative to gain time, or unless when joined with antimonial or ipecacuan wine in long standing diarrhœas.

The great danger to be apprehended in this disease, is from the readiness with which inflammation and gangrene is brought on the intestines, by irritation from acrid and putrid accumulations ; and the only security against it lies in the timely and constant use of proper evacuants, repeated as often as a return of fever, griping, pain and tension of the abdomen, foul tongue, bad taste in the mouth, and impaired appetite, point out a renewal of these ; and especially in guarding against all irregularity and intemperance, whereby the original symptoms are very readily recalled, so that the same ground has to be gone over and over again, in the same complaint.

In some instances we had recoveries, where, from the severity of symptoms, continual vomitings, hiccup, cold sweats, weak pulse, and the
most

most putrescent, offensive and sanious discharges by stool, there was every reason to conclude, that a degree of mortification had taken place in some portion of the intestines.

As an instance, I have put down the case of *John Quigly*, not in my own department of the hospital, but whom I saw frequently along with the gentleman who had charge of him; and who, by the constant and assiduous application of such measures as have been mentioned, was perfectly recovered, and discharged cured. But the aggravating symptoms were two or three times renewed; and it behoved to keep up a constant purging by one means or other for the space of a fortnight, before there was any amendment. Another instance, under my own care, was in the case of *John Bowerman*, who survived, for a considerable length of time, the complete separation of the whole rectum in a putrid bilious flux; and who, I made no doubt, might have fully recovered, had due care and attention been continued to him. His case is added.

Such was the general mode of treatment in what might be called the first stage of bilious fever and flux; and where there were no rooted obstructions in the liver or mesentery, nor confirmed bilious
diathesis

diathesis previously existing, the disease most commonly terminated here. The fever, and that peculiar anxiety and oppression of spirits, which accompanies redundancy of bile in the upper part of the first passage, went gradually off. The stools returned to a natural colour and appearance; and the tongue and countenance put on a clear and healthy look.

But in a great proportion of cases the disease ran out to a great length beyond this, and commenced what might be called the *Second Stage*. The patient continued to be distressed with a continual flux, with straining, griping, mucous, and sometimes bloody stools; spasmodic pains in different parts of the abdomen; with heat and dry skin, and some evening fever. There was some return of appetite, or rather an anxious craving for something to fill up, and give a little tone and strength to the system; and though there was but little thirst, and the tongue looked pretty clean, yet there was no healthy digestion. There was some yellowness on the tongue towards the root, with a fallow and sickly cast of countenance, and dull yellowish colour in the white of the eye. Under these circumstances,

cumstances, it was necessary to continue the use of purgatives at intervals, and to employ those of a more active sort. Whether it was, that few India fluxes of any standing are not connected with some disease, or obstructed state of the liver or mesentery; or that some degree of this was induced in the course of bilious fluxes, I could not positively determine: but we constantly found, when the disease continued any time in this state, mercurial purgatives answered much better than any other; or that mercury, combined with purgatives, and continued on the alterative plan; such as a pill, composed of rhubarb, calomel, and soap, $1\frac{1}{2}$ gr. of each, given every night and morning, till it began to affect the mouth, effected cures when nothing else did any good; giving only now and then at night, when this did not keep the belly sufficiently open, a pill with Aloes Socotorin. substituted in place of the rhubarb.

Whenever there was suspicion of an inflammatory or obstructed state of the liver, the blue pills were given alone, till the mouth became affected, and these were continued for some time longer in milder doses, interposing occasional purgatives, when pain or griping gave reason to suspect the
renewal

renewal of fresh accumulations in any part of the canal. Under this mode of treatment, we were frequently successful, when we were gaining no ground, nor doing any good by evacuants and palliatives.

Mercurial friction we seldom had recourse to in these sort of cases; nor did we carry the use of mercury to such lengths as some pretend to have done for the cure of India fluxes, who seem to have proceeded without having had any determinate ideas about their nature, or the operation of mercury in their cure.

In the advanced, and especially in the last stage of this disease, tenesmus was apt to become a very troublesome symptom. Giving two or three pills a-day, composed of Pulv. Ipecac. gr. i., and Pulv. Rhei gr. iij. seldom failed to give relief; or what I sometimes substituted with the same effect was, Pulv. Ipecac., gr. iij.; Pulv. Crystal. Tart., gr. x.; Conserv. Rosarum, ʒij. made up into a bolus, and given in three equal parts through the day; and we made it a constant rule to add some aromatic oil, generally the Ol. Fœnicul. Dulc. to all our alterative and purgative pills.

Whenever

Whenever severe pain and griping, with soreness to the touch, or tension in any particular part of the abdomen, took place, and continued fixed to a spot, and was not fully removed by free and full evacuation, especially if along with these symptoms, the parietes of the abdomen were tense and retracted towards the back-bone; great and immediate relief was obtained by the application of a large blister over the affected part. This we had sometimes occasion to repeat again and again in the course of the same complaint, and often thought the patient was relieved by it from the most imminent danger; in so much that it became a kind of routine of practice with us in such like cases, if there was a fixed pain in any particular part of the abdomen, and repeated evacuations and fomenting the belly did not succeed in removing it, especially if this was accompanied with heat, tension and retraction of the teguments, or whenever, in the progress of the disorder, a new affection of this kind came on,—immediately to apply a large blister over the part; and when severe griping pains came to affect the lower belly and top of the rectum, with straining and bloody stools,

stools, we applied them above the pubes with the same advantage.

With regard to the dietetic part of practice, an hospital admitted of but little choice or variety; nor could strict attention be had to this on such an establishment, except upon a general plan. But with regard to officers, and such as were at sick quarters, we made it a general rule to forbid all hot broths, tea or soups, and roasted meat. What seemed to agree best with every body where animal food could be made use of, was the native mode of dressing it: The *pillaws* and *curries*, or grilled fowls, with native pepper, and chicken-broth with the same seasoning. Fat and roasted meats were strictly forbidden. Dried white fish and water for breakfast answered very well, and a glass or two of Madeira, or brandy and water after dinner. In the secondary stages, we never forbade the use of fruits, especially such as were astringent; as the mango, and guavo or pomegranate; and we always directed a part of the rind to be eaten along with them. They were grateful and useful antiseptics; only, much of the pomegranate rind

rind was too strongly astringent to be used indiscriminately*.

In the secondary stages of this disease, we found, that the exhibition of opium, in the form of glyster, could be admitted of, and was frequently of service in relieving pain and tenesmus, and in procuring quiet and easy nights, and thereby recruiting the strength; but it never did good in any other way, or while bilious accumulations prevailed; and it behoved to be alternated with purgatives.

In but too many cases where the constitution had been much enfeebled and relaxed, or the strength exhausted by previous disease; instead of procuring a termination of the flux, we saw it become more frequent. The bilious colour disappeared from the stools, and they became white and

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mucous.

* The author of these observations was reduced to as low a state by bilious flux as ever any European in India. The first turn towards recovery was found at the hospitable tables of Vizagapatam, where all the tropical fruits were in plenty. Nature and appetite prompted strongly, and the fullest indulgence was followed, not only with impunity, but with manifest advantage.

mucous. The tongue got clean, but a fallow look remained. There was no return of healthy appetite, but a degree of hectic fever continued, with progressive loss of flesh and strength; and the food passed through the bowels in an indigested state; the disease terminating in its *Third and Last Stage*,—a continual flux or lenteric diarrhœa. In this condition, neither bark, opium, nor tonics, were of any service. Bark, in some instances, rather seemed to do harm. Now and then, cures were effected by a slow and gradual course of the blue pill, assisted with rhubarb and bitters, with aromatic seeds infused in brandy and water. Perhaps in such cases, nauseating doses of antimonials, or occasional full vomiting might have been of use; and mercurial frictions might have been preferable to the pills, but we had so much experience of the good effects of these, without aggravating the bowel disorder, that inunction was but seldom tried.

Fifteen or sixteen drops of Elix. Vitriol. in a large draught of weak infusion of the *Margosa* leaf, was always grateful to the stomach, and improved the appetite. Neither the Quassia Simarouba nor Cascarilla barks were in the hospital, nor
did

did they seem to be much known in India practice. In the advanced stages of bilious fluxes where the system was much reduced and relaxed by the disease, many officers found benefit from the use of a *long* shawl wrapped round the abdomen next the skin; and others who could not afford the expence, found the same advantage from a flannel bandage.

Both in the bilious and liver fluxes, where we had occasion to administer long and repeated courses of mercury, I observed, that it was longer, in whatever way employed, of affecting the mouth, and that ptyalism seldom could be carried the same length by it as in colder countries; and so far from weakening the habit, inducing hectic, and a dissolved state of the blood, our patients generally got full and plump after its use; infomuch, that we sometimes looked on this as the surest indication of its having been effectual for removing the disease for which it was employed.

We have already mentioned the general appearances found on dissecting such as died of bilious fever and flux. To have been more particular would have thrown little additional light on the subject. The following case, though not strictly

connected with the disease we have treated of, it may be worth while to put down, as tending to show the dangerous tendency of bowel-diseases in India; and how readily inflammation and gangrene are brought on the intestines from causes which are seldom, in Europe, productive of such effects.

DISSECTION.

On the 4th of August 1782, was admitted into the hospital, *A. B.* seaman, under thirty years of age, affected with fever, small, weak and frequent pulse, and pain of the abdomen; but without tension or fulness. He was under some delirium, and his countenance was pale, with cold sweats over his limbs. His respiration was laboured and irregular; with much anxiety in his countenance, and jactation of his body and limbs. He said what he ate and drank did not pass through him, and he complained of much pain on pressing the umbilical region. Warm fomentations were applied to the abdomen, and some glysters were prescribed for him in the evening, and through the night; but nothing was brought away but slimy mucus, with much straining. Next morning a
laxative

laxative was given him, but was not retained on his stomach. There was more delirium, or rather wildness of look and gesture, for at times he spoke very collectedly. Pulse very weak and quick, with cold sweats, constant jactation and restlessness. All his drink was spouted up as soon as it reached his stomach, but without retching or hiccup. After renewing the fomenting, and a glyster, two pills, containing ten grains of calomel and a grain of opium were given him, and retained on his stomach; but without producing any effect, and he died in the course of the following night.

On opening his body next afternoon, the omentum was found very much thickened; the lower border of it inflamed and red. The whole of it was dragged over to the left side, where it was crammed in between the intestines and parietes of the abdomen. The whole track of the ilium was inflamed, and its blood-vessels enlarged and full of blood. Where it enters the colon, were found coiled up two large lumbrici worms, alive when taken out. Over these, the coats of the intestine were thickened and inflamed to a high degree, and much contracted in diameter, but with no erosion or ulceration of the gut.

In the ilium above, were two distinct intus-susceptions, each of four inches in length, the superior portions inverted within the inferior. The included parts were pale and bloodless. The colon was empty and flaccid. There were no appearances of bilious accumulations, or other marks of disease.

CASE OF MORTIFIED RECTUM.

James Bowerman, invalid, some time in the beginning of November 1782, complained of a looseness, with gripes and tenesmus, which he said had come on some days before, but which he had not mentioned sooner, in expectation of its soon going off. He had been in good health, and the wound for which he had been invalided had been long healed up. On inspecting his stools, they were of a dark colour, and very offensive to the smell. His pulse was frequent, with heat of his skin, pain and tension of the abdomen, and some difficulty of voiding his urine. His tongue foul, and countenance fallow.

His

His abdomen was well fomented, and a dose of soluble tartar and manna was immediately given him, assisted by frequent glysters, whereby much dark-coloured fetid stuff was brought away. This course was continued for four days successively, without the colour or fetor of the discharge being in the least altered. But the difficulty of voiding urine had increased; and for the last twenty-four hours he had passed only a small quantity, equal to a few spoonfuls, with great straining and pain. There was some fulness above the os pubis, but not like that occasioned by the retention of much urine in the bladder. A catheter was, however, passed, and went easily, but no urine was found in it. A glyster, with forty drops of Spirit. Terebinth. was given him in the evening; and two tea-spoonfuls of Spirit. Nitri Dulc. were put into his drink through the night. He passed at different times, before ten o'clock next day, about a pint of urine, but with much pain and straining. Still there was a good deal of fever, with general swelling and uneasiness of the abdomen. Only cordial soup, and some wine, were given him for this day.

On the eighth and tenth day from his complaint, the physic was repeated, with a plain glyster at night, and the abdomen was fomented once every day. After this, he continued to pass his urine freely.

On the eleventh, there was no amendment; his pulse was still quick and feeble; and the appearance of his stools nothing better. This day he complained of a pain about the anus, which had prevented him from receiving the glyster last night. On inspection, the edge of the gut was found to be swelled out all round, and much inflamed. The verge of the passage was of a deep red colour, with a thin ichorous matter draining from it. Bark and wine were now given him in large doses, and a poultice was applied over the swelling. By next morning, the whole was black and mortified. At night, the whole of the rectum was found hanging inverted from the anus nearly seven inches in length; the greatest part in a mortified state, but here and there the different coats distinguishable, and easily separated from each other. This was all removed; and after washing and fomenting the parts with chamomile decoction, the poultice was continued over
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the opening. The following day, some detached portions of the gut came away. Still there was considerable pain and tension of the abdomen, with a low and weak pulse; but he kept up his spirits remarkably well. The intestinal discharge came away insensibly, with a great deal of sanious and putrid sloughs from the sides of the opening, which made a frequent renewal of the poultices necessary; and every time this was done, a large syringe-full of warm water, with a little Port wine, or Mel Rosarum, was thrown up. To the fourth day from the separation of the gut, there was but little change, only the discharge was not so much discoloured, and his belly was considerably easier. The external edge of the opening was still black, and much swelled out; but within there was an appearance of its casting off. In three days more, this was effected; leaving a monstrous opening, large enough to introduce a goose's egg with ease. But all within, to the top of the sacrum, or as far as the eye could reach, the sides of the opening were perfectly clean, with a kindly suppuration and granulations springing up. The appearance of the alvine discharge was by this time much mended, and nearly of a natural colour. The state
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of the abdomen became much easier; his pulse fuller, and his looks better. The poultices and fyringing the fore were now laid aside, and only a little dry lint was laid lightly into the opening, with a large spread pledget over it, to exclude the air; and this was renewed four times in the twenty-four hours. His bark and wine were still continued; but it was necessary to interpose a laxative every third day, otherwise his belly became tense and painful.

In this way he went on for fourteen days from the separation of the gut, with every appearance in his favour. The fever and flux, pain and uneasiness in the abdomen, had been entirely removed. Urine always passed freely, and without pain, and he had recovered his appetite and a considerable degree of strength, when I was disabled by sickness from attending the hospital. Soon after this he had become worse, and was complaining again of pain and tension in the abdomen; and I understood that his physic had not been regularly continued, but in place of it opiates to allay pain and procure sleep. On the 4th of December, on sending again to inquire for him, I was informed, the pain of his bowels had entirely
left

left him, though his belly was much swelled, and that he had but little discharge by stool; that his looks were bad, and his pulse very low and weak. From this account, it was easy to foretell his fate, which the same night concluded, happily, perhaps, for himself; though I once considered him as a gained case, and was anxiously contriving the best means for preserving the passage, and how the distress of a constant *stillicidium alvinum* might be best prevented.

SOME OBSERVATIONS ON THE OTHER
BILIOUS DISEASES OF INDIA.

TRUE and formed jaundice occurred at the hospital, in some instances, where the whole skin, eyes and urine, were tinged with a deep yellow colour. This appeared, in all the cases, to arise from a redundancy of bile, without being attended with obstruction of the gall-ducts.

It was soon and easily removed in them all by a few purges, composed of mercury, squills and
soap,

soap, followed by the exhibition of bitters. But where any degree of fever or quickness of pulse were present, two or three doses of Soluble Tartar, and Manna with Tinct. Rhei, were always premised.

