

Practical observations in surgery : more particularly as regards the naval and military service : illustrated by cases, and various official documents / by Alex. Copland Hutchison.

Contributors

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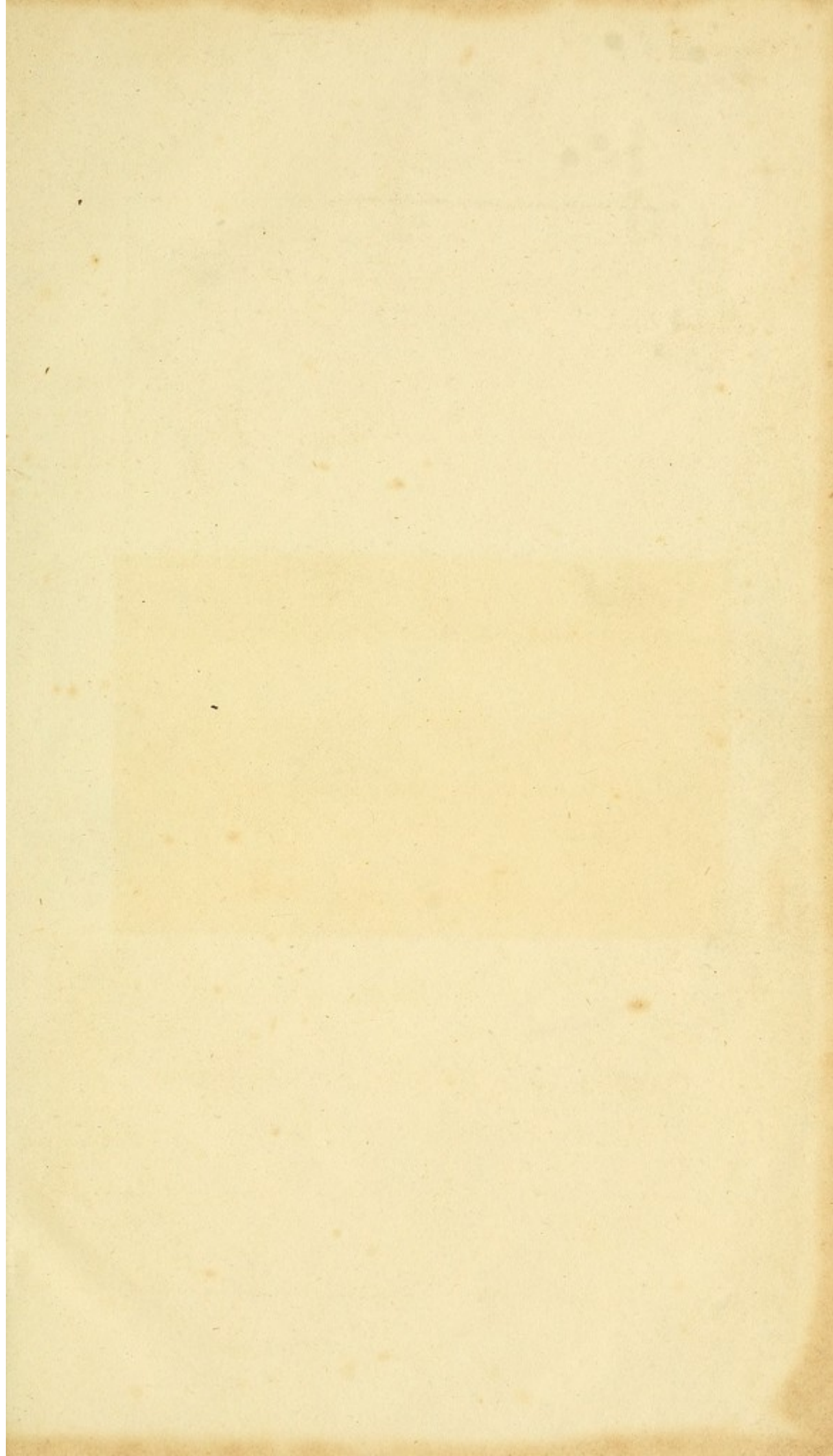
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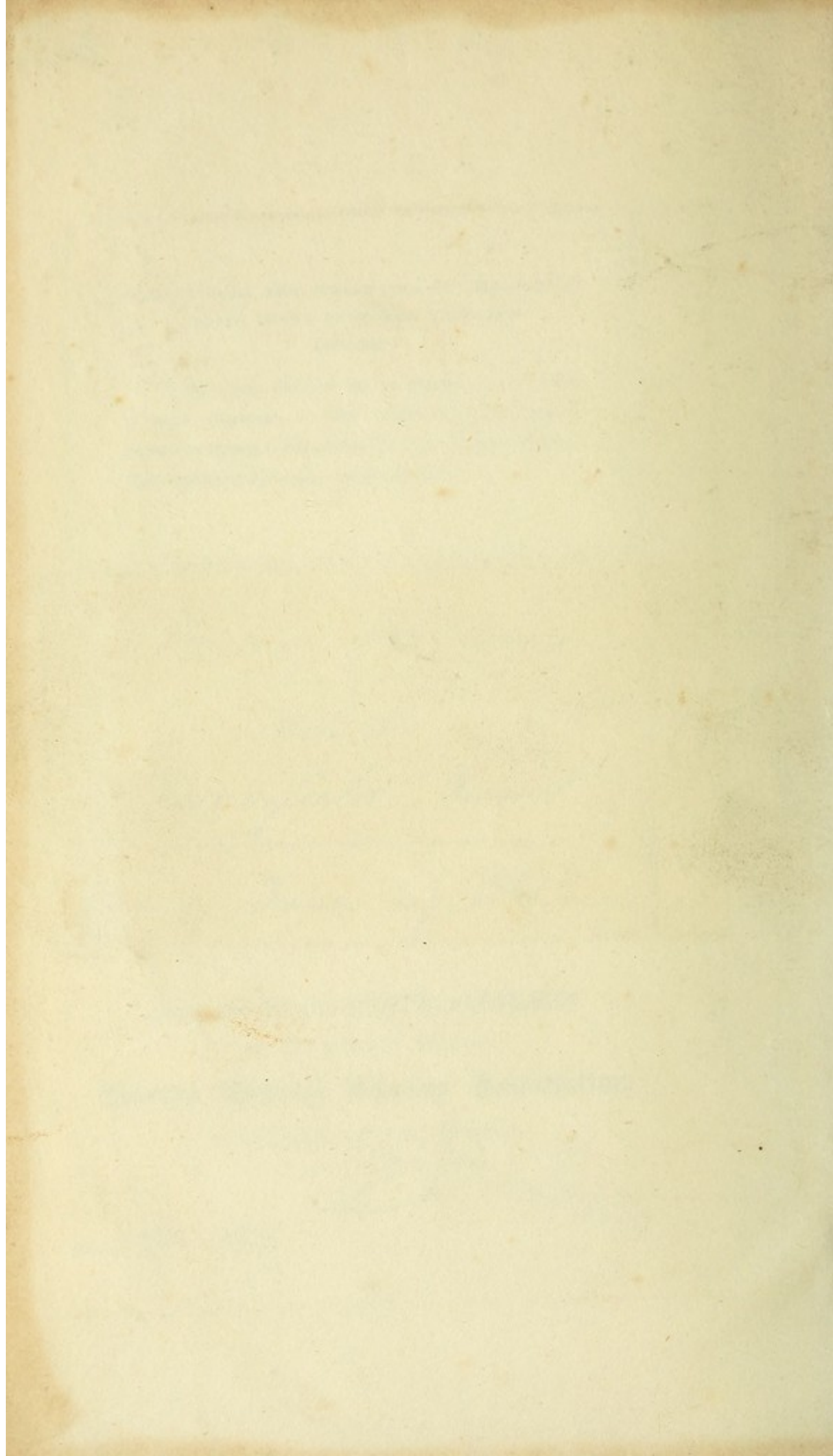
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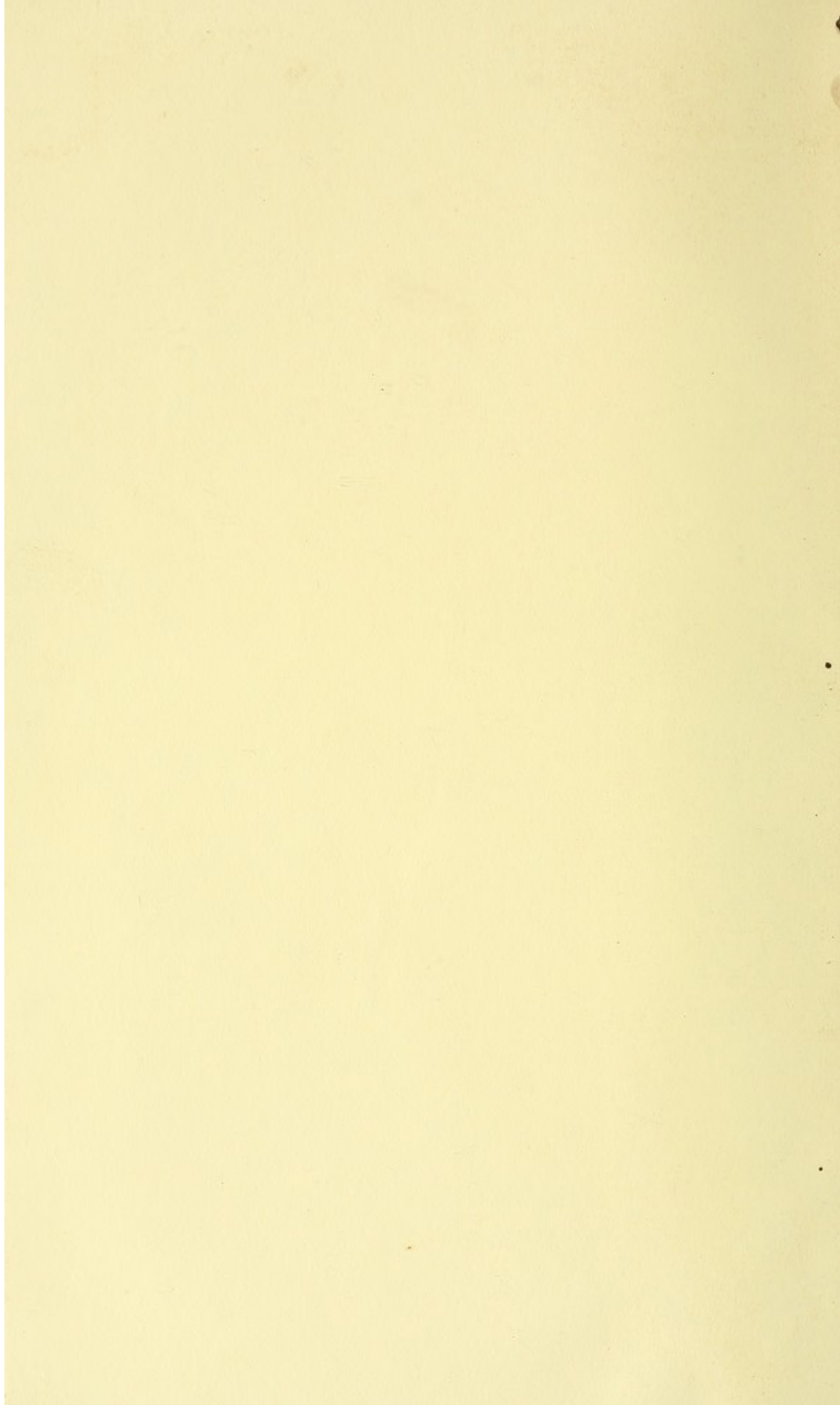
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Doctor John Richardson
our his Townsman & most affectionate
Friend The Author

Director John Jackson

from his Government and most officials

Review the book in

PURGERY

THE LIFE AND MILITARY RECORDS

OF THE LATE GENERAL JOHN JACKSON

BY THE COMRADE IN ARMS

JOHN JACKSON

1864

THE LIFE AND MILITARY RECORDS

OF THE LATE GENERAL JOHN JACKSON

K
PRACTICAL OBSERVATIONS

IN

S U R G E R Y :

MORE PARTICULARLY AS REGARDS

THE NAVAL AND MILITARY SERVICE.

ILLUSTRATED BY

CASES, AND VARIOUS OFFICIAL DOCUMENTS.

SECOND EDITION, CONSIDERABLY ENLARGED.

BY ALEX. COPLAND HUTCHISON, Esq.

Senior Surgeon Extraordinary to His Royal Highness the DUKE of CLARENCE; Senior Surgeon to the Westminster General Dispensary; Consulting Surgeon to the Royal Metropolitan Infirmary for the Diseases of Children; Fellow of the Royal College of Surgeons, and Member of the Medical and Chirurgical Society of London; Corresponding Member of la Société Médicale d'Emulation of Paris, of the Royal Medical and Medico-Chirurgical Societies of Edinburgh; Surgeon to the Royal Naval Hospital at Deal during the last War; and now Surgeon to His Majesty's Dock-Yard at Sheerness, &c.



LONDON:

PRINTED FOR

0 THOMAS AND GEORGE UNDERWOOD,
32, FLEET STREET.

M.DCCC.XXVI.

TO
SIR WILLIAM JOHNSTON HOPE, G.C.B.

VICE-ADMIRAL OF THE WHITE;

MEMBER OF PARLIAMENT FOR THE COUNTY OF DUMFRIES; AND ONE
OF THE LORDS COMMISSIONERS OF THE ADMIRALTY;

&c. &c. &c.

SIR,

It would be out of place here to enlarge on those private sentiments of gratitude and personal respect which have a share in inducing me to place this Work under your Patronage; for, on public grounds, I certainly could not place it under any protection more properly than that of an Officer who, to distinguished services in war, adds the merit of acting a conspicuous part in the civil administration of the Royal Navy; and who possesses, in an eminent degree, that virtue and intelligence which can appreciate the value of the lives and health of seamen, whether as objects of humanity or policy.

In reviewing the annals of past ages, ancient and modern, it does not appear that this, as in the present times, was studied by the commanders of fleets and the leaders of armies, as a sacred and indispensable duty. As they could not be blind to the importance of an object without which war could not be carried on with efficiency or success, we must impute this apparent neglect to the ignorance or distrust in the means of effecting this end. But whether it was owing to this, or to the less civilised character of our ancestors, certain it is, that the conduct of the officers of the present day exhibits a striking contrast to that of former times.

Only a few years before the middle of the last century, the enlightened and classical Author of Anson's Voyage, after eloquently depicting, and bitterly deploring, the horrors of the sea scurvy, by which a complement of four hundred men was reduced to eight efficient hands, concludes his narrative with pronouncing that this was a disease which admitted of no remedy. Nevertheless, means, at all times accessible and practicable, have been devised by which this disorder has been extirpated from the Navy.

Those fevers, also, which were the next greatest scourge of a life at sea, have been nearly extinguished, chiefly by counteracting those squalid, intemperate, and slothful habits which engendered them; in effecting which the medical officers have been zealously seconded by those improvements in cleanliness, discipline, and diet, for which the country is indebted to the superior and enlightened attention paid to these objects by those who direct the civil affairs of the service, and by commanding officers; and it may with truth be affirmed, that without these new methods of economising human life, the Navy could not have been manned during the late great struggle, unparalleled in its duration, extent, and the momentousness of its results.

When we reflect, therefore, that through these means, and some other improvements and discoveries in physic and surgery, the efficiency of this great bulwark of national defence and glory has been more than doubled, and the financial expenditure reduced in a like proportion; the importance of the study of health can hardly be too highly estimated, as it respects the duties of commanding and medical officers, but, above all, as it affects the vital interests of the State.

It is under these impressions that I have felt a pride in belonging to the Naval Service during a war in which its glories have been carried to an unexampled pinnacle—which have animated me in the exercise of my humble duties, and stimu-

lated me to exert my feeble abilities to the utmost, in endeavouring to contribute ever so little to this grand and patriotic object.

The observations which I have made in the course of many years' service, afloat and on shore, are embodied in the work which I now beg to inscribe to you, in testimony of the high respect with which I have the honour to be,

SIR,

Your very grateful, obedient, and humble Servant,

A. COPLAND HUTCHISON.

May 1, 1826.

intended to be a permanent addition to the income of the
country, and to be a source of revenue to the Government.
The Government, however, has not been able to do so, and
the result has been a heavy loss to the country, and a
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PREFACE

TO

THE FIRST EDITION.

It would be equally erroneous as unjust to impute the perfection to which the arts and sciences have attained at the present era to any particular age or nation. It is, indeed, well known, that the most momentous discoveries in mathematics, astronomy, chemistry, &c. have in some instances owed their origin to the reveries of wild enthusiasm, and not unfrequently to mere accident. The fall of an apple from a tree, is said to have excited the first idea of gravitation in the mind of the immortal Newton, whose philosophy will endure as long as truth and reason shall continue objects of research with man; and Archimedes, the greatest of geometers, detected the adulteration in Hiero's crown by observing the ascent of the water on the wall, as he descended naked into a bath.

The progress of human intellect in the acquirement of knowledge has been at all times and in all countries of slow growth; and the perfection to which the moderns lay so large a claim arises more from the accumulated facts and scattered lights of past ages and nations concentrated, as it were, into one focus, than to any superiority of mental powers, so confidently assumed by the existing race.

It must, however, be admitted, that the last century has added largely to the previous stock of general information; and no art or science has felt its beneficial influence in a higher degree than the science of Surgery. The different wars of defence or aggression in which the various States of Europe have been unhappily engaged for so many years past, have tended, extensively, to enlarge the boundaries of surgical science, and to give a decisive boldness and dexterity to the operative part, of which the most skilful of our predecessors at the commencement of the eighteenth century could form no idea.

I have principally confined myself to a detail of practical facts, and avoided, as much as possible, the slippery paths of theoretic reasoning, excepting where the subject un-

avoidably elicited it analogically. And the critical remarks I have hazarded on the works of others, are made, I trust, in a spirit of liberality and fairness, for as such they were certainly intended to be conveyed.

It may not be improper to mention here, also, that the surgical department of the Royal Naval Hospital at Deal, for between seven and eight years, was solely committed to my management, and during the whole period the practice was open to the inspection and observation of all the medical officers of the fleet, who were besides invariably summoned by public signal to attend operations. I am happy in this opportunity of bearing testimony to the ardour and professional zeal manifested on all these occasions by those gentlemen. I should likewise notice, that, for the more general diffusion of surgical knowledge, to those members of the profession confined to the limited experience of isolated ships of war, it is a standing order of the service, that surgeons and assistant-surgeons are not only at liberty to attend the hospital practice, but are directed to be present at every capital operation, whenever circumstances will permit their so doing.

I have only farther to observe, that should

the contents of this volume be the means of adding something to the general mass of surgical knowledge, particularly among the junior members of the profession, the principal object of the author will be accomplished.

PREFACE

TO

THE SECOND EDITION.

IN 1816 I published a small work entitled "Some Practical Observations in Surgery;" and in the following year, a pamphlet entitled "Further Observations, &c.," which was intended as an appendix to the first: both which, however, are comprehended in the work I now submit to the public, with considerable additions of new matter, and enlargement of the old.

Three of the chapters in this edition appeared originally in the Medico-Chirurgical Transactions of London, and one in two numbers of the Medical and Physical Journal,—all which have been enlarged and corrected, with the view of making the work more useful to those for whom the greater part of it is especially designed—the medical officers of the Fleet and Army.

The chapter on Imperforate Anus was read at one of the meetings of the Medical and Chirurgical Society, and by the council voted for publication in their valuable Transactions; but I was strenuously advised to withdraw it, and insert it in this work, which I had then in contemplation. I am more satisfied that I came to this determination, as a very interesting case has since occurred to me in my neighbourhood; to which, although I have but slightly alluded, as it happened while this work was in progress through the press, yet I have sufficiently so, I trust, to shew its importance, as regards the operation required for this defect of nature. It may be alleged that I have been guilty of great repetition and prolixity, when treating of Imperforate Anus; but as this subject had been so little discussed before, I thought it might be useful to enter somewhat into detail.

Since many enlargements have been made and new subjects introduced into this second edition, I trust the slight change made in the title may not be considered unnecessary.

I have to add, that my official duties as Surgeon to the Naval Arsenal at Sheerness have deprived me of the advantage of refer-

ences, and thereby prevented my giving extracts, or being as correct as I could have wished, in the allusions I have made to the writings of others; but, upon the whole, I hope they will be found to be substantially so. If, however, I should have erred in this and in the arrangement of some parts of the work, I trust the respective authors and my readers will admit my distance from town as a sufficient apology.

I cannot send this work to the public without expressing my gratitude to Dr. Burnet, the Medical Commissioner of the Navy, for the official documents with which he has so obligingly furnished me on the subject of Hospital Gangrene and Malignant Ulcer; as likewise to my much-esteemed friend Dr. Quarrier, for his valuable observations on Feigned Diseases.

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ON AMPUTATION.

PRACTICAL OBSERVATIONS
IN
SURGERY.

ON AMPUTATION.

So much has been written on the subject of Amputation in general, and so progressive have been its improvements during the last half century, that, as performed at the present period, I am inclined to think it has approached nearer to perfection than any other operation in Surgery.

An extensive hospital practice, owing to the desolating effects of the late war, both afloat and on shore, having afforded me ample opportunities for observation on this important subject; the subsequent remarks, I trust, will not be deemed altogether superfluous or undeserving attention, more especially from the junior members of the profession.

With this view, I shall not occupy the time of the reader by entering on the different stages of the operation, as recommended by the most approved authors; but chiefly confine myself to those points in which I may happen to differ from them,

with my reasons for so doing; to others that have been either imperfectly treated, or wholly omitted; and lastly, to the accidents that have occurred to me during, or subsequently to the performance of the operation in question, together with the methods resorted to, in order to obviate or remedy these difficulties: but before I proceed to this part of the subject, it will be highly advisable to discuss the question as to

*The proper Period for operating in Gun-shot Wounds,
and all recent Accidents.*

A late sensible and ingenious writer * has proved the necessity, and demonstrated the advantages, arising from amputating on the field of battle, in preference to the delay usually recommended; but even this gentleman advises to defer the operation from two to six hours, in order, as he remarks, to allow the constitution time to recover from the shock and alarm it has sustained. At page 24 of his book, he says, “that the sufferer may have time to recover from the shock of the injury, and approach as near as possible to a state of health; and the farther he is from this state of health, the greater the chance of a fatal termination.”—

“ If a soldier, at the end of two, four, or six hours after the injury, has recovered from the general constitutional alarm occasioned by the blow,

* See Guthrie on Amputation in Gun-shot Wounds, &c. first edition, published in 1815.

his pulse becomes regular and good, his stomach easy, he is less agitated, his countenance revives, and he begins to feel pain, stiffness, and uneasiness in the part; he will now undergo the operation with the greatest advantage, &c.”—“If, on the contrary, the operation be performed before the constitution has recovered itself to a certain degree from the alarm it has sustained, the additional injury will, most probably, be more than he can bear, and he will gradually sink under it and die.”

It appears to me, however, that in all wounds from cannon-shot, or splinters, or even those from musket-balls penetrating the joint of the knee, for instance, or in those attended with fracture and laceration of the principal nerves of the limb, &c., in which amputation may be deemed necessary on the first view of the case; that the sooner such a source of irritation is removed by a fresh incised wound, the greater will be the probability of recovery; for, laying aside for the present the constitutional irritation occasioned by such a wound, the very circumstance of a few hours' painful anticipation of the operation to be submitted to at the termination of the above periods, added to the deep impression the wound will continue to make on the patient's mind, and the gloomy prospect of his helpless condition, when so mutilated, all acting conjointly, will greatly tend to render him less capable of undergoing the operation than when more immediately

performed after the infliction of the injury; for, in the former case, depression not unfrequently follows reflection, accompanied by an unwillingness to submit to the necessity of the operation. This, Mr. Guthrie justly remarks, rarely exists in the first instance; for, he observes, page 49, "Soldiers in general are anxious to undergo an operation when they find it inevitable, and frequently press it before the proper time; that is, before they have sufficiently recovered from the shock of the injury."

I am of opinion, however, that the anxiety of the patient thus described, is a strong argument in favour of *immediate* amputation, as it fully evinces the mind to be prepared for the event it contemplates as inevitable; and, consequently, its operation, which we all know to possess a very powerful influence, may be calculated upon as favourable to ultimate success.

With respect to the shock which the constitution receives, either from the forcible and sudden removal of a limb in battle, or the infliction of a dreadful wound requiring amputation; I can, with the utmost confidence, affirm, that my experience has not furnished a single instance to justify a deferred operation, nor have I been able to learn by sedulous inquiry among my professional brethren serving afloat, that such had been the result of their observation.