Ten or twelve cases of intermittent fever were met with; but there was not one of them that did not arise from disorder or redundancy of the bilious secretion, or from obstructed viscera. The type was regular in none. Quotidians changed into tertians, and *vice versa*. The intermissions were not perfect. The patient complained of headach, want of appetite, oppression of spirits, nausea and griping pains, or had an irregular flux; sometimes a hard or tender liver.

No perfect or lasting cures were made by bark, unless a long course of purging had gone before it. It had more or less effect in stopping, or suspending the fits for a time; but very often it only rendered them more irregular, or, what was worse, it changed the disease into a continued fever.

It was not thought safe or proper in any case, to exhibit bark without a frequent alternation of purgatives, or without being combined with aromatic

matic seeds, and vitriolated or soluble tartar. In one case of regular tertian, which was supposed to be simple; it was thought the bark had made a perfect cure, and the patient was discharged under that idea: but he was returned to us not many days after, under a most violent bilious fever; with tumor, tension, fulness and heat of the abdomen, loaded yellow tongue, and such a degree of wild delirium, as rendered him perfectly unmanageable, so that little or nothing could be done for him; and he died in two days after his second admission, —a sure proof that the source of his disease was deeper than had been at first suspected.

In most instances, this disease was removed by a course of purging alone: or, if it proved obstinate, especially if the liver or belly felt hard, or enlarged or tender to the touch, a course of mercurial alteratives, with purges occasionally interposed, was certainly successful.

DISEASES OF THE THORACIC VISCERA.

SUCH cases were exceedingly rare, or rather never appeared at all under an idiopathic form. Pulmonary consumption was wholly unknown.

There

There were several cases, where matter collected in the liver, eroded the diaphragm, and the lungs were wasted, and spit up by coughing. Only two cases of catarrh, with cough, and symptoms threatening pneumonia, by being neglected, were met with ; but both of them were easily cured by blistering, and the common remedies for that affection.

RETURN FROM INDIA IN THE MEDEA
FRIGATE.

For a considerable period after leaving the Indian seas, a tendency to the diseases of that climate, and a bilious diathesis, were observable among the seamen.

We had simple bilious fluxes ; fluxes connected with old standing obstructions of the liver and mesentery ; and a few cases of acute hepatitis.

The captain's steward had long laboured under one of these old standing obstructions of the liver, which do not readily terminate in acute inflammation, but which are often attended with long-continued

tinued ill health ; and produce occasionally very untractable and dangerous disorders. He had been on shore attending on his worthy and benevolent master, Captain, (now Admiral) Sir Erasmus Gower, where, to his other misfortunes, he had contrived to add a confirmed pox. When he came on board, he was attacked with bilious vomitings, and an irregular flux, and was altogether in so reduced and impaired a state, that little was expected to be done for him, beyond palliating his complaints. As we approached the Cape, his disease put on the form of a tertian intermittent ; with the fits at first pretty regular ; but they became less so as the disease advanced. They were so violent as to make it doubtful, whether he might support them long, unless they could be mitigated. A mild emetic, and several purges of soluble tartar with manna and magnesia, were prescribed for him ; and at last recourse was had to bark, with vitriolated tartar, and infusion of chamomile. This suspended the fits for a week ; but at the end of that time he did not look better, and they returned with greater violence than ever. After a few repetitions, the disease changed into a continued fever, with a putrid bilious flux, which lasted for two months.

His

His stools were at first thin ; almost black, highly offensive to the smell, and attended with much pain, tumor and hardness of the belly. But he never complained of any pain in the region of the liver, unless when it was hard pressed ; though it was certain the foundation of the whole lay there. By the time the ship reached England, which was in exactly four months from our leaving Madras, his complaints had been in a great measure removed. His stools had become nearly natural ; his countenance was putting on by degrees the look of health, which it had long wanted ; and he had recovered his appetite and so much strength as to be able to walk the decks.

The treatment of this case was throughout the same as we followed in the India bilious fluxes ; with only this difference in the choice of laxatives, that a saline mixture, with about half a grain of tartar emetic, in divided doses through the day, was frequently employed, and answered the purpose of moving his bowels as well as any. Great and repeated benefit was also derived from blistering the abdomen, whenever severe pain and griping, referred to a particular spot, gave reason to suspect the existence of topical affection there.

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The only radical cure for his complaints would have been a gentle and long-continued course of mercury; and this could now have been undertaken with safety: but the ship being to be paid off, he was sent to Haslar Hospital, where he did not long survive.

GENERAL OBSERVATIONS.

IN many late communications from India, we find DYSENTERY (of which we have said nothing) so frequently spoken of as one of the common and ordinary diseases of the country, and without any thing stated to distinguish it from this disease, as it appears elsewhere, and has been described by former writers, as to render it necessary to subjoin some observations to explain how this has happened; and also to shew, why here, and no where else, mercury and the nitric acid have been employed, and with so much success, in its cure.

By consulting Dr Clark's Remarks on the Diseases of India, and two Memoirs on the Health of the 88th Regiment, by Dr Macgregor, published

in Dr Duncan's Annals, and in the third Number of the Physical and Surgical Journal, we find from their dissections in the complaint which they uniformly call *Dysentery*, the very same diseased appearances as were discovered by us on dissecting the bodies of those who died of bilious and liver disorders; viz. inflamed or ulcerated liver, a diseased state of the mesenteric glands; inflammation and thickening of the intestines, with effusions of blood between their coats; erosion, ulceration of the internal membrane, and sometimes sphacelus and gangrene. But with dysentery, as it appears in all other countries, liver-disease is rarely found connected; and the intestinal affection is in a much inferior degree, or confined more to the internal membrane.

They describe the stools as being copious and liquid; frequently bilious; and never as containing scybalæ. Dr Macgregor says, "In 500 cases, he does not think that scybalæ were passed in six of them." This diseased condition of the intestines, and the dysenteric symptoms which sometimes took place to a considerable degree in all bilious fluxes, we considered as the natural and necessary consequences of diseased bile and vitiated

ted secretions, acting on parts highly irritable, and therefore much disposed to disease, as almost the whole abdominal viscera seem to be in India. Topical disease of the liver, we did not consider as a cause of fluxes, or of dysenteric symptoms in them, in any other way than as giving occasion to vitiated and depraved secretions. But a sufficient distinction is in my opinion to be made between the *bilious* and *hepatic fluxes* of India, and *dysentery*, from the following considerations.

In those that depend on simple disorder of the secretions, and where the liver is not primarily affected, there is always much more disturbance and disorder in the functions of the stomach, and upper part of the intestinal canal,—bilious vomitings and dejections, with stomach and bowel sickness,—than takes place in dysentery; and the disease resembles much more cholera morbus.

The disease sometimes terminates, and health is restored, by the first evacuations, without dysenteric symptoms ever appearing, or it runs on to speedy inflammation and gangrene, with a putrid bilious flux; and although in such fluxes, there is generally some fever present, it is only accessory or accidental, and is never of any regular type or du-

ration. The stools are generally of a deep yellow or green colour, and seldom, in the early part of the disorder, mucous; nor is tenesmus ever an early symptom. For the most part, they are easily procured by the gentlest laxatives; and when not interrupted by abdominal spasms, copious and liquid, never scybalous: and that kind of dysentery which arises in camps, hospitals, and crowded ships, is distinguished from all other fluxes, in being highly infectious; whereas those of India, by all concurring accounts, are never so in any degree. Fluxes properly hepatic have the symptoms somewhat varied, but are clearly referable to a distinct affection different from the dysenteric.

Whether dysentery, under its true and proper form, be a native disease of India, or of any tropical country; or if it ever appears in them without being imported from colder latitudes, I am not prepared to say. In crowded ships, or in similar situations, it may perhaps be generated, (especially among people newly from Europe) any where. But I am not disposed to think it a coast disease of India. That which arose in the fleet that sailed from England under the command of Commodore Johnstone, gave

gave place to other diseases long before we reached the Indian seas.

In Dr Macgregor's first report, it is stated, "That the diseases far most prevalent" (on the Bombay coast) "and the most deserving of serious notice, have been dysentery and hepatitis; "and if not the same disease, the two are most clearly allied in this country. Five hundred and forty-four cases occurred during the year 1801, and of these, forty died. The bodies of twenty-two were inspected after death, and the liver was found diseased in sixteen." It is from this inspection that we are informed, that "dysentery is almost always connected with a disease of the liver as a cause." Yet it is afterwards said, that "in other cases, the liver was found but slightly, or not at all affected;" but the morbid intestinal affections we have mentioned, were found in all of them. With regard to the cure, speaking of both under one head, viz. hepatitis and dysentery, it is said, "A large proportion of the cases were cured by remedies that have never been supposed to operate on the liver. But it must be confessed," (he adds) "that our cures by these remedies were more frequent and certain, soon

“ after our arrival in India, than they of late have “ been.” The remedies employed for the first three months are enumerated, and it is stated, that they were used with considerable success; but it immediately follows, “ Yet we soon found, that “ mercury and analagous remedies,” (viz. the nitric acid) “ were to be the most generally relied “ on.”

Much more to the same purpose, will be found in Dr Macgregor's Second Memoir, and in Dr Clark's Remarks; sufficient we think to warrant the conclusion, that the disease which they uniformly called Dyfentery in India, is in its nature, symptoms, proximate cause, and also in its method of cure, entirely different from that which has been described under this name in all other countries; that it differs in nothing from bilious and liver-fluxes, so commonly to be met with there; and that if this name is to be applied, it ought to be joined with one which may serve to distinguish the disease from other varieties,—such as the *Hepatic* or *Bilious Dyfentery of India*.

From the known effects of mercury in the cure of liver-diseases, and in the removal of mesenteric obstructions, we will have an easy explanation, why,

why, in all severe cases of dysentery as it appears in India, mercury and the nitric acid were to be the most generally relied on for their removal.

How far these remedies, in moderate doses, may be found innocent, or useful for the cure of real dysentery, or in all its combinations, I do not undertake to say; but I am persuaded, if given in doses that have been prescribed for what has gone under that name in India, they could not fail in many instances to be exceedingly hurtful.

In fluxes purely bilious, I sometimes thought that mercury even produced good effects as a simple corrector, from an alteration for the better being not unfrequently made by it on the alvine discharges, before it could have entered the system in such quantity, as to affect the state of the organs concerned.

Both Drs Macgregor, Clark and Chrystie agree in stating, that dysentery is never contagious in India. I observed no evidence of the existence of this in any of the diseases to be met with there; and I am doubtful, whether, with the exception of the exanthemata which appear to be so in every country, there be any others of that description.

This, were it confirmed, might appear a striking peculiarity, since we know that in countries under a similar latitude, and under a similar degree of heat, some of the most active and virulent contagions, are in a manner endemic; and are supposed only to appear in colder climates by transportation. Thus, Yellow Fever has become endemic in the West Indies, and the Plague in Egypt and the Levant. But plagues and contagions appear to have been in former times equally common to all the countries of Europe; and there are some reasons to conclude, that the yellow fever was first imported to the West India islands from the southern States of America. The Turks are but a late colony from the north of Asia, and the population of the West Indies is constantly recruited by supplies from Europe or North America. It is well ascertained, that these contagious diseases produce the severest effects upon new comers, or persons whose system of fibres has not been subdued and relaxed by a residence in a hot climate, but from the nature of the countries in which these diseases have become fixed, and from the season of the year, viz. the autumnal, at which the contagion spreads and becomes most active, there

is some reason for supposing that both plague, yellow fever, and perhaps the late Cadiz, Malaga and Gibraltar fevers, though each possessing a specific contagion *sui generis*, may yet have so far a common character, that it is contagion combined with, or engrafted on a bilious diathesis, or vitiated state of this secretion: Hence, perhaps, the reason why some of them are to be found at all seasons of the year, in countries where this is a constitutional temperament; and the difference, and even opposition in the plans of cure that have been followed, has necessarily arisen from the variety that takes place in relation to climate, season, and the state of the weather, as disposing more or less to bilious redundancy, inflammatory diathesis, a rich and dense blood, or a rigid system of fibres.

One reason why contagious diseases prevail less in India than in other similar latitudes, may perhaps be the greater distance from Europe; the long tract of navigation mostly within the tropics, which allows time for dissipating all seeds of contagion from that quarter, and for taking off the temperament of body most congenial to it, and for assimilating the habit to what is the morbid constitution of the country. Should such diseases ever
become

become endemic there, the probability is, they will be imported from the north.

It remains to subjoin some observations on Bilious and Liver Diseases, as they appear in our own country.

To a stranger, the distinguishing symptoms of liver inflammation in India appear at first not a little obscure, from the prominence of the secondary and symptomatic affections with which it is generally attended. In Europe, the difficulty is rather increased from their variety. Here we often meet with pulmonary affection combined with it, to such a degree as to render it difficult for us to say which is the radical and which the sympathetic disorder; and wherever there is much delicacy of constitution or phthical tendency in the habit, we are always uncertain of which the danger may be the greater; or how far the measures we employ for the removal of disease in the one organ, may not foster or aggravate that in the other. The disease is in general more of a chronic nature. A variety of symptoms, referable to other heads, as those of dyspepsia, hypochondriasis, and what are called the nervous affections, are sure to combine
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with it ; and the radical disease is often so slightly marked, as to render it not a little difficult to say what or which is the principal or primary among them.

Bilious redundance and depravations, which give a standing character to many of the India diseases, are there also pretty distinctly pointed out, from the appearance of the excretions, and from the colour of the tongue, eyes and urine.

Many European disorders have the same origin ; but the marks of it are not so well expressed, or they are of a more temporary standing ; or the same cause is found to operate in a different manner, and to produce more varieties.

Of these, it may be sufficient to notice the following.

Persons returning from either India, often bring home with them a constitution, wasted and debilitated by the diseases of those climates ; from which they recover with difficulty, or not at all. It is not, however, often that a simple bilious diathesis continues long at home, where there are no obstructions in the liver or mesentery ; and persons who have been wasted and reduced to the last degree by India fluxes, sometimes recover perfectly

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at home, and enjoy good health, and as firm a state of the stomach and bowels as ever.

A disposition to redundancy of the bilious secretion, and to cholera morbus, is observable during the autumnal months, in all the southern countries of Europe. The disease is, in general, very manageable, under the use of the same remedies as we employed in the milder bilious fluxes of India. Small doses of ipecacuanha and rhubarb are very useful; and the best form of these is when made into small pills. Doses of soda phosphorata, given in beef-tea, form one of the mildest and most lenient laxatives we can employ, unless in very irritable states of the stomach. It is not very certain in its operation as a purgative; but in repeated small doses, is the best laxative we can use in all cases where blood is passed with the stools. Rhubarb and Pulvis antimonialis mixed together, may be employed for the same purpose; or, what answers as certainly as any, when the stomach is unsettled, a saline mixture with calcined magnesia diffused in it. A proportion of tincture of jalap added to this mixture and well sweetened, makes a very effectual purge, and is one as easily exhibited to children as any I have tried. Plentiful

tiful dilution is a material part of the treatment. Opiates are but little wanted, and the premature use of them is often hurtful.

In some habits, we find a constitutional tendency to bilious disease, operating entirely in a different way, and which is often of long standing. It is most common to females about the middle or advance of life, but never remains to old age. Far from inducing purging, the bile takes a contrary direction, and, by regurgitating into the stomach, occasions headachs, sickness, depression of spirits, with nausea and bilious vomitings. This comes at irregular, sometimes at lengthened intervals; lasts for one, two or three days, and then goes off, sometimes with, but often without, a bilious purging, and without much injury to the health, till the return of another fit.

I have never succeeded in doing any thing material to correct this disposition. Keeping an open belly is always of consequence; as the patients are disposed to be costive, even while under the complaint. For this, I have found a pill composed of equal parts of aloes, jalap, and calomel, or of Extract. Colocynth. comp. *Pb. Lond.* with calomel, two or three for a dose, answer well. And

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some patients have found benefit from using equal parts of Pulv. Rhei, Magnesia usta, Flor. Chamæmel. and Rad. Zinziber., as much every day, or every other day, as opens the belly gently.

Such disorders as have been mentioned, may all be referred to simple redundancy or regurgitation of bile, but little vitiated or altered in its quality. But there are others to be met with, which seem to originate in highly depraved states of this fluid, together with indigesta or disordered aliments operating lower down in the alimentary canal, but attended also with much stomach disorder, and which are sometimes carried to a very dangerous and fatal height. This, too, occurs most frequently to females, especially to those who are subject to costiveness, and to disorder in the digestive organs; to what they call *stomach cholics*; to acid eructations, and dyspepsia. They are seized with a severe pain referred to the region of the stomach, the left side, or upper part of the abdomen, often without any warning, and with spasmodic stricture, or what they call a *severe cramp pain*. On examination, the muscles of the abdomen are sometimes found to be spasmodically affected, and it is strongly retracted. Severe retching and vomitings
come

come on. The ejecta, sometimes bilious, but oftener highly acid, or of a pungent and acrimonious taste and smell. In the worst sort of cases, there is great sickness, with debility, and a weak faulting pulse; faintings and coldness of the extremities, with a pale hippocratic countenance from the very first. The spasmodic affection, perhaps, goes off, and the abdomen rather becomes tumid and painful, with flatulent distention and borborygmi. Sometimes the patient is cut off in this way before the bowels are fully moved, to ascertain the state of their contents. In cases less severe, and where this is effected, the evacuations are offensive to the smell, green, fetid or sanious, and the complaint is removed by a course of purging. Where death takes place suddenly, the person is generally supposed to have been cut off by gout, or by cramp in the stomach. Enteritis or ilius do not attack so very rapidly, nor do they prove so speedily fatal; and it is not conceived, that bile or indigesta, confined in any part of the alimentary canal, can acquire an acrimony that shall produce such effects at once, and without much previous warning.

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But this is not the only case in which we find that the causes of disease do not produce their effects till they are accumulated to a certain force. Nature will do much to resist or obviate impressions that are hurtful, provided she is not surpris'd and overwhelmed at once. How she effects this resistance in the case before us, admits of an easier explanation than we are able to give in many others. The first passages are all lined with a slimy mucus, to defend them from acrimony. An increase of this secretion will take place, wherever, in any of the turns of the intestine, acrimonious indigesta begin to be accumulated. When these come to be carried suddenly forward to another portion of the canal, it is then only the full effect will be produced. We had occasion to see this often verified in the bilious diseases of India, where we were sometimes well assured of the existence of highly acrimonious accumulations in the turns of the intestines. The patient would have but little or no pain, griping, or sickness, while his bowels were kept quiet and undisturbed by purgatives; but the moment their contents were put in motion, every thing was suddenly reversed, and the patient was sometimes as quickly and effectually killed by
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it, as if a strong sedative poison had been artificially injected into his intestines. Every person, some time in his life, may have felt what will serve to confirm what we are endeavouring to illustrate. Something has been eaten which has disagreed with the stomach; that is to say, has not taken on the proper chylifactive digestion, but has undergone some other change, and generated an acrimonious mixture; and some of the severest cases of the disorder we are describing, can be plainly referred to this cause. Nothing perhaps is felt till the next day, or later. Sharp cholic pains, accompanied with bowel-sickness, and with a sense of motion through the guts, begin to be felt. This proceeds lower and lower down, till a few loose stools removes the whole. The origin of the complaint is made evident, in other cases, from griping pain, and a feculent purging, having preceded the attack. This will be suspended during the severity of the stomach affection and the spasms, but is renewed again when these go off; and the complaint is removed by the assistance of purgatives. We are in danger of being misled by the spasms, which the patient himself refers to the stomach and internal parts; but in this he is mistaken. They affect

only the abdominal muscles, and are only symptomatic, arising from irritation in a distant part; just as happens in tetanus, or as we found them in the *mort de chien*. The offending matters are not in this case lodged there, but in the turns of the duodenum or jejunum, and the stomach acts readily in ejecting the contents, and admits of being filled with drinks, which it could not be, were it spasmodically contracted. Filling the stomach with warm weak tea, is often of service in abating the pain and spasms.

Another way in which we are ready to deceive ourselves, if we are not on our guard, is by dissections. The patient dies. The body is permitted to be opened, and this it is supposed is to explain every thing. This is done 48 hours perhaps, or longer after death. The turns of the intestines, or some portions of them, appear suffused and red, or approaching to a purple colour, with the coats thickened, and the mesenteric vessels turgid; all this heightened by the contraction of parts, and coagulation of the blood, which takes place after death. These are supposed to be the effects of inflammation, and the patient is thought to have died of enteritis. But the case is totally different. Inflammation

mation of the intestines is quite a different thing, and never proves so quickly fatal. These appearances are all the effects, and not the cause of the disease. They are the consequences of pain, stimulus and irritation, acting on delicate and sensible membranes; and will be found in every case of sudden death, from any abdominal disease whatever, or from any kind of poison taken into the stomach. The pulse in this complaint, is never hard or throbbing, as in enteritis, and blood drawn in it, never exhibits any inflammatory crust; nor is there any difficulty in moving the belly, when the stomach will retain purgatives, as there is in that disease. Much experience indeed does it require, and many dissections of similar cases, to enable us to judge and distinguish accurately between the causes and effects of disease; and even between the effects of disease, and the effects of death. The dissection proceeds no further than we have mentioned; and if it did, it is but a very slight judgment we could form from appearances, of the presence or absence of noxious acrimony in the intestinal contents. Chemistry itself has not yet imitated, nor can it be supposed ever to imitate the operation by which chyme is converted into com-

pletely animalized chyle; far less the morbid alienations of this process. What life is, or what the influence it exerts on the operations of a living system, or in what way it is acted on, either by stimulants or sedatives, are all matters that seem to lie beyond the sphere of our investigation. We can do little more than observe and investigate facts. We are pretty certain, that of all the secreted liquors, none are more susceptible of morbid alienations than the bile; that in a healthy state, it is a necessary and important agent in the chylous process, but when it is altered and diseased, there is no saying of what kinds, or to what extent, acrimonious changes may be produced on the digestive matters.

Hence, in the cure of diseases referable to this source, our indications are confined to the objects of diluting and expelling what is noxious. Where the nature of this is unknown, demulcents and correctors in a proper sense, can have no place.

In several cases, however, even this is not to be undertaken without precaution, and is to be accomplished only in an indirect or round-about way. The irritability of the stomach must be taken off, before we can introduce either diluents or purgatives

tives with any effect; and the irritation arising from pain and spasm, must be allayed or mitigated in order to prevent the accession of inflammatory affection. Nothing, in full and strong habits, or where the pulse keeps tolerably firm, and where there are no fainting fits nor coldness of the extremities, will conduce so effectually to the last purpose, as full blood-letting. But where the circumstances are reversed, it can do no good, and the blood is often with difficulty made to flow, from the sickness and faintings. In such circumstances, a large blister applied over the abdomen will have much more certain effects.

For the purpose of taking off the irritability of the stomach, and removing the vomitings, it is seldom that, under proper management, we are disappointed in employing opium. It is almost needless to say, that success is not to be expected, in the ordinary way of giving it by the mouth. Rubbing two or three drachms of laudanum, mixed with warm spirits, on the stomach, will sometimes answer tolerably well. But a far more certain effect is to be expected, from exhibiting it by glyster. From 60 to 100 drops of laudanum, (according to the severity of the disease, and the patient's

previous habits with regard to the use of opium), in a small quantity of thin and liquid starch, forms a proper glyster. It will be retained in the rectum, and seldom fails to procure a complete remission of the spasms, pain, and retching. The stomach will become steady enough to retain purgatives in moderate but continued doses, with mild diluent liquors, in small quantity at a time, until the belly be sufficiently opened; always preferring, both with respect to form and quality, such as pass the stomach with the least irritation; and continuing them, till we are sure the bowels are evacuated from end to end. Glysters, though they may be useful to begin and promote evacuations, have only a partial operation on the bowels, and cannot of themselves secure our purpose. A return of pain and retching may occasionally take place, and require a repetition of the opiate-glyster for their abatement, with a repetition of the purgative medicines afterwards; but in this case, it is necessary to watch the state of the pulse, lest the continuance of irritation should light up inflammation; which free and timely blood-letting only can prevent.

Another reason for our prescribing opium is, that by its acting much more on the sentient, than
upon

upon the moving power, it so far prevents irritation, as to allow of acrimonious matters being drawn off through the intestines without danger, which would ruffle and stimulate extremely, if a temporary reduction was not thus induced on the sensorial power. In other words, the system may be kept a good deal under the influence of opium, without our losing much of the effect of purgatives.

A repetition of the purgatives, or at least attention to preserve an open belly, will be always necessary for some time. For, to whatever cause we may impute the disease, not only will the aliments at the time in the bowels, be diverted from the proper chylifactive process, but such as are taken in during its continuance, will not undergo that process perfectly; or the action of the intestines will be weakened, and they will require an additional stimulus to secure the proper propulsion of their contents.

We do not intend to maintain, that every case of this disease, as we have described it, is to be with certainty referred to irritation from acrimony generated in the first passages. The passage of gall-stones, through the biliary ducts, or of urinary

concretions by the ureters, the displacement with strangulation of any of the bowels, will be accompanied with symptoms very nearly similar: and pain, especially when very acute, is not always referred with much distinctness to the place of the offending cause, even by the patient himself. But in all *these* cases, there will be some hardness or fulness in the pulse; and blood drawn during the complaint, will exhibit more or less of an inflammatory crust. There may be retrocedent gout, or there may be a spasmodic or nervous affection, such as we see in some hysteric disorders somewhat resembling this: But in all of them, except perhaps in the case of the gout, of which I say nothing, because I never saw it, or in the passage of gallstones and urinary calculi, we can never consider our patient as secure, until his bowels are fully cleared; and the chief part of the cure must consist in purging*.

Another set of diseases arising in this country from depravations of bile, we meet with among infants.

* See Appendix No. II.

fants. In the fetus, many of the internal organs are imperfect and inactive. Until birth the animal has not yet arrived at the exercise of half its functions. An entirely new and different way of life is then entered on, with a different distribution of the circulating fluid; and an increased supply of it to most of the internal organs, in particular to the liver. Plethora, then, or an unusual determination of blood to the abdominal viscera, is a necessary consequence of this change, and precedes that which, in growing animals, takes place towards the head. All the secretions performed in this part of the body, seem to be in excess, compared with those of the adult. Hence the frequency of jaundice, of the red and yellow gum, the deep yellow or green colour, so prevalent in the stools of infants, the frequency of loosenesses, gripes, choleric pains and fluxes, with the strong tendency of all their diseases to fall upon this part of the system. Acidity in the first passages, from the nature of their aliment, irritation from teething, from abounding slime, or from worms, may give occasion to many of their complaints. But very often they have their origin from a different and more dangerous source, viz. irregularity, excess, occasional

fional obstruction and depravations in the bilious secretion.

Disorders arising from this source may be in every degree. They always become serious, when, with some vomiting or purging of highly-coloured bile, or at least with more or less bowel irregularity, the belly becomes tumid and painful, attended with fits of crying, seemingly from cholic pains; with some interruption or irregularity in the urinary discharge; the bowels sometimes loose, at other times difficultly moved; with stools of a green colour, and of a broken consistence, intermixed occasionally with a white, thick and plastic matter, and green slime. If occasional rushes recede, and the healthful appearance of freckling on the skin goes off, and if it becomes pale and white, with a livid colour about the eyes and lips; and if the child becomes unable to suck, moans and whines in a weakened and altered tone of voice, much danger is always to be apprehended. If the disease proceeds, the eyes become fixed and staring, with the pupils dilated; and much anxiety and distress is painted on the countenance. The pulse begins to sink, and the extremities become cold and livid, with cold sweats over the body. Irregular catch-
ing

ing convulsions of the muscles, of the fingers, arms and face, come on, indicating the approach of death; and the abdomen swells and becomes livid, sometimes before, and always soon after that event.

This is the disease called by mothers and nurses in Scotland, the *bowel-bive*. It is a dangerous inflammatory bilious disorder; and when not soon relieved, very frequently proves fatal. It is brought on by disorders of the milk, by exposure to cold, and living in low, cold and damp situations.

Every thing here depends on free and timely evacuation of the bowels, repeated as long as green, viscid, broken, white and plastic matter is discharged. Bleeding with leeches if the child is full and strong; warm bathing; and blistering the abdomen. In weakly children, rubbing the belly with warm spirits may be employed. It proves little stimulant in this way; and may be used with advantage in many of the bowel-complaints of children. No purgative answers better in this case, or is more to be depended on, than calomel: but it ought always to be remembered, that in some of the bowel-complaints, even of very infants, full and effectual evacuation is not to be procured, except

cept by the exhibition of purgatives in very large and repeated doses. This may be always presumed, when the stools are plastic and slimy; causing the cloths on which they are received, to cohere and stick together.



*Copy of a Letter to Mr W—— Assistant-Surgeon
Madras, &c.*

“ SIR,

“ I have been favoured with yours by Ensign G——. As your letter shews a candid inquisitiveness that merits information, I shall be somewhat explicit in answer.

“ Mr G——’s is one of these cases, which occur every day in this country, and oftener than is imagined in other hot climates; not seldom I believe in camps, and in particular seasons in Europe, when bilious disorders prevail. But it is generally overlooked, on the supposition that fluxes are simple diarrhœas, arising from miasmata, putrid bile or crudities, or something acrimonious in the first passages; and of course are treated with
emetics,

emetics, laxatives, antispasmodics, and bitters. Indeed, if they were only produced by such simple causes, we might generally expect speedy and effectual cures, by a perseverance in the above remedies, properly adapted.

“ But on the contrary, we see them often run on to a great length ; and often of precarious issue : and to our mortification find, that such treatment proves palliative only for a day. This being evidently enough the case, we ought naturally to conjecture, that the source of this obstinacy must be looked for, beyond the intestinal canal. Such is really the fact. A deep-rooted obstruction generally supports the disease, in spite of unwearied evacuations ; and all assistance becomes only palliative till this is removed.

“ A want of attention to this circumstance, allows fluxes to run on to the second and third stages as they are called ; but which in reality are no more than different stages of duration and weakness ; for the disease has been uniformly the same from its commencement, viz. An obstructed liver and mesentery ; but chiefly the former, with some degree of inflammation : The flux itself being little more than a symptom
of

of the disease, and the effect of diseased secretions,

“ We have seldom reason to be doubtful of this cause ; for if we have not pain to direct us, an experienced touch will discover the obstructions, the tenderness or enlargement of the liver. I say an *experienced touch* ; because it requires frequent practical examination, to satisfy one with respect to the different degrees of hardness, firmness and sensibility, that constitute a disease of this bowel.

“ However, appearances are seldom so equivocal, as to puzzle practice in general. I venture to affirm, that the grand source of health and disease, is connected with the natural or diseased condition of the liver ; and that every chronic or lingering illness, arises in a considerable degree from some defect there. In many acute disorders, it has also its share. But in every kind of sickness, whether local or general, that is peculiar to this country, it is material to examine it. For, no perfect cures can be made, without having a strict eye to it.

“ The flux he has laboured under for 15 months, might originally have been cured in as many days ; and even now will give but little trouble, as he

has

has strength enough left to bear the operation of medicines.