What Mr. G. means by the constitutional shock arising from desperate wounds, I should conceive as merely the consequence of the acci-

dent, and the influence it may have on the nervous system; which we may expect will gradually continue to increase, proportionably to the extent and vitality of the parts injured, and the length of time that has elapsed before the application of a proper remedy; namely, amputating above the wounded part.

Every officer, seaman, soldier, or marine, who had undergone amputation from gun-shot wounds, and had fallen under my observation and management, have all uniformly acknowledged, that at the time of their being wounded, they were scarcely sensible of the circumstance, till informed of the extent of their misfortune by the inability of moving their limb; although, sometimes, previously aware of having received a smart blow on the injured part.

When surgeon of the *Terror* in 1803, in a night action off Granville, a quarter-master came down to me in the cockpit, crawling on his hands and one leg, dragging the other after him, and said, "Sir, I believe I am wounded, but am not certain, only that I cannot use my leg. I was in the act of re-hoisting the colours that had been shot away, when I felt something smartly strike the calf of my leg; and I feel my trowsers wet, which I suspect to be with blood." This poor man had actually been wounded on the calf of the leg by a spent twenty-four pound shot, which dreadfully lacerated the gastrocnemius and soleus muscles, from the popliteal cavity to their consolidation in

the tendo Achillis, at the same time fracturing both tibia and fibula.*

To place this matter beyond contradiction, as far, at least, as the evidence of numbers can vouch for facts, it may be mentioned that, out of upwards of ninety soldiers, badly wounded in the memorable battle of Waterloo, and afterwards removed from Brussels to Deal Naval Hospital, and whom I separately interrogated on the point in question, in the presence of Sir John Mead, Deputy Inspector of Hospitals for the Kent District, not one appeared to have lost complete self-possession for a moment. On the contrary, many of them continued fighting in the ranks of their respective regiments, after having been struck more than once, twice, or three times even, with musket-balls: many of those men were wounded with grape-shot; some through the lungs, abdomen, parts of generation,† face, neck, vertebral

* Had the propelling force continued the original velocity of the shot, when it unfortunately came in contact with the limb in this case, the sensation communicated by the wound to the patient would have been, in all probability, proportionably less.

† One of these was a young soldier, of the 42d regiment, who was struck by a musket ball on the upper part of the thigh, which lodged. He was placed under my care just three weeks after he was wounded; *affected fuerat penis tentigine plenâ et perpetuâ* during the whole of this period, and his urine dribbled from him—the ball was imbedded in the symphysis pubes, having the urethra stretched over its convex surface, and from which situation I cut it out, *deinde horæ momento detumuit penis ad statum flaccidum naturalem.*

column, joints of the knee, elbow, and wrist. Some of this number had also suffered amputation, and there were about eighteen that laboured under gun-shot fractures of the upper and lower extremities. Two or three, from the extensive nature of their wounds and loss of blood, afterwards became faint. Such, indeed, were the effects on my friend Lieutenant-Colonel Beckwith, of the 95th, who underwent amputation of the left leg, both bones of which had been fractured close to the ankle joint, by a grape-shot which lodged in the part. This gallant officer was totally unacquainted with his calamitous wound, till informed of it some time after by a staff-officer, who first called his attention to the circumstance, on perceiving a stream of blood flowing from the boot and stirrup-iron to the ground; and after such a lapse of time, the loss of blood must have been considerable, which produced some degree of faintness.

With respect to the alarm produced on the patient's mind by the infliction of such a wound in battle, as will require the amputation of a limb; and supposing, also, to that be superadded considerable exhaustion of the vital powers, in consequence of previous great bodily fatigue and sensorial excitement: will the delay of a few hours tend to remove the cause of this reduced state of the animal functions, taking into our consideration that the number of nerves lacerated are a constant source of irritation to the sensorium, acting indeed immediately upon it? I should apprehend not; and further, that, far from tranquillising or reno-

vating the exhausted excitability, every moment the operation is delayed will only tend greatly to increase the evil intended to be guarded against.

If I do not misconceive the author's meaning in his application of the word alarm, I think it may be fitly denominated fear, either of death, or the pain anticipated from the operation the patient is about to undergo; or both. Fear is a depressing passion, which debilitates the vital powers in a very extraordinary degree, and has in some instances proved fatal; but, happily for the national character of these realms, it is an impression seldom harboured in the breasts of British seamen or soldiers: yet, it must be acknowledged, that even in them it sometimes has occurred; and in the treatment of disease or management of accidents, it is unquestionably one of the most unfavourable circumstances a medical man has to encounter; for I hardly recollect an instance in which the patient persevered in believing himself in a hopeless state, that was not attended with a fatal termination. Were it necessary to corroborate this fact, I might relate several cases which occurred in the course of my own experience, but especially the cases of three foreigners.*

* Of these three cases, two were Swedes, and the third an Italian, on whom I operated for popliteal aneurism, in Deal Hospital (see Dalmiero's case); the two former instances occurred whilst I was surgeon of His Majesty's ship the *Druid*. They all persisted in declaring that they must die, in opposition to every attempt sedulously made to persuade them to the contrary: and they fully accomplished their prediction.

When untoward cases of this nature occur, recourse might be had, with great propriety, to the use of internal stimuli, as has been very properly advised by Mr. Guthrie, at pages 25 and 50. Under such circumstances, to administer a certain portion of wine, &c., proportionably to the exigency of the existing debility, will tend to rouse the dormant powers of the system, and enable the patient to undergo the operation with more fortitude: the soothing language of kindness and encouragement may then be advantageously employed; stating the strong hope we have of ultimate recovery, and the competent provision for future comforts, ensured to him by the gratitude of his country.

None but those who have suffered by the hand of affliction and calamity can properly appreciate the value of kindness and attention; and the power of these important auxiliaries, in the hands of the humane surgeon, is well understood, and not unfrequently practised in our service successfully.

Although Mr. Guthrie recommends the propriety of the delay already mentioned, yet he would by no means have it extended beyond the period in which pain, rigidity, and tumefaction of the limb commence; and he limits these consequences to the space of eighteen or twenty-four hours. Now, supposing the medical officers attached to the Duke of Wellington's army, at the great battle of Waterloo, or in any of those fought in his Peninsular campaigns, had deferred amputating till the expiration of four or six hours after

the infliction of a wound requiring that operation; would they, let me ask, have completed all that part of their duty, before the termination of the period limited by Mr. Guthrie, and beyond which, according to him, it would be improper to act? We may, with the greatest probability of truth on our side, decide in the negative.

All those that suffered amputation, then, after the period in question, and in the battle of Waterloo there must have been many, were from necessity left, we may suppose, till the expiration of the favourable period, and the suppurative stage had commenced; but before such wounded reached this anxiously looked-for crisis, how many, may I be permitted to ask, will have been numbered with the dead? These are perilous and serious considerations, requiring some degree of fortitude even to reflect upon: and, independently of the principle of *any delay* being, as I have endeavoured to prove, fraught with evil to seven patients out of nine; the practice recommended by Mr. G. will have a dangerous influence on the mind of the young military surgeon, in sanctioning by his authority, a period of two to six hours of the most favourable time for operating on the wounded soldier to elapse, without the performance of a single amputation.

Exclusive of the objections already opposed to the doctrine of procrastination, many more might be adduced equally cogent; such as the great accumulation of patients on the field of battle, which

will be in proportion to the nature, extent, and severity of the contest, and the danger of hastily and imperfectly performing operations, from an anxious desire on the part of the medical officer to attend to the wants of every sufferer; their numbers momentarily increasing, while the surgeon rests, as it were, on his arms, and painfully awaits the expiration of the prescribed period before he dare to act.

My friend Dr. Wright, at present Physician to the Royal Naval Hospital at Haslar,* writes me as follows, “ I had sixty-eight wounded in the battle of Camperdown, and fifteen amputations, of which three were double below the knee—two thigh cases, very high, and seven arms. All the wounded recovered, and most of them on board. The fleet was eleven days at sea after the action, on account of a gale and contrary winds. I have never had any bad symptoms after amputation, nor have I ever lost a case after this operation.

“ I am no advocate for delay, when amputation is deemed necessary in recent wounds and accidents. I have always operated as soon as possible. I amputated during the whole of the Dutch action, without the least intermission, until all were completed; and in this battle I had only the aid of two very young assistants.

“ I have been informed, also, by some of my friends who were in Lord Rodney's action, in the

* This excellent officer has paid the debt of nature since the first edition of this work was published.

West Indies, commonly called the battle of the 12th of April, that in some of the ships, where the amputations were deferred until the action was over, the success was by no means such as to recommend the adoption of the plan in future practice.”*

I have also corresponded, on this subject, with several naval surgeons of great experience, whose opinions so fully coincide with Dr. Wright’s and my own, that I consider it unnecessary to multiply evidence on this head; the success indeed of the doctor’s practice alone, upon the principle we have been discussing, so completely establishes the *propriety* and *advantage* of IMMEDIATE amputation in gun-shot wounds, that no farther evidence or comment from me appears to be necessary.† I should here wish it to be understood, however, that our greatest naval actions have seldom exceeded from six to eight hours in duration; at the conclusion of which, the operations of the surgeon are generally more than half, nay, sometimes even all, completed.

I am fully aware, that in action on board a ship, where many men are wounded in a short

* The Camperdown action was that in which Lord Duncan commanded, and Dr. Wright was surgeon to his Lordship’s flagship, the Venerable, of 74 guns.

† In farther illustration of the point in question, I would refer the reader to Baron Larey’s book; more particularly to his statement of the cases of Generals Lanusse and Syllly; as also to the drummer’s case; and Farrol’s, at the conclusion of these remarks.

space of time, and these accumulating on the attention of the limited number of medical officers employed in each ship of war, especially those of the smaller class; and taking into consideration, also, the disadvantages that naval surgeons labour under with respect to light, deficient accommodation, want of pure air, and also of necessary assistance in the cockpit, during battle, &c. &c., that much may be objected to the propriety, and even possibility, of operating at all during so eventful a period: but, notwithstanding all the difficulties here enumerated, if the surgeon possess sufficient nerve, and proper confidence in his own talents, the operation *ought not to be deferred one moment*; and I should never scruple to give preference and priority to the worst cases, whether officer or seaman, without being very solicitous as to the period of their first presentation.

The confined space of a cockpit, its want of proper ventilation, and still farther vitiated by the exhalations arising from the bodies of a crowd of wounded men remaining there so long a time; all this, I say, is not likely to add to the successful issue of an operation of such magnitude, however dexterously and skilfully performed; but it would be the highest temerity to remove the wounded, after an action, to a more airy part of the ship, for the purpose of operating, could even any such be found free from bustle and confusion; as the removal would only add to the irritation already, probably, too great.

The public and the profession are certainly much indebted to Mr. Guthrie for his meritorious endeavours to extend the boundaries of surgical science, and for the practical facts furnished by him on so important a subject; but his doctrine of delay, however short the interposed time may be that he recommends, requires more mature consideration before its reception, as a practical rule in modern surgery, can be admitted. The experience and observations of others opposed to such opinions, must be placed in the opposite scale; and from an impartial review of the whole evidence, submitted to the profession at large, truth, eventually, may be expected to be clearly and finally elicited.

I cannot, however, quit this subject without expressing my regret, that Mr. Guthrie had not made himself somewhat acquainted with the practice of naval surgeons; a class of men to whom the profession owe as many improvements in the science as to any other. Had he so condescended, previous to the publication of his work, he would have found, I imagine, that what Baron Larey and himself had but recently discovered, namely, the utility of *early* amputation in gun-shot wounds, has been the settled practice in the naval medical service for fully half a century past; which embraces a period by far the most transcendent in the glory of the United Kingdom.

Soon after the publication of the preceding observations in the first edition of this work, em-

bracing more particularly the important subject of amputation in gun-shot wounds; the expedition sent against the piratical state of Algiers, under the command of Lord Exmouth, returned to Spithead. The squadron consisted of five ships of the line and five frigates, besides sloops of war and bomb vessels. It will be in the recollection of my readers, that in this little fleet there were more men killed and wounded in proportion to the force employed, than in any preceding conflict, perhaps, in the annals of Great Britain. It will be seen, however, on reference to the note,* that the loss was considerably greater in some ships than in others; a circumstance that must occasionally occur from local position, the duty assigned to a particular ship by the commander-in-chief, or to some untoward accident during the engagement.

The surgeons of the different ships of war employed in this expedition, were fully prepared for the sanguinary conflict that subsequently occurred, and awaited the awful moment in anxious so-

* Number wounded, exclusively of the killed, as given in the Gazette: but by a subsequent inquiry they are found considerably to exceed the amount stated.

Ships of the Line.	Queen Charlotte	131	Frigates.	Leander . . .	122	430
	Impregnable . .	163		Severn . . .	34	
	Superb . . .	84		Glasgow . . .	37	
	Minden . . .	37		Granicus . . .	42	
	Albion . . .	15		Hebrus . . .	15	
		<hr/>		Infernal . . .	17	
		430			<hr/>	697

licitude to afford assistance to the brave men who might require the utmost efforts of their skill, with all that zeal and humanity, so conspicuous in the conduct of the medical officers of both services throughout the whole of the late wars; now happily terminated, and peace restored to Europe, by the successful issue of this last tremendous battle.

In some of the ships, cots were prepared and slung for the accommodation of the wounded; by means of these the men were gently lowered down directly into the cock-pit with all the care and attention which the importance of the case demanded. By these precautions, the patients were exempted from the irritation consequent on the ruder mode of conveyance heretofore practised, and the medical officers were enabled to afford more immediate relief to the necessities of the sufferers. I mention this circumstance the more particularly, as it appears to me to be one of the greatest improvements in the preparatory arrangements of the naval surgeon going into action, for it necessarily tends to render the success of his capital operations much more certain; besides the important consideration of lessening the immediate sufferings of the wounded.

On the return of the squadron into port, I was extremely anxious to learn the particular periods at which the amputations had taken place, the nature of the wounds requiring that operation, and the different results. Deeply impressed with

the momentous importance of the subject in question to the army and to the navy, as well as to the community in general, I lost no time in addressing a letter to the Commissioners for Sick and Wounded Seamen, &c. The Commissioners, with the readiness and zeal which have invariably marked their conduct when the good of the service was the object in view, immediately facilitated my wishes by procuring the annexed Replies to the Queries contained in my letter. These documents so fully illustrate and corroborate the truth of the doctrines which I had previously endeavoured to inculcate, in the first edition of this work, that I hasten to lay them before the profession, in the hope of settling definitively a question so long agitated, so interesting to humanity, and of such vital consequence to the national service in future wars.

As some of these official communications are very extended, and would occupy much space, I trust I shall be excused by the writers in giving such parts only, as appear to bear more directly on the subject under consideration; and I shall endeavour to give such extracts with all due candour and fairness, stating the opinions of those gentlemen who oppose or sanction the point in controversy.

Those surgeons who may appear to have been less successful in the general result of their operations than others who pursued a different plan, and were actuated by other sentiments, cannot in

justice reflect on themselves, however much it may be lamented, particularly in the sea service, as their mode of proceeding was influenced by the opinions of gentlemen of high professional talents, and of acknowledged experience in practical surgery. The principal object of this inquiry is, simply to point out the dangerous tendency of those opinions, which appear to be founded on plausible reasonings deduced from effects theoretically supposed to occur, rather than the result of actual experience or just observation.

After the perusal of these documents, it will, in the first place, be necessary to consider those parts in which the writers make mention of shock and alarm to the constitution on being badly wounded in battle, as the reason assigned for *deferring* amputation till these dangerous symptoms had subsided, with the results; secondly, those in which the existence of such affections is positively denied, and consequently where amputation had been *immediately* performed, with the results also; and, lastly, the statement of other surgeons of that fleet, who noticed the circumstance of a pallid countenance, feeble pulse, and tendency to syncope occurring in some few instances immediately on the sudden loss of blood from a severe wound, requiring amputation. These, I think, are the leading facts, and embrace the principal contents of the different papers under review.

First, then, as to shock and alarm: the only medical officer who mentions this occurrence

is the surgeon of the Impregnable; but in his report he merely states, that "he did not amputate till the battle had terminated; and that it appeared to him, the constitution of his patients had entirely recovered from the *shock* and *alarm* usually experienced on being wounded in battle."—Now, he enters into no statement respecting the symptoms and appearances generally characterising *shock* and *alarm* of men wounded in battle; and, therefore, it may be fair to infer, that such constitutional derangement was purely imaginary and hypothetical: else why not particularly describe the attending symptoms which induced him to suspend the operations till the battle had terminated? The probability is, that his judgment was influenced and controlled by the published opinions of certain writers on this interesting subject, as he adopts precisely their phraseology, and not regulated by personal experience and observation. In this ship there were *eleven* amputations performed, legs and arms; but no case of double amputation occurred,* and *nine* out of that number died. Of the two that recovered, one was operated upon below the knee, and the other above the elbow.

The authors alluded to above, make much mention of *shock and alarm to the constitution*; a phrase, vague, ambiguous, and undefined; but

* Some days after the battle, a second amputation occurred in one case, and the patient died.

great part of this affection called shock, must no doubt be understood to consist in the state of the mind. — Now, in the first place, we know, that in the ardour of battle, the same excitement of mind continues for some time after the actual infliction of the injury, however severe, as is well known to those who have witnessed the patriotic exultation of seamen, who, under the knife, have joined in the shouts of victory! — The depression of mind, so unfavourable to the success of an operation, does not come on till the spirits are exhausted by pain and loss of blood. Secondly, with regard to pain itself, the same rule holds; for it is well known, that the most severe wound is hardly felt at first, and that the smart terminating in agony does not come on for some time, a time which may, and should always be anticipated by operation.

The surgeons of the *Leander* and *Severn* amputated *immediately*. All the men, excepting two, were operated upon within half an hour of their being removed to the cockpit. These gentlemen, with the surgeon of the *Superb*, *positively deny* the existence of the slightest appearance of *shock and alarm to the constitution*, though, on a reference to their respective papers, it will be seen, that the wounds requiring amputation with them were, in many instances, even more severe than those which occurred on board the *Impregnable*.

In the *Leander*, fifteen patients underwent amputation, two of whom lost *both thighs* very high

up; and one was a hip-joint case, with other severe injuries; and these were the only men that died in consequence of their wounds and the subsequent operations. We must except, however, one man who did not belong to the ship, and who had been thrust through the stern port from a gun-boat during the engagement; in consequence of which, it was impossible to ascertain how long he had been wounded before the operation was performed. Thus *eleven* cases recovered after having undergone amputation. It is proper to mention, however, that two of this number died after the cicatrization of their stumps, one of phthisis pulmonalis, and the other of bilious remittent fever; but these deaths cannot be considered as militating against the principle I am so desirous to establish.

On board the *Severn*, four amputations occurred, namely, one arm and three thigh cases, all of which recovered. It will be seen, and is truly worthy of remark, that one of these patients, far from suffering any shock or alarm, on having his leg completely carried off by a cannon-shot, very coolly and deliberately removed the handkerchief from off his neck, and wrapped it round the mangled stump, to stop the effusion of blood, till he could reach the surgeon.

The surgeons of two or three of the ships speak of the danger that sometimes occurs from the sudden loss of a quantity of blood, on being severely wounded in battle, particularly the surgeon of the *Superb*; but in these cases even, the patients are

stated to have been perfectly collected, and free from every thing like sensorial affection. It is here also proper to remark, that the above circumstance is already observed upon at page 9. The general effect of a sudden abstraction of blood from the system, is feebleness of pulse, pallid countenance, faintness, and even syncope; but all these apparently alarming symptoms are speedily removed by administering some generous cordial, as wine, diluted brandy, &c. — To these occurrences we cannot justly apply the doctrine of *shock and alarm to the constitution*, and in fact they need not retard the operation beyond the period necessary to rouse the dormant powers of the system, by the means already pointed out, and which, at most, requires not many minutes to effect.

The greater number of wounds inflicted by contending armies, are those arising from grape-shot and musket balls; whereas in naval engagements the very reverse of this is the fact in an increased ratio; for, the wounds received in ships of war are generally produced, either by the direct stroke of a cannon-shot, of large dimensions, or, what is still more lamentable, by ragged fragments of timber violently rent from the planks or beams of the ship, impelled by balls infinitely larger than any ever employed in fields of battle. Wounds inflicted by splinters of wood, are always more extensive, accompanied with frightful contusions and lacerations of the soft parts.

If, then, there be any *shock or alarm to the con-*

stitution, occasioned by gun-shot wounds, which should deter or interdict the army-surgeon from performing immediate amputation, when such an operation is deemed indispensably necessary; how much more alarming must we expect to find this mental shock among the wounded men in naval battles, whose injuries are found much more serious and formidable, as we have fully shewn in the preceding paragraph. But the truth is, that until a late writer, Mr. Guthrie, talked of shock and alarm, unfortunately, in all cases of gun-shot wounds, and stated the danger of amputating before the constitution had recovered from these gratuitous and hypothetical affections, no such idea had ever entered the minds of our most experienced naval surgeons.

It has been very properly remarked, by some of the medical officers employed in the expedition against Algiers, that instances of fatal hæmorrhage had occurred, in consequence of the patients incautiously relaxing the tourniquets that had been applied for some time, to stop the effusion of blood, till the surgeon could find leisure to operate in regular succession, or until he thought himself justified in operating. But what man, let me ask, can bear the severe pressure of a tight ligature like the tourniquet, on a wounded limb, for four or six hours, without an effort to relieve himself from the painful stricture occasioned by the instrument, however short indeed the period

might be? The probability and danger of such an occurrence may with propriety be urged as a strong argument in favour of immediate amputation, which would effectually guard against such fatal accident. It is, indeed, scarcely possible to suppose, that a ligature could be continued for such a length of time, even on a perfectly sound limb, by which the circulation is impeded, or totally obstructed, without being attended with serious consequences, and even a risk of ultimate gangrene, not to mention the extreme suffering of the patient.

Having entered pretty largely into the nature of the irritation consequent on gun-shot wounds, in which I have endeavoured to demonstrate that it is not an immediate result, but an increasing affection in a greater or less degree, proportionably to the extent of the injury, and the nature of the parts wounded; I do not feel it necessary to say more here, excepting briefly to observe on gun-shot fractures of the extremities requiring amputation. Let us suppose, in wounds attended by such circumstances, the bones much shattered, and the patient left for a few hours before the operation is had recourse to; surely we are not to conclude, that the unhappy patient, during this painful suspense, can remain in a tranquil or quiescent state; certainly not: the probability is, that the muscles of the injured member will be attacked with spasms, the limb more or less thrown

into involuntary action, and the nerves, heretofore untouched, lacerated or grated upon by ragged points, detached fragments, and sharp edges of the fractured bones, thereby increasing the irritation in an infinite degree.

In addition to the documents before us, illustrative of the fatal consequences generally attending deferred amputations in battle, I am authorised to state by ocular witnesses, that in two of the ships where this doctrine was fully acted upon, several officers and seamen, so wounded as to require immediate amputation, died in the cockpit, before the period had elapsed in which the surgeon felt himself justified or warranted to commence operating; two cases in particular, one was badly wounded a little above the knee, and the other at the ankle; and it is necessary to remark, that all the amputations performed in that ship were arm cases.

I had it originally in contemplation to have added a fifth Query, embracing this particular point; namely, "How many men, whose cases required amputation, died in the cockpit before you deemed yourself warranted to commence operating?" But, from motives of delicacy, I afterwards withheld it; trusting that, from the contrasted practice herein so amply adduced, conjoined to what has been previously stated, the question will now be considered by the profession as fully illustrated and finally settled.

The country, and the relatives of our brave defenders in future contests, will not, I trust, have to lament the uncertainty of a point in surgical practice of such vital consequence to humanity, on which the professors of this important science could not themselves agree. *Magna est veritas, et prævalebit.*

*The following are the Official Documents referred
to at page 17.*

Spring Garden, Oct. 29th, 1816.

GENTLEMEN,

* * * * *

On the grounds of public and national utility, therefore, I request that you will be pleased to direct the surgeon of every ship employed in Lord Exmouth's expedition to answer the following Queries, or any such, the medical commissioner of your Board may be pleased to substitute, with a view to the attainment of all the information we can reach on the important subject of amputation in gun-shot wounds.

Query 1st. How many wounds in the late battle before Algiers occurred in the ship of which you were surgeon that required amputation, and what was the nature of such wounds?

Query 2d. Did you amputate during the action, or defer it until the action was terminated, so as to allow time for the constitution to recover from the shock and alarm a patient is said to labour under, who has been wounded in battle?

Query 3d. When amputation was deemed necessary, at what precise period was the operation performed subsequently to the infliction of the wound; *i. e.* how many days, hours, or minutes, to the best of your judgment, elapsed before the amputation took place? This question is to apply to every amputation that occurred on board, or in hospitals, and may have come to your knowledge.

Query 4th. Of the patients amputated, how many recovered, and how many died; and of those that died, how long did they survive the operation?

I beg to assure the Board, that in making this request I am influenced by no other motives than the benefit of the public service and the advancement of surgical knowledge.

I am, &c.

(Signed) A. C. HUTCHISON.

The Commissioners for Transports, Sick
and Wounded Seamen, &c. &c.

Transport Office, 18th Nov. 1816.

SIR,

Dr. Harness, the medical commissioner, having proposed to the surgeons of the several ships named in the margin,* which were em-

* Queen Charlotte, Impregnable, Superb, Albion, Minden, Leander, Glasgow, Hebrus, Granicus, Severn, Infernal.

ployed on the late expedition against Algiers, the four Queries stated in your letter of the 29th ultimo, I am directed by the Commissioners for Transports, &c., to enclose for your information copies of the answers which have been received from the whole of the said surgeons, with the exception of the surgeon of the Minden, from whom no answer has been as yet received, that ship being still employed on foreign service.

I am, SIR,

Your most humble Servant,

ALEX. M'LEAY, Sec.

To A. Copland Hutchison, Esq.
Spring Garden.

(Copy.)

A List of Wounds that occurred on board His Majesty's Ship Impregnable, in the Battle at Algiers, that required Amputation, with the Nature of the Wounds, &c. &c.

GENTLEMEN,

* * * * *

CASE I.

Mr. J. Hawker, midshipman, aged 18, had his right leg carried off at the knee-joint immediately before the explosion, by which latter

accident he had his hands, neck, and leg severely burnt; his thigh was amputated about three hours and a half after he was brought to the cockpit; he was in tolerable spirits at the time of the operation, but died about an hour after it. This unfortunate young gentleman was discharged from the sick-list the day before the action.

CASE II.

John Keough, boy, aged 16, had his left leg carried off at the knee-joint by a large splinter, which also shattered the condyles of the femur; his thigh was amputated about three hours and three-quarters after he was brought to the cockpit, and he expired immediately after the operation: this boy was naturally of a weak habit, and had lost a considerable quantity of blood before he was brought down, owing to the tourniquet having slackened; he was, however, in tolerable spirits previous to the operation, and was very desirous of its being performed.

CASE III.

Richard Pepper, serjeant of marines, had his left arm close to the shoulder-joint, and part of the pectoral and deltoid muscles, carried off by a cannon-shot; had also a severe splinter wound in his left leg. Amputation was performed at the shoulder-joint, about four hours after the wounds were received; he was in

pretty good spirits at the time of the operation, but died about an hour after it.

CASE IV.

John Gaulter, private marine, aged 25, was stationed in the main-top, where, by a discharge of grape, he had his left arm carried off close to the shoulder-joint; his left thigh was fractured, and he had also a severe grape-shot wound in his loins. Amputation was performed at the shoulder-joint about four hours and a quarter after his appearance in the cockpit; he was rather low when the operation was performed, and expired just after it was finished. This unfortunate man was on the sick-list for the cure of syphilis, which had been effected; but he was still under the influence of mercury, and consequently much debilitated.

CASE V.

Joseph Morrison, seaman, had his right leg carried off by a large shot close to the knee-joint, had also two severe contused wounds in the lower part of the abdomen and groin, which would have terminated in extensive sloughing sores; his thigh was amputated about four hours and forty minutes after he was brought down; he appeared in tolerable spirits at the time of the operation, but expired an hour after, in violent convulsions. It was said, that one of the burnt-men, in a state of delirium, fell on

his stump, to which cause the spasms were attributed. Sixteen arteries were secured, and no nerves included in the ligatures.

CASE VI.

John Murray, yeoman of the sheets, aged 28, had his left leg shattered by a cannon-ball a little above the ankle-joint, had also the tarsal and metatarsal bones of his right foot very much fractured, together with extensive laceration of the integuments covering the foot. The left leg was amputated below the knee, about five hours after he was brought down: just before the operation, he appeared in pretty good spirits, although of a weak habit; but immediately after it, a degree of syncope came on, which prevented an amputation of the other extremity taking place; it was found necessary, however, to perform this last operation on the 2nd of September, six days after the action. He died on the morning of the 6th of September, in extreme debility.

CASE VII.

George Ryder, boy, aged 16, had his left leg carried off close to the knee by a cannon-shot; his thigh was amputated about five hours and a half after he was brought below, when he was in excellent spirits, and continued so for some time, but expired on the 30th of September of hectic fever. He was of a delicate habit.

CASE VIII.

William Hipwell, seaman, age 35, had his right arm carried off a little above the elbow joint, by a cannon-shot. Amputation was performed near the insertion of the deltoid muscle, about five hours and fifty minutes after he was conducted to the cockpit, at which period he was in good spirits, and has since done remarkably well: he was sent to Plymouth Hospital on the 9th of October.

CASE IX.

John Dennis, seaman, aged 26, received an extensive wound on the back of the left hand, accompanied with a fracture of several of the metacarpal bones; the radius and ulna of the same arm were also badly fractured, said to have been occasioned by a splinter. In a consultation, amputation was deemed necessary, which was performed on the 3d of September, seven days after the action, at which period he appeared in good spirits, and perfectly reconciled to the operation: he died on the 10th of September, seven days after the operation, of a violent spasmodic affection of the abdominal and thoracic muscles; in the course of which, the muscles of the lower jaw were, occasionally, strongly contracted. This unfortunate man was of a weak and irritable habit; and, after the third day from the amputation, his countenance exhibited strong marks of approaching tetanus.

CASE X.

Daniel Moffett, seaman, aged 45, had his left foot very much shattered by a cannon-ball, which rendered amputation below the knee necessary on the 3d of September, seven days after the action: he was sent to Plymouth Hospital on the 9th of October, with his stump almost healed. This man was of an excellent habit of body.

CASE XI.

George Church, seaman, aged 42, received a compound fracture of the right tibia and fibula, accompanied with a considerable projection of bone and laceration of the integuments, which rendered amputation necessary on the 4th of September, eight days after the action. He was of a very irritable, desponding habit, and had several severe paroxysms of intermittent fever subsequently to the amputation, which reduced him to a state of extreme debility; in consequence of which, it was found necessary to leave him at Gibraltar Hospital; and at the period of the ship's quitting that place, it was not expected he would live many hours. He had been in the Hospital only three days when we sailed, and was sent there on the 12th.*

* It has been since ascertained that this patient died.

REMARKS.

The above is a faithful account of the wounds and amputations that occurred on board His Majesty's ship *Impregnable*, in and after the action at Algiers; by which it will appear, that the constitution in every instance had entirely recovered from the shock and alarm a patient labours under immediately after being wounded in battle. I cannot very readily account for the sudden dissolution of so many of the unfortunate men who underwent amputation, unless I take into account the other injuries they received, and the following probable cause, which I must beg leave to submit to the judgment of Dr. Harness; namely, the intense heat those unfortunate men were unavoidably exposed to in the cockpit for many hours, and which, together with my exertions there for more than sixteen hours, produced an universal eruption over my body, and an extensive swelling of my inferior extremities. The thermometer, after the explosion, and consequent presence of seventy burnt men and boys, stood as high as from 136 to 140; and had I been of a weaker habit, I must inevitably have sunk under so long an exposure to such a degree of temperature. How much more, then, must the wounded have suffered!

The Queries Nos. 1, 3, and 4, are, I trust, answered in the foregoing statement; and in answer to No. 2, I have to state, that I did not perform any amputation until the action was ter-

minated; and that it appeared to me, that the constitution of my patients had entirely recovered from the shock and alarm usually experienced on being wounded in battle. I have only farther to add, that the amputations were performed in the customary manner.*

I am, &c.

A. MARTIN, Surgeon.

58, Clowance-street, Plymouth Dock,

4th November, 1816.

To the Commissioners of Transports, Sick
and Wounded Seamen, &c. &c.

(Copy.)

No. 17, Great Suffolk-street, Charing Cross,
2d November, 1816.

GENTLEMEN,

In answer to the 1st Query, five men were wounded on board the *Granicus* by cannon-shot, in such a manner that they required amputation.

2d. The amputations were performed immediately after the ship left off action, which was about eleven o'clock at night.

* I feel it due to Mr. Martin to state, that, a few years ago, whilst that gentleman was surgeon of the *Duncan*, 74, he sent to Deal Hospital, under my care, a man upon whom he had performed an amputation at the shoulder joint; and I embrace this opportunity of offering my testimony to its having been a well formed stump.

3d. Four were wounded between four and five o'clock, and one at nine o'clock.

The first that suffered amputation, his left arm was shot off by a cannon-ball close up to the shoulder; the amputation was performed six hours and a half after he received the wound: he was the only patient that died, and had every appearance of doing well; but the great loss of blood sustained by this patient, previous to his removal to the cockpit, was, in my opinion, the occasion of his death.

The second was wounded about the same time as the first: the fore-arm was shot away about three inches above the articulation of the hand, and was amputated four inches below the elbow, six hours and a half after he was wounded. Cured on board.

The third was wounded about 5, 30, P. M.: he suffered amputation at twelve at midnight; his arm was shot off by a cannon-ball above the elbow: it was amputated four inches below the shoulder. Cured on board.

The fourth was wounded at 5, 40, P. M.: the arm was nearly shot off by a cannon-ball above the elbow; the humerus being much shattered, it was amputated at 12, 40, A. M., five inches below the shoulder. Cured on board.

The last that suffered amputation was wounded by a cannon-ball at 9 P. M.: it carried the arm off at the shoulder; the head of the humerus was shivered into various pieces; part of the glenoid

cavity was dissected out, as well as several pieces of the humerus which lodged about the axilla. He suffered amputation at 1, 20, A. M. Cured on the 28th of October.

4th *Query*. The patient that died, died forty-two hours after the amputation: four recovered.

I have the honour to be, &c.

C. F. VANDERBURGH, Surgeon.

The Commissioners for Transports, Sick
and Wounded Seamen, &c. &c. &c.

London, 1, James-street, Adelphi,
1st November, 1816.

GENTLEMEN,

Three cases requiring amputation occurred on board His Majesty's ship Glasgow, in the late action at Algiers.

The first was a man of colour, that had all the metacarpal bones of the right hand shattered by a grape-shot; the system did not seem much disordered, and upon administering some wine, amputation just above the wrist was immediately performed by the circular incision, and the stump healed nearly by the first intention.

The second was a man that had his left leg carried away at the knee by a round-shot, while in the fore-top: he had lost a good deal of blood; but upon administering some wine, he seemed to have recovered so much as to

admit of the operation, and it was performed perhaps an hour after the infliction of the wound: the stump was healed in the fourth week after the operation.*

The third was a negro, who had both arms carried away a little above the elbow by a round-shot, and was, also, severely contused upon the chest with splinters. The operations were performed, perhaps, two hours after he

* Since I have been furnished with these documents, the surgeon of the Glasgow has related to me the following anecdotes of this patient. The man was captain of the fore-top, and there stationed during the battle: on his leg being so wounded, that only a small portion of integument kept it connected with the thigh, he, with a view of obtaining surgical aid as soon as possible, grasped a rope, by which to lower himself down upon deck. When he had reached half way, the mangled limb, over which he could not possibly have any control, became so entangled among other ropes, that he was under the necessity of raising himself upwards, about three feet, that he might disengage the wounded limb with the assistance of the sound one, whilst he was still hanging by his arms; and having accomplished this end, he descended quietly upon deck.

When placed in the cockpit, and waiting till Mr. Stenhouse had completed the amputation of an arm in which he was then engaged, the bugleman's death by a cannon-shot was announced, whose wife was at this time employed in assisting the surgeon. The poor woman was instantly thrown into a violent paroxysm of grief; and whilst she was thus bewailing her loss, the wounded captain of the top said, with much composure and *naïveté*, "Come, Poll, don't be blubbering; you shall not remain a widow long: I will marry you myself directly that I am well!!" And I understand he has since fulfilled his promise.

was wounded. His principal complaint was oppression of breathing; he was put into a cot, and died in from half an hour to an hour afterwards, apparently from the injury of the chest.

I am, &c.

WM. STENHOUSE, Surgeon.

The Commissioners for Transports,

&c. &c. &c.

His Majesty's Ship Superb, at Plymouth,
12th Nov., 1816.

GENTLEMEN,

* * * * *

ANSWERS.

Query 1st. Amputation was performed on one person only on board the Superb; it was done above the knee, in consequence of a large grape-shot having perforated the joint.

Query 2d. The limb was amputated during the action, as soon as some intermission had taken place of wounded men coming down to the cockpit. It might be nearly two hours after the receipt of the wound. There was no shock or alarm of the system, to render it necessary to delay the operation. He has recovered.

Query 3d. During five years that I was surgeon of the Doris frigate, I had occasion to perform amputation only once: it was of the

arm of a seaman who had the elbow-joint shattered by his falling from the mizen-gaff in a gale of wind, which dispersed the invading French fleet on the coast of Ireland, about Christmas, 1796. The operation was performed immediately after the accident, and the stump healed by the first intention.

When surgeon of the *Raisonnable*, in the action of the 22d of July, 1805, with the fleet of France and Spain, three men had their limbs torn away by cannon-shot; viz.

Thomas Knight, aged about 26, a very muscular man, of short stature, at six o'clock, P. M., had the thigh shot about the middle. When brought to the cockpit, he was very faint and languid, the pulse feeble, and without resistance, the countenance ghastly, and there was a cold perspiration on the skin. When the action ceased, the operation was performed, in three hours after the receipt of the wound. Little blood was lost during the amputation; however, he died exhausted in nineteen hours afterwards. Common nutriments and cordials were given in a moderate way, and he had an opiate.

Richard Beamsley, aged 22 years, landsman, had his arm shot away at the elbow. Three hours after the accident, I was about to amputate the arm, but he resisted it with such determined obstinacy, that I was obliged to attend to other wounded men. About ten o'clock,

when I again insisted on the necessity of his undergoing the operation, he started up suddenly, became faint, and fell down. Thinking this proceeded from fear, and his dread of the operation, I put it off until two o'clock in the morning, at which time he still continued lethargic, except when roused, or spoken to. The arm was taken off; but he died in the space of a few hours, which I could only ascribe to the loss of blood he had sustained previous to the operation.

John Bradbury, aged 23, seaman, had the right arm shot away very high. The humerus having been shivered longitudinally into two portions, as far as the glenoid cavity, the arm was amputated at the shoulder-joint in about three hours after the accident, and was healed on board before the ship arrived in port. As the pressure of the tourniquet could scarcely be admitted, he was put under the care of a woman, who prevented bleeding before the operation, by pressing on the face of the wound with her hands.

On the 5th of December, 1808, the boats of the *Raisonnable* having been employed in cutting a ship out from under the batteries of St. Rose, in the island of Bourbon, Philip Harold, a robust seaman, aged 28 years, had the elbow-joint perforated by a grape-shot. The head of the ulna was completely shattered, the radius dislocated, and the splinters of the broken

bone spread about amongst the soft parts. There had been little loss of blood, and being under no trepidation whatever, instantly on coming on board, he submitted to the operation; and was cured by immediate adhesion in the space of a few days. The amputation was done in less than an hour after the accident.

On the 22d of September, 1809, Lieutenant Hawden, of the Royal Marines, employed with his party on shore, at the assault of St. Paul's, in the Isle of Bourbon, received a wound by a musket-bullet in the patella, which penetrated its upper and outer angle. On visiting him on shore after the action, I strongly urged my opinion, that he should undergo immediate amputation; but it was opposed by a Dr. Davis, of the Bombay establishment, who attended the troops on the expedition, as he believed the limb might be saved: as he was supported in this opinion by a naval surgeon, the operation was deferred. The officer was brought on board the *Raisonné*, where, notwithstanding the most rigid antiphlogistic treatment, every thing went wrong. A prodigious swelling of the limb took place from the groin to the instep, attended with an equally violent conflict of the system. Matter formed in the joint, which was discharged, through the opening made by the bullet, only in certain positions of the limb. Hectic fever, with regular paroxysms and rigours, having become established, the amputation of the thigh was

performed on the twelfth day, as the only means of giving him a chance for life. During the operation a great discharge of matter took place, which was found to proceed from an abscess formed near the bone, and extending along it nearly to the groin. He survived the operation only four days.

In the summer of 1811, a seaman who had been wounded on board an American ship, in the Great Belt, was brought on board the Cressy six hours after the accident. He had lost two inches of the tibia, by two bullets fired by accident from a musket. He suffered amputation below the knee, and recovered.

Query 4th. In four amputations of the upper extremities, one died.

In four amputations of the lower extremities, two have died.

REMARKS.

Though not desired to make any comment, I hope it will not be deemed irrelevant to offer a few remarks in answer to the Queries of the Honourable Commissioners, which I presume are proposed with the view of ascertaining, with more precision, the period most proper for performing amputation in gun-shot wounds of the extremities.

Before the action of the 22d of July, 1805, in which my operations were so unsuccessful, I had

formed a very erroneous opinion, derived from the theories of the day; namely, that in gun-shot wounds, the arteries were so perfectly stunned or seared by the impulse of the ball, that very little or no bleeding took place. On that occasion, I was too well convinced that this was a visionary hypothesis, leading to the most dangerous consequences. On the contrary, I believe, whenever the great vessels of the thigh are divided in any open wound, in whatever way inflicted, that an impetuous flow of blood always takes place, which instantly brings life into extreme danger; that it is only from the total cessation of circulation, or from the action of the heart and arteries instantly becoming languid, in consequence of this sudden depletion, that the opinion of their not bleeding has taken its origin. I can easily conceive, that several ounces of blood may be poured out from the great arteries of the thigh with every systole of the heart, so that, in the space of one minute, such a quantity may be lost as may render the success of an operation very doubtful. In the attack on Algiers, Mr. Bowen, midshipman, aged 16, had the thigh shot away on the quarter-deck, within two inches of the groin. Having been struck directly in the centre of the thigh by a cannon-ball of large diameter, the mangled limb adhered by a few ragged muscles only; the bone was shivered into fragments towards the joint. When brought to the cockpit, though one of the temporary tourniquets had been applied very

tightly round it on deck, there was a considerable quantity of blood dripping from the stump. I found him extremely exhausted, there being a cessation of the pulse at the wrist, a deadly paleness of the countenance, and the skin bedewed with a clammy sweat. There was, however, no nervous dejection; he was solicitous of having surgical assistance, and apparently would have submitted to any operation. In such a deplorable state of inanition, it would have been an unavailing act of cruelty had I presumed to amputate at the hip-joint; he must, unquestionably, have died under the operation. He lived only an hour and a half after the receipt of the wound, and his name was put in the list of the killed. I was afterwards informed, that he lost a great quantity of blood on the instant he received the wound.

Revolving in my mind, when on our passage to Algiers, the various contingencies of practice that were likely to occur in a sanguinary contest, this sudden loss of blood, especially in great wounds of the thigh, was an occurrence which of all others I dreaded the most. That I might be enabled to counteract it as much as possible, I constructed about 100 temporary tourniquets, which were distributed through all parts of the ship, and amongst those who were to be employed in the boats; the officers and men were instructed in the manner of applying them, and informed, that in cases where a limb was carried away,

there would be an immediate loss of blood, which could not fail of being very dangerous, unless the wounded man, or any person near, should grasp the face of the wound, and stop the bleeding, by pressing firmly with both hands until a tourniquet could be applied.

In a great number of violent gun-shot wounds of the extremities, I have never, except in those attended with excessive hæmorrhage, observed any constitutional commotion which might have prevented any necessary operation from being immediately performed. I am, therefore, inclined to think, that the alarm or shock of the system, so fully dilated upon by Mr. Guthrie, in his late publication, must occur in those wounds where there are bleedings from the smaller arteries; for he expressly says, that "the wounds of the great arteries by cannon-shot are generally fatal." In his Section on Amputation at the Hip-joint, in enumerating the cases which may render the primary operation necessary, he affirms, that those who had the thigh carried away by cannon-shot about the middle, died on the field of battle. I think it may be presumed, that he found a proportionate degree of danger when the limbs had been shot away still lower. This, in my opinion, constitutes a great difference between the practice of the army and naval surgeon in time of action. Those desperate wounds are all brought to the cockpit, in consequence of its proximity; and, in consequence of artillery being the chief instru-

ments of offence, become the principal cases to be operated upon. As far as I can form a judgment, the hazard is not great in primary amputations after bloodless wounds, such as wounded joints, compound fractures, &c., occasioned by musketry and grape-shot: and these, I believe, form the greater part of military practice in the field.

Profiting from the experience of Mr. Guthrie, who recommends the free use of wine and stimulants, in cases of wounds attended with collapse, I had provided those remedies, and designed to have administered them in the late battle. As no cases occurred which particularly required their use, I am unable to say what success would have attended that practice, or what degree of inanition they might have had the power of obviating.*

I am, &c.

JOHN ADAMSON, Surgeon.

H. M. S. Superb, in Hamoaze,

12th Nov., 1816.

To the Commissioners for Transports,

Sick and Wounded Seamen, &c.

* The administration of stimulants in such cases was, I believe, first recommended by Mr. Little, a naval surgeon, in the London Medical and Physical Journal, several years before Mr. Guthrie published.

20, May's-buildings, St. Martin's-lane,
31st October, 1816.

SIR,

I beg that you will be pleased to lay before the Medical Commissioner of the Board, the following answers to the Queries contained in your letter of yesterday.

1st. One gun-shot wound of the leg, both bones fractured, the fracture of the tibia extending almost into the knee-joint: there was not much external hæmorrhage, but the blood had very much distended the cellular membrane. The amputation was performed above the knee.

2d. Deferred it until the action terminated.

3d. To the best of my judgment, about fourteen hours elapsed before the operation took place. I have no knowledge of any other amputation.

4th. At the time of the patient William Davis's discharge to Gibraltar hospital, and when the ship sailed for England, twenty days after the operation, there was every probability of his recovery, although five days after the amputation hæmorrhage had taken place from the femoral artery, which, in consequence, was tied in the thigh with two ligatures, and the interspace divided.

I have not heard of the patient since we left Gibraltar.

I am, &c.

GEORGE CLAYTON,
Late Surgeon to the Infernal.

Alex. M'Leay, Esq. Sec.
&c. &c. &c.

(Copy.)

Edinburgh, 13th Jan. 1817.

17, West Nicolson-street.

SIR,

I have this day received your letter of the 9th inst. containing Queries relative to the amputations which were performed subsequent to the battle at Algiers: and I proceed to answer them in the order in which they are put.

Seven cases occurred on board the Queen Charlotte, which required primary amputation: viz. one of the shoulder-joint, two of the arm, one of the fore-arm, two of the thigh, and one below the knee. The destruction of parts, in all those cases, was so great, as to leave no doubt of the propriety of immediate amputation.

It was not my intention to have operated during the continuance of the action, unless forced to it by urgent circumstances. But after the action had lasted about six hours, without a prospect, as I was told, of its coming to a conclusion, I proceeded to amputate, leaving two of the assistant-surgeons to afford assistance to such wounded as should be brought down while I was engaged in operating.

In one case, only, did I witness that great constitutional commotion which has been said generally to follow severe wounds; and so far from being deterred from undertaking the operation in this case, by this state of commotion, I considered it an additional motive for proceeding to it with-

out delay. The immediate consequences of the removal of the shattered limb in this case, were highly satisfactory—the commotion speedily diminished; and in conversing with the patient some time afterwards, on the subject of the operation, he expressed himself in very strong terms of the relief he had experienced, from inexpressible suffering, by the operation. This amputation was performed at the shoulder-joint, a few minutes after the wound was received.

One operation, as I have stated above, was performed a few minutes after the receipt of the wound. Four were performed from four to six hours, and two on the following day, about eighteen or twenty hours after they were wounded. The two last amputations were not performed sooner, in consequence of the patients withholding their consent to the operation.

Of the amputations performed on board the *Queen Charlotte*, one terminated fatally. One was discharged into his proper ship, the *Granicus*, three weeks after the operation, with the stump nearly healed; and five were landed at *Portsmouth*, all either perfectly or nearly recovered.

The fatal termination of the unsuccessful case took place on the 38th day after the operation. He had been struck on the left side by a large bar of iron, which destroyed a portion of the pectoral muscle, and the soft parts of the side as low as the eighth or ninth rib; divided the axillary plexus of vessels and nerves; shattered the

humerus into numerous portions, with perfect destruction of the soft parts on the fore part of the shoulder, and of the posterior fold of the arm-pit, leaving only a small triangular portion of the back part of the deltoid, which was, however, sufficient to cover the glenoid cavity, after the removal of the head of the humerus.