“ His case from the beginning to this time, has been an obstructed liver ; and could have been at no time effectually cured, but by mercurial deobstruents. A strict diet, exercise, palliative and laxative medicines, to blunt and evacuate bile disordered in its secretion, when the inflammatory tendency had ceased, might relieve for a time ; and even produce a temporary cure. But they never could restore him to that health, or the vivid clearness of countenance peculiar to health ; nor even prevent the relapses he has been subject to, during so protracted an illness, at so many different periods of which, had his feelings been questioned, they would have been sufficient to have pointed out the source and cause of his disease. For I find by his own account, his case has been in the beginning a great deal inflammatory. At present, his liver is only enlarged and hard, but no pain there. His flux is accompanied with gripes and tenesmus, and his look is bloated and fallow. His urine, too, is very high-coloured. This appearance, by the by, never fails to attend liver-disorders of any standing ; though it now and then happens in nervous habits

habits, and in diseases of the bile itself. But in general, it is a material index to diseases where bile prevails.

“ When obstructions of the liver exist, the first digestion goes on very imperfectly ; therefore, the first indication in this case is, to clear the bowels of phlegm, and other causes of irritation. The second, to remove the obstructions of the liver ; also to restore the lost tone of the intestines, and to strengthen the system in general.

“ In recent cases where tenesmus is troublesome, castor-oil is a good purge ; it operates effectually, and discharges much gelatinous stuff, from the flexures of the duodenum and colon ; and as it enters not the blood, it creates little disturbance in the system. It is therefore in recent cases a good purge. But in his case, where the bowels have been much relaxed and weakened, rhubarb, quickened with calomel, or soluble tartar, is better to answer the first intention ; repeated once, or oftener, according to the nature and complexion of the excretions.

“ Proper evacuations being made ; the second indication, of removing the obstruction of the liver, is to be answered by mercury, administered but
slowly ;

slowly ; as his complaints are of long standing, and his habit much relaxed. A drachm of mercurial ointment may be rubbed into his side daily ; and ten grains of a pill composed of equal parts of rhubarb and calomel may be given, one night and morning, or the following :

℞. Species aromat. gr. iv.

Vitreum Antim. cerat.

Calomel. præp. utriusque gr. iij.

Confect. Alkermes, q. s. ad bolum, man. et vesp. fumendum.

This is to be continued till the mercury fixes in his mouth. And by this means the obstructions will be gradually removed ; and the load of ferous humours that flow to his guts, in their present relaxed and irritable state, will be diverted to his mouth ; whereby his bowels will gain a truce from evacuations.

“ As the obstructions remove, the urine and stools will grow more natural, and every secretion less diseased. In these chronic obstructions, the friction in the application of the mercurial ointment, is also not without its use.

“ As you desire my opinion of Opiates and Astringents, I shall give it you, from experience, in a few words.

N

“ Opiates

“ Opiates are dangerous medicines in fluxes, and always to be used with fearful caution. Early in the disorder, where the disease is putrid or inflammatory, they should be given in no situation. Suspending evacuations for a night, may bring on a fatal inflammation. In chronic cases, freedom from gripes, the smell and nature of the evacuations by stool, are the only criteria to direct their use; for no retentions are to be made of any thing acrimonious. In short, in a climate where all the capital disorders arise from putrid bile, or obstructions, nothing must be shut up.

“ As to astringents, they are often dangerous medicines in fluxes, and always precarious. They can be used with no kind of safety, till all kinds of obstructions are removed, and with them every thing that is putrid and diseased. In the acute cases they have fatal effects. In the more chronic they pamper and protract the disorder; with all its concomitants, gripes, tenesmus, &c.

“ When the disease becomes a simple diarrhœa without gripes; or these originating only from wind, equal parts of Prunorum Sylvest. and the Conserv. Aurantior. or Confect. Cardiaca is an elegant and safe astringent. The Tinct. Cascarillæ,

cold

cold bathing, and exercise, recover the constitution from relaxation.

“ Having made these remarks on opiates and astringents, I come next to the second indication in the case of Mr G——; the obstruction of his liver being removed, and the other complaints abated, it is to be answered by mild bitters of the least astringent kind. Bark, which in most cases of weakness and irritation, is an invaluable medicine, is in liver diseases a poison. The Flor. Chamæmel. Sem. Carvi, Sal Polychrest. of each ʒi. , will make a couple of cups of bitter tea, to be drunk before and after noon. This with proper diet and exercise will be sufficient to restore him,

“ Captain Long, whom you may know, laboured under a disorder of the same kind, but worse, being complicated with much weakness, and the loss in a great measure of the use of his extremities. The source and cause of his complaint had also been overlooked, and he also had trifled on with the usual medicines for fluxes, till he was reduced to extreme weakness. After reducing the obstruction of the liver by mercury, putting the

N 2

patient

patient in a proper train for the use of astringents, his cure was effectually completed, with

℞. Cons. Aurantior. ℥i.

Pulv. Cort. Per. ℥℞.

Pulv. Rad. Serpent. Virg. ℥ij.

Tart. Vitriol. ℥i.

Syr. Aurant. q. s. ad electuar.

Of this he took ℥℞ in the day, and continued it some time. And every night when his excretions were not free, he took 10 grains of a pill composed of aloes, soap and calomel.

“ These are two instances of liver fluxes, which you have seen. I have met with numberless unfortunates from camps, and different parts of the country in the very same predicament; who have with great difficulty survived this wreck of constitution.

“ But it is impossible in a letter to enumerate the different varieties of complicated bilious disorders, that practice daily presents to observation. Nor can I in this way convey a proper idea of the nice and particular treatment, diseases arising from putrid bile and obstructions require. Different circumstances and constitutions diversify prescription. Capital diseases require the most circumspect attention. Omissions or mistakes are not to be remedied

medied by any future efforts; especially where putrid bile lurks in the habit. Disturbing it suddenly by evacuations, putting it in motion before it is well diluted and corrected, proves often like poison, suddenly fatal. Of this I have seen instances in men who were not at the time confined to their beds. As a striking instance, also of the attention necessary in the most trifling complaints arising from bile, I can assure you, I have known what are called *trifling medicines*, prescribed for ailments which were considered equally trifling, productive of very serious disorders.

“ For example, I have seen a course of bitters, ordered for what was imagined a windy relaxed stomach, produce obstructions; and in inflammatory habits, a real inflammation of that bowel. Such accidents as these, awaken a man’s caution. But it is a practical fact, that no strong astringent bitter can be used here with impunity, unless the case is really simple relaxation. Mixing the gentlest kinds with neutral salts is only safe. Indeed, it is perhaps a problem in physic, how long the use of astringents may be continued with safety, or without danger of inducing some other disorder.

N 3 “ Before

“ Before I conclude this letter, though somewhat foreign to the subject of yours, I cannot avoid putting you on your guard against a disorder of the liver, which, from its being overlooked, I have once seen in Europe, and several times here, attended with fatal consequences. The complaint I mean, is what is called the *liver-cough*. The obstruction in this case, is pretty generally accompanied with some degree of inflammation and pain; though seldom acute, unless pressed with the fingers; or when the external membrane is also affected. But it often happens without pain or inflammation. The cough is entirely a symptomatic complaint, and is the misleading symptom of the disease.

“ The patient pronounces his own case a cold, and is put on a course of ineffectual pectorals, takes exercise, and shifts his situation for health, until his liver either suppurates, or becomes a mass of irrecoverable obstructions. In every irritable or inflammatory habit, any mistake at the commencement of the disease, is of the most dangerous consequence. The liver, diaphragm and lungs, adhere and suppurate. A purulent spitting succeeds; and instead of a pure uniform pus, the substance of the
liver

liver is expectorated with a deep hollow cough; in form of glandular membranes, of a purplish bloody parenchymatous look. This disease, like all other inflammations of the liver, is very tractable in the beginning by evacuations, relaxing antiphlogistic medicines and mercury.

“ Such cases as the above I have met with, and have been happy enough to effect some cures even in this advanced stage.

“ It is to be observed, in all disorders of the lungs of any standing, the liver is always affected; but in this case the lungs are but secondarily so, and never give any trouble, if the obstruction of the liver is removed.

“ In them there are neither tubercles nor infarctions. The breathing, except in inflammatory cases, is never affected, and the symptomatic complaint of cough and pain in the shoulder, may always be mitigated by lying on the back, with the head low, and the legs raised.

“ To the above I shall add another disorder, which is entirely of the liver kind.

“ Agues are by no means frequent in the dry sandy soil of this coast; but quotidian remittents often happen here, from inflammatory obstruction

of the liver. I say *remittents*, because the fever never goes entirely off; though the quotidian ague fits are very regular in their attacks. The patient in such cases tells you only he has got the fever and ague, with a pain at the pit of his stomach. But his report is not to be trusted without farther examination; both in the standing and lying posture. On pressing with your fingers towards his right side, he will complain of much pain and tenderness; and his urine will be very high coloured. Sometimes he will have a pain in his right shoulder; and generally he has a liver cough. This is a complicated case; though there is in reality no contra-indications in the cure of it. The inflammation and obstruction of the liver, are the proximate cause of the disease; and all its different symptoms. Venesection is immediately necessary; and if the stomach seems loaded, an emetic may safely be administered after it; but it should be such as will operate easily, and open the belly. Such I found the following in all bilious cases:

Vin. Ipecac. et Antimon. utriusque ℥ ss.

Oxym. Scillit. ℥ vi. M.

“Notwithstanding the continued fever, a drachm of mercurial ointment may be rubbed into the side,
 morning

morning and evening, after fomenting it. Saline draughts with nitre, or tartar emetic, ought to be given every three or four hours; and the bleeding repeated if necessary. The ague and cough require no attention. They will diminish as the mercury takes effect; and entirely cease when a spitting comes on. Any bilious attacks that happen during the interval, are to be relieved by emetics, castor oil, or soluble tartar and glysters, as circumstances may require. We meet here with quotidian agues of two years standing, attended with a very irregular state of the bowels, and on every accession of the fit, such an astonishing secretion of bile as to produce a real cholera morbus.

“ On the subject of agues I shall observe to you, that bark is seldom necessary in the cure of them; and often unsafe; except in cases of great weakness and relaxation, or where the nervous system is much affected. On the contrary, evacuants, neutral salts, and deobstruents are seldom ineffectual. However, where the indications are not sufficiently marked, and where difficulty arises about the propriety of exhibiting particular medicines, the following criteria, with restrictions, may serve as a guide.

“ When

“ When bark does not succeed in stopping the fits, and preventing relapses ; deobstruents, neutral salts, and relaxing medicines, with evacuants, according to circumstances, are more likely to answer. But whether in agues, or in diseases induced by obstructions of the viscera, if the urine is high coloured in the intervals of the fit, or during the course of the disease, astringents of every kind are to be avoided, as infinite mischief may be done by them, especially if the diathesis be inflammatory, or if putrid bile lurks in the primæ viæ ; from which often arises wonderful and astonishing effects in the system. Sudden fevers are lighted up, and all the variety of nervous affection ; according to the degree of its acrimony, and the peculiar idiosyncrasy of the patient.

“ The case of a gentleman who was under my care not many days ago, will exemplify this. He was young, healthy and florid, when he was suddenly taken ill with fever, dry skin, and his tongue as white as a sheet ; his urine like porter, with a highly alkaline smell. Great heat and fulness about the præcordia. Pulse sometimes high, sometimes low, but always as quick as possible. Great restlessness and agitation of his whole frame. Sometimes

times the deepest dejection of spirits, even to crying; sometimes raving, horrors and general spasms. Sometimes crying for wine to support him. Sometimes crying for water to allay an unquenchable thirst. All these transitions were displayed during my first visit, which happened in a few hours after his being first seized.

“ This appears clear enough to be a case of putrid bile, operating in the system; and is one of those cases, where the patient is either out of danger, or extinguished in a few hours.

“ The whole indication of cure in such cases is, to dilute and evacuate the irritating cause; by attenuating medicines, to quiet the disturbance in the system occasioned by it.

“ Stimulants have no place here, notwithstanding the variety of nervous affections. They unavoidably aggravate every symptom. Emetics ruffle too much to be ventured on, when the whole system is disordered; besides the danger of their setting in motion at once, a deluge of putrid bile, which is never done without instant risk.

“ For this gentleman I ordered a purging glyster immediately; and his legs to be fomented in salt and water; till a solution of one ounce of manna,
and

and half an ounce of soluble tartar, in twelve ounces of water, could be sent him.

“ Of this he was directed to take four table spoonfuls every hour, till it should operate four times ; which brought away some frothy bile of an intolerable stench, like the workings of a beer cask in its appearance. This was far from being sufficient to produce any considerable effect. He was however sensibly relieved, and it was no small satisfaction, from the nature of the excretions, to find the disease in my power. As soon as the effect of the laxative was over, I directed him to take every three hours, a table-spoonful of the following :

℞. Camphoræ gr. x.

Mucil. Gum. Arabic. ʒi.

Amygdal. dulc. decort. ij.

Terantur optimè simul, et adde

Jalap. Salin. ʒ x.

Tart. Emetic. gr. j.

Syr. Sach. ʒij. M.

This to be continued in the intervals of purging. and to use clear Rhenish whey as common drink. He passed a more tolerable night, less restless, less oppressed, and his head less affected. The day following

following he was indeed worfe. Another and more active purge was prefcribed, compofed of

Fol. Sennæ ʒj.

Mannæ ʒij.

Tart. Solubil. ʒiij.

Sem. Carvi ʒß.

Infufed in eight ounces of boiling water, one half to be taken early in the morning, and the other two hours after.

This operated five times. The stools were of the fame nature and fmell, but plentiful, and every fymptom abated confiderably. After the operation of this purge, his urine and tongue remained the fame ; but he was much more compofed, with fewer fpafms, and fewer attacks of the depression of fpirits. His fkin was moifter, and his pulfe regular and lefs frequent.

“ It only remained now to prepare the remainder of the bile for expulfion. He was therefore directed to drink frequently, and take his medicines regularly for a couple of days ; and the third day in the morning, the fame purge was repeated, with the addition of half a drachm more of fenna. This operated very effectually, and brought away much gelatinous ftuff and bile ; and the evening of that day his urine became natural and clear.

clear. His complaints all vanished, though his tongue was but little altered. Nothing further was necessary, but to leave a purge with him, to continue the Rhenish whey, and to use light diet until he recovered more strength. But as these disorders, with many others of the putrid bilious kind originate in the liver, relapses cannot be prevented, nor perfect recoveries made, without removing every obstruction, and restoring the secretions to health. For though all acrimonious and putrid accumulations, arising from diseased secretions, are removed by well-timed evacuations; yet indigestion and frequent collections may soon occasion the same scene to be acted over again, if obstructions are not removed, and healthy bile restored to perform Nature's first and greatest operation in the animal economy. We therefore should never think it sufficient to save the patient from immediate and present danger. It is incumbent on us also to remove the latent defect, which is the principal source of all; the obstructed state of the liver and mesenteric glands. The excretions and urine are minutely to be attended to; and as circumstances require, gentler or stronger mercurial deobstruents, with mild bitters and neutral

tral falts, with occasional vacuants, are to be exhibited ; and strict diet is to be recommended, till the health and constitution be perfectly restored ; otherwise our services are flattering rather than useful,—if I may be allowed the comparifon, like the splendid actions of the General, which often acquire to him reputation and honour, but are productive of no real advantage to the State.

“ I could furnish you with a variety of such cafes, and a multitude of such histories, of other complicated bilious diforders which came daily under my notice, but they would fwell this letter to a volume, though it already exceeds the bounds I had prefcribed to it. I fhall therefore only further obferve to you in general, That bile, in different ftates and conditions, produces the appearance, and apes almoft every other diforder, and of confequence, much attention and experience are required, to diftinguifh properly its operation and effects. In this country there are but few fimple fluxes, fimple agues, or coughs, or indeed fimple diforders. And you may be affured, that when the liver and primæ viæ are not confidered as the grand fources of difeafe, continual and ferious blunders will be committed. Mercury, in judicious hands,

hands, is a safe and tractable medicine ; and as it is the only powerful and effectual deobstruent in glandular obstructions, it is of consequence the only medicine that can be depended on, in the latent defects of the system, which entail diseases or impede recovery. However, it often requires assistance from other medicines ; such as are antispasmodic or aqueous to wash the glands, and increase the secretions in general. And it also requires assistance adapted to the effects the disease has produced on the constitution. For example, in venereal and other habits, where the solids are much relaxed, the blood poor and flimsy, mercury without bark will spread every ulcer, induce fibrillæ, and increase every symptom. In acute diseases, evacuations, neutral salts, and relaxing medicines, render it safe and effectual. In irritable habits it requires management, as its operation is chiefly on the solids. But the idea of its injuring the constitution, by destroying the crasis of the blood, is without foundation. On the contrary, it is but too apt to leave behind it an inflammatory diathesis : So much so indeed, that I would recommend to you a general rule in all severe attacks of disease, where mercury has preceded, to
bleed

bleed early and freely. For, watching, fatigues, and bodily exercise of the severest kinds, have not greater effects in wasting the thinner parts of the blood, and producing a density of it, than mercurial courses. The mild air of this country is very favourable to the operation of mercury, and there are many diseases here, for which it is infallible, with fair play and judicious management.

“ You may observe, I have been somewhat general on my answer to yours. But I was willing to throw into it as much information as the compass of a letter would admit of. Upon the whole, it contains a few remarks which you may improve to your advantage. To have been circumstantially minute was impossible, it being rather a subject for a whole volume, than for a few sheets. Hospitals and practice can only realize these hints; and if I can at any time render you any assistance, I shall be ready to do it.

I am, Dear Sir, &c.

J. PAISLEY.

O

“ P. S.

“ P. S. I have added the state of our hospital (Military) at Madras *, to shew you the prevailing diseases along the coast for this month.

Venericals,	-	-	-	50
Quotidian remittents,	-	-	-	2
Simple bilious fevers,	-	-	-	30
Bilious fevers, with visceral obstructions,				15
Simple fluxes,	-	-	-	20
Liver fluxes, and fluxes from visceral obstruction,	-	-	-	98
Chronic visceral obstruction from im- paired habit,	-	-	-	69

* See Appendix, No. III.

ULCERS

ULCERS
AND
HOSPITAL SORES.

THE Naval Hospital at Madras, consisted of a large square of building ; or rather of a shade of one story, open every where on the inner side ; and within a few hundred yards of the sea beach, detached from all other houses. A shade open on all sides was constructed within the square, and extending its whole length, for the accommodation of patients with wounds, ulcers, and sores. And such was the freedom of ventilation through the whole, that no bad or sickly smell was ever perceived, except close to some bad putrid ulcer, or patient with a putrid flux. The cheapness of labour, and the liberality of the gentlemen who had the contract,

O 2 tract,

tract, provided us with servants for sweeping, washing, and all the purposes of cleanliness, to our utmost wish. Ventilation was our only concern; for warmth or shelter we needed to have no care. Under circumstances so favourable, we were led to impute the general intractability of our ulcers and sores, rather to the influence of other causes, than to the fault of foul and contaminated hospital air;—either to the effect of local circumstances; the state and situation of the settlement, and of the town of Madras; or to the state of the air and constitution of the climate, inducing a weakened and relaxed condition of the extreme vessels, (probably in many instances combined with a latent scorbutic taint), which rendered the healing of all sores, or the separation of the dead, and renovation of new and living parts, an uncommonly tedious and difficult process. A peculiar degree of acrimony in the matter of sores and ulcers, was also very remarkable, and presented an additional obstacle; and made it very difficult to maintain the proper condition in their vessels, for accomplishing the healing process.

That the influence of the climate, and state of the air, was sometimes connected with these deprivations,

pravations, we had undoubted proof at the setting in of the north-east monsoon, on the 14th October 1782, when almost every stump, sore, and ulcer in the hospital, got foul, and put on a bad appearance; while in the cool and dry weather that succeeded about the middle of November, and during the month of December, those all got better; and more of them were healed up within the last month, than ever happened during any other period. Similar changes were observed to take place on other occasions, when the alteration in the state of the weather was not at all remarkable; but never to any thing near the same degree as in this. That a taint of sea-scurvy in the blood, sometimes contributed its share to the degeneracy and ill condition of our sores, we had good evidence in the appearance of the sore itself, even when scarcely any marks of it could be otherwise detected in the habit.

For, in many cases, from ships newly arrived from England, or from long cruises in the India seas, the appearance which this taint never fails to communicate to sores or ulcers, was evidently perceivable;—an ulcer with thick and livid edges, and a suffused dun or yellow colour, spreading

some way round it, readily disposed to bleed upon the slightest pressure; or, instead of purulent matter, a bloody serum oozing out; or the parts swelled up, and the fore covered with a hard and firm coagulum of a red colour, composing a kind of membranous crust, raised high above its surface. These appearances are always decisive of true scurvy. But they are not always so distinctly marked as to attract our attention. An ulcer with livid edges, and a yellow broad margin, with a discharge partly sanious, partly purulent, and a tendency to bleed on friction, marks also pretty certainly some degree of the same taint. We found much more difficulty in correcting this diathesis at Madras, than usually happens, where vegetable, or even farinaceous diet can be procured in any tolerable plenty.

The air of a large hospital might contribute somewhat to the production of this taint; but I am persuaded, the local situation of the town, and state of the settlement at that period, had a very considerable share. The country round was more than once overrun, and plundered by the horse troops of Hyder Ally. So that our supply, even of fresh meat, and much more of vegetables and
fruits,

fruits, was by far too scanty. And a few imperfectly cultivated and unripened fruits, with the cocoa-nut juice called *toady*, was all we could procure for our scorbutics. Another source of unhealthiness arises from the situation of the town, and fort of Madras itself, built upon a low, flat and sandy beach, and surrounded almost entirely with stagnant swamps, or ponds of stagnant water, which are not only a receptacle for every sort of corruption and filth, but have their edges, as well as the beach on the other side, covered at all hours of the day with the natives, in the act of relieving nature from her burdens, to take advantage of the water for washing afterwards, which is their invariable custom. What a source of putrid exhalations under a vertical sun! The streets, lanes and alleys, formed only of beaten sand, admitted of no sweeping or cleaning: Nor did there seem to exist while we were there, any sort of police for that purpose; or for removing nuisances of any kind. So that if it had not been for the number of *Brammany* kites, carion crows, and *parriar* dogs, together with an innumerable multitude of large flies, all constantly employed in the office of scavengers, in removing this offensive

mas, Madras, in my opinion, could not have been habitable. How much better regulated such things may be now, I know not.

Famine was also at this period spreading sickness and death. The miserable natives were daily falling down, or laying themselves down, an easy and unresisting prey to it, in every street, stall and lane about Black Town. Nor did anybody seem to take any further concern with them, than to carry them off, and throw them down at the back of the *bound hedge*, (a kind of ditch and bank planted with bamboos, which had served to mark out the boundaries of the first European settlements in India,) converted literally at this period into a real Golgotha, the place of many a human bone and skull.

At this time the country was frequently overrun by Hyder Ally's *Louties*, or irregular horse-troops; and great numbers of the inhabitants, after being plundered, or having their property destroyed, were driven to seek refuge within the walls of Madras. A great number of the rice-ships had been lost in the monsoon. And the English fleet having failed to Bombay for repairs, the Bay of
Bengal

Bengal was left open to the operations of the French, with no other protection to the rice-ships from that quarter, (upon which Madras depends for a great part of its supplies,) than the spirited and active exertions of Captain Gower, in the *Medea* frigate, could afford them. The consequence was, an extraordinary rise in the price of rice. The company used some measures to relieve the general distress. Once or twice a week, a *Peon*, or *De-bash* or some company's servant, under some such gibberish name, set out from the fort, making a kind of hallowing noise, whereby he gathered all the beggars about him, and from an apron or sash, full of *fenams*, (a small silver coin of about 2½d.), distributed as long as he could maintain his feet among the crowd, to every hand that was held out. When he was in danger of being trodden down or overturned, he broke from them, ran to a certain distance, and began again the same distribution, without minding who were the followers, or who they were that received, so as he gave to every hand a piece, leaving the stronger to rob and plunder the weaker as they thought fit. Whether any thing more effectual was done

done I was ignorant, but this I saw again and again.

Another appearance in our hospital ulcers, and which I had observed in ships in India, before attending at the hospital ; and which I thought owing to simple relaxation of fibre, particularly affecting the vascular system, was a discharge of a vast quantity of matter upon the surface of the sores, of a consistence altogether differing from pus, and resembling exactly gluten, or what is called *inflammatory buff* on the surface of blood ; of a consistence so strongly adherent and elastic, as not to be wiped off, but with the utmost difficulty. This is to be met with most frequently in ulcers of the toes and feet, often after amputation of the toes ; and while this kind of discharge lasts, the sore never suffers any change for the worse ; but neither does it contract or heal, nor do any sort of applications produce any change, except astringents. If these were applied with this matter on the surface, they only converted it into a firm tough crust, without affecting at all the vessels of the sore. Poultices made soft with oil, and applied cold, had most effect in dissolving this, so that the sore could be wiped clean, and then solutions of blue vitriol,
or,

or, what perhaps did still better, the application of plain spirits on a bit of charpee, soon contracted the vessels, so as to prevent more of the glutinous part of the blood, than could be converted into good pus, from being thrown out upon it. And the cicatrization generally proceeded readily when this impediment was removed.

Some reasonable explanation could thus be made of these several appearances and conditions of our sores. But there were others of a different and more important kind, for which it was not so easy to account.

Instead of the cellular membrane and soft parts being principally affected, the disease much more frequently occupied the hard and solid parts; the bones, tendons and periosteum. This in many instances might be owing to previous hurts and bruises, which affect more the hard parts, but very often nothing of this kind could be traced. Sometimes there appeared only a small and superficial ulcer, covered over with a tough gelatinous matter, with the bottom parts swelled and puffed up; and when we got the sore in some measure clean, we found the tendons, where any were in the way, either swelled up, or bare and dead in many places;

places ; so that they rotted away to a great length beyond the extent of the sore ; or it was found necessary to cut them through, and very often we found matter confined below them. If a bone was near, it was uniformly found bare, or at least the periosteum sloughy and diseased to a great extent. And this we sometimes found, where there appeared only a superficial ulcer of no great size, seeming to extend no deeper than the cellular membrane, looking clean and granulating, and without sinuses. The disease appeared to have begun in the periosteum, and to have extended outwards. Whenever, therefore, we found an ulcer with the bottom parts puffed up, or higher than the neighbouring surface, we made ourselves sure, though it looked clean, there was mischief below. Indeed, every healing ulcer ought to be attended with contraction and sinking of the parts affected, and if it is otherwise, something wrong is always to be suspected.

In many cases, where the ulcer was situated in the middle of a limb, especially the leg ; if it was of any considerable size, with the bone exposed and carious, we very generally found the periosteum diseased, or separated and destroyed, to a much larger

larger extent, than either the dimensions of the external ulcer, or the extent of the caries of the bone. Even where the edges of the ulcer seemed adhering to the bone all round, on trying with a probe, these were easily separated, and the periosteum was found wanting.

Exfoliation of diseased bone, again, was commonly a difficult and imperfect process in this country. Instead of casting off in one piece, the bone came away in small spongy carious worm-eaten like bits, while fleshy granulations springing up from the substance where bone had come off, and these inosculating with similar granulations from the edges of the sore, when a new piece of bone loosened and came away, a sloughy diseased state of the adjoining parts was occasioned; and this was renewed as often as there were any parts of the diseased bone to come off. We seldom had occasion to know in what manner sores of this kind could heal up; or whether sound and healthy bone could have been formed out of these fleshy granulations: For in most cases, if the ulcer was of any considerable size, or was near the end of a bone or any of the large joints, and the destruction of the periosteum was of large extent, (and these were
most

most commonly the conditions), it became absolutely necessary to have recourse to amputation at last. The disease of the bone came always to reach as far, or farther, than the disease of its membrane, and sooner or later, the external ulcer followed the same course. Hectic fever was the certain consequence, and proved as certainly fatal, if the member was not removed. Something similar sometimes happened after amputation, and occasioned long standing and troublesome ulcerations and exfoliations, even in cases where every thing favourable to the healing of the stump might have been reckoned on; even where the bone had been very well covered at the time of the operation, and scarcely exposed to the external air at all. In some cases, this happened after the stump had been perfectly healed up, and the patient had been using his wooden leg. A remarkable instance of this was in the case of *Henry Arthur*, whose leg had been taken off above the knee, whether on board ship, or at the hospital, I did not know, he being already a patient in the hospital when I came to attend. It was indeed a pyramidical stump, but it had been healed up above 12 months; and the man had long used his wooden leg. Small ulcerations

ulcerations and collections of matter formed in several places about the cicatrix. On the first examination with the probe, the instrument could be passed its whole length all round, and within the middle of the bone, which was every where denuded of the periosteum. The discharge was ichorous and offensive, and soon became intolerably fetid; tinging the probe of a hepar-sulphur colour, every time it was introduced. The bone began at last to loosen, and by degrees pushed outwards, till it came away by a kind of exfoliation, which was almost singular with us, viz. in one entire piece, from the trochanter minor, nearly nine inches in length. The external surface of the bone was smooth and little corroded, but within, the cancelli and inner tables were much destroyed; in so much, that the whole resembled nearly the middle piece of a flute. Little more was required for this case, than to support the strength by wine, bark and nourishing diet, and to wash out the parts frequently, with decoction of bark, and tincture of myrrh. There was no occasion for any dilatations, the ulcerations having sufficiently opened up the cicatrix at an early period. About four months after the bone came away, the openings were near-

ly healed up, and the whole thigh felt almost as hard and firm as the other. I could not prevail with him to allow me to retain the separated bone; his intention being to exhibit it, with a view to an augmentation of his smart-money at the Chest of Chatham, for which the necessary certificates were furnished him.

Our large ulcers at the hospital were always much disposed, when they got foul, to put on a gangrenous appearance. This for the most part was only a local affection, arising from a peculiar acrimony of the discharge, occasioned by relaxation and torpor of circulation in the extreme vessels. It was by far most frequent in ulcers of the legs, toes and feet. The edges of the sore would get inflamed, become black, and slough off by little and little, with a half sanious discharge, till the sore became greatly enlarged in its whole circumference, while the rest perhaps kept clean, and discharged good pus, with healthy-looking granulations. This was in general soon corrected by antiseptic lotions; and the application of pledgets dipped in them, such as Decoct. Cort. Peruv. and Flor. Chamæmel. with Tinct. Myrrh., poultices, wine, and meat diet, provided the constitution was tolerably

tolerably found. But very often the fore would become sloughy and get black all over. The circulation stopped in its vessels; and a thin black fannies came to be poured out from the half-living parts; with the edges livid and inflamed some way round, without any separation or casting off of the dead parts by all the means we could use. In this state the fore would often continue for many days, until hectic fever came on, from the absorption of putrid matter, and destroyed the patient. Many ulcers that were at first superficial, and free of sinuses, without any perceptible cause took this course; or were prevented for a long period from healing by this disposition. Very seldom had we any sphacelated limbs, with general swelling, inflammation, redness and tumour of the whole member, exanthematous and yellow suffusions, such as are to be met with from violent contusions in other countries; except in a few instances among the wounded, after actions, especially the sanguine and robust, who had but newly arrived from England. Nothing like true phlegmon or phlegmonic inflammation appeared at the hospital; and any thing of the nature of erysipelas was unknown there.