An enormous wound remained uncovered, from which extensive sloughing took place; every thing, however, promised a favourable termination. The ligature of the axillary artery came away on the fourteenth day; the wound was healthy, and contracting rapidly; and his general health was improving, although he suffered from a disease of the bowels of long standing, unconnected with his wound.—But, on the twenty-ninth day after the operation, hæmorrhage unexpectedly took place. On removing the dressings, the bleeding ceased. It returned the following morning, and it was then ascertained to proceed from the axillary artery. An incision was made in the course of the artery, and by cautious dissection it was separated from the surrounding parts, and cleanly secured with a ligature about $\frac{3}{4}$ ths of an inch below the clavicle. In cutting down on the artery, the edge of the knife came in contact with a sharp splinter of bone placed directly over it, which had caused ulceration of its coats, and consequent hæmorrhage. Not more than a pound of blood was lost; his strength was, however, much reduced by the loss, and he sunk on the eighth

day after the artery was secured, no return of hæmorrhage having taken place.

I have thus endeavoured to reply to the different Queries, in as clear and concise a manner as I can, confining myself as nearly as possible to a bare statement of facts, without venturing to offer any opinion or observation of my own, which the occurrences referred to may have suggested. I beg to add, that no case occurred which required secondary amputation; and that the patient, whose case is related above, was the only one of the wounded on board the Queen Charlotte who died after the action.

I am, &c.

ALEX. DEWAR, M.D.*

Alex. M'Leay, Esq. Sec.

&c. &c. &c.

(Copy.)

18, Arundel-street, Panton-square,
London, 1st Nov. 1816.

SIR,

In answer to your letter of the 30th ultimo, I have to acquaint you, for the information of the Commissioners for Transports, &c. 1st, That in my opinion there were twenty wounds on board the Leander which required amputation; sixteen of which were from cannon, bar, or double-headed shot, fracturing the bones, lacerating the soft parts, and tearing the blood-vessels and

* See Dr. Dewar's Inaugural Dissertation on this very subject, published in Edinburgh, 1818.

nerves asunder. One was a fracture of the femur, and laceration of the thigh by a piece of langrage; and three were fractures by musketry, the latter of which I conceived it necessary to endeavour to preserve, though contrary to my own opinion on this subject.

2d. I amputated during the action, and did not defer it until the constitution recovered from the shock and alarm the patients might have laboured under, none of them having exhibited that derangement of the sensorium so frequently described by authors on gun-shot wounds; and from its being my decided opinion, that the knife immediately following the injury, was the most effectual mode of securing the patient from such nervous or sensorial irritation.

3d. I amputated immediately on the patient's arrival in the cockpit, if I could get near him from the pressure of other wounds, and every one was amputated within half an hour after his removal to the cockpit. — Of the three which I attempted to save, one is likely to preserve his limb; he has suffered, and will continue to suffer much, and he now laments that he did not accede to my proposal to amputate. One lost his thigh at Haslar hospital, about the thirty-fourth day after the battle, and died a few days afterwards. The other lost his left arm, very high up, and is doing well.

In answer to your fourth Query, I shall herewith subjoin a list of the amputations, with their nature, &c., which I trust will afford you the information required.

LIST OF AMPUTATIONS

*Performed on board H. M. Ship LEANDER.**August 27th, 1816.*

NAME.	QUALITY.	NATURE OF AMPUTATION.	REMARKS.
Captain Wilson...	Marines.	Both thighs, (very high.)	Died in a few hours.
David Barry.....	Seaman.	Both thighs, (very high.)	Ditto.
Timothy Sullivan	Ditto.	Hip-joint.	Died shortly after.
Michael Holland...	Sergeant.	Left thigh.	Sent to Hospital, Sept. 30th.
Thomas Farrell...	Seaman.	Ditto.	Ditto, Ditto.
Cornelius Wells...	Ditto.	Ditto.	Ditto, Ditto.
Francis Coldthread	Ditto.	Right thigh.	Ditto, Ditto.
John Williams.....	Ditto.	Ditto.	Died of phthisis, Sep. 10, stump just cicatrised.
John Taylor... ..	Marine.	Left thigh.	Died of fever, Sept. 20, stump cicatrised.
Pat Brabazon.....	Sergeant.	Right arm.	Cured.
John Martin.....	Seaman.	Ditto.	Ditto.
Henry Roofe.....	Ditto.	Left arm and cranium fractured.	Sent to Hospital. Convalescent.
James Walker.....	Ditto.	Ditto fore-arm.	Cured.
Joseph Mascall....	Ditto.	Ditto.	Ditto.
A Seaman, name unknown, and belonging to another ship.....	—	Left thigh. Arm fractured, and much bruised about the chest.	Died shortly.

Convalescent.

Captain Wilson had both his limbs torn off by a double-headed shot; and David Barry had his carried away by a cannon-ball—they were amputated as high as possible, by the circular incision. Both were very unfavourable subjects for an operation, with impaired constitutions.—Barry had had ulcers and varicose veins. Sullivan had a dreadful wound; his arm was fractured, and he had also a wound in the breast. The man whose name is unknown was thrust through the stern-port, from one of the gun-boats. His thigh was fractured and cruelly lacerated; his arm was also fractured, and he was much bruised. Williams was consumptive on his entering on board the ship; and I never had any hopes of his recovery. Taylor's stump had healed by the first intention, when he was seized with fever, and died on the 20th of September, having resisted every effort for his recovery. The pestilential easterly wind of Gibraltar produced the fever, and it was only checked by our removal from that focus of disease. For further particulars I shall refer you to my letter of the 28th of September.*

I am, &c.

D. QUARRIER, M. D.

Surgeon, Leander.

* The letter alluded to in the text, has been read to the Medical and Chirurgical Society, and published in their

(Copy.)

H. M. Ship Severn, Motherbank,
28th November, 1816.

SIR,

In compliance with your letter of the 30th October, proposing certain questions relative to the operations performed in the action at Algiers, I have the honour of transmitting the following answers.

ANSWER 1st.

Four wounds occurred requiring amputation. In one case a musket-ball passed in a slanting direction through the arm, fracturing the os humeri. In the second, the leg was shattered by a cannon-shot, close to the knee, and left attached behind by only a small portion of muscle. In the third case, the leg was carried off entirely by a cannon-shot on board of a gun-boat. The fourth, the leg was shattered by a cannon-ball, and left hanging, as in the second case; but, in coming down the fore-rigging, he received a wound by a splinter below the patella of the same knee.

Transactions: to which I beg to refer, for a very interesting and animated report of the state of the wounded on board the *Leander* in the bombardment of Algiers.

ANSWER 2d.

All the amputations were performed during the action. I did not perceive symptoms of any particular shock or alarm, under which patients in that situation have been said to labour, all of them appearing uncommonly collected. The first case, a midshipman of about twenty years of age, came down out of the fore-top, with very little assistance. In the third case, the man was so completely collected, that he took the handkerchief off his neck, and tied it himself about the stump. The fourth (the captain of the fore-top) was wounded in the fore-top, and came by himself half way down the rigging, when he was wounded in the knee; the pain of which he described as more acute than the first wound.

ANSWER 3d.

On the first patient the operation was performed a very few minutes after he got down to the cockpit, which was also the case with the second. In the third, the man was wounded in a gun-boat, about half-past three in the afternoon, and he was brought on board of this ship, about two hours afterwards: I was at that time completing the former amputation, and think I began with him about six, P. M. The last man must have waited nearly an hour, as he was brought down with several others, and had to wait his turn.

As to the latter part of this question, I did not send any patients to an hospital.

ANSWER 4th.

All have recovered.

I am, &c.

ANDREW LESLIE, Surgeon.

To Alex. M'Leay, Esq. Sec.

&c. &c. &c.

Among the wounded on board the Albion and Hebrus, not any case occurred that required amputation.

In a conversation the author had with the surgeon of the Impregnable, after these official documents were furnished, that gentleman particularly requested him to state, the delay in amputating on board that ship was occasioned more by necessity than choice.

I feel it my duty to insert the subjoined letter from my friend Dr. Baird, as connected with these papers, for it strongly corroborates the propriety and necessity of amputating, in gun-shot wounds, without *any* delay. The Doctor's opinion will carry peculiar weight, when it is known, that his opportunities of forming a judgment on this important subject have been

numerous and extensive, particularly the last thirteen years of the war; during which period he filled the station of Inspector of Naval Hospitals, &c. &c. with the most unwearied zeal, and great benefit to the public service.

At the Earl of St. Vincent's,
Rochetts, 20th of October, 1816.

DEAR SIR,

Although you are fully in possession of my opinion respecting the propriety of immediate amputation in all cases of gun-shot wounds in which this operation shall appear indispensably necessary; yet, if any further evidence were wanting, I have had it fully established, in my late visit to the wounded seamen and marines landed from Lord Exmouth's squadron, at Haslar and Plymouth hospitals. Indeed, I cannot well conceive a more culpable practice than that of deferring an operation longer than the surgeon can give his time to perform it, leaving the patient suffering under all the irritation and pain of a shattered limb, independent of approaching and increasing inflammation; whilst an immediate amputation would free him of the former, and lessen the chance of the latter.

I am, dear sir,

Faithfully yours,

ANDREW BAIRD.

Alex. C. Hutchison, Esq.

I feel it due to myself here, to make a few remarks upon that part of Mr. Guthrie's second edition, where he replies to my observations on his first edition; and, in doing so, I beg to assure him and the profession, that I am totally uninfluenced by any feelings beyond the desire of establishing the truth of my former doctrines and assertions; and, also, of claiming to myself whatever merit they may possess as to originality, namely, in having been the first, in this country at least, to prove the fallacy of the arguments, as a general rule, for *any delay*, however short the interposed time may be, in amputating a wounded limb that cannot be saved.

This is a question which, when first agitated, was not duly appreciated by the profession and the public in this country; but now that we come to sit down in peace, and reflect over the battles that have been fought, and the blood that has been shed, by contending fleets and armies, for a period of nearly thirty years, it is fearful to contemplate how many brave men and patriots of all nations may have fallen a sacrifice to the ignorance in which, it appears, we have hitherto remained upon this point of practice alone; a point now, I trust, for ever settled, because it is of vital importance to every nation liable to war; and a correct knowledge on the subject, under divine Providence, may be the means of saving the lives of thousands of such gallant men as may hereafter contribute to the glory and prosperity of their country. There is not a surgeon, who has read much on this particular question, but who must admit that delay, and sometimes considerable delay, in amputating was the general doctrine inculcated until the termination of the late war, although the practice, both in the army and navy, may have been different,—experience, not books, having led us to the right path: and I deny that any two or three, or half-a-dozen writers, however celebrated, could settle a point of so much im-

portance as that we have been discussing, without practical proofs, and arguments ; yet we have Dr. Hennen's authority for it that Wiseman "dismissed it in one line as a settled point."* and White, who published in 1712,† in much about the same space !

It is far from my intention to detract from the merits of other writers who have laboured in the same field, but truth and justice compel me to place the question in a clear point of view, and to leave the subject at issue to the decision of the profession, particularly as the attack upon my writings has been so uncalled for, and as they have been so uncandidly treated.

Mr. Guthrie commences his reply to my observations, by bringing forward a conversation, said to have passed between a Mr. Williams, surgeon to the forces, and myself (see page 232): I have not the honour of knowing Mr. Williams, but I perfectly recollect conversing with an army medical officer, in the street, about the period specified in Mr. Guthrie's reply, and the gentleman alluded to may, or may not have been Mr. Williams ; but the conversation was not quite as is stated by Mr. Guthrie. As exactly as I can recollect it, it was to this effect: that he, the stranger, had *not then read* Mr. Guthrie's work ; but that *if* Mr. G. recommended a delay in amputating in gun-shot wounds, it was not the practice pursued in that part of the British army to which he, Mr. W., was attached ; for that he had amputated immediately, or as soon as he could, and he had no idea but that other surgeons had done the same: this was the sum total of this supposed Mr. Williams's conversation ; and I have since learnt from Mr. Gunning, who was surgeon-general to the

* See Dr. Hennen's valuable work entitled Principles of Military Surgery, second edition, p. 44.

† White de Recta sanguinis missione.

British army in the Peninsula, that such were *his instructions* to the whole *corps medical* of that army; although there were not at that time any such rules of practice known to exist in the writings of any surgical author, either foreign or domestic, who had had experience in the treatment of gun-shot wounds, and who had given satisfactory proofs and arguments in favour of it.

I became, therefore, the more surprised that Mr. Guthrie should have advanced such opinions in his first edition, but considered that he had done so from an honest and thorough conviction, in his own mind, that they were correct.

As we are upon the subject of private conversations, I shall now take the liberty of stating what Mr. Guthrie said to me, in his own house, when I waited upon him to return the visit he politely paid me, and to which he has alluded in his reply, before my second tract (the *Farther Observations, &c.*) was published; upon my asking him what were Sir James M'Gregor's opinions on the subject at issue between us, he said, (at least so I understood him,) that Sir James thought his, Mr. Guthrie's, doctrine, in recommending some delay, was the preferable practice. This then was an acknowledgment that the doctrine of some delay was that which he intended to convey in his first edition; although he now turns round upon me, in the second edition of his work, expresses surprise that any body could understand him as advocating the propriety of delay, and boldly states, that I have taken what he calls his *exceptions* for a *general rule*.

In farther corroboration of my statement, and of the only true reading of Mr. Guthrie's first edition, I beg to refer him to all the reviews of his work, and of mine; the reviewers, he will admit, could not possibly have any reason for mistaking exceptions for a general rule: and if he will point out one individual who did not understand, as

a general rule, that he, Mr. G., recommended a delay of a certain number of hours, then I will acknowledge myself in error on this point; but it so happens I am led to think that he cannot do this, for the greater number of these reviews are now before me, and fully bear me out in this particular.*

We are, however, bound to believe, since the appearance of his second edition, that Mr. Guthrie always intended to urge immediate or instantaneous amputation in wounds requiring that operation; and can now only regret, that he had not made himself more intelligible to all his readers; for every medical man whom I have consulted on the subject, and who had read his book, understood him as I have done: but I cannot conclude this part of the subject without earnestly intreating the reader who may happen to be interested in the discussion of this question, to peruse that gentleman's first edition; I shall then have no fear of being accused of taking exceptions for general rules.

I feel sorry to have been obliged to say so much, after the *correction*, contained in the second edition of this gentleman's work; and I have little doubt but that I shall be considered a bold man indeed, to have done so in the face of the last extraordinary passage of Mr. Guthrie's reply to me, which is as follows: "If any one is (be) disposed to accuse me of doing one thing and of recommending another, I shall not consider him worthy

* See the Edinburgh Medical and Surgical Journal for July, 1817, and for November 1818. The London Medical Repository for March, 1817: the same work, vol. 4, page 199. The Medico-Chirurgical Journal and Review for December, 1816. The London Medical and Physical Journal for November, 1820. Critical Review for March, 1816. The Monthly Review for April, 1818.

of my attention, or that of any honourable man.”* It so happens, that I am neither afraid of Mr. Guthrie’s threats, nor the threats of any other man: my published opinions and statements will, I am well convinced, be received by the profession with quite as much respect and candour as those of that gentleman: and surely a question may be discussed without having recourse to such language as that contained in the above-cited passage. But our friend Mr. G. seems to imagine that declamation may possibly overturn facts; and that it does so with some particular individuals I am willing to concede, but not with the well thinking and right judging part of the community.

Mr. Guthrie, in his reply, proceeds next to discuss the question of shock and alarm to the constitution from gun-shot wounds; but as this subject has already been so fully gone into and argued both in his work and in mine,—besides, as we do not *altogether* disagree upon this part of the subject,—I shall dismiss it in the words of a reviewer.†

“Mr. Hutchison denies *in toto* that gun-shot wounds *generally* produce such shock and alarm to the constitution, “or nervous commotion,” as will sanction delay; the documents before us generally testify against the presence of this sensorial derangement. We have accompanied *armies* and fleets to battle, and have not seen it: and in short, taking the evidence of facts, if a sailor or a soldier be seen calmly applying a tourniquet or handkerchief to the lacerated remains of a lower extremity, to check hæmorrhage; or if, like Captain B., he can preserve himself, thus mangled, by swimming in the sea a long

* See Guthrie, second edition, p. 242.

† See Edinburgh Medical and Surgical Journal for November, 1818, page 646.

period;* if a sailor can lower himself down by the ropes from the tops of the ships, on deck, and pilot his limb in safety amidst ropes while hanging by a shred of integument; if the soldier calmly seeks a place of safety, or the sailor creeps to the cock-pit, without being sensible of the extent of his injury; if officers, like the brave Abercrombie and colonel Beckwith, are first apprised of their wounds by those near their persons; if with such wounds they can wait at their artillery, to point and fire the gun of revenge; if an officer, like captain M'K., will threaten to complain to the commanding officer if the surgeon did not immediately amputate his limb; if both sailors and soldiers can then animate their companions to fight, and join in the shout of victory; if they generally desire immediate amputation; if officers after death-wounds, like Benbow and Abercrombie, can continue to direct the manœuvres of battle; if the brave Athenian Cynagyrus was killed, holding the Persian vessel by his teeth, after his arms had been successively cut off; and if in these acts (and many more we might record,) we admit the severely wounded to exercise rightly the mental functions of per-

* When the Princess of Wales passed the Downs for Germany, on board the Jason Frigate, a royal salute was fired from all the ships of war then at anchor; among others, there was a cutter, whose commanding officer was dressing in his cabin during the salute; and after it had terminated some minutes, the lieutenant came upon deck, and looking over the bulwark of his vessel, saw one of his own men swimming in the sea, and a stream of blood behind him. This poor man had been blown from the mouth of the carronade he was loading with a fresh cartridge, by which both his arms at the elbow joint were carried away, and which I amputated at the insertion of the deltoid muscle, in Deal Hospital, about half an hour after he was picked up; he recovered in a fortnight, and was discharged with a pension of thirty-six pounds a year.

ception, reflection, memory, and judgment, and display the moral and physical faculties of courage, resignation, fortitude, energy and skill, instead of fear and alarm, we may surely decide that the injury but rarely produces a severe constitutional shock or injury, productive of the necessity of deferring amputation; and, indeed, if it did always, we must deny the brave, the glorious honour of having died (not from one, but) "covered with wounds."

I have now a much more serious charge to bring against this gentleman,—one not depending upon hearsay, but upon documentary evidence; and I shall leave the reader to call it what he will, for I shall only quote his own writings and the written document in my possession, with less comment and remark than it really deserves: the accusation and its refutation shall principally speak for themselves; only premising, that as I have ever lived an honest and honourable man, I can never suffer any one, let him be whom he may, to arraign either my honour or my character, with impunity.

I have waited thus long in noticing the insinuation, lest an immediate reply, in any other way, should have been construed into haste and precipitation; and lest I might appear to use language which, on more remote and more serious reflection, I might not approve. In this forbearance, too, I have had a good example set me by Mr. G. himself, who has informed me, that he had delayed his reply to me for nearly three years for the same reason.

Mr. Guthrie says, page 239 of his second edition, "I have sufficiently disproved the last, and I should suppose the first also," meaning two positions contained in my book, already adverted to, "and only now notice it to correct an error which bears upon the subject, with reference to the case of lieutenant-colonel Beckwith, whose meaning he (Mr. Hutchison,) must have mistaken. He says, 'this gallant officer was totally unacquainted with his

calamitous wound till informed of it some time after by a staff officer, who first called his attention to the circumstance, on perceiving a stream of blood flowing from the boot and stirrup-iron to the ground; and after such a lapse of time, the loss of blood must have been considerable, which produced some degree of faintness.* I have colonel Beckwith's authority to say, after reading this passage over to him, that it should stand as follows; 'the sound of the coming shot, the blow, the sense of it, the bleeding, and the calling out of my friend, were as two seconds of time by the watch.' The shock and alarm which immediately followed, the colonel acknowledges; and very expressively says, 'you doctors may call it fright if you please:' but fear on an occasion of this kind never occupied a place in the breast of our friend."

This long paragraph, if it mean any thing, is a pretty direct charge against the truth or correctness of my statement of colonel B's. case, who was upwards of two months under my professional care at Deal, from the consequences of this very amputation, where I attended him, without interested motives, as a guest in the house of a friend; and who I am convinced would be the last man in the world that would state a thing at one time, and gainsay it at another. But it so happens, that the identical paragraph above quoted from my book was shewn to colonel B. in manuscript, months before it was printed, and to which he then assented, as to the facts of the case; and which the colonel afterwards recognised in print, as the same I had previously shewn him.

As a proof of this, on my submitting to him the attack made upon me by Mr. G., the colonel asked me whether I did not recollect the only remark he made to me, on perusing the passage in question, when first I shewed it

* The reader is here requested to peruse the whole of the paragraph at pages 6 and 7 of this work.

to him in manuscript, namely, that he thought the words "some time after," implied an indefinite time, as a quarter of an hour, &c. which from the nature of the wound, subsequently ascertained, was not possible, in his opinion, to have been the case; and which the colonel said was the only remark he made to Mr. Guthrie, when that gentleman read to him the paragraph above quoted from my book: but this was only according to his (colonel B.'s) judgment. I wish, said I to him, to come to *facts*: will you be so kind as now to inform me whether you were sensible of being wounded before it was intimated to you by the staff officer? that is now the point at issue in this case: as to the rest of the question, it is all but supposition and matter of opinion, which no one can decide from the premises, as I informed you when the manuscript was first submitted to you. The colonel then distinctly stated, *that he did not know that he was wounded until the staff officer mentioned it to him.*

Now with regard to the supposed objectionable words, "some time after," I should be glad to know what other more qualified expression could have been used, seeing that the colonel did not know that he had actually been wounded until informed of it by another person; and if my memory serve me correctly, the intimation was made to colonel B. by the officer riding up to him, and saying, "I am sorry to say, Sir, that you are hit." "Hit!" replied the colonel, "where?" I appeal to colonel B. whether these were not the precise words that passed on the occasion.

I shall refrain from remarking farther on that passage in Mr. G's. work where he so animatedly describes the "sound of the coming shot, the blow, the sense of it, and the bleeding, &c. &c.," for which he says he had the *authority* of the gallant officer, than merely to observe, that at this extraordinary detail the colonel smiled, as well

he might; sensibly remarking at the time, "how was it possible, in a battle such as that at Waterloo, where balls of all kinds were whizzing by and over one in all directions, that I should have happened to hear the sound of a shot that wounded me?" and of which wound, I replied, you were not aware until apprised of it by the friendly officer who first gave you intimation of your misfortune.

I could enlarge upon this part of my reply, but I feel it to be more consistent with my character, and the important object I have in view, the establishment of professional facts, to abstain; I shall finish by simply quoting what colonel B. has written in his own hand, in the margin of my book, on occasion of the interview alluded to; and which my friend Mr. Guthrie is very welcome to see whenever he pleases, "THE OFFICER DID FIRST SIGNIFY TO LIEUTENANT COLONEL BECKWITH THAT HE WAS WOUNDED."

I have judged it right to say thus much in justification of my own published facts and opinions, and to advise Mr. Guthrie to be more correct himself, and less dictatorial in future, especially when he attempts to impugn the opinions, and correctness of the facts, of others. He will, I am quite certain, by such a line of conduct, gain more lasting fame, of which I honestly think him deserving, than by the course he has pursued. I shall conclude this reply with an earnest hope, that whatever I may have found it necessary to say on this occasion, may not be construed into any hostile feeling towards Mr. G., for such is really the furthest from my mind; and as a friend, I shall take the liberty of recommending to his attention the good olden rule of "*sum cuique*."

2. *On the Application of the Tourniquet.*

When an amputation is to be performed on a diseased limb, not depending on a recent wound or accident, in which all delay is deemed inadmissible, it may be necessary to premise, that the evening preceding the operation it will, in general, be useful to administer to the patient some aperient medicine; and in cases of great debility, not unfrequently an attendant on long standing ulcers of the lower extremities, an enema will be sufficient to answer the purpose of removing the contents of the larger intestines, and lessen the probability or necessity of having recourse to the bed-pan during the first day or two after the operation: a process often attended with much inconvenience, pain, and sometimes even a risk of hæmorrhage.