We always had a great number of ill-conditioned gangrenous ulcers, or ulcers with gangrenous inflammation, confined to the edges of the sore only; sometimes spreading, sometimes stationary, or alternating with a clean surface and healthy granulations, for a long period of time. The least neglect or lodgment of matter, or inattention to cleanliness in dressing, very readily brought on such a gangrenous condition in sores. The matter soon became so acrid, as to tinge the probe of a shining brown colour, and to produce corrosion and sphacelus.

Bark did so little good in these sort of cases, that we laid it aside altogether. I was doubtful, whether in India it ever bettered the condition of any sore. In two cases of ulcers of this sort in the foot, opium seemed to have a good effect in stopping the course of gangrene; but in many of the larger sores it produced no effect at all. Camphor was tried internally, and did good in several instances.

GENERAL TREATMENT.

WE have mentioned, that the correction of scorbutic diathesis, which may be supposed to have had a very general influence upon the condition of our ulcers, was a matter of more difficulty at Madras, than usually happens in other situations. Wherever this influence was distinguishable from the appearance of the sore, or the known situation of the patient previous to the complaint; the assistance of internal correctors, as far as we could command them, was not overlooked, especially at the first outset. Wine, vegetables, and such fruits as we could procure, were given freely; and I observed, that wherever, under such circumstances, sores were disposed to bleed easily, a doze of elixir of vitriol in a large draught of water, twice a-day, was of much service in checking this.

In all contused wounds, if it be a matter of much consequence in colder climates, on the first formation of sinuses, or lodgment of matter, to lay them open, and give the matter free vent, it is doubly so in this, where every thing stagnant in the system, runs with such rapidity into a state of

putrescent and gangrenous acrimony. But this behoved to be done early or not at all; for after sinuses had been formed, and lodgments of matter established, and the edges or surface of the fore had begun to become black and gangrenous; the more we scarified and dilated, the more need there appeared for these operations. Scarification in such circumstances, only carried the acrid matter deeper, and extended the mischief. In short, nothing of this kind was ever attended with advantage, but while the fore or ulcer was in a tolerable healthy state, and the discharge not yet become sanious and brown. Whenever tendons came in the way, and appeared soft and spongy, of a dead white colour, and swelled up, we were sure that matter was confined below them, or among their sheaths; and that they would never recover to a sound state. So that, let the importance, or consequence of the tendon be what it might, we found it the best way to cut it through, and remove as much of it as was diseased, at once. Tendinous aponeuroses of muscles behoved to be treated in the same manner. Purulent matter was often confined by them, and as they were generally long of

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giving way, it was thought most advisable to divide them with the knife.

Whenever a large ulcer came to affect the parts near any of the large joints; if the bone was carious, and the periosteum separated and diseased, beyond the diseased portion of the bone; we were always forced to amputate at last, on account of hectic fever, the imperfect exfoliation of the bones, and the spreading of the ulcer from this cause, as well as from a bad disposition in the blood, or of its own vessels. Out of fifteen cases of amputation, of the large limbs for ulcers of this sort in the year 1782, we lost only four, and I am persuaded more of these might have been saved, if recourse had been had to it sooner; for none of the patients were lost by any consequences that arose from the operation, but sunk under the hectic fever which had come on before it was done. Some patients also with spreading gangrenous sores of the legs and feet, were probably lost from an idea that was entertained, that gangrene and mortification depends always on a disease of the system, and on a morbid condition of the solids and fluids, which must be corrected before any operation can succeed; and it must be confessed, that the directions

in books of surgery, generally run in this way ; at least they commonly direct, that we should wait till nature makes an attempt to separate the dead from the living parts. But this opinion, so far at least as affects Indian practice, and the *hospital gangrene* of that country, is not well founded ; nor perhaps with respect to such mortification as is the immediate consequence of external injury in general*.

A case that occurred in the *Medea* frigate on her return to England, may here be put down, though

* The following instance fell under my knowledge. A young man in consequence of fracture and tight bandaging of the fore-arm by a country bone-setter in the south of Scotland, had a mortification brought on it. The surgeon who was called, found it advanced above the elbow, and proceeding so rapidly, as to make it doubtful, whether it might not reach the shoulder before his amputating instruments could be brought him from Dumfries, a distance of seven miles. They were but just got in time, and the arm was taken off within two inches of the head of the humerus, and very near to the discoloured part of the skin. After the amputation, every thing succeeded perfectly, and the stump healed very quickly.

though no certain or unequivocal inferences can be drawn from it. The ship was dismasted in a gale of wind off the Azores. Among a number of men hurt and wounded by the fall of the masts, we had one with a fracture of the thigh bone, which did well; and another with fracture of the tibia and fibula near the ankle joint; simple it was indeed, but the bones broken into several pieces. Fractured limbs are unhappy cases to manage in a gale of wind; and this gale lasted for many days. Though in the last case there was no tight bandaging, the leg began to mortify about the fractured parts, and swelled much. By the time we got our disabled ship to anchor under the lee of St Michael, the swelling had reached the thigh; and ecchymosis had extended on one side some way above the knee. The man had also received a large wound upon the outside of the fore-arm, whereby the flesh and muscles were torn off from the bone, about half of the length; but this had begun to digest, and was looking well. The poor fellow was very willing to have his leg taken off, and this was done a little way above the knee, with some difficulty, on account of the great swelling; and so near to the ecchymosis on the skin,

that a small portion of it was at one place left above the circular incision. For three days he did very well, and the fever and quickness of pulse which he had before, was in a great measure gone off. On the fourth he complained of some pain of his belly, and that he could not pass his urine. Having had no stool from the time of the operation, a dose of castor-oil was given him; soon after which he fell into convulsive fits, and he died in less than an hour. On inspecting the stump immediately after death, the swelling of the thigh was so much reduced, as to loosen all the bandages. A fine suppuration was beginning to appear, and the skin laid over it was adhering. The ecchymosis left above the incision at one spot, as formerly mentioned, was now quite gone off, and the skin had returned to its natural colour.

It may be proper to remark, what every naval surgeon will be aware of, that this case could not have fair play. The patient's habit was full, and would have required plentiful bleeding, laxatives or glysters, &c. From the state of the weather, none of these could be employed.

In the gangrenous and sphacelated ulcers at the hospital, it was with much regret, I saw many sink under hectic fever from the absorption, before the discharge could be corrected ; and that in many cases, this was not brought about by all our remedies. It was a hard case to take off limbs on account of ulcers of no great extent, and which might have been cured without difficulty in other situations. But the alternative had been so often fatal, that we were forced at last to have recourse to it. It was first tried in the case of *John Gibson*, a fine young lad of 20. He was sent to the hospital with an ulcer on the back-part of the leg, where the gastrocnemius muscle begins to grow tendinous. It was of no great extent, and appeared to be only superficial, but the surface was black, and the discharge thin and ichorous. The edges were livid and inflamed some way round ; yet there was but little swelling of the leg. It remained in this state for five or six days, unchanged by all the applications we could devise. It did not spread, but penetrated deeper among the fibres of the internal muscle, discharging a great deal of thin black sanious fluid ; and a considerable degree of heat, thirst, and quickness of pulse had come

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on. The leg was taken off about mid-day ; and by ten at night, the heat, thirst, and quickness of pulse had entirely gone off. The stump looked well at the first dressing, and was soon healed up, without any untoward symptom. How far this practice was followed afterwards, the notes I had taken do not express, farther than that it was adopted to the saving of some lives ; and from recollection, I am pretty certain it was followed in similar cases, and that any disappointments, or ill consequences, if they had followed, would have been recorded.

In other countries, inflammation, when it affects tendinous or membranous parts, generally runs high ; and though they suppurate unkindly and with difficulty, this is always attended with much inflammation and pain. But here it was quite otherwise, the inflammation never ran high enough, and it terminated most commonly in gangrene ; especially in cases where the toes and feet were affected. Whenever an ulcer so situated, got so deep as to affect the aponeuroses, sheaths and tendons, it was very apt to get foul and gangrenous ; and the matter was ready to spread and insinuate itself deep among them. The tendon, instead of inflaming and sloughing out, became only soft, spongy and

and dead; and never separated unless it was cut out. We might syringe with all the cleaning and stimulating liquors we could think of; and dilate and make as many counter-openings in the foot as we pleased, and give wine, bark and opiates in any quantity; but where the matter had become black and gangrenous, and had insinuated itself among the tendons in the sole of the foot, we never got one of them to heal without amputation. Badly ulcerated toes, (which in other situations would have healed without difficulty,) were often obliged to be taken off, in order to prevent this danger. Latent and imperceptible scorbutic cachymia may be thought to have been, and probably was in some degree at the bottom of such a general tendency to acrimony and ill condition of our ulcers. Bark had but precarious and uncertain effects at best; and independent of this, we were often prevented from a free, or full exhibition of it, from bilious diathesis, or a suspicious condition of the abdominal viscera,—an inflammatory or obstructed state of the liver or mesentery. Wine was allowed to the patients with as much liberality, (considering the price,) as could reasonably be expected. Vegetable diet and fruits could

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be procured but in sparing proportion. The cocoa-tree liquor called *toddy*, we had, but it was of so fermentable a nature, as to become aciscent in a short time, and much of it produced disorder and griping in the bowels *.

Our first application to all foul, sanious and sloughy ulcers, or where the edges were tumid, painful, and inflamed; and to all bruised and lacerated wounds; was fomentation with Decoct. Chamæmel. Flor. Sambuc. Summat. Absynth. and poultices. Some people thought we were too liberal in the use of these; and continued them too long. It was an easy mode of dressing, and gave but little trouble, except to the assistants, or the patients themselves. And no doubt it might often happen, from the great number of cases poured in upon us at once after actions, or on the return of the fleet from a long cruize, and the want of sufficient assistance at the hospital, that some irregularity in regard to dressings, might now and then take place. But it was oftener owing to the inclination

* See Appendix No. IV.

clination of the patients themselves; they were generally fond of continuing poultices longer than was necessary;—a proof that they afforded ease at least. Rice boiled to a consistence to make it soft and smooth, or rice-flour with a little hog's-lard, made as good an emollient poultice as we could wish. To have made them of more fermentable materials, by mixing up a quantity of cocoa juice with the boiled poultice, might have answered well as an antiseptic application, (if frequently renewed,) to our foul and putrid sores. But this, so far as I know, was never tried. Indeed, the common rice-poultices, from the heat of the weather, were generally in a state of fermentation before they were removed. Soft and oily poultices applied cold were absolutely necessary for another condition of ulcers; where a tough adhering mucus, which could not be removed by wiping, or washing, was thrown out upon the surface of the sore. This kind of discharge was only to be removed by poultices of this sort; and then a pledget dipped in plain spirits, soon brought the ulcer to such a state, that no more of the coagulable lymph, than could be converted into proper pus was thrown out upon it.

Whenever

Whenever any portion of an ulcer got clean, and began to granulate, dry lint was there applied, while the poultice was continued over the whole; so long as the edges were inflamed, and the discharge from any part of it foul and sanious; or till the whole surface became uniformly clean and healthy. But as the state of our sores was subject to frequent variations, either wholly or in part; so behoved to be our applications. It was no uncommon thing with us, to have a large ulcer dressed with different applications at the same time; perhaps a pledget of dry lint, or wetted with spirits, or astringent solution where it was clean, and a poultice over the whole, to digest and deterge inflamed sloughy and gangrenous margins, or to dissolve and clean away glutinous mucus.

In all cases we made it a rule to renew our poultices three times at least in the day, and to wash with Decoct. Chamæmel. at every application; and if an ulcer, after being once clean, put on again a foul appearance, we always found it necessary to have recourse to these anew for correcting the discharge.

Our general mode of dressing, for all clean and granulating ulcers, after inflammation of the edges
had

had fully subsided ; was with slips of cerate plaster, and country lint. This last was coarse bleached cotton thread, without any dressing, made to lie straight by combing it with a wide comb ; and cut in lengths adapted to the size of the sore. This made the most light and easy dressing I have seen, sufficiently absorbent ; and it always came off with great ease. A long cerate strap over each end, fastened it down upon the skin, and kept the whole steady, till a compress and roller was applied. This was also of cotton cloth, and embraced the whole member. Upon no one thing does the healing of ulcers more depend, than upon the neat, easy and uniform application of this. A split at one end, so as to give it two heads, makes it tie easily round the member, and prevents the use of pins, which are always troublesome, and often wanting in an hospital ; or they are getting wetted and rusted, and unfit for use. Or perhaps they are left to the patient himself to put in ; in the doing of which, he very often shifts and alters the tension of the whole bondage. *Baynton's straps* may do very well, and be very useful in private practice, or in single cases ; but they will never come into general use in large military hospitals, until

until these be much better provided with assistants than they are at present.

We had never any trouble with hard and callous edges; nor any need of caustic for their reduction; nor had we any occasion for precipitate to produce incipient incarnation in the bottom of sores. But we had much occasion for the latter, and the milder escharotics and astringents, to restrain or destroy the growth of a soft, flabby, and spongy flesh, which, whenever an ulcer got tolerably clean, was but too apt to spring up, and again become sloughy and cast off. So that cicatrization was often impeded by this loose luxuriance, as much as by the laxity, want of tone, and due contraction of the neighbouring skin. Hence the great advantage derived from the use of astringents; and of all those which we employed, none answered so well as blue vitriol, in solutions of different strengths, adapted to what we thought the condition of the sore. A quantity of dressing cotton, prepared by being wetted with this, and afterwards dried, was always kept in readiness for this purpose; as well as a bottle or two of vitriol water, of different strengths for washing, as the dresser judged preferable. Few ulcers were healed
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and skinned over without this application. But when the fore was nearly closing, we behaved to use this but sparingly, to avoid the danger of forming a scab upon it, instead of a sound cicatrix; and when this was avoided, the cicatrizations procured by this means, continued as firm and steady, as where nothing of the kind was employed.

As the healing of the fore goes on, it is always of consequence to favour the contraction of the skin, by the application of compresses to the neighbouring parts, and to give a little more tightness to the bandage over these, with a view to diminish, as much as possible, the extent of cicatrix, which never has the firmness of real skin; nor is furnished with cellular membrane, to allow free motion to the parts below it: Though it sometimes gets so hard and contracted, as to impede the circulation, and occasion varicose and œdematous swellings. So that much of the future usefulness of the member, wherever there has been a large ulcer, depends on the size and goodness of the cicatrix that has been formed. It is from this circumstance, more than from the weakness of the new skin, that ulcers of any size on the legs, are

attended

attended with so much unfoundness and disability of the member, and are so liable to open up again by any future violent exertions. If it has penetrated so deep as the muscles, the granulations from them unite with the new formed-skin, without the intervention of cellular membrane; so that the action of the muscle has a continual tendency to break it up afresh.

Sometimes our ulcers, with every thing looking well, and filling up with healthy granulations, with well-conditioned pus, would without any visible cause become stationary; and then we often found, that by varying the dressings, the healing would go on again very well; very often by withdrawing the astringent solution, and applying poultices for a few days; or by substituting spiritous applications, in place of the vitriolic water. And I often found, unmethodical as it may seem, that under the alternation of the last with poultices, a sore would heal as well as with any sort of dressing whatever; the one so far counteracting the other, as to preserve the proper tone in the vessels necessary for conducting the healing process. Whenever a clean and healthy ulcer becomes stationary, without a systematic affection, I am persuaded

suaded it is from want of this necessary condition being maintained in its vessels; and that we will often attain our purpose, by a little variation in our applications; and where we have no particular index to guide our choice, it will be found best to adopt for a time, such as are of an opposite character to the last in use.

Notwithstanding the general malignity, and ill-conditioned discharges from our hospital ulcers, whenever those on the legs continued long, I observed, that they became a mere local disease at last; and a great deal of attention, pains, and judgment was requisite, to vary and adapt the dressings and applications to every varying state of such ulcers, in order to maintain that tone and action of the vessels, without which no good pus nor healing process can be procured in any sore. I am persuaded, it is owing to want of attention to these circumstances, and owing to the dressing of sores being left almost entirely to the care of students, mates, and hired servants, that hospitals, military and municipal, have incurred the opprobrium they have long lain under, in regard to this part of practice.

Our amputations were all done on Mr Allanson's plan. But where the weight of the patient's body was to rest upon the end of his stump, we did not attempt to cover it wholly, so as to produce adhesion by the first intention; for this always produced much wrinkling of the skin, or inconvenient corners at each side of the limb. We found a better stump was formed upon the whole, if three-fourths or so of its circumference were healed up in this way; and we had the remaining cicatrix generally hollow, in place of being conical or pushed out.

TETANUS.

In the year 1782, no cases of this disease occurred at the hospital, either after amputation, or from any other cause. In the beginning of 1783, we had two patients seized with it. In one case, it succeeded the amputation of the leg; and the affection was but slight and easily removed by opiates. In the other, it arose from a gangrenous ulcer in the great toe. This toe was taken off as soon as
the

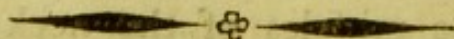
the disease appeared. The patient had formerly been subject to epileptic fits, which returned with the tetanus, and carried him off.

In the latter end of July, or beginning of August 1783, on the return of the fleet to Madras Roads, after an action off Cuddalore, the hospital list was swelled to the amount of 1800 patients, and the apartments were much crowded, notwithstanding of extensive sick quarters added to the hospital. Several of the ships were but newly arrived from England, and the fleet had been out a long cruize. Many of the people were thus in a sickly state, or tainted with scurvy. The land winds, which blow all along this part of the coast, had not yet subsided; but this is the usual course in every season; and there was no other known circumstance, to which we could impute the surprising prevalence and fatality of tetanus, which took place on this occasion.

Being employed, at this period, in the general management and regulation of the hospital, and in dressing bad wounds and amputated limbs, (which were very numerous,) without a particular charge, I had taken no exact account of the cases, or of the numbers, that were cut off by it. They

were very numerous ; 40 or 50, or more. It seemed to be all one, whether the tetanus arose from amputations, or from severe lacerated wounds, or from those that were exceedingly slight, and in a clean and healthy state ; or whether such wounds were in the fleshy parts, or among those that were tendinous ; the disease almost uniformly proved fatal. None recovered who were attacked, except one ; and in this one, the affection was slight, and confined to the muscles of the lower jaw. It came on in this case from a bruise on the first joint of a finger. The finger was taken off, and the disease was soon removed. About this time also a similar slight case came under my care in the Medea frigate, from a hurt or bruise, with fracture of the os nasi, and was removed by opium. It was quite another kind of disease in all the cases at the hospital, except the one mentioned. It began with pain and stiffness in the muscles of the lower jaw, but I never saw the jaw at any time so rigidly closed, as to prevent the introduction of liquids from the point of a spoon. The teeth could always be opened about a quarter of an inch or more, by a little forcing. A great degree of stiffness, rigidity and spasm of the muscles of the affected member

member soon succeeded with opisthotonus and affection of the muscles of the neck and back so that they lay rigidly stretched out at their full length. There was a peculiar shining watery look of the patient's eye, oppression of the spirits, and sighing, with a slight degree of fever, but no delirium or insensibility. In this way the sufferers generally continued for 10 or 12 days, sometimes longer, and gradually sunk under the disease, without any change to the last. Some were not attacked till 14 days after the accident by which tetanus was brought on. Amputation was tried in several cases without effect. The largest doses of opium we could venture on both given internally, and applied to the sores, and the stiff jaws; camphor, blisters to the jaws and throat, warm and cold bathing and dashing, wine, spirits, the volatile alkali, were all equally unavailing. In one case, full salivation was excited by mercury, with no better success. Not one patient recovered, except in the slight case formerly mentioned; nor did any of our remedies produce the smallest mitigation, or seem to retard even the progress of the disease.



BURNS FROM EXPLOSION OF GUNPOWDER.

BURNING from explosion of gunpowder was a frequent accident in several of our naval engagements; and when it went to any depth, was attended with terrible consequences. Whenever the burning was upon the head, neck or face, and the cutis vera was affected, the case was always attended with much inflammation and swelling; and generally with such a degree of fever, as soon proved fatal. Indeed, but few recovered, where the burning was extensive on the upper parts of the body. The pain and torture was so great, and the patients suffered so much in dressing, that it was with difficulty they could be got to admit any thing more than the application of oiled cloths. And if there was much inflammation and exfoliation of the cutis vera, this was followed by such an excessive discharge, as their constitutions could not support. Very often the fever ran so high, attended with delirium, hiccup and vomitings, as to cut them off in the first week. We placed

placed our patients with burns in the coolest and best aired wards in the hospital, and it was necessary to give them laxatives frequently, as they were disposed to be costive; and to allay the febrile heat and thirst, by acids or tamarind water for common drink. But we did not pursue the antiphlogistic plan any further than this. On the contrary, we thought it necessary to support the strength by cordials, and strengthening diet and drinks, as soon as any abatement of fever took place.

When the sores began to digest, we found the oil cloths very inconvenient, by adding to the filth and uncleanness; and that it answered much better, to wash the sores at each dressing with spirits and water, of such strength as could be borne without much smarting; and to dress with Ung. Alb. Camphorat., or, as long as the edges were swelled and inflamed, with poultices.

Of all the applications which have been employed in the recent state of burns, I have never found any equal to the Carron oil, viz. equal parts of lime water and linseed-oil; with an opiate in a dose sufficient to abate pain twice a day; with wine and nourishing diet after the fever has abated

Dry.

Dry powdered chalk recommended by some in the ulcerated state of burns, is a coarse and clumsy dressing indeed; and by its adhesion to the parts, and hardning with the matter, is very ill suited to the tender and irritable state of such sores, but may be used in another way with great advantage. Apply all round the edges, pledgets dipped in linseed-oil, or spread with any soft ointment. Powder the sore all over fully, and to some thickness, with finely powdered chalk. Apply over this a piece of rag well wetted in linseed-oil, so as to smear and soften the chalk. This converts it into a sort of soft putty, which comes off perfectly easily, and keeps the sore in a fine, clean and healing condition throughout the cure.

Deep and corroding ulcers were frequently occasioned by these burns. In two cases the amputation of the hand became necessary, on account of such ulcers affecting the bones and tendons. In some cases of this sort, we found that a solution of corrosive sublimate in water, employed as a wash, did more service than any thing we made use of: At least three or four such ulcers, that had resisted every other treatment, were healed up under its use. An impediment to the healing of some
ulcers,

ulcers, originating from burns, and which had been observed in other cases, where ulcers were situated over a joint, arose from the action of the muscles, on the side opposite to the fore; whereby the joint being kept bent, the new granulations were kept constantly on the stretch, and in a state of irritation. This was very observable in several cases of ulcers over the joint of the great toe, and fingers, which were kept from healing, till this obstacle was removed by the application of a lined splint along the opposite side.

FRACTURE OF THE CRANIUM, &c.

Nowhere should we suppose this to be a more frequent occurrence than on board ships of war, and after naval actions, yet after three general engagements, in a fleet from 9 to 18 sail of the line, besides several actions with single ships, two cases of this kind only were met with at our hospital.

The first was a fracture over the sagittal suture, of an irregular shape; the bone cracked and separated all round, of about the size of a dollar,
and

and without depression. The crack was so open when he came to the hospital, as to shew very distinctly the pulsation of the brain, by the flux and recession of the matter resting in it. No bad symptoms had ever occurred. The piece cast off, and the opening was filled up with a fleshy substance, in which new bone formed and united with the sides in no long period.

The other was a simple fissure, of about an inch in length, in the occipital bone. No account being received with him, nor wound or hurt being known of, or appearing externally, he had been for some days placed in a fever ward, and treated as under fever, until his messmates gave information, that he had received a blow on the head in action. On shaving his head, a puffiness and some discolouring of the teguments was observed on a particular spot; and on making an opening over this place, the fissure of the bone was discovered, with the edges discoloured, but not separated or depressed. The state of stupor in which the patient was, left no doubt of injury to the brain. The trephine was applied over the fissure, and an ounce and a half of purulent matter was discharged, but afforded

forded no relief, and he died in the course of a few days.

Little information can be derived from the recital of such cases, unless it be to remark the difference of issue in circumstances, or from injuries nearly similar; and that no prognosis concerning this is to be drawn, from the extent of injury done to the bone itself; but from existing symptoms, as they may arise in every particular case. That a considerable piece of the bone of the cranium should be fractured, and fully detached from the neighbouring parts, without being beat in, so as to compress the brain, may be difficult to conceive of. But many such cases are on record. It seems to be equally certain, that among savages at least, many cases of fracture of the cranium, attended with compression, and with great and extensive injury to the brain, are healed up without any assistance from art, or at least only of the simplest kind. Thus says Lieutenant Watts in his account of Governor Philip's voyage: "At the island of Huachuane, three of the natives came on board, who had the os frontis fractured in a terrible manner, but were perfectly recovered from their wounds." Similar relations are given
by

by many other travellers and voyagers. Blows from stones or clubs, the common instruments of warfare among savage nations; or falls from rocks or trees, must be the general means, by which such wounds are inflicted, and must in many instances occasion depression, as well as fracture of the bone. This may be either with or without detachment of the depressed portion. How the system is enabled to support such a lengthened injury to the brain, or in what way nature may operate to remove a depressed piece of bone, may be difficult to determine. A case I had occasion to see, many years after the foregoing, shews to what extent the brain itself may sometimes be injured, without producing any immediate effect upon the system.

A boy about 14 years of age, running along the streets at Dumfries, came with his full force against the foot of a lamplighter's ladder, carried horizontally; whereby a strong iron pike, with which it was armed, was driven through the forepart of the os frontis into the brain; carrying all the broken pieces of bone along with it, and making an opening, within which the finger could be easily turned round. Yet he was neither struck down, nor much stunned with the blow, and walked
about

about after receiving it for half an hour, the wound discharging a good deal of blood, mixed with broken portions of the brain. He lived for 26 days after the accident ; nor until a few days before his death, that his left side became in some measure paralytic, did there appear much fever, or any alarming symptoms. There was a very great discharge of purulent-like matter, with broken portions of brain, and often in the latter period large quantities of clear lymph. After his death, the greatest part of the right anterior, and much of the lateral lobe of the brain, was found suppurated and destroyed. The dura mater thickened, white, and detached from the bone, over the whole extent of the diseased portion of the brain. And yet the pericranium, contrary to what might have been expected, close to the edge of the original opening, which had been enlarged for the extraction of the broken bones, and another which had been made farther backwards, for the discharge of matter, kept perfectly sound, and adhered to the cranium as completely as ever.

A method was adopted in this case, by the gentleman who had the charge of it, (Mr William Jardine, navy surgeon,) for enlarging the open-
ing

ing made in the scull, in order to facilitate the extraction of the broken pieces, which perhaps is deserving of being made known to the public. The object was to enter the trephine, without a centre pin. And it was successfully effected, by the very simple contrivance of a circular frame of hard wood, (or the same may be made of ivory), of about half an inch in depth, and of such a thickness, as to allow three well sharpened steel points to be fixed in one of its edges, at equal distances from each other. The diameter of the circular was adapted to the trephine head, so as to allow it to move easily round within it, without shaking or vacillating. This was put down upon the bone round the opening, and kept steady by means of the steel points, while the saw placed within it, was entered with the utmost ease. The same instrument might be made of polished metal entirely, and adapted to the trephine head, with perfect exactness, so as it may move within it without the least shaking, and the bottom part might be scooped out between the points, so as to shew the entry of the saw perfectly. It appeared to me that such an instrument for entering the trephine, is preferable in all cases, to that by means of the perforator

perforator and centre-pin ; and for this reason, that, whether the centre-hole be made with the perforator or centre-pin, this must require much more pressure, and that directly downward, than that occasioned solely by the cutting of the saw. This may be of some consequence, both to the patient and the operator in working on cracked or suspected portions of bone. And besides, as the centre-pin must always project some way beyond the teeth of the saw, all danger of penetrating the bone with this, before the saw be sufficiently entered to take it out, is removed. This may be thought to be a very unlikely accident; but I have seen trepanned pieces of the scull, with a hole fairly through their centre, in a surgeon's collection; and whoever will but take up half a dozen of scull caps, and hold them up between him and the light, will be readily convinced of its possibility.

The objection to this mode may be, that it will require a little more room and removal of teguments than in the usual way. But very little harm, it is supposed, can ever arise from this. And

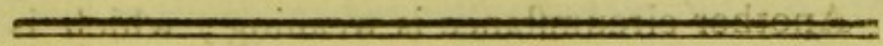
let it be observed, that though the instrument may not, on trial, be found to answer so perfectly on an old dried cranium, it is quite different on a fresh and living bone.

APPEN-

APPENDIX.

APPENDIX.

from an acrimony in the secretions from the mouth, the consequence of inflammation induced on the parts, by the rising of the teeth.



ten followed by similar complaints, called in Scotland the nursing-draw, and is generally imputed to the change of diet, or to the giving the infant much with improper food.

APPENDIX.—No. I.

Remarks on some Diseases of Infants in Scotland.

THAT there is in the habit of infants a remarkable tendency to *bowel-disorder*, and to *excessive fluxes*, we have the evidence of every day's experience to assure us.

Many circumstances in their constitution combine to occasion this. Among others is the irritation arising from *dentition*. This is generally spoken of, as if it were supposed there existed an established sympathy between the membrane of the alveoli, and the coats of the stomach and intestines, by which disorder and looseness might be produced, in consequence of the affection of the gums. But there is no occasion for this supposition; and the truth is, the disorder arises wholly

from an acrimony in the secretions from the mouth, the consequence of inflammation induced on the parts, by the rising of the teeth.

Another circumstance is weaning; which is often followed by similar complaints, called in Scotland the *weaning-brash*, and is generally imputed to the change of diet, or to overloading the stomach with improper food.

I am however persuaded, that both of these circumstances are much oftener the remote and indirect causes, than the proximate and immediate; and that the complaint is much more frequently brought on, by what is very much overlooked; often enough attempted to be concealed from a mistaken prejudice about the rearing of children, viz. from the application of cold. To the absurd fancy of exposing children at all seasons to the open air, with a view to strengthen the constitution, and make them weather-hardy, numberless lives are daily sacrificed in this country. But when a fashion has been once introduced, be it upon whatever irrational or inconsistent fancy it may, it has its run till a new one, perhaps the very reverse, comes in and supercedes it.

The

The idea of exposing infants, from a few weeks after birth, to all weathers that blow, except perhaps to a very storm, has been probably taken up from the cool regimen, and exposure to free and cool air, proper in small pox, and in the treatment of fever; and it proceeds upon the supposition, that an infant, born perhaps in a town in the beginning of winter, and to be brought up in all the delicacy of a city life, should be able to bear the application of as much cold, as the full grown subject, or as perhaps its parents were accustomed to bear under a very different sort of rearing in the country. All this, however, is contrary to nature, of which every mother may convince herself, in spite of the fashion, if she will condescend to be instructed by *instinct*, which never errs. Every mother who has no other instructor for her guide, endeavours to foster and cherish her young by heat. The modern fancy is to *cherish* the young of the human species, by the application of cold: And for some time, or to the period of dentition, it goes on, without seeming to produce any bad effects. But as soon as this commences, the irritation arising from it, induces a degree of febrile disposition,

whereby every other exciting cause is rendered active; and the same application of cold, which before would have produced but little or no effect, is now sufficient to light up an actual fever. The child begins at the same time to cough, and has an unusual flow of saliva, with an inflamed or sore mouth and tongue. This continues for some days, but ends at last in some stomach-disorder and a severe looseness. All this appears inexplicable to the mothers and nurses; for the child has not been more exposed to cold than usual. But they agree to call the cough a *teething cough*, and the bowel complaint a *teething looseness*, laying their sympathies as broad and wide as possible. The whole matter however is perfectly simple, and there is no need of sympathies to explain it. The application of cold naturally enough excites coughing, and the acrimony induced on the discharge from the mouth, from teething, and from the effects of cold, together with the discharge from the mucous membrane of the lungs, all which, with them go down to the stomach, very readily disturbs the functions of digestion, and produces gripes and looseness.