The proper distance for the application of the tourniquet, whether the part intended for operating on be situated above or beneath the knee or elbow, should, in my opinion, be nearly the same; namely, a hand's breadth below the groin or axilla. The next circumstance that claims our attention will be the kind of pad or cushion, to be applied underneath the strap or web of the instrument, for compressing the artery. I am in the habit of using a pad considerably smaller than is commonly employed by surgeons in general, being not thicker than a finger, and which I place somewhat obliquely over the artery, to preclude the possibility of its being displaced, by any direc-

tion that it may subsequently be found necessary to give the limb during the operation. It may be made by taking a few turns with a bandage, about a rounded piece of deal, of the circumference of a goose-quill, an inch and a half in length. After the pad is thus prepared, it should be stitched, to prevent any embarrassment from unrolling during its application, with about a yard of bandage left hanging from the compress, for the purpose of passing round the limb.

Surgeons usually place the screw of the tourniquet immediately over the pad for compressing the artery; but I am of opinion, that a more convenient situation for this part of the instrument, both as it regards the operator and assistant, will be on the outside of the limb, nearly opposite the course of the artery to be compressed; for, by this position, the pad will be less likely to be displaced by the web of the instrument, than when the screw part acts immediately upon it. I have seen gentlemen, who rank deservedly high in the profession, make use of a pad of a rolled-up five-yard bandage; at one period I was myself in the habit of using such large compresses, and might have continued in the use of them to this day had not a very embarrassing circumstance occurred to me on one occasion, that shall be noticed hereafter.*

* See Farrol's case before quoted; and also page 203 of Mr. Guthrie's first edition for an accident of a similar nature that occurred to him, by which he lost his patient.

A principal objection to the placing of a large pad over the artery is, that the web of the tourniquet passing over a surface so much elevated above the circumference of the thigh, a considerable angular space on each side of it will be left slightly, or not at all compressed by the circular band of the tourniquet, however closely the instrument may be screwed. This will not only endanger the loss of a large portion of blood, from the divided ends of such vessels as may happen to traverse that space, a circumstance to be particularly guarded against in cases of debility; but the emission of blood must also embarrass and obscure the view of the young surgeon, in the subsequent parts of the operation.

3. *On the Division of the Parts.*

The skin, integuments, and facia, being divided by a circular incision, and retracted upwards as high as is judged necessary; the superficial muscles should next be divided; and, lastly, the more deep-seated ones; beginning this last circular incision at the part where the former muscles have retracted to, as these muscles will be found to retract more than those immediately connected with the bone. After this the muscles are to be separated from the bone upwards, between one and two inches, in proportion to the size of the limb; and leathern or strong linen retractors are to be used, in preference to metallic ones; on account of the liability of the latter to detach the

periosteum from the bone, at a point higher than the part to which the saw is applied: and thereby endanger tedious and troublesome exfoliations.

As soon as the bone is cut through, and before the retractors are removed, I make it an invariable rule, whether there be any occasion to use the bone-nippers or not, to take off the asperities, and scrape, or endeavour somewhat to round, the sharp cut edge of the bone with a strong blunt scalpel, in order to prevent the soft parts from being injured when brought over the end of the bone in forming the stump; which is very apt to happen by the pressure of the adhesive straps and bandage in doing up the limb. This precaution will be found to be doubly necessary when the amputation is below the knee, owing to the thinness of the integuments covering the ridge of the tibia. Mr. Hey, of Leeds, in this latter case, recommends the *filing* down the ridge of that bone;* and military surgeons have been in the practice, of late years, of sawing off a considerable portion of the upper ridge of the tibia after amputation; but I have found nothing more necessary than what has been described above.

4. *On securing the Blood-vessels.*

In securing the blood-vessels it may, probably, be unnecessary to mention, that they ought to be taken up in proportion to their magnitude, begin-

* See his Practical Observations in Surgery, second edition.

ning always with the principal; but I would by no means recommend to include in the same noose with the femoral or brachial arteries, their accompanying veins, when an hemorrhage, which sometimes occurs, renders a ligature necessary; as is practised and advised by Mr. Hey;* for it is probable that a considerable twig of a nerve may be concealed between these vessels, which, consequently, would be included:† besides, it might occasion an unequal division of the inner coat of the artery, and retard, or, in some cases, wholly prevent, the complete adhesion of the parietes of the vessel.

I recollect once tying an artery of considerable magnitude, situated in the centre of the strong cellular sheath of one of the muscles of the thigh, and when the noose was tightened (including a small portion of surrounding parts) the patient screamed out, and the stump was thrown into such violent action, that it was forced from the hands of the assistant who held it. On examination, the twig of a nerve was found to have been included; for when the parts were cleared of blood by the sponge, the bulging end of the nerve became very distinct; but which could not be seen before the noose was tightened, on account

* See his Practical Observations in Surgery, second edition.

† I have seen two instances in which the saphena branch of the anterior crural nerve was divided, in one instance into two, and the other into three distinct branches, all included in the same sheath with the artery and vein.

of the part in which it was imbedded being of the same colour and appearance as the nerve itself. The vessel was therefore pulled out by means of the ligature, divided above the noose, and tied insulated from the surrounding parts. When an artery, after amputation, is drawn out with the tenaculum, and the ligature passed round it, the assistant should be careful to tighten the noose steadily, and to avoid doing it by jerks, which I have several times seen productive of a rupture of the thread close to the vessel; and he should take care, also, while he ties, that the ends of the ligature be on a line with the noose he is tightening, that is, forming right angles with the vessel secured, else he may force the curved point of the instrument from off the divided extremity of the vessel, which may detach the artery from its bed to a greater extent than intended: or, should the tenaculum be forced only a little outward from the part where it entered, and occasion a small rent in the coats of the vessel, the probability is, that the ligature may be applied immediately over, or a little forward of the ruptured part, and secondary hemorrhage be the consequence, by the blood issuing from the sides of the artery above the ligature.

Arteries wounded longitudinally, which will sometimes happen in detaching the muscles from the bone, should afterwards be cut transversely at the upper part of the incised orifice, before they are finally secured; as I have experienced some

difficulty in passing a ligature round such wounded vessels, besides the necessity the surgeon is under of tying the artery in the form of an elbow, which mode ought never to be considered as sufficiently secure.

When arteries are found ossified on amputating, either from age, or a previously morbid state of their coats, and that there shall be calcareous depositions, it will be impossible to tie them insulated in the usual way, as they will be found to crumble under the stricture of the ligature. In such unfortunate cases, recourse must be had to the needle, which is to be passed round so as to include a portion of the muscular substance to act as a compressing cushion on the brittle sides of the artery; the ligature is then to be gently closed, sufficiently so, however, to put an entire stop to the circulation through the vessel, till granulations shall have formed, and obliterated the canal; for, under such circumstances, no cohesion of the parietes of the artery can be expected to take place.

It is of essential importance in amputation, that every artery from which there may be the slightest probability of an after-hemorrhage should be tied, previously to bringing into final contact the wounded surfaces; for, should a small branch escape detection, it may, when warmth and reaction take place, bleed profusely, occasion the removal of the dressings, the re-opening of the stump, additional pain to the patient, and increase

the general irritation, by the alarm usually resulting from unexpected hemorrhage.

With this view, therefore, it will be requisite that every coagulum of blood shall be carefully removed, as I have frequently discovered the mouths of very formidable vessels, concealed by coagula, which stop the bleeding only till the parts become heated; and this substance is broken down by the constant impulse of the circulation. The sponge I have often found insufficient to remove these coagula from the orifices of such vessels, and I have been frequently compelled to employ the nails of the fore-finger and thumb to detach them from their adhesions.

The practice of washing in cold water the wounded surface of the stump before the dressings are applied, as recommended by a late writer, I consider objectionable, for more reasons than one: first, its effects as an astringent can only be very temporary; secondly, additional pain must be induced by the shock, the necessary result of such treatment; and, lastly, after the patient warms, the re-action of the system will be greater in consequence of the previous application of cold.

As the arteries are tied, I have generally been in the habit of cutting off one end of the ligature about the eighth of an inch from the noose, for the purpose of lessening the irritation, by diminishing the size of this foreign body; but I question much whether it be attended with any material advan-

tage. The ligatures of the two principal arteries are, however, exceptions to this rule; and in order that these ligatures may be readily distinguished, I knot the two ends of each together, which, in the event of their not being detached at a proper period, may be advantageously employed in accelerating their separation, by twisting the two ends together, thereby tightening the noose and hastening the ulcerative process by which the ligatures of arteries are ultimately detached.*

To obviate the disadvantages arising from the residence of ligatures within an amputated stump, it has been lately recommended to cut off *both* ends of the ligatures close to the noose: and by a former writer it is remarked, that troublesome abscesses were sometimes the consequence, in his practice.

Mr. Lawrence, of Saint Bartholomew's Hospital, has, however, renewed the practice with considerable success, and given a very valuable and interesting paper on the subject in the 6th volume of the Medico-Chirurgical Transactions. By the recommendation of this plan from such high authority, it becomes our duty to give it every fair trial and consideration; as, should farther experience establish the advantages of the proposal, over the objections that have been

* See a small tract on the subject of the Operation for Popliteal Aneurism, in which the practice of twisting ligatures, to accelerate their separation, was first recommended by me. Published in 1811.

urged, another important step will have been gained to practical surgery.

But it is a practice that cannot at any rate, I imagine, be safely applied to the ligature of large arteries in any other state than that described above—namely, in an amputated limb. In aneurism, for instance, a collection of pus surrounding the enclosed noose, however small that collection may be, would be so situated (in immediate contact with the coats of the artery, retained, as it were, in a cup by the theca of the vessels, and the wound upwards, sealed in every part by the closest union,) as to be likely soon to extend the boundaries of its confined space, by breaking down the slender cellular connexions existing between the artery and its surrounding parts; thereby producing inflammation where its consequences are most to be dreaded, insulation of the artery and eventually ulceration of its coats, from whence a fatal hemorrhage might ensue. Such are the objections to cutting off both ends of a ligature close to the noose, in any operation for aneurism, as has been lately practised with success in amputations; and which I have stated, with a view, merely, to guard the young surgeon against his application of the principle, to an artery in any other situation than in that before described.

5. *On Forming the Stump.*

In forming the stump of the thigh, I am of opinion, with Mr. Allanson, that the anterior and posterior flaps should be brought down over the end of the bone, so that the seam or line of incision be transverse, and not longitudinal, as is commonly practised; but the principle upon which my preference to this mode of forming the stump is founded differs entirely from that of Mr. Allanson. He says,* “If the line be formed from above downwards, when the cure is completed the cicatrix will generally be found directly opposite to the bone; therefore, in walking with an artificial leg, the point of pressure must be upon the new-formed skin, which is an evident disadvantage: this is avoided by forming the line in a contrary direction, viz. from side to side, in which case, after the cure is complete, it will be found that, in consequence of the more powerful action of the flexor muscles, the cicatrix is drawn downwards, and the extremity of the bone is therefore covered with the old skin; and hence, in walking, the point where the greatest pressure falls is upon this part, and not upon the new skin.”

The above is certainly a strong reason for forming the stump of the thigh in a transverse direction; but, in my opinion, there exists a much stronger one, to which he (Mr. A.) does not

* See Allanson on Amputation, p. 67, 8.

allude ; nor, as far as I am acquainted, any other writer, and which I shall shortly have occasion to offer.

Mr. Benjamin Bell says, "The line of incision should be longitudinal, in order that the secretions of the stump may have a free exit, by the depending situation of the lower angle, &c." This reason for forming the line of contact longitudinally on the face of the stump has been urged by most authors, and taught by every Professor in the various schools of surgery. On these high authorities, and sanctioned by such specious arguments, surgeons in general have adopted the same practice in forming the line of contact in stumps, that is, longitudinally and perpendicularly. I feel persuaded, however, that, on more mature reflection, the mode in question will be found to favour the formation of pus between the flaps, and consequently tend to defeat the great object in view, namely, union by the first intention ; for let us suppose a stump formed on the above principle, resting on its cushion, and upon its depending angle ; will not the weight of the thigh, thus pressing on the longitudinal seam, against the bed or pillow, tend to separate the sides of the flaps to a greater or lesser extent, according to circumstances ?

The conclusion is irresistible, and experience justifies it. This separation of the flaps, however partial it may be, must necessarily form a cavity, and consequently a nidus for the secretion of

matter, which the support of the adhesive straps and bandages, &c. will not be wholly sufficient to counteract, particularly when the former become loosened by moisture, or the stump is reduced in size by various causes.

Such are the principal objections I had to offer against the long-established mode of forming the stump in a longitudinal line; and I shall now beg leave to state my reasons for recommending a total abandonment of this ancient practice, as well as the advantages that are likely to accrue from adopting a contrary proceeding, namely, that of closing the wounded surface, and forming the line of adhesive contact transversely, the reverse of the former.

In making the seam transversely, the weight of the thigh must necessarily press the sides of the flaps into closer contact; and hence union by the first intention, the grand object of our efforts, is more effectually promoted; and hence also the exclusion of collections of matter, no cavity being left for its secretion and deposition, which, when they occur, often protract the cure to an indefinite period, by favouring troublesome exfoliations of the bone, &c.

Since I have adopted this plan, the formation of pus within the stump is a circumstance of rare occurrence indeed; and it has besides enabled me to discharge from the hospital many men who had undergone amputation above the knee,

within the space of three weeks after operating; and in some instances the stumps were perfectly cicatrized in the short period of fourteen days. No such favourable circumstance ever occurred in my practice while in the habit of forming the face of the stump in a longitudinal direction. The practice here recommended will be found still more applicable and advantageous on board ships of war, where it is well known the rolling and pitching motion occasioned by the swell of the sea so frequently disturbs the healing process of nature in uniting parts divided by the knife.

I trust, then, the reasons here assigned will be considered by the profession at large sufficiently cogent for preferring the transverse seam in the formation of stumps to the longitudinal line, heretofore so universally practised.*

In forming the stump transversely in thigh cases, there is, however, a necessary caution to be given to the young surgeon, strongly exemplified by a circumstance which I witnessed in one of the public hospitals of this metropolis, and which caused much embarrassment to several dressers in the establishment. The surgeon having amputated the limb, and secured the blood-vessels, left the subordinate parts to be performed by the young gentlemen. In drawing the flaps together, these pupils, by mere acci-

* Mr. Guthrie, in his book, recommends the transverse line of stump, but does not assign any reason for such a preference.

dent,* formed the line of incision transversely ; and although there was sufficient integument to cover the bone, yet, with all their efforts, they were unable to bring into contact, by nearly an inch, the edges of the wound ; and they were on the point of abandoning the contest, when I took the liberty of suggesting to them the propriety of relaxing the posterior muscles of the thigh, by depressing the end of the stump, which was then at a right angle with the body : the result of this simple process was, the immediate approximation and contact of the flaps. This occurrence plainly demonstrates the impropriety of placing the stump on elevated cushions, as is too commonly the case, during the cure. It should be noticed also that, where a stump is formed transversely, the patient must be confined to his back when placed in bed, otherwise the stump will partake of all the disadvantages of a longitudinal one.

What has been observed with respect to the line of incision in amputations of the thigh will be equally applicable to the arm ; but in the leg and fore-arm we shall be under the necessity of following the direction of the bones. In forming stumps below the knee, the adhesive straps should be applied obliquely, and in such a manner that

* One of the surgeons to the hospital alluded to in the text, informed me that their uniform practice was to form the stump of the thigh in a longitudinal direction, namely, up and down, for the reasons before stated.

none of them shall be placed immediately over the ridge of the tibia, upon the cut edge of the bone, else the pressure they occasion is liable to produce inflammation, and ultimately sloughing and ulceration of the thin integuments.

With the view of obviating the inconvenience here stated, some military surgeons have lately adopted the practice of sawing off a considerable portion of the angular ridge of the tibia; but I think this mode liable to the objection of exposing one fourth more of bony surface than necessary, from which small spiculæ are so frequently thrown off, thereby preventing cicatrization, and of course retarding the progress of the curative process. It is well known also, that the wonderful powers of nature are able to remove, by absorption, all points and inequalities left by the saw in a short space of time: this fact has been frequently verified in dissecting stumps some months after amputation, in which the cut ends of the bones are found to be completely rounded; and the greater the length of time after the amputation, the more complete the effect.

6. *Of Exposing and Dressing the Stump.*

In cases where amputation has been performed on one of the great extremities, I never suffer it to be opened, or the dressings removed, before the fifth, and more generally the sixth day, excepting where much tension and inflam-

mation supervene, or an unusual secretion of pus takes place, and is retained by the too close application of the adhesive straps. In the latter case, the outer dressings are removed, and one or two of the straps snipped with a pair of scissors over the incised line, carefully avoiding the ligatures, to permit a free exit of the contained matter; the stump is then closed up as before, but the following day I make it an invariable rule to remove the whole of the dressings.

The tension and inflammation, resulting from amputation, are best combated by the application of emollient cataplasms to the face of the stump, laid over the adhesive plasters, previously relaxed a little, and renewed every two or three hours; or fomentations may be used. If the inflammation has communicated itself to the integuments of the stump upwards, cold, astringent, and evaporating lotions will generally be found the most suitable remedies.

It may happen, however, in particular instances, notwithstanding all our efforts to the contrary, that the unfavourable symptoms continue to increase, and assume alarming appearances: under such untoward circumstances recourse must be had to the most powerful antiphlogistic means of relief, as general blood-letting, with brisk cathartics; and if no remission or evident abatement of the dangerous symptoms should take place, decisive benefit may be derived from making free incisions through the inflamed cel-

lular membrane, on different parts of the stump, such as recommended and practised by me in the treatment of erysipelas phlegmonoides, with the most happy effects.

With a view to guard against the possibility of air insinuating itself between the sides of the flaps, should complete adhesion not have taken place, and to keep up that uniform pressure upon the sides of the flap, produced by the sticking plaster, so necessary to expedite the cure, as one strap of the plaster is removed, the part is gently cleaned with a soft sponge, dried, and the strap replaced by a similar one, before any of the others are touched. By strict attention to these minute but important rules, I feel persuaded that I am indebted for much success in performing speedy cures after amputation.

The ligatures are brought out as nearly opposite their respective nooses as possible, then placed in relaxed positions on the superior flap, under the adhesive plasters, and are never examined as to their being detached till the third or fourth time of dressing.

The manner of removing the straps of sticking plaster too is, in my opinion, of much consequence to be attended to, especially in the first few dressings; for, if great care be not taken, the slight and newly formed adhesions may be torn asunder; if, for instance, the strap be stripped off by holding one end at nearly a right angle with the adhering part, the flap will be

raised up with it, and thus a separation of the newly united parts be produced.

My plan is, to reflect the raised end of the strap close down upon the adhering part, and to bring it gently forward with one hand, whilst the removing part of the strap is followed by two fingers of the other, placed upon the skin, which will effectually prevent the occurrence of such an accident; and when one end is detached from its adhesions, as far as the line of incision on the face of the stump, in like manner the other end is brought down, and the strap wholly removed.

When the flaps are brought together, and all the straps applied that are deemed necessary to retain them in apposition,* I place upon the under flap a thin compress of lint, enveloped in a piece of simple dressing, with the ointment side outwards (to admit of the more easy removal of the circular strap); over this a broad circular strap, snipped at the outer edge, to make it apply more closely, is passed, and carried upwards round the member, leaving the cross angles of the stump projecting beyond it: two smaller straps of sticking plaster are also passed obliquely over all, crossing them on the face of stump, that the

* Mr. Lawrence's remarks on the abandonment of the close application of adhesive straps on the face of a stump, the use of flannel caps, Malta crosses, &c. are particularly applicable, I conceive, when applied to the transverse form of stump I am recommending, as in that there cannot be any necessity for such support. See Medico-Chirurgical Transactions, vol. vi.

sides of the flaps may thus be kept in closer contact, and thereby union between the inner surfaces more certainly promoted.

After the second or third dressing, unless the stump should not be doing well, such as the presence of tension, inflammation, or a profuse secretion of pus, I am of opinion it ought not to be opened out to be dressed oftener than once every other day; but in this the surgeon must be guided by existing circumstances.

The tourniquet I leave loose upon the limb from the period of the operation until thirty-six hours after the detachment of the last ligature, as a precautionary measure against secondary hemorrhage.

7. Medical Treatment after Amputation.

With respect to the medical treatment after the removal of a limb, it must of course depend on the previous and existing circumstances of the case. In healthy subjects, there is little or nothing to be done immediately; but attention to the solubility of the bowels must be kept in view throughout the cure; and if symptomatic fever should arise, I usually prescribe the acetate of ammonia, sometimes combined with the camphorated mixture, antimonials, nitre, &c.; and when the vascular system indicates a preternatural and morbidly increased action, I know no remedy so effectual as general depletion of the circulating mass; and I am inclined to think

that many more patients have been lost, after the operation in question, from a too sparing application of the lancet, than from its abuse. My first attention, however, is to direct the exhibition of an anodyne draught of thirty or forty drops of tinct. opii the evening subsequent to the operation, to diminish irritation and promote rest: the draught is repeated the following night, and continued, should it be found necessary.

Should the patient be labouring under dysentery or diarrhœa, when amputation shall be judged necessary for carious or malignant ulcer, a very frequent occurrence in cases admitted into naval hospitals, it will be vain to expect relief while the exciting cause continues to act, namely, irritation, and the absorption of putrid sanies from the ulcer. The limb must therefore be removed in the first instance, and we may then expect a cure by the usual remedies employed in such disorders.

In incipient dysentery, where there is reason to suppose that the disease is aggravated by an inflammatory diathesis, I have been induced to take away from ten to sixteen ounces of blood occasionally, and to administer saline purgatives, rendered more efficient by the addition of small portions of tartarized antimony, as recommended by Sir Gilbert Blane, in his valuable Treatise on the Diseases of Seamen, with now and then an anodyne to allay pain and general irritation. In the intermediate periods, minute doses of

ipecacuanha, combined with rhubarb, were found useful. When the disease is more advanced, especially that contracted by a long residence in the torrid zone, I have experienced great benefit from the use of calomel, and the application of blisters to the abdomen.* That very troublesome and aggravating symptom, tenesmus, may be greatly mitigated, and often wholly removed, by injections composed of thin starch-water, combined with opium and the sulphate of zinc.†

Diarrhœa is treated at first with saline purges, and afterwards the *mistura cretæ cum opio*. The diet in these bowel diseases is commonly farinaceous, such as sago, arrow-root, &c. made palatable with lump sugar.

It has repeatedly occurred to me, whilst surgeon of the Naval Hospital at Deal, to admit there on one day from twenty to forty patients, of the very worst species of carious and malignant ulcer, from ships just arrived from the East and West Indies, Mediterranean, &c. sent home as invalids, the major part of whom labouring under

* During my services in the West Indies, and off the coast of Africa, I have found the exhibition of large doses of calomel in chronic dysentery attended by the most happy results; and I embrace this opportunity of adding my testimony on this subject, in corroboration of Dr. Johnson's opinions inculcated in his valuable book on the Influence of Tropical Climates, &c.

† I believe Dr. Moseley, in his book on Tropical Diseases, was the first who recommended the *sulphas zinci* to be used as an injection in dysentery.

diarrhœa or dysentery, of more or less standing ; so that the practice here recommended is the result of ample experience and attentive observation. Although the foregoing observations exhibit a view of my general practice in the hospital, yet it is to be understood, that occasional deviations have taken place, as anomalous symptoms or unusual circumstances rendered them necessary. Much must be always left to the judgment and discretion of the attending surgeon, for which no practical rules can be provided or laid down.

With regard to the hospital diet of naval establishments, there are general regulations for the different daily meals, but varied frequently at the discretion of the principal medical officers, as suitable to peculiar states and diseases ; and I believe it is admitted, by all those who have minutely examined into these truly royal institutions, that with respect to the various comforts provided by Government for the sick, they stand pre-eminent and unrivalled throughout Europe.

CASE I.

William Williams, aged about 25, was admitted into the hospital from H. M. S. Hero, with the whole of the integuments of the foot, leg, and nearly half the thigh completely insulated from the subjacent muscles, and the greater part gangrenous, the consequence of a severe attack of erysipelas phlegmonoides. The patient was much emaciated, his pulse quick and small,

and he had a diarrhœa upon him. On the gangrenous parts sphacelating off, the muscles in some places looked healthy, and in others they were pale-coloured; but throughout they had the appearance of being beautifully dissected for the purpose of a demonstration in situ, for there was not a vestige of cellular membrane to be seen interposed between the layers; the whole having been broken down by previous suppuration, or removed by absorption; and from the surface of the muscles a thin acrid matter was secreted, of a disagreeably acetous smell.

The limb was amputated, therefore, pretty high up the thigh: eighteen arteries were tied at the operation; and, as it is the peculiar nature of this species of erysipelatous inflammation to confine its action to the condensed cellular membrane chiefly, this substance was removed from every part down to the bone. On pulling out the femoral artery with the tenaculum, for the purpose of tying it, such a degree of adhesive inflammation between the coats of the artery, vein, and nerve had preceded the operation, and the intervening cellular substance usually found between these vessels being removed by absorption, that complete and firm union had taken place, so that the vein and nerve followed the artery, when the latter was pulled forward with the instrument; nor could the artery be tied alone, until the nerve was torn from its adhesions to the coats of the artery by the nail of my thumb and finger.

Adhesion throughout the whole extent of the face of the stump, excepting in the course of the ligatures, was formed in the usual time; and only a few drops of good pus were discharged at each dressing, through the ligature openings. The patient's health improved, and his appetite became good. On the 11th day, the ligature of the femoral artery was found detached and removed. On the 13th from the operation he called out to me whilst in the ward, after he had been dressed, that the stump, on a sudden, had become unusually warm; and, on throwing down the bed-clothes, arterial blood was found issuing from the stump with considerable force, through the ligature opening of the femoral artery.

The bleeding was soon arrested by the application of the tourniquet; and, upon laying open the face of the stump, the end of the femoral artery was found destroyed by ulceration, to a distance beyond a chance of securing it with effect in that situation. An incision, in the direction of the artery, was therefore made, of about three inches in length; the incision terminating on the face of the stump, at the upper part of which the coats of the artery appearing healthy, it was there securely tied, when the bleeding ceased. This patient eventually did well, and was discharged cured, with a good stump.

REMARKS.

That ulceration of the coats of the artery in

this case was occasioned by the nerve being torn from the side of the vessel higher than where the ligature was applied, I am pretty confident; for, reflecting on the causes which could have given rise to this accident, I recollected being very desirous, at the amputation, to pass the ligature higher up on that account, and of being prevented by the adhesion on the opposite side of the artery, which ought at the time to have been also separated, so as to have allowed the ligature to pass close up to the adhering parts of the vessel, on both sides. My confidence in this being the cause of the after-hemorrhage was strengthened by observing that the ulceration extended higher on that side of the artery from which the nerve had been torn than on the opposite.

To guard against secondary hemorrhage, then, from such an occurrence, the relation of this case will, I trust, have its due influence on the mind of the young surgeon.

CASE II.

John Howard was admitted from H.M.S. York, with forty others, labouring under a carious and malignant ulcer of the foot and ankle. The limb was amputated below the knee, and all the arteries tied except the peronæal or fibular, which neither bled, nor could be found after the most diligent search; so that it was suspected of being altogether wanting: the stump was therefore dressed, and the patient carried to bed.

About eight o'clock of the evening of the operation, hemorrhage came on, and evidently from the fibular artery; which, on the face of the stump being laid open, was in vain looked for, notwithstanding the blood came in some force from the usual direction of that vessel. This artery had retracted so much within its sheath, that it was absolutely necessary to cut off nearly an inch of the end of the fibula, in order to reach the vessel, and tie it with more convenience and security.

REMARKS.

Should such an occurrence happen in the practice of any other gentleman, I can confidently recommend the sawing off a portion of this bone; since, in the case related, the stump healed in the usual time, and no bad consequences followed.*

It may be necessary here to remark, that in amputating below the knee the soft parts should be divided with the leg at a little flexure, and the blood-vessels tied whilst the stump is in this position; so as to prevent the retraction of the arteries within their sheaths, should the stump happen to be extended after the removal of the limb.

Mr. Draper, staff-surgeon to the forces, related to me a very singular circumstance, that came under his observation whilst serving with the army on the continent: it was that of a soldier,

* The circumstance of troublesome hemorrhages frequently occurring from the fibular artery after amputation, and arising from the cause mentioned in the text, is noticed by O'Halloran.

who had his leg amputated below the knee, for a gun-shot wound a little above the ankle, and who recovered without its being necessary to tie one vessel, either during the operation, or subsequently to it; nor did the slightest oozing occur at any one period during the cure.

CASE III.

On the 1st of December, 1808, Robert Farrol, aged about 32, a seaman belonging to the Defence, was wounded on the posterior part of the leg, by the heel of the top-gallant-mast coming down by the run, whilst in the act of striking it. By this accident, both bones of the leg were fractured and shattered into a thousand pieces; the integuments and muscles from the popliteal space to the os calcis, were dreadfully lacerated; the tendo Achillis was torn from its insertion, with a portion of the os calcis attached to it; the bellies of the gastrocnemius muscle hung loose and pendulous through the lacerated integuments; the posterior tibial artery was wounded, and the continuation of the great sacro-ischiatic nerve completely torn asunder in the popliteal space, with about two inches of it hanging out of the wound, insulated and unconnected with surrounding parts.

As the ship was at an anchor in the Downs when the accident occurred, the surgeon judged it more advisable to send the patient immediately to the hospital than to amputate on board. Un-

fortunately the wind and tide were unfavourable, and the boat was upwards of three hours in reaching the shore. During this period there had been slight hemorrhage, but which was arrested by the application of the tourniquet; and during his conveyance the patient was seized with two convulsive fits, with the interval of an hour; but for the first two hours he was free from any such affection; and, until the first fit seized him, he was perfectly sensible and composed, as I was informed by the medical officer who accompanied the man on shore. The accident occurred at half-past eight A. M. and it was one P. M. before he reached the hospital.

The nature of the injury being ascertained, and finding the patient's jaws to be now closely locked, he was instantly carried into the operation-room, where he was seized with another convulsive fit, soon after the amputation had commenced, and about three-fourths of an hour from the preceding one: and just as the operation was completed and the stump dressed, he expired before his removal from the table could be effected.

REMARKS.

Farrol was a strong muscular man, and insensible from the first moment I saw him. The pad placed over the femoral artery, previous to the application of the tourniquet, was large; and although the instrument was screwed as tightly as my strength enabled me, on dividing the

muscles by a circular incision, several jets of blood came with such force against the lower divided surface of the muscles, and upwards in my face, as to lead me to apprehend the femoral artery was altogether uncompressed. Before the patient lost, however, more than four or five ounces of blood by this accident, I thrust my hand down between the divided muscles, seized the bleeding vessel with my finger and thumb, and tied it securely before we proceeded to finish the operation, which was not an easy task, as the patient was struggling all the while strongly convulsed.

On the limb being removed, we found it to be the profunda that had been tied during the operation, which in this subject was unusually situated.*

During the operation, the flow of blood in the femoral artery was completely stopped by the pressure of the pad under the strap of the tourniquet, and the profunda occupied that space internally, between the pad and the part of the web of the instrument which pressed upon the limb; being a space sufficiently large to have admitted the passage of the forefinger without using force to thrust it under.

This circumstance is alluded to in another part of these remarks (page 72), which first suggested

* A post mortem examination proved that the profunda was given off by the external iliac, about an inch above Poupart's ligament, and with a course more inward than usual.

to me the disadvantage and even danger that is sometimes likely to arise from placing too large a pad over a principal artery during the amputation of a limb.

In this case, the quantity of blood lost by the accident on board, by the hemorrhage in the boat, and at the operation, did not, in all, exceed thirty ounces ; and this was corroborated by Mr. M'Cormick, the surgeon of the ship, as well as by his assistant.

I have gone more at length into Farrol's case than the concluding remark would seem to require ; but it is with the view also of endeavouring to elucidate an important point in practice, the proper period for amputating in gun-shot or other recent wounds and accidents, in which such an operation may be deemed necessary.

From the great extent of injury to the soft parts, that is generally produced by a wound inflicted with cannon-shot, or large splinters from a ship's side, the number of nerves so lacerated and torn must, consequently, be a great source of irritation to the system, through the medium of the sensorium ; and I shall here repeat, that it appears to me the longer the source of irritation be suffered to exist, the less chance will the surgeon have of saving his patient when he comes to amputate at the conclusion of the battle, or after the expiration of a few hours ; and I think the relation of Farrol's case strongly exemplifies the truth of this remark.

I consider this case, with others stated by Baron Larey, to be conclusive in support of the principle we have endeavoured to inculcate in another part of this work : for here we find the patient, for the first two hours, perfectly sensible, tranquil, and free from any alarm or cerebral affection whatever ; he afterwards gradually becomes insensible, convulsive paroxysms come on, with the intermissions shortening ; and lastly, a fixed jaw, the awful precursor to tetanus. It cannot, I think, be therefore assumed, that a delay in the operation, after this man was landed, would have wrought that state of mind and constitution, so as to have fitted him the more for the shock of the operation than at an earlier period. Even as it was, the operation was too long delayed, nor should I have considered myself justified in performing it when I did, had it not been judged necessary, with a view to check the approach of tetanus. It can now only be lamented by every man of feeling, as it was by the surgeon of the ship, afterwards, that the amputation did not take place on board, immediately on the receipt of the injury, in which case it is more than probable the issue would have been very different,—at any rate, that the patient's death would not have been so immediate to the operation.

CASE IV.

A few years ago I amputated the leg of the butler to Deal Hospital, at the advanced age of

63, who had been subject to ulcers on that limb for upwards of twenty years. The arteries in his case were all ossified, and the blood poured out of them, as out of inelastic tubes. They were secured with the needle, in the manner stated at page 77, and the ligatures separated at the usual period, without the smallest oozing of blood having occurred subsequently to the operation.

The ulcers on his leg were situated between the middle of the tibia and ankle, and both bones were carious close to the lower joint, but the caries did not extend upwards from the ulcers, which induced me to amputate below the knee. Were such another case, however, to occur in my practice, considering the age of the patient and long standing of the ulcers, I should certainly amputate above the knee, where the blood-vessels would be more likely to be from calcareous deposits than nearer the parts diseased; and this I consider in such cases should be an established rule in the practice of surgery. The butler did not survive the loss of his limb any great length of time.

CASE V.

On Amputation of the Foot at the Tarso-metatarsal Articulation.

R. Farmer, an African, aged about 22, was serving on board the Tenedos frigate, and exposed to very cold weather on the banks of Newfoundland, in March 1815, when he became sud-

denly attacked with violent pain and inflammation in his feet, which soon terminated in gangrene, and nearly destroyed them both. As soon as suppuration was established, the surgeon of the ship had determined on removing his legs; and accordingly the left was amputated below the knee on the 13th of April following. On the 23d of the same month, the patient was landed at Deal, and placed under my care in the hospital.

The day after his admission, a close examination was made of the remaining foot; the gangrene here had reached the centre of the metatarsal bones directly across the foot, there being a circular line of separation at this part completely round, but extending upwards at one part as high as the junction between the metatarsal bone of the little toe and the os cuboides. A probe could also be passed upwards under the soft parts along, and in contact with the other metatarsal bones, nearly as high as the articulations, and, in the metatarsal bone of the great toe, quite as high.

The integuments covering the carious metatarsal bones above the line of separation, were so very much diseased and thickened, that I despaired of making them serviceable as a covering for the tarsal bones in any attempt to remove the foot at the articulations; as, however, the patient was already deprived of one leg, I judged the chance of saving the other, by such an operation, too important not to give it to him.

An incision was therefore made on each side of the foot upwards, towards the os calcis, of about two inches in length, beginning at the circular line of separation; and the diseased flaps, above and below, were dissected from the metatarsal bones until we reached the articulations; the metatarsal bones were then dislocated one by one, commencing with that of the little toe. The difficulty in passing the scalpel to divide the connecting ligaments of the central bones, would have rendered the operation much more painful and tedious, had we not, after dislocating each bone from the attachments to its corresponding bone of the tarsus, cut the inter-osseous muscles slightly downwards to the toes; and then, with the finger and thumb of my left hand, pressed the tarsal head of the metatarsal bone upwards or downwards, as was most convenient; by which means we were enabled to divide the ligaments of the next bone, without being in the least degree embarrassed by the head of the last bone dislocated, jamming the instrument as we proceeded. The projecting end of the first cuneiform bone was cut off with the saw, so as to make it on a line with the others: two arteries were tied, and the flaps gently approximated with adhesive straps.

This is a tedious and very painful operation. Farmer's foot, however, was perfectly cicatrised in five weeks, notwithstanding the diseased state of the integuments forming the flaps; and when discharged the hospital, he could walk remarkably

well without any assistance from a stick, with only a wooden peg for his left leg, and a shoe well stuffed with wool for the remains of his foot.* It is an operation, too, of the utmost consequence and importance to a patient, and well deserves the attention of the profession, particularly in the naval and military service. The merit of having first performed it is due to the late Mr. Turner of North Yarmouth, who, my friend Sir Astley Cooper informs me, performed it successfully about the year 1787. After this, Mr. Hey of Leeds published one or two cases; but on a reference to Mr. Hey's book, I find that gentleman's stumps to have been considerably longer than mine, both by the drawings he gives and the description; probably in consequence of his having brought the soft parts forming the sole of the foot much more over than we were enabled to do in Farmer's case:—this will always be much influenced, however, by the original length of the patient's foot; and in all cases the extension and flexion of the remaining part of the foot, after this operation, will be maintained to a certain degree; sufficiently so, at least, to enable the person to walk afterwards without any inconvenience from this circumstance.

* This poor man has perambulated the streets of London for several years past, selling shrimps and periwinkles, which he carries about with him in a basket, and without the assistance of a stick.

I am, notwithstanding, inclined to think, that however successfully we may perform this important operation in England, we should pause before we recommended its adoption in tropical climates : as, from the unavoidable delay of completing the operation, the number of nerves, tendons, and tendinous expansions that must necessarily be divided with the knife, and the very considerable pain thereby excited, it would, in such situations, be likely to be followed by tetanus.

CASES VI. AND VII.

On Amputation during the Spreading of Mortification, arising from Gun-shot Wounds, or other recent Accidents.

Until within these few years, surgeons have deemed the amputation of a limb during the spreading of gangrene, from whatever cause it may have arisen, as highly inadmissible. The operation has, therefore, in all cases been postponed till a line of separation between the dead and living parts was completely established.

The writings of Baron Larey, Mr. Guthrie, and more recently of Mr. Lawrence of St. Bartholomew's Hospital, contained in vol. vi. of the Medico-Chirurgical Transactions, have in a great measure falsified the above doctrine, and clearly pointed out the distinction to be drawn by sur-

geons between the species of gangrene arising from a recent wound or accident, and that which is to be considered as arising from some general affection of the constitution.

I feel happy in being able to add the testimony of the two subjoined cases to those of the gentlemen above quoted, with a view towards establishing so important a fact; although in the first case the disease was certainly in its very incipient stage, yet I am thoroughly convinced, and so was my much-esteemed colleague Dr. Wright, that, had the operation not taken place in the evening when the patient was landed, it would, in all human probability, have been too late on the morrow, and the patient fallen a sacrifice to the delay. In the other case, mortification was fully established, and is completely in point.

Mr. Grey, aged about 15, midshipman of a sloop of war, was wounded, in 1809, by a cannon-shot, which dreadfully lacerated the integuments and muscles of the arm and fore-arm, carrying away the olecranon process of the ulna and the end of the radius, fracturing at the same time both condyles of the humerus.

The patient was landed at Deal, about thirty-six hours after the injury; when the arm, shoulder, and parts adjacent, were swollen and tense, with several small vesications, and the colour of the skin was beginning to assume the appearance of gangrene. The arm was amputated immediately, about three inches above the insertion of the

deltoid muscle; and on dividing the integuments, the cellular membrane was found loaded with a darkish yellow-coloured fluid. After the operation, the swelling, tension, and unfavourable appearance of the skin, over the remains of the arm and shoulder, gradually subsided, and he was discharged (cured) in about a month.

A short time before Mr. Grey's wound, a case still more in point came under my management, but of which my notes do not furnish me with any farther particulars, than that a seaman of middle age was wounded through the knee-joint by a musket-ball, off the coast of Holland. On the patient's admission into the hospital, four days after the injury, the leg was in a state of spreading gangrene, perfectly cold and livid around the ankle; and the lividness extending to about two or three inches above the wounded part. The patient complained of pain in the thigh, but more particularly in the region of the hip-joint.

The thigh was therefore amputated within an hour after his presentation, close up to the trochanter; and he, too, recovered without any disposition to gangrene manifesting itself on the face of the stump. The sides of the flaps did not adhere by the first intention, but healed by the process of granulation.

CHAP. II.

ON THE TREATMENT OF ERYSIPELATOUS
INFLAMMATION.

AMONG the various diseases incident to seamen on board his Majesty's ships of war, the frequent occurrence of erysipelas, and its generally unfavourable termination, cannot but have attracted the attention of the naval medical officer. The number of desperate cases of this nature annually admitted into the naval hospitals, must have also created a correspondent anxiety, on the part of the surgeons of these institutions, to discover the most efficient means of checking its destructive tendency. Impressed with this consideration, and fatally convinced of the total inefficiency of the common manner of treating the disease in question, I am induced to submit to the profession at large a more successful mode of practice, I am inclined to believe, than has hitherto been adopted. To this communication I feel the more excited from the perusal of some ingenious remarks, published in a periodical journal *, bearing favourable testimony of the practice, first recommended by me, in the treatment of erysipelatous inflammation, and so strongly expressed, that I should

* See Mr. Johnson's paper in the New Medical and Physical Journal for March 1814, pages 197-8.

deem it culpable silence longer to withhold from the profession the result of my experience and observations on so interesting a subject.

That seamen are more subject to this disease than other classes of society, is to be ascribed to the nature of the diet and strong liquors with which they are supplied, and to the sudden alterations of temperature to which they are necessarily exposed, affecting in a more particular manner the cuticular excretions: to these exciting causes may be subjoined the confined space allotted to a large body of men to sleep in, frequently unventilated for days together (excepting it be by wind-sails), owing to a boisterous state of the weather and the necessity of keeping the ports closed; the great increase of temperature in consequence thereof between decks, and their liability to be suddenly called upon deck to duty, from this vapour-bath, often in a state approaching nudity: all this combination of circumstances will sufficiently account for the great tendency of seamen to attacks of erysipelatous inflammation*.

During the period that the surgical department of Deal Hospital had been under my superintendence, I find, on a reference to the hospital books, and my own private notes, that upwards of forty cases of erysipelas had been admitted†; and, with three or four exceptions, it has, accord-

* See Heister's Institut. Chirurg. p. i. lib. iv. cap. vi. p. 290.

† I say "the hospital books and *my own private notes*,"

ing to my judgment, been that species of the disease styled by nosologists and systematic writers, erysipelas phlegmonodes.

In all the cases above alluded to, the malady was confined to the upper or lower extremities, chiefly the latter; and, among seamen, I have never seen it on the face excepting two or three slight instances, and in these it was considered as symptomatic rather than a primary disorder, having arisen from wounds of the head, where the bone or its investing membrane had been injured.

The lower extremities being the parts most subject to the attacks of this disease among seamen, may in some measure be attributed to their legs and trowsers being more frequently immersed in salt water than other parts of the body, and the constant irritation produced by the friction of such coarse materials (canvas) as usually constitute the dress of sailors, upon the naked skin.

The epidermis or rete mucosum has been supposed by some writers to be the particular seat of erysipelas, whilst others confine its morbid action alone to the cellular substance, and a third class to both these parts*. My own observation,

because the greater number of cases admitted had either other diseases marked against their names, or merely the very general one, *inflammation*, from some inattention in filling up the sick tickets which accompanied the men on shore.

* See Mr. John Pearson's book on the Principles of Surgery, page 191.

however, has afforded me convincing proofs that, in the species of the disease now under consideration, its active and destructive influence will be found more especially directed to the skin, and the reticular or condensed cellular substance forming the aponeurosis of the muscles, &c.

In the genuine erysipelas phlegmonodes, pus is seldom formed in the substance of the adipose part of the tela cellulosa, exterior to the aponeurotic expansion, that is, between this membrane and the skin; its most common position is beneath these parts, and in immediate contact with the muscles. Those conversant with erysipelas phlegmonodes, must have frequently witnessed the destruction of the aponeurotic coverings as soon as suppuration or effusion had taken place, by discovering large portions of that membrane detached, and floating in these secretions when liberated by puncture or other means.

That the skin is, in a great many instances, primarily affected, and the disease thence communicated to the aponeurotic coverings of the muscles, cannot be denied; but I am strongly inclined to believe, that the converse is as frequently the case. I have no idea, however, that the loose cellular structure of the adipose substance participates much in the inflammatory action of erysipelas phlegmonodes.

That species of the disease at present under review is, I am persuaded, confined chiefly to membranous parts, such as the aponeurotic ex-

pansions, skin, sheaths of tendons, muscles, &c. It has sometimes been found to commence in the periosteum, detaching that membrane, and insulating the bone, thereby producing the disease so accurately described by Mr. Whately *. It has also arisen from puncture of the facia in the operation of bleeding, from contusion, fracture, or other injuries affecting the periosteum, and when friction has been employed to promote union between the ends of fractured bones; all indicative of considerable sympathy existing between these parts.

This disease may be distinguished from E. œdematodes, by a greater sense of tension on the inflamed surface, and by the speedier facility with which the parts recover their elasticity and equality of surface, after the application of manual pressure. When two fingers are applied at a certain limited distance from each other on the affected parts, with alternating pressure, an obscure perception of deep-seated fluctuation will be communicated, even in the early stage of attack, and long previously to the commencement of effusion or suppuration. This sense of fluctuation we have uniformly found to exist when inflammation originated in, or had been chiefly confined to, the aponeurosis of a part; and in such cases the most experienced and attentive surgeon

* See his pamphlet on the description of an Affection of the Tibia induced by Fever, &c.

will sometimes be deceived, by what is usually denominated the *tactus eruditus*.

The absorbent vessels of the parts affected also take on a morbid action; their energies are greatly increased, and the inflammation is ultimately communicated to their coats. I had, recently, a case of the sequelæ of this malady: the patient was sent to me from off the Scheldt to Deal Hospital; and such had been the degree of active powers communicated to the absorbents, during the period of high inflammation, that the whole of the cartilages forming the articulating surface of the knee-joint were removed, leaving the femur and tibia completely ankylosed: and when the disease has been seated on the leg or fore-arm, we have been enabled to trace its course all along the lymphatic vessels to the trunk, in the form of red lines, till lost in the inguinal or axillary glands.

Erysipelas phlegmonodes is so alarming a disorder, as it affects the description of men who were the principal subjects of my experience in the treatment of this disease, that if active measures to arrest its destructive progress had not been pursued in the first instance, gangrene and sphacelus of the integuments, or of the whole limb, would not unfrequently have deprived the patient in a few days either of his limb or life.

If, however, gangrene does not take place, we have invariably found the disease to terminate

in effusion or suppuration between the integuments and muscles. These secretions, from being so situated, break down the cellular and vascular connexions between those substances, to a greater or less extent proportionably to the height the disorder has attained; so that immense bags of matter are sometimes formed under the integuments, which may be moved, not only all round the limb by changing its position, but, as I have often witnessed, from the ankle to the trochanter, and over the glutæi muscles. The integuments thus deprived of their nourishment through the blood-vessels from the subjacent parts, the vitality of considerable portions of this substance must inevitably cease; and the muscles will be left without a covering, to the extent, sometimes, of the greater part of the leg and thigh; and in such cases, if immediate recourse be not had to the amputation of the limb, the patient will sink under the discharge from so great an extent of suppurating surface.

Notwithstanding that incisions have been made in different parts *after* effusion or suppuration had taken place, with the view of liberating the contained fluid, and every means subsequently used, by local applications and bandaging, to promote union between the detached surfaces, I have but seldom succeeded, and then only where the parts insulated were not extensive.

“ It frequently happens,” says a late and

highly respectable writer, "that, in cases of erysipelas phlegmonodes, the cellular texture which enters between and connects together different parts, such as muscles, tendons, nerves, blood-vessels, &c. becomes dead, by which the continuity of these parts is destroyed. In these cases extensive portions of the skin are usually removed, partly by gangrene, and partly by ulceration; and we see muscle, tendon, blood-vessel, and nerve, denuded of their proper coverings, and existing in different states of disease." The same author says, a few lines farther, "I have, in various instances of erysipelas phlegmonodes, seen several inches of the femoral artery laid completely bare, by the gangrene, ulceration, and sphacelus of the parts covering it,*" &c.

In conjunction with the usual medical treatment in such cases, topical blood-letting, by means of cupping, followed by fomentations, was the plan I pursued in the first few cases that came under my care; † and, in the very incipient stage of the disease, this may be all that is required to effect a cure by resolution; but, should the disorder advance to suppuration, insulation of the

* See Dr. Thomson's Lectures on Inflammation, pp. 512-13.

† This is not a new practice. Cupping and fomenting the affected parts in erysipelalous inflammation is recommended by Wiseman, in his Chirurgical Treatise, vol. i. published in the middle of the 17th century.