This

This is the history and the cause of almost all the febrile disorders of infants, and of what are called *teething fevers*, *teething coughs*, and *teething and weaning loosenesses*. The proximate cause of almost all of them is untimely and undue exposure to *cold*; and every mother may rest assured, that no infant, or child, can be brought to bear the same degree of this, without danger of suffering by it, as the same child or infant will bear easily, when advanced to the adult state: and that the cold-water washings, and the sending infants out a-iring in winter weather, and all the other parts of the case-hardening process, should be delayed till the teething and weaning be over; or till the child be able of itself to tell how such things agree with it, and when it suffers by them.

The treatment of *coughs* and of *catarrhal affections* in infants and children, may be safely enough trusted to a few vomits of ipecacuan wine, repeated at short intervals. The syrups and pectorals that are often sought for seldom do any good, and are ready to add to the stomach-disorder and indigestion. Equal parts of thin mucilage of gum-arabic and Syr. Scillit. A tea-spoonful once or twice a-day maybe useful at times as a pectoral,

or

or a tea-spoonful or two of Syr. Althœæ, with from 10 to 20 drops of Tinct. Hyoscyami in each dose, will often answer better. But opiates in any form are to be used with caution in the beginning of the complaint, or while the stools are disordered, and of an unnatural appearance. The practitioner has but little to do with the cough; but he ought to be aware of what in all probability is to follow from acrid secretions; and where the emetics do not open the bowels fully, they ought to be followed with two or three purges; such as 3 or 4 grains of rhubarb, and double the quantity of calcined magnesia, for a child of one year old; or, what will be easier given, $1\frac{1}{2}$ grain of calomel, well rubbed up with 3 or 4 grains of lump-sugar; or Tinct. Jalap., and Syr. Sacch. of each a drachm and a half; and so in proportion for those above it; but less need hardly be given for any age below. When, from these precautions being neglected, or from whatever cause it may arise, the looseness becomes excessive, and the child begins to fall into the condition mentioned *suprà*, page 83, any further prosecution of evacuants would be attended with bad effects: and along with the other measures there

there mentioned, the following mixture may be used with good effect :

℞ Potio. Cretac.
Tinct. Catechu,
Tinct. Croci,
Syr. Sacch.—utriusque, ʒij.
Tinct. Opii gutt. xx.

A tea-spoonful, or more, for a child of one year old, two or three times a-day.

Ten drops of Aq. Carbon. Ammon. to be added to this mixture, wherever the matters ejected from the stomach, or passed downwards, have an acid smell. This is so frequently the case in the complaints we are mentioning, that it may be in general added with advantage. Where vomitings take place at the same time, add to it the Aq. Ammon. with Spirit. Nucis Moschat. ʒi; to be given in the same dose, immediately after every fit of retching.

APPEN-

APPENDIX.—No. II.

On the Disease called Choleric.

A place is given to the disease called *Cholic* in all the Nosological Systems, and some of them distinguish it into species and varieties. A late eminent writer places it under the head of *Spasmodic Affections* in the natural functions; considers it as of the same nature with *Ileus*; and so far from entering into these distinctions, he says: “It has the same proximate cause, and is attended with the same symptoms as ileus, only in an inferior degree; that the proximate cause is a spasmodic contraction of some part of the intestinal canal, and that he is well persuaded that this is the same in all the species that have been taken notice of, and that consequently the indication of cure is the same in all of them, namely, to remove the spasmodic contraction mentioned*.”

In

* Cullen's “First Lines.”

In looking over some Notes, taken at Dumfries so far back as the year 1786, I find that cases had been met with, which, from the way in which the notes have been put down, had perhaps been taken up in this view. They are to the following purpose. That through the winter of that year, there had occurred an unusual number of cases of enteritis or ileus, several of them ending fatally, &c. That during the succeeding spring months, seven or eight cases of *spasmodic cholice* were also met with, of which the following account is given: “ That the greatest number were in female patients, all of them about or above the age of forty; but whether connected with any disorder or irregularity in the menstrual discharge, is not mentioned; that the pain affected chiefly the region of the stomach, which was sore or tender to the touch, but without swelling or inflation;—that retching and vomiting took place in all of them soon after the first attack;—and that the complaint was accompanied with jactation, straining and twisting of the body, much more than is commonly observed in persons labouring under enteritis: but that the belly was in general open, or easily moved by purgatives,
“ and

“ and none died of the complaint ;—that bleed-
“ ing and opiates gave relief in every case ;—that
“ laudanum, mixed with some aromatic spirit, and
“ rubbed on the pit of the stomach, was frequent-
“ ly successful ; but that more certain relief was
“ procured from administering it by glyster, and
“ that it was necessary to use means to preserve an
“ open belly for some time after recovery, in or-
“ der to prevent relapses, which were ready to
“ happen if this was neglected.” Nothing is
said about spasmodic affection of the abdominal
muscles ; and it is not now known why the
name of *spasmodic* had been adopted to distin-
guish it.

Since that period, however, I have met with so
many cases of similar disease, clearly referable to
acrimonious irritation, induced on the alimenta-
ry matters in the stomach or intestines, by excess
in the use of spiritous liquors, or by the use of
improper and indigestible articles of food, and ac-
companied with symptoms of imperfect or un-
healthy digestion ; as gastrodynia, anorexia, car-
dialgia, and habitual costiveness, as to induce a
conviction, that though there may be cases in which
the disease depends on the same proximate cause
with

with ileus, viz. spasmodic contraction in some part of the intestines, according to Cullen; yet there are many others, to which we must assign a different origin, viz. the presence of acrimony, arising from disordered bile and indigesta in the turns of the duodenum, and where the spasmodic affection is merely symptomatic.

This will be confirmed by the history of four different cases, that were lately met with in the course of the same week. The first was in a young woman, subject to a variety of stomach complaints, and habitual costiveness, but who was in good health at the time of the attack. This was instantaneous, attended with severe pain, retching, and vomiting of highly acid matters; spasmodic contraction of the abdominal muscles, weak faltering pulse, with coldness of the extremities. She died within twenty-four hours from the first attack, without the bowels having been fully moved, to ascertain the state of their contents. The abdomen of this patient was opened after death in the Royal Infirmary. The second was a married woman, liable to frequent attacks of the same complaint, and labouring at the time under a bowel-

disorder,

disorder, attended with gripes and a feculent purging. This was suspended for the time, but was renewed by the purgatives given her for removing the stomach-complaint, and continued for some days. The third was in the wife of a recruiting serjeant, and was referred to no cause; but I suspected intemperance or irregularity in her habits of life. The fourth was a male subject, and the disease was plainly brought on by a dinner of beef and greens, eaten the day before, not in the best state of preparation. The three last recovered; but two of them, not without considerable danger. They were all treated in the way mentioned *suprà*, page 184, to which this refers: Two that were full and strong, with blood-letting, but no inflammatory crust was exhibited by the blood of either.

A proper choice of purgatives, both as to form and substance, comes to be a material part of the treatment of such a disorder as this. The Pil. Aloet. *Pb. Edin.* two or three every two or three hours, until ten or twelve are taken, or till they purge freely a number of times, will often answer our purpose well. In several severe cases, I have
seen

seen the following prove very effectual, and rest on the stomach easily :

℞ Pulv. Jalap. ℥ij.
 Magnes. ust. ℥β.
 Sacch. Alb. ℥vj.
 Tere simul. opt. et adde
 Aq. Fontan. ℥iij.
 Aq. Menth. Pip.
 Tinct. Sennæ comp. utriusque ℥β. M.

Two table-spoonfuls of this to be taken, shaking the phial, every hour or two, according to the state of the stomach, and urgency of the case, till it operates fully.

Jalap, without proper preparation and admixture, is but a nauseous medicine. Much depends on rubbing it into a very fine powder, with hard lump-sugar ; and by means of this, almost all the medical powders may be reduced to any degree of fineness we wish to give them.

A variety of other purgatives, or of combinations and preparations of them, may be employed. Almost every person has his particular form and choice in respect of these ; but in such cases as we have mentioned, we can hardly expect to succeed with any of them, unless by passing them through the stomach, while the system is considerably under the influence of an opiate.

Purgatives have been divided into the *drastring* or *heating*, and the *cooling* or *lenient*. I believe this division to be quite fanciful; and that, independent of idiosyncrasies and peculiarities of stomach and habit, they are all very much alike; and that no purgative in a dose that acts fully, will leave any heating or irritating effects behind it. With respect, indeed, to the facility of dozing, they are very different.

APPEN-

APPENDIX.—NO. III.

Diseases at the Naval Hospital of Madras.

THE Naval Hospital at Madras, while I did duty in it, contained double the number of patients stated in the report of the Company's Hospital, p. 210; very often a great deal more.

Few venereals were sent us from the ships, nor were there many in the fleet. The seamen had but little communication with the shore. Little or no prize-money was divided in the country; and the easy ladies at Madras do not often venture themselves on board ships. Indeed, from the modes of life, none but the very outcasts of outcasts could subsist among Europeans in such a character. At Madras, there were to be found females of the same description, as in every long-shore city in every other part of the world; but it did not appear to me that venereal complaints were very common among them. Their attention to cleanliness,

linefs, their frequent washings, and other modes of management with regard to certain parts of the system, perhaps in some measure tends to prevent the frequency of this disease among them. But of this I am uncertain. The report from the Company's Hospital seems to import differently; and I speak only from what I observed among the people with whom I was most conversant. Among some officers who lived on shore, I saw some of the most inveterate cases of lues venerea, attended with vile leprous phagedenic and herpetic sores and eruptions on the skin, and which were not cured without the most miserable wreck of constitution I have any where witnessed.

The great bulk of *our* hospital cases consisted at all times of *ulcers*. Of the remainder, the proportion and kinds would agree very much with the report given at p. 210. No exact general lists were, however, kept with relation to practice; and those relating to contract, and the settlement of accounts with Government, could not be much depended on in this respect.

Of *Fevers*, properly *remittent*, that is, with a regular diurnal *remission*, I observed none in India; and I do not know that fevers, observing
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any other type, come properly under this description. In many of our tertian and quartan agues, the patients were not, in the intervals, entirely free from disorder; so that it might be difficult to distinguish them exactly as remittent or intermittent, and still more with regard to those observing the quotidian form. In the inland part of the country, there may be more regularity. But at the hospital, the type was very changeable in all of them, and they very readily took on the continued form.

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APPENDIX.—No. IV.

On preserving Health in India, &c.

I am doubtful whether, in such a country as India, where there are such evident marks of a prevailing torpor and want of tone in the system, the common practice of stopping a seaman's *grog*, whenever he gets a sore or ulcer, be founded in a due consideration of the circumstances; and whether, in hospitals, when a full supply of wine cannot be had, substituting *punch* in place of it, might not, even in the case of wounds and ulcers, be, under circumstances, attended with advantage. The inflammation which we found in most cases in India attendant on such complaints, was not of that kind to be injured by a moderate use of diluted spirits. Indeed, it seldom ran high enough; and more stimulus to the system seemed in general to be the main thing wanting to the cure. The system of a seaman, habituated to a daily proportion of spiri-
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ritous drink, cannot fail to suffer considerably in its powers, if this be suddenly withdrawn. The discharge from a large ulcer occasions a considerable waste of the nutritious part of the blood; to supply which, will require a more stimulating and nourishing diet than the ordinary fare of an hospital, and especially that the accustomed stimulus the patient has had in his drinks, should not be altogether withheld.

As being connected in some measure with this subject, the few following observations may be of some consequence towards preserving the health of Europeans in India. They may appear of little importance to those who are acquainted with the nature of the country, and the modes of living practised there: But let it be remembered, that we are not writing for such.

By far the greatest number of persons who go out for the first time to India, are in the early stage or vigour of life; and if they preserve health on the passage, arrive in it in high spirits, and with the European tone and vigour of system in some measure unbroken. The open sea-air, and the exercise which they have been accustomed to take on the ship's deck, has insured to them a keen appetite,

petite, and a healthy and vigorous digestion; and the European habit of using a great deal of animal food in the meals is by no means repressed by a sea-voyage. But no person in India ever takes, or can take, sufficient exercise, either within or without doors, to digest such a diet. The modes and habitudes of life are in that country entirely different from the European; and this produces a considerable diminution of the digestive powers; but the acquired appetite remains for some time, and the usual proportion of animal food is perhaps indulged in, till some stomach or bowel disorder occurs to check it.

New comers ought to be aware of all this, and that they are now in a country where the digestive organs are peculiarly liable to disease, and they ought therefore to diminish considerably both the quantity and richness of their diet. They cannot too soon adopt the regimen of the Europeans who have resided in the climate, and accustom themselves to what are called the native dishes, which consist for the most part of boiled rice, and fruits, highly seasoned with hot aromatics, along with meat stews, and sauces, with but a small proportion of solid animal matter.

Provided

Provided every degree of excess, that approaches to intoxication, be avoided, a regulated use of wine and spiritous liquor will be attended with far less injury to health than a full diet of animal food. But any degree of excess in these, which goes the length of producing any disorder in the stomach, or in the process of digestion, will be attended with the same bad effects; and if hard-drinkers be, in Europe, proverbially subject to diseases of the liver, how shall they expect to escape in a country where this is in a manner endemic? A little shrub and water, or Madeira and water, between meals, is useful, and in some measure necessary, to keep up the tone of the digestive organs, and to supply the waste occasioned by an excessive perspiration. But the *sherbets*, composed of acid and water, and perfumes, are mere *rot-gut* drinks, nor are the English beverages at all worth the price that is paid for them. It is not by acids and coolers, that the septic tendency of the climate is to be resisted, so much as by hot and stimulating aromatics, eaten along with the food, and a few glasses of wine or of punch after it. The superabundance of vegetable acid in the stomach and

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bowels, tends rather to injure the business of digestion, than to promote it.

Another way in which some young men injure their health on their first arrival in India, is from a kind of false bravado, and the exhibition of a generous contempt for what they reckon the luxurious and effeminate practices of the country. They have perhaps heard and read much of these before their embarkation; and this leads them to a general contempt of the country customs and manners, as arising entirely from those dispositions. They will not submit to be deprived of the use of their limbs, and be carried about, laid out at their full length on a *palankeen*, like a sick person in a European litter. Perhaps they will not even carry an umbrella, to screen them from the rays of the sun, but will ramble about, and take their former exercise in the heat of the day, till some climate sickness is brought on, and teaches them effectually to distinguish between what the inhabitants of the country have learned from experience, as the best means of resisting its unhealthy tendency, and their own erroneous and rash conjectures.

There is another custom, which tends greatly to confirm the opinion new comers generally entertain

tain of the sensuality and effeminacy of the European residents,—the universal practice of going to sleep on a couch an hour or two after dinner; but this, the necessity of avoiding perfect ennui, and being left alone, soon reconciles them to; and I do not know that any evil arises from it, provided two things be attended to, viz. to guard against a too full meal of animal food, and too much wine, and that this restriction be not made up by a proportional indulgence at supper. To this, there is the more temptation in India, that from supper being at a cooler hour, it is apt to become the convivial meeting, and the more social meal. In fine, strangers, arriving in India, if they regard the preservation of health, cannot too soon adopt the modes of living followed by the experienced European residents there, in the management of the whole of what have been called the Non-naturals; and, as much as official costume will admit, the light and loose mode of dressing adopted by the natives, will be found far preferable to the tight and heavy clothing of Europe.

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