Sydenham also recommends repeated bleedings and fomentations to the parts affected. See his Opera Universa, cap. vi. p. 279.

integuments, as has been before stated, will not unfrequently be the consequence.

Convinced, then, of the imbecility of the above mode of treatment in all serious cases, I felt the necessity of adopting a more decisive plan of cure ; and from that period I have been in the practice of making several free incisions with a scalpel on the inflamed surface, in a longitudinal direction, through the integuments and down to the muscles, as early in the disease as opportunity admitted, and *previous* to any secretion having taken place.

These incisions may be made about an inch and a half in length, from two to four inches apart, and varied in number, from four to eighteen, according to the extent of surface the disease is found to occupy.

By means of these incisions the operator will not only be enabled to abstract fifteen or twenty ounces of blood from the surcharged vessels actively engaged in feeding the disease, but he will also afford the most unequivocal relief to a tense and over-distended skin, which is clearly evinced by the great retraction that takes place between the labia of the incised wounds immediately after the instrument is withdrawn, so as to give them a gaping appearance ; and still farther, these incisions form ready channels through which any fluid may pass as soon as secreted ; and thus the formation of bags of matter, and the insulation of the integuments, so much to be

dreaded in *E. phlegmonodes*, will be effectually prevented.

When erysipelas has been occasioned by some violence done to the periosteum, from blows or contusions received on the exposed surface of the tibia, or when it is purely an idiopathic disease, and from the symptoms there is reason to conclude that the vessels situated on and in communication with this membrane have assumed a morbid action, one or two incisions should be made on the fore part of the tibia, and carried down through the inflamed membrane to the bone: by these precautionary steps, caries, or in young subjects even necrosis, may be happily prevented; at all events, it will be employing the most decisive preventive means in our power.

Fomentations generally succeed this operation, alternated, sometimes, with cold or evaporating lotions, until a reduction of all the unfavourable symptoms, which we have invariably found to take place within twenty-four hours.

In making the incisions, it is necessary to be careful not to cut in the direction of a principal artery uncovered by a muscle, nor of a tendon which might afterwards destroy or impede its actions, nor yet in the course of the principal lymphatic vessels, as troublesome swellings of the limb below would, it is probable, be the consequence of their division.

The medical treatment in these cases has been chiefly directed to the keeping the bowels free,

and an endeavour to make the skin perspirable by the exhibition of antimonial or other diaphoretic medicines, and occasionally, where the constitutional irritation has been great, an opiate at bed-time.

The bark, so strongly recommended by Drs. Fordyce* and Wells,† and more recently by Sir Gilbert Blane,‡ I have never prescribed in this species of the disease, previous to the reduction of the attendant fever, and the abatement of inflammation by the above-stated remedies; but in the only two cases of erysipelas erraticum|| that came under my care, the early exhibition of the bark was attended by the most salutary effects. These two last-mentioned patients were, at their admission into the hospital, extremely emaciated, old, and worn out men in the sea-service.

In considering the high testimonies given in favour of an early exhibition of the bark as a leading remedy for arresting the violent and destructive progress of erysipelas, there is much reason to apprehend, that so administered to the description of patients usually admitted into Naval Hospitals, its salutary influence would not be

* See the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, vol. i. page 290.

† See also vol. ii. of the same work, pp. 213—229.

‡ Sir Gilbert Blane's excellent work on the Diseases of Seamen, page 600, 3d edition.

|| See Dr. Bateman's Synopsis on Cutaneous Diseases, page 130.

found commensurate to the sanguine expectations held forth, at least unaided by other means. The treatment of the same disease nominally, as applicable to different constitutions and habits, must necessarily undergo great modification, and often a total opposition, especially in the early stages of attack.

The class of patients generally received into the London Hospitals (where the bark practice was first established), I presume, differ materially and fundamentally from the description of men on whom my experience and knowledge of the disease in question have been founded; for, while the first are persons usually belonging to the lower orders of society, part of the population of a vastly crowded and overgrown city, labouring under privations often of wholesome food, clothing, good air, and also much devoted to intemperance, with frequently broken-down constitutions, pre-disposed to asthenia, they are unable to bear farther reduction, even when the first symptoms of attack evidently denote phlogosis.

To this order of patients, then, the tonic powers of the bark, boldly administered in erysipelas, must be, it may be readily conceived, essentially necessary from the very commencement; and so circumstanced, I should feel extremely reluctant indeed to trust alone to the plan by incision, nor would it be consistent with the duty we owe to society and the profession rashly so to do; but a judicious combination of both modes

of treatment might bid fair in many instances to expedite, and more effectually obtain the great object in view—namely, the speedy restoration of the patient.

But with respect to seamen and marines, the very reverse of the above picture is the fact. They possess, commonly, great constitutional energy, are warmly clothed, well fed, their food and drink highly stimulant, the air they breathe particularly pure, and free from all admixture of putrid exhalations, the usual results of the narrow and filthy streets of great cities.* This combination of fortuitous circumstances naturally predisposes the system to high inflammatory affections; no similarity of deduction from analogy can therefore be drawn by a comparison of these two classes of people; and the treatment of disease, however it may agree in nosological character, must of necessity be subject to great dissimilarity and modification, as already observed.

In support of these observations, I have lately been informed, from high professional authority, that “in transferring the bark treatment from one of the large London Hospitals to private practice, where there is purer air and wholesome habits of life, great disappointment was experienced, and that the hospital practice applied

* What has been stated at page 111, cannot, I imagine, militate against this assertion in the text, since the period seamen are so shut up below is limited to four hours, and then impure air is breathed only in stormy weather.

but to a small number of these," &c. By this statement, therefore, it would appear that the air and habits of life assimilate seamen more to patients in private practice and in the upper ranks of life, than to those generally admitted into the London Hospitals.

If we compare also the highly improved state of the Naval Hospitals with those of London, the difference will be equally striking.* Insulated buildings, erected on the most convenient site, commanding a view of the sea, with unobstructed circulation of pure air—interior order the most exact—the most religious attention to every species of cleanliness—disciplined patients and nurses, frequently inspected by the medical assistants or superintending officers—spacious wards with iron cradles, one allotted to each person, and an intervening space of three or more feet—the systematic and undivided attendance of the physicians and surgeons morning and evening, and oftener, if judged requisite—joined to every comfort attendant on the upper orders of society, better administered, and amply provided by the liberality of Government, have distinguished in an eminent degree the Royal Naval Hospitals for some years past.

The inference to be deduced from the pre-

* "In all cases thorough ventilation should be attended to, a circumstance unpardonably neglected in many of the *hospitals*, and in most of the prisons of this metropolis."—See Medical Repository for March 1815, page 255.

ceding reasoning is obvious, and needs, I trust, no farther illustration to justify the practice by incision, when applied to patients constituted as we have been just delineating them.

I will, however, add one more observation on the subject of the bark. Sir Gilbert Blane says, at page 600 of the enlarged edition of his work, "In erysipelate, R. pulveris cinchonæ drachmam unam, sumatur omni hora vel interpositis duabus vel tribus horis."* Supposing, then, a drachm of the bark to be given every one, two, or three hours, according to existing circumstances, and as recommended above; how long a period is generally found to elapse before the system feels the salutary operation of the bark, so as to exhibit a manifest arrestation of morbid action, and an amelioration of the disease?—as I conceive, that upon this fact alone will depend the preference to be given to the one practice over the other, that is, the bark or incision; for we know in active inflammation, like that now under our consideration, even an hour or two will often establish its termination either in suppuration or gangrene.

I can confidently say, that in the majority of cases treated by incision in Deal Hospital, relief from all unfavourable symptoms has been effected

* "Hæc methodus medendi, quæ æque efficax ac simplex est, primò excogitata fuit à Cl. Georgio Fordyce, Medico nosocomii Sti. Thomæ, ubi et ipse felicissimo cum successu eandem expertus sum, in muneribus meis ibi fungendis."

in a very few hours. It is, as it were, to take the disease by storm, which the danger of delay and the urgency of the symptoms appear to me fully to justify; whereas the bark plan, when it does succeed, must be by more gradual approaches.

When erysipelas has attacked the lower extremities, and the inflammatory action runs high, terminating either in suppuration or effusion, a greater or lesser degree of œdema, with some tension, and considerable rigidity of the tendons of the parts affected, will be found to be the certain consequences. The œdema in this case appears to arise from a prolongation of the morbid action in the vessels; and as long as that continues to exist, it will strongly predispose to relapse,—no unusual occurrence in erysipelas. The general treatment of this affection was by the application of spirituous lotions, the support afforded by a well-applied bandage, warm salt-water bathing, the internal use of cinchona, pil. hydrargyri, &c., as the nature of the case or adventitious circumstances seemed to require.

The rigidity is probably owing to adhesions between the tendons and their cellular sheaths, produced during the active period of inflammation; and hence result stiffness and immobility of the parts. Gentle exercise, friction on these parts, a well-regulated diet, and attention to the alvine

excretions, seem to offer the most probable means of relief.

With respect to the contagious nature of erysipelas, so strongly insisted on by some writers, I do not feel myself, from past experience, sufficiently warranted to decide in the affirmative; but I have remarked that more cases than one have generally been received from the same ship, provided the vessel had remained any time in the Downs, after the first case was landed; and I have met with one instance where the disease has attacked another patient in the same ward in which such cases were placed, and who had ever before been exempt from that disorder.

Relapses are very common in every situation where I have seen the disease, but especially so where recent cases were placed in the same ward where there might happen to have been others convalescent from it; and we have observed that those recurrences have been early or late, in proportion to the proximity of the convalescents to the recent case admitted. All these concurring facts tend much to favour the probability of the contagious nature of erysipelas.

From my own experience, then, and the various information derived from every surgeon in the fleet, to whom these practical facts had been communicated, I have no hesitation in recommending to the serious consideration and attention of the profession the advantages that are

likely to arise from constituting the treatment by incision, the great basis for successfully subduing the formidable train of symptoms usually attending erysipelas phlegmonodes, as it attacks seamen, and of ultimately promoting and securing a speedy cure.

In the last six years and a half in which the treatment by incision had been fully acted upon at the establishment at Deal, I have never lost a case,* nor was the recovery of the patients to perfect health and a free exercise of their limbs protracted beyond the usual period. It may be worthy of remark also, that the incisions healed kindly, and invariably without any disposition to slough. I am, however, desirous to be understood, that in conveying the practical information herein contained, I propose it to apply chiefly to the disease as it manifested itself on the extremities of all the patients consigned to my care; although it be but reasonable to assume from analogy, that the practice would be equally applicable where the disease is seated on other parts of the body; but we should be cautious how we disfigure the face by such incisions.

How far the treatment here recommended in erysipelas phlegmonodes would be applicable in

* Within this period a case of gangrene succeeding to E. phlegmonodes was admitted, I think, from the Hannibal: this man died; and previous to the period mentioned above, I have witnessed three deaths from the disease, and five amputations.

E. œdematodes, or in any other species of the disease, I cannot, from my own experience, take upon myself to say. From the testimony of others, however, I have been informed that the plan by incision has been equally beneficial in the latter species of the disease; some account of which will be found in the New Medical and Physical Journal for March 1814 and February 1815.

Upwards of eleven years have now elapsed since I first laid before the profession, through the Transactions of the Medical and Chirurgical Society of London, the substance of the foregoing new method of treating Erysipelatous Inflammation. Since the reduction of Deal Hospital, in January 1816, my practice in London has not afforded me so much opportunity for observation in the new mode of treatment in this particular disease as I had previously been accustomed to; but in the few comparatively slight cases that have come under my care in the metropolis, I have had the most satisfactory and convincing proofs of the decided advantage this plan possesses over every other that has yet been noticed by writers either of the present day, or by those of former ages.

I feel the more induced to bring this subject again under the notice and serious consideration of the profession, because it is not now any longer on my own authority that I recommend the general practice of incising the inflamed surface in this disease; but it is on the authority of *every*

surgeon who has pursued it; for it appears to have been quite as successful in the practice of others as it has been in mine. It is also because, on the first appearance of my paper on this subject, some disposition was evinced by professional writers to ridicule the practice,* and more subsequently, as it gained ground, even amidst all this opposition, to ascribe the merit of it to O'Halloran, that I have a few words more to urge on the subject; and I confess that I have been not a little surprised to find O'Halloran's name mentioned by the distinguished writer, Professor Andrew Duncan, jun. and by Dr. Johnson, as the first to recommend the practice.† I only request the reader to consult O'Halloran's work,‡ and, having so done, to ask himself whether that be the disease we have endeavoured to describe in the preceding pages, for which Mr. O'H. has recommended "profound incisions." He will, on the contrary, find the section headed, "On a Species of *Gangrene* subsequent to Phlebotomy." The difference between us is simply this,—that Mr. O'H. recommends incisions to cure gangrene,

* See Mr. Samuel Cooper's Surgical Dictionary, 2d or 3d edition. Preface, and article Erysipelas.

† See this gentleman's paper on Diffuse Inflammation of the Cellular Tissue, published in the Medico-Chirurgical Transactions of Edinburgh, and the Review of the above Paper in the Medico-Chirurgical Review, by Dr. Johnson.

‡ See a complete Treatise on Gangrene and Sphacelus, with a New Method of Amputation. By Mr. O'Halloran, Surgeon, published in Dublin 1765.

whereas I recommend the same practice to prevent it, as well as to prevent suppuration or effusion as the sequelæ to *Erysipelatous Inflammation*.

Now that the plan of treatment by incision in erysipelas is becoming more general, from a thorough conviction of its being the best, and that I have proved my claim of being the first to introduce it, I trust I shall not be considered presumptuous in taking to myself such merit as it may continue to deserve, although my main aim and object be now to render the treatment as general as it has proved beneficial, both in my own practice and in that of others.

Among other matters, I have been accused of not having given cases illustrative of the treatment recommended, when my paper on this subject first appeared. The fact is, that I was then too actively occupied in the hospital to do so; and judging that a plain straight-forward account of my mode of treating the disease, and the extraordinary success attending it, would be its best passport to general notice in the profession, I satisfied myself that I had done all that could be required of me, the more especially as the practice was pursued in a large public establishment, which was open to the inspection of every medical officer of the navy or army, independently of the constant attendance of the numerous hospital mates at various times attached to it, the service of each being for a twelvemonth only. As, however, it has

been suggested, I beg to subjoin notes of a few cases that occurred to me in London, and which may answer the objection started, although they be not of that desperate description which came under my observation and management at Deal.

Samuel Timmins, aged 52, residing at 28 Tower Street, Seven Dials, was admitted a patient at the Westminster General Dispensary on the 1st September, 1818, with very acute erysipelas phlegmonodes of the hand and fore-arm, attended with intense pain and some fever. Three incisions were made on the inflamed arm, about an inch and a half in length, down to the flexor tendons, and from which twenty ounces of blood were abstracted in little more than a minute: so rapidly, indeed, did the blood flow, that my friend Mr. Wood, the present lecturer on chemistry and pharmacy at the Middlesex Hospital, suspected that the radial or ulnar artery, pursuing a course more inwards than natural, had been divided. On raising the arm above his head, however, the bleeding ceased almost instantaneously: a dressing of lint was laid over the wounds, and a bandage moderately tight was passed round the part. He had a cathartic immediately administered to him, and he walked home.

The next day the swelling and inflammation had more than half subsided, and in a fortnight he was quite recovered. Had the prompt treat-

ment adopted in this case been deferred only for a day, the loss of the arm or sloughing of the flexor tendons would have been the inevitable consequence; in which latter case the fingers must have become completely useless.

Eliza Fox, aged 62, residing at 12 Cumberland Street, Middlesex Hospital, was admitted 14th December, 1819, with erysipelas of the hand, extending to the wrist, arising from a slight injury to one of her fingers. Several incisions were made over and into the sheaths of the tendons in a longitudinal direction, and her bowels were acted upon by a cathartic. She was shortly discharged cured, with the perfect use of the hand and fingers.

Hannah Eastwood, aged 35, residing at Church Passage-yard, Compton Street, was admitted 18th January, 1820, labouring under erysipelas of the hand from a similar injury to that of Eliza Fox. The parts were incised down to the tendons, which bled freely, and by which a small quantity of pus was also discharged. She was purged, and very soon recovered, without any lameness.

Michael Clanney, aged 7 years, residing at 68 King Street, Soho, was admitted, 9th March, 1820, with very active erysipelas of the foot and ankle, spreading upwards. Incised the foot and leg in four different parts, which bled considerably. This boy was occasionally well purged, and had fomentations and evaporating lotions alternately applied to the parts.

This patient was discharged cured on the 20th May, without any lameness or other inconvenience.

Thomas Onions, fancy cabinet-maker, aged 35, residing at 14 Crown Street, Soho, was admitted at the Dispensary 24th July, 1820, labouring under very acute erysipelatous inflammation of the left foot and ankle, extending upwards to the knee. Four incisions were made, as before described, upon the most inflamed parts, which bled freely. He was purged, and had the fomentations and lotions alternately applied. This was rather a serious case, notwithstanding which, in about ten days after the incisions, he walked to the Dispensary, and was discharged cured in August.

Through Mr. Allan, the intelligent surgeon of Leicester Square, Mr. Compson, of the city, has had the kindness to send me the subjoined notes.

“ Edward Giles, aged 45, of a spare habit, but enjoying, generally, a good state of health, received a blow on the right shin on the 7th January, 1821. A considerable bruise and a slight wound were the consequences; to which, during the succeeding 14 days, he paid but little attention, and continued to follow his daily labour. The wound did not shew any disposition to heal, and on the 21st much inflammation appeared around it: the whole of the leg very rapidly increased in size, and the inflammation extended in the course of

the absorbents to the groin: fomentations and poultices were applied three or four times a day.

“ 25th. The swelling of the leg and foot had considerably increased; the tension, inflammation, and pain were excessive, and vesications, containing a purple-coloured fluid, appeared upon many parts of the limb: the patient's tongue was extremely dry and furred, thirst considerable, pulse rapid and small. I had no difficulty in recognising this as a case of phlegmonoid erysipelas, so well described by Mr. A. Copland Hutchison in his paper on this subject. Having on other occasions seen Mr. Hutchison's method of treatment pursued with marked success, I resolved at once to adopt it.

“ I accordingly made four or five incisions on the leg completely into the cellular substance, penetrating some distance into it: the pain, tension, and inflammation of the limb were quickly lessened. The poultices and fomentations were continued, he was put on a plain unstimulating diet, and the regulation of his bowels was attended to.

“ 26th. I was greatly pleased to observe that a complete stop had been put to the extension of the inflammation and swelling, as well as to the increase of vesications. He had a little sleep during the night, and was pretty free from pain.

“ 27th. He had been a little delirious during the night: his tongue is still very foul, and his

pulse small and rapid. The swelling of the foot not having subsided, I made two or three incisions into it, with the same beneficial effects that had followed those made on the leg. During the succeeding three or four days, it was most gratifying to witness the rapid amendment of the symptoms. The tension and vesications disappeared; the swelling and redness became comparatively trivial; and he was free from pain, at the same time that his fever was nearly gone.

“The incisions did not shew any disposition to suppurate or enlarge: the poultices and fomentations were continued. On the 31st I perceived a collection of pus on the inside of the calf: it was circumscribed, but did not point. A table-spoonful of healthy pus was liberated by puncture. Similar collections of pus which formed in different parts of the limb were in like manner discharged.

“The patient's strength was now supported with bark and nutritious diet. The wounds healed, and in two months from the commencement of the inflammation he was dismissed cured.

“The foregoing case has made a very strong impression on my mind in favour of making incisions early in a limb attacked with phlegmonoid erysipelas: nothing could be more manifest than the good effects resulting from them in this case: for, from the rapidity with which the inflammation extended, and from the early formation of dark-coloured vesications, I am persuaded that if the

ordinary modes of treatment, *alone*, had been pursued, the whole limb would have, in twenty-four hours, been in a state of gangrene !”

Mr. Peter Cunningham, a surgeon in the navy, who was an hospital mate acting under my orders at Deal, and an officer of talent and the strictest probity, writes me as follows :

“ Edinburgh, January 15th, 1818.

“ DEAR SIR,

“ IN compliance with the request contained in your letter of the 6th instant, I have to subjoin the following brief observations on erysipelas phlegmonodes, and its treatment by local blood-letting, namely, by incisions.

“ While hospital-mate at Deal, I had an opportunity of witnessing your very successful practice in the treatment of this disease, by the above means. I did not, however, meet with any cases of it after going afloat, until I joined his majesty's ship Marlborough, as senior assistant-surgeon, off Cadiz, in November 1812. The disease had then made its appearance among the seamen, attacking almost all the recent wounds, and pneumonia being prevalent at the time, few of the lancet wounds escaped. It also frequently attacked the sound parts, particularly the front of the thigh, ushered in by a deep-seated, fixed pain, which the patients described as being able to cover with the point of their finger ; followed in about twenty-

four hours by a small inflamed speck over the part complained of, which gradually spread over the limb, accompanied by great tumefaction, hardness of the skin, and symptomatic fever. Deep and extensive suppuration speedily ensued, destroying the whole of the cellular texture, which was subsequently discharged at the various openings made for the evacuation of the matter, and, probably, after several relapses, terminated in the adhesion of the muscles to each other and the surrounding integuments, rendering the limb stiff, hard, and contracted, and of comparatively little use to the patient.

“ Low regimen, purgatives, and cold saturnine applications, were at first solely relied on; but witnessing their total inefficiency alone, in preventing suppuration from ensuing, I suggested to Dr. Warden, the surgeon of the ship, to make a trial of the means I had seen so successfully practised by you; which he directed to be done accordingly, and the most happy effects resulted from their adoption. I have met with many cases since, and, by a continuance of the practice of incising the inflamed parts, I have never failed in arresting the progress of the disease. Cold saturnine lotions were then applied, alternated with fomentations, and free purging kept up by saline cathartics.

“ In eight or ten hours after the first scarifications, if the heat were still much above the natural standard, they were again had recourse to.

“ All the cases of this disease I have yet seen occurred when the ship's company were dieted upon fresh beef after a long use of salted meat ; and, what is singular, I do not recollect a single marine among the number.

“ Cases of erysipelas different from the phlegmonoid are occasionally met with ; but they are always solitary, affect those chiefly of debauched habits, and are found frequently to recur on the same part. I have found the same treatment equally effectual in both species of the disease : and in every instance in both varieties the scarifications have healed without exciting the slightest uneasiness either in the mind of the patient or of the practitioner.

“ I am, &c.

“ PETER CUNNINGHAM.”

The last I shall quote on the present occasion is a note from Mr. George Young, who is no less admired by the profession for his gentlemanly deportment and originality of thought, than for his love of the science of surgery. It is as follows :

“ MY DEAR SIR,

AGREEABLY to your request, I now repeat what I had the pleasure to state to you in conversation, concerning the advantages I have derived from employing the mode of treatment you have recommended for erysipelas phlegmonodes.

“ Having frequently witnessed the great loss of

time, and the serious injury to the constitution of the patient, occasioned by delaying incisions until much matter has accumulated beneath the fascia, and having noticed that small openings (such as are usually made) do not admit the ready escape of pus, I have long been in the habit of making very free incisions, as early as I could detect fluctuation; and from this practice I have derived much quicker cures.

“But since I read your paper, I have not waited until I could detect fluctuation; I have made free incisions when the diffused tense swelling and general redness, with high constitutional irritation, have led me to conclude that the usual attempts at resolution would be fruitless. On these occasions I have, however, with one exception, always found some small quantity of pus; the incisions have bled freely, and the cure has been effected in a few days.

“In one instance only (it was in the fore-arm) I could not discover any pus: nothing but a stream of blood followed the incisions. The symptoms, which had been very severe, quickly subsided, and the wounds healed rapidly.

“Believe me, my dear Sir,

“Always very truly yours,

“G. YOUNG.

“3, Frederick's Place, Old Jewry.”

I have been urged by many other distinguished surgeons who have pursued this mode of

treating erysipelas with equal success as myself, to lay the subject again before the profession in the most *forcible* manner possible, as a moral duty incumbent on me, that the merits of the treatment by incision may be more firmly stamped on their minds, and thereby the lives of their patients the more certainly preserved. I really know not what can be said more forcible than that which has been stated in the preceding pages; for I think too well of the profession to imagine that a highly-wrought description would influence their judgment on so very important an occasion. I shall therefore leave this part of my subject to make its own impression, by the success that may continue to attend it*

* See Mr. James's (of Exeter) interesting work on Inflammation, and Dr. Butler's on the subject of the Plymouth Dock-yard Disease, published during the last year.

CHAP. III.

OBSERVATIONS ON SIMULATED OR FEIGNED
DISEASES.

IN a late valuable work on Medical Jurisprudence, published by Dr. Paris and a barrister of equal celebrity in his profession, J. S. M. Fonblanque, esq., an interesting account is given of simulated or feigned diseases. It embraces the greater part of the little all that has been written on the subject, but adverts more especially to the works of Mahon, Foderé, and Dr. Hennen, of our own country.

The subject appears to me to possess much deeper interest than at first sight it might be supposed to do, particularly in a national point of view; for it regards both the efficiency of men for the service of the state in times of war, and the protection of the real and innocent sufferer from suspicion and reproach. It is likewise important, inasmuch as an enlarged knowledge of this subject may enable the professional attendant to relieve the torturing anxiety of relatives, whose feelings are but too frequently worked upon by individuals of their own family, for the purpose of accomplishing some particular end; and, lastly, it is of importance as it regards the practitioner,—for, on the correctness of the medical man's prognosis will greatly depend his professional character with his employers.

It is for these reasons, chiefly, that I have deemed it a duty incumbent on me to offer such observations on this subject as the extensive experience my situation in the naval service has enabled me to make. I shall, therefore, without further comment, proceed to the subject in question, only requesting that such as may be sceptical, as to the great utility of this description of practical knowledge to the public and to the profession, may read the able and well-written exordium contained in Dr. Paris's work above adverted to (vol. i. p. 355), where the most convincing arguments are adduced in proof of its importance, in every possible point of view.

ULCERS. — There is no species of imposture more practised by seamen, in order to obtain admission into naval hospitals, and eventually to evade the service, than that of making ulcers on the legs, or of extending and keeping open such as already exist.

The means pursued by these men are various. Such ulcers of this class as have come under my observation have been produced in one or other of the following ways: — By cutting off a piece of skin with scissars, or with a knife; by the application of a blister, or quick lime, to the sound skin; or by the use of a mineral acid. When any part of the surface has been thus abraded, the sore is kept open and extended by the re-application of some of the above-named articles, or by the use of common copper coin: but, of all

the substances resorted to on such occasions, that of acids is by far the most difficult to detect; for the impostor is often so alert, that he removes the surgeon's dressings during a certain period, and occasions the acid to act upon the parts in dressings of his own, substituted in their stead; and, after the desired effect is produced, the ulcer is well washed, and the former dressings and bandages re-applied, with a care and cunning which renders a discovery very difficult. Other substances than the acids may sometimes be detected, by strictly observing the surface of the ulcer and the old dressings.

I recollect amputating the leg of a man at Deal Hospital, for a caries of the tibia, extending to the ankle-joint and upwards to the knee. This man asserted that he had never "played any tricks" with his leg, although I was persuaded and asserted that he had; and in this he persisted until the day after his leg was removed, when I showed him a piece of copper coin, which I had that morning discovered on dissecting the amputated limb, imbedded between the gastrocnemeus and soleus muscles, nearly three inches from the margin of the ulcer. The unfortunate man then candidly stated, that he had thrust the piece of money into the ulcer, about nine months before, with the view of obtaining his discharge by invaliding; and he lived to lament his imprudence.

As a remedy or preventive against such impostures, it has long been a practice in the navy

and army to trust to a well-applied bandage, from the toes upwards to the knee, to seal the end of the roller with wax, and to impress it with the surgeon's own seal; but it was not long ere I discovered that this method was totally inefficient, by frequently observing a coagulum of blood upon the surface of the ulcer, and the surrounding skin in a state of inflammation, notwithstanding that the bandage and dressings remained apparently entire and untouched. This occurrence was rather difficult to account for, unless by the person striking the ulcerated part against some hard substance: I afterwards, however, discovered, and it was confessed to have been done, by introducing a needle or pin through the bandage, and thus scratching the surface of the ulcer.

To guard, therefore, against this new device, I had a certain number of strong oaken boxes, made in the shape of a large square boot, to come up about four or five inches above the knee, the short thigh part of the boot forming with the leg an obtuse angle, so that the muscles of the diseased leg might be preserved in a relaxed or bent position. The upper end of this wooden boot was closed by a square piece of the same strong wood, with a circular hole cut in it to suit the circumference of the thigh, which was lined with list or leather, to prevent the cut edge of the wood from giving pain or uneasiness to the wearer. This boot, so made, is cut down the middle to the toe-part; hinges are then put on,

and a lock, which cannot easily be picked, attached to the centre of the leg. Two narrow slits are then made through the sole of the boot, one on each side of the hollow of the foot, through which a leathern strap is passed, for the purpose of being attached to a circular one round the ankle of the impostor, by means of two buckles, which, being inside, will completely preclude the possibility of the person's drawing his leg through.

When such characters came under my care in Deal hospital, this was the plan pursued; and I never failed to heal all these ulcers, after this measure was adopted.

In addition to what has been stated, it becomes necessary to mention that I had painted upon the lids or fronts of these boxes, in large letters, "*Punishment for Impostors*;" and in each ward, when they were not in use, we had two of them placed in the most conspicuous part, as a warning to all newly-admitted patients.

This, and other plans adopted, so completely succeeded in detecting impostures, which at this time were very common, that it soon spread among the crews of the different ships composing the grand fleet, then employed in the blockade of the Scheldt, as well as among the Downs squadron, under the distinct command of the port admiral; and, eventually, so notorious did Deal hospital become for the detection of imposture, that latterly it was a very rare occurrence for

such characters to be presented for admission ; and by which means, those fleets, then of such importance to the vital interests of Great Britain and her allies, were kept better manned, and therefore more efficient, than they could possibly have been, had the seamen found it easier to practise their deceptions upon the surgeon.

DIARRHŒA.—I have known diarrhœa and dysentery many times induced in hospital practice, where the individual found that he could not succeed in attaining the object of his desire, viz. invaliding, by any other means ; and I have witnessed, not unfrequently, such unfortunate men fall a sacrifice to their own imprudence, by inducing a disease which they would most gladly have been relieved from at a period when perhaps it was too late. On this subject, the writer cannot readily forget the death-bed disclosures, and the pangs of conscience, he has witnessed on one or two occasions.

The bowel affections to which I now allude can, I have reason to believe, be induced by various means ; but that which was most resorted to by deluded seamen was a mixture of vinegar and burnt cork,—in what proportions I have never been able to ascertain : neither can I discover in what manner the burnt cork can assist in producing the disease in question ; but certain it is that these were the ingredients most commonly had recourse to ; and as certain is it, that some of the finest youngest men in the navy have

fallen victims to the use of such substances, for the accomplishment of their unhappy purposes. I have also known convicts in the Penitentiary at Millbank, previous to the late malady breaking out, both in their cells and in the infirmary, break down, with their fingers, in their urinary utensils, a good figured or formed motion, and intimately mix it with the urine, so as to induce the belief that it was in reality a diarrhœal evacuation; but a little attention to the character and appearances, with strict watching, will in most cases lead to a detection of the imposture. The object which convicts have in such practices is to be exempted from labour, and to be kept in the infirmary, where their comforts in every way are certainly much greater than when in their cells in the prison.

FEVER.—This is another disease which I have known feigned. The particulars of the most remarkable case of it which came under my observation I shall content myself with relating.

In 1801, I was appointed to the depôt for prisoners of war at Stapleton, near Bristol: in this new appointment it became my duty to go through the prison occasionally (where there were between three and four thousand men), for the purpose of selecting the sick for removal into the hospital, and where, as has already been stated, there is better fare and better accommodation than in the prison. Under such circumstances, indeed, the sick enjoyed the same com-

forts to their fullest extent as were granted by the government to British seamen in a naval hospital, which is such an ample supply of both food and wine as the medical officer may direct; and an hospital dress, of both cloth and linen, is also invariably supplied to each patient, on his admission into the hospital. It is not to be questioned, therefore, that admission into the hospital became an object of no small solicitude among those captive men, for they have not unfrequently been known to gamble away, not only their clothes from off their backs, but even the last blanket in their hammocks, and the winner to barter them to persons who were constantly, at that time, given access to at the gate of the prison, or otherwise to carry on this traffic by throwing ropes over the walls, after the bargain was concluded at the gate, for the exchange of the articles.

In one of my daily visits in the prison, I was requested, with much earnestness and expression of concern, to visit a man in his hammock, who was stated to be labouring under high fever: his pulse was small, and so rapid that I could hardly count it; his tongue was covered with a brown coating, the eighth of an inch thick; and withal he was vomiting violently. Tobacco was strongly smelt in what he rejected from his stomach; and, on his recovering a little, I requested again to examine the tongue, when I removed a considerable portion of the soft and apparently foul substance, and brought it away with me on a piece

of paper, for the purpose of examination, and which proved to be common brown soap.

The man was conveyed to the hospital, and was narrowly watched for a few hours, at the end of which time his fever had entirely subsided; when a full acknowledgment was made by him, that it had been a common practice to obtain admission into the hospital by using tobacco and soap, as has been just described. But this discovery nearly cost me my life; for the next time I professionally visited the prison, this man made a thrust at me with a sword-stick, which, but for another prisoner who stood close to me, would certainly have passed through my body.

After this I never entered the prison but with four soldiers as a guard; when this man, on some of these occasions, assisted by a few of his friends, revenged themselves by picking vermin (*pediculi*) from their bodies, and blowing them through quills upon me as I passed; so that I have frequently returned to my apartments completely covered with them.

I am indebted to my friend Dr. Quarrier, the distinguished Surgeon of the Royal Marine Artillery, for the subjoined very interesting communication.

“ Little Green, January 31st, 1826.

“ MY DEAR SIR,

“ I AM quite ashamed of my long delay in

replying to your letter, and in attending to your request, respecting the cases of simulated disease which have come under my observation. I am at present so much engaged in a variety of pursuits, that I cannot enter into the full detail I had intended: but the cases now before me afford ample testimony of the truth of your observations and remarks contained in the 51st volume of the London Medical and Physical Journal, while they exhibit the deleterious effects of the use of tobacco and other drugs, taken for the purpose of avoiding the naval or military service, and some melancholy instances of the injurious effects of pressure in the irritative ulcer, which was formerly so prevalent, and caused the greatest ravages in the navy. There are, perhaps, no persons in his majesty's service who have more to contend with such practices than the medical officers of the royal marine divisions; and it requires the utmost vigilance and precaution to meet and detect the variety of schemes adopted, not only to leave the service when interest or inclination leads them to attempt it, but in the concealment of disease upon recruits entering the corps!

“ Since the conclusion of the war an extraordinary impulse has been given to a variety of impositions upon the medical officers of the army and navy, by the additional pension which is given to men who may be invalided after certain periods of service: no sooner do they complete their

period of seven, fourteen, or twenty-one years, than they commence feigning disease. Some are more or less ingenious in their contrivances; and many valuable men are lost to his majesty's service, notwithstanding the greatest vigilance and precaution of the medical officers, who are placed in a most obnoxious situation, by the reward which is ultimately given to the most audacious and persevering in their mal-practices; and it does not unfrequently happen, that the most idle and useless sailor or soldier obtains a pension superior to the unsophisticated veteran, who has never shrunk from duty or from danger! It is sometimes observed, in doubtful cases, that the naval and military officers, as well as the surgeon, have their patience exhausted by the perseverance of a decided sculker, when it is not unusual to remark, that 'he is a useless fellow,' and 'that he had better be allowed to go, when a better man may be obtained in his place.' Nothing can be more fallacious than this doctrine: for no sooner does one of those impostors succeed, than you are sure to have two or three to take his place in the attempt to obtain their discharge by pursuing the same plan.

“**DISEASES OF THE HEART.**—The most formidable species of simulation which I have had to contend against has been the production of apparent organic disease of the heart, introduced into the royal marine artillery by George Chapman, a gunner, who had been brought up under a

veterinary surgeon, and had acquired a knowledge of the effects and noxious qualities of certain deleterious drugs. This practice was productive of some alarming consequences for a considerable period: some few were permanently injured, having actually produced the disease which they intended to counterfeit, and some others succeeded in obtaining their discharge, notwithstanding the vigilance of the medical officers at Haslar, where they were treated, and the strictest inspection on my own part. One man was suspected, and was most closely watched; he, however, contrived to elude the vigilance of all the medical attendants, as well as non-commissioned officers and nurses, and was invalided with apparently confirmed organic cardiac disease. Twelve months afterwards, however, we found this fellow at Chatham, perfectly well, having subsequently enlisted into the East India Company's service, and exulted in the manner in which he had weathered us all.

“Chapman was an ex-groom of my own: being discharged by me for a series of frauds and impositions, he disliked attending drills and the various duties of a soldier. He soon contrived to get gonorrhœa, and was consequently sent to the hospital for cure. No sooner had he been cured of this complaint, than he became weak and dyspeptic, and assumed a variety of forms of disease, for the purpose of obtaining his discharge; but, being aware of his character and habits, we resisted his attempts, month after

month, until he relinquished his plan. He was discharged from the hospital cured, when he took the earliest opportunity of deserting from Fort Monkton, having been threatened with exposure by one of his victims to a practice which must be always dangerous, and frequently fatal, in its effects.

“ While this man remained in the hospital we were surprised to find an unusual number of cardiac affections, more particularly in the surgical wards where he was placed. Some who had gone into the hospital with slight gonorrhœa or syphilitic affections, had no sooner recovered from their original disease than faintness, vomiting, and the utmost degree of nervous irritability assailed them, leaving palpitations, and a variety of dyspeptic feelings. Every curative means was adopted by the physicians and surgeons of the hospital, but with partial success; I say partial success, for some of them became tired of medical discipline, and got well speedily; but the rest continued until Chapman was sent out, when they got spontaneously well: a considerable degree of debility only remaining. I have already stated that Chapman deserted in a few days after being sent from Haslar. He was taken, after an absence of some months, was punished, and sent again to Haslar hospital for cure; when a fortnight had not elapsed before two cases of cardiac disease occurred in the ward where he was, and in men who had hitherto never exhibited the

slightest symptom of such an affection. The symptoms assumed a considerable variety of form, with strong epigastric pulsation; and we could not doubt that means had been resorted to so as to produce this curious affection; but we were foiled in our various attempts at searches and surprises, and in discovering the particular means adopted to produce such anomalous symptoms. Chapman was again discharged cured, and very soon deserted a second time. He was taken in a remote part of the country, and succeeded in inducing the staff surgeon of the district militia, who had to examine him, to report his total incapacity for service, in consequence of *organic disease of the heart*. He had taken his medicine, and no one unacquainted with the peculiar symptoms, and the expression of countenance induced by the helleborus albus, could detect a person so practised in the art of simulating disease as Chapman was. He had found it profitable, and sold his powders to the seamen and marines at a considerable price, as well as receiving a gratuity upon success. We had indeed learnt from one of the men who had taken Chapman's medicine, that he had been in the habit of selling a full dose at 4*d.*, and a set of powders, sufficient to produce all the effects, at 3*s.* 6*d.* The helleborus alb. was the principal ingredient, and the powders were calculated either to produce a sudden and severe illness for the immediate occasion, or to gradually undermine the tone of the stomach and digestive

organs, producing every appearance of dyspepsia, attended by great nervous irritability, and violent and continued palpitations! This drug, however, is most uncertain in its action, and it is constantly adulterated in the shops; the smaller doses, therefore, at times produced the most violent symptoms, and frequently deterred the person from persevering. It is fortunate that the adulteration was so great; for it will excite the astonishment of physicians, to know that two scruples, and sometimes a drachm, and even a drachm and a half, of this most noxious drug was given as a full and effectual dose. The most violent symptoms were produced, threatening immediate dissolution; and I have reason to believe that two men, who came under my immediate inspection in 1821, must have died had not remedies been immediately administered. Their cases made a serious impression; and from the peculiar expression of countenance, we had acquired the readiest means of detection:—the practice was consequently discontinued, and I had hoped that Chapman had taken his secret with him, until the autumn of 1823, when, during my absence from Chatham, James Braddick, a gunner, having been extremely irregular, was put in the guard-house on the 7th October: he had not been long confined when he complained of nausea, succeeded by incessant and violent vomiting and purging, extreme pain at the stomach, severe headach, excessive weakness and inability to move, fre-

quent tremors, coldness, terror, and anxiety. The features were pale and shrunk; the eyes sunk; the tongue tremulous; the skin was covered by a cold clammy perspiration; there was scarcely any pulsation at the wrists; and the circulation was extremely irregular and disturbed. He moaned and groaned immoderately, until overpowered by repeated faintings. By and bye reaction commenced, when these symptoms were followed by violent throbbing of the temples, excessively strong palpitations, great epigastric pulsation, heat, thirst, rawness of the fauces, and some enlargement of the tongue, which was loaded and tremulous. The eyes were fiery, and the face much flushed. He was then freely bled, and a strict antiphlogistic regimen was pursued, with perfect quiet and confinement to bed. In three days he was convalescent, and was to be discharged from the infirmary on the 13th. However, when about to return to the guard-house to await his trial by court-martial, he was again attacked in a similar manner, and had all the severe and dangerous symptoms as on the 7th. I had now returned from leave of absence, and from the horror, tremor, and distress of countenance, I immediately recognised the effects of Chapman's prescription. Fomentations were used, and warm demulcents were given, with cordial draughts occasionally;—the faintings were long and protracted, and the vomiting and purging were almost incessant. It was some hours before re-

action commenced, with extreme pain at the pit of the stomach, violent pain in the head, giddiness, and illusory and indistinct vision: the action of the heart was exceedingly irregular, violent, and fluttering; and, upon placing the ear to the chest, there was a distinct rushing sound, as if the valves of the large vessels had been broken down and produced regurgitation. The pulse at the wrist was also very irregular, and the tongue was very much enlarged.

“ He was ordered to be confined to a room by himself, his clothes were removed, and no person had access to him but the medical attendants and nurses. He was placed upon spoon diet, and a rigid antiphlogistic regimen was pursued, with frequent bleedings. He found it unavailing to deny having taken the hellebore; at this time he had taken a penny-worth in cold water, about a drachm and a half, which must have destroyed him had it not been greatly adulterated. His recovery was slow and progressive, leaving much debility, nervous agitation, and palpitations. Blisters and tonics, with camphor, were administered with great benefit; and he was sufficiently recovered to be marked off for duty on the 30th. His clothes were restored, and that night he took an opportunity of escaping from the window, and, having eluded the sentinel, he deserted, to avoid the military punishment which awaited him for repeated offences against discipline. He had indeed been exceedingly irregular, and the charge of simu-

lating this disease would have been substantiated upon the court-martial, as he was a fit subject to exhibit as an example to the rest.

“ Upon my return from Hampshire, where I had been for some little time, I was informed by the army medical officers at Fort Pitt, that the 12th regiment, then under orders for Gibraltar, had invalidated a number of men for diseases of the heart, and they had strong suspicion of its having been feigned, or that the soldiers had taken means to produce it; for it was a new feature of disease for men in the prime of life, and previously healthy, to be afflicted all at once with such peculiar symptoms of organic disorder; and they were anxious to ascertain whether or not such disorder had been counterfeited in the royal marine artillery. I explained the instances which had occurred, and exhibited Braddick as an illustration of the fact. The men then in the military hospital at Fort Pitt were isolated, and, as I understood, readily cured: no more were invalidated, and the system was effectually stopped. At this time the apothecaries at Chatham had sold a very considerable quantity of the hellebore to the soldiers' wives; and I learnt that the 12th regiment had received instructions from one of the marine artillery. The quantity purchased was generally from one to two drachms, and, from the information given me, a drachm was the usual quantity administered to produce decisive and immediate symptoms: this excites vomiting, purging, syn-

cope, tremors, and great nervous irritability; and is succeeded, as in Braddick, by great arterial action, and violent cardiac agitation, leaving a great degree of debility, and sometimes a disposition to paralysis. For the more slow and progressive mode of deception, a very small quantity is used, from four to ten grains in beer, day after day, until the stomach is thrown into a state of disease, and much nervous irritability is produced. The peculiar expression of countenance induced by this practice is now readily detected, and I have only had one man who has hazarded the attempt for these twelve months last past; his constitution became so much impaired, by the drug having a severe and unequal effect upon him, that he ultimately produced the disease which he intended to assume. Indeed, the constitution is, in most instances where this mode is persevered in, more or less undermined. We have, however, completely checked the practice in the marine artillery, excepting when under a more than common impulse, as in the case of Braddick.

“We have had some attempts at feigning mania; and Adam Blake, a gunner, of notorious character, for a series of years continued to feign disease in a variety of shapes and forms. After using the hellebore, under the inspection of Chapman, he became dyspeptic and melancholy, and at times became furiously mad; he, however, always betrayed himself by carrying the thing too far. Hæmoptisis was afterwards tried; he had spitting

of blood for a week. I discovered a small wound at the back of the cheek, from which he could readily suck the blood. He made one or two more efforts, when, in a drunken fit, he fell down stairs, and dislocated the left shoulder. It was readily reduced; but at the moment when he was about to return to duty, the head of the humerus was again displaced, and ultimately he acquired a habit of throwing his arm over his head by the side of the bed, and by a sudden jerk he could displace the head of the arm bone, and throw it under the pectoral muscle. This was attempted frequently at Chatham, when his arm was strictly confined for a time sufficient to shew him that he should not succeed; and he found it convenient to return to duty, and continued at duty until our arrival at Portsmouth, in June 1824, when he again commenced the system of throwing the arm out of the socket. This he contrived to do always at night: the arm at last became in some degree wasted, when I thought it most proper to present him for survey, stating the history of the man. He was invalided—three months had not, however, elapsed before he was tried and convicted of sheep stealing, and is now a convict on board the hulks at this port. While confined in Portsmouth gaol on the charge of felony, he again attempted to counterfeit madness; but he immediately relinquished his plan when the intelligent surgeon of the gaol informed him that he had communicated with me.

“ I have, like yourself, found the application of copper a favourite practice ; and soldiers and sailors imagine that the metal being in contact with wounds or ulcers has a specific and deleterious effect, while the pressure used is the sole cause of the inflammation and irritation which is produced upon and around the sore. I have only had one man, Coles, a gunner, who has made this attempt for several years : he was detected by the vigilance of the Infirmary serjeant, and as his case was flagrant, and an avoidance of service so repeated, he was tried by a court-martial, and punished for the offence. The ulcer soon healed, upon his being confined to his solitary room, with no other covering than the bed clothes, and the rigid adherence to spoon diet, which I have found more effectual in preventing such attempts than any punishment inflicted upon them.

“ I am, my dear Sir,

“ Ever most truly yours,

“ D. QUARRIER.”

CONTRACTIONS OF THE HANDS, ELBOWS, AND KNEES ; AND LOSS OF POWER, OR PARALYSIS, OF THESE PARTS.—This imposture is, next to ulcers, the most frequent which we meet with among seamen and marines ; and it must appear quite clear that a man, labouring under any of the ailments at the head of this section, will, so long as it is believed to exist, not only be

excused from duty, but, if it continue, and the designs of the person be not detected by the surgeon, he may eventually be invalided from the service, and rewarded with that pension which is due only to real sufferings and services.

The first case of this kind that occurred to me was at the period when I was surgeon of the *Druid* frigate, commanded by that excellent officer, Sir Philip Broke, Bart. In the year 1806, the cook's mate of the ship had a contracted arm, and so immovable was the joint at the elbow, that the ulna and humerus had the appearance of being ankylosed; and, from long want of use, the muscles of that limb were so much reduced in size, that the arm had altogether an emaciated appearance. This man had never received any injury upon the arm, but accounted for it by a constant pain which he stated to have suffered all over that member for several months previously to my having joined the ship, and during all this period he had been excused duty. I felt satisfied, after a few days, from a variety of concurring circumstances, that he was an impostor, and so reported him to the captain. But, notwithstanding that I continued so to report him for upwards of two months, that worthy man (for, in whatever ship Captain Broke sailed, he was the father of his people) would not follow my advice, and make an example of him; which, from the great number of such characters at that time in the ship, was so necessary; alleging that I might

possibly be mistaken, and that he should never forgive himself if he were to punish a man who might afterwards be found to be innocent. Upon this, I asked Captain B. whether, if I were to shew the man's arm to him, and to the whole ship's company, rendered quite straight, without using force, would he then be convinced? His reply was in the affirmative.

After having acquainted Captain Broke with the plan I intended to pursue, he, in furtherance of the arrangement, ordered all hands on deck for punishment. When the man was stript for this purpose, I examined the contracted arm with great attention and minuteness, never making any attempt to stretch it out, until I saw the influence of the will taken off from the muscles of his arm, by his earnestness and great anxiety to answer some question put to him by the captain, who all the while I was so employed (about ten minutes or a quarter of an hour) kept engaging his attention in conversation, in order to divert his volition from the contracted arm: then, to the utter confusion of the cook's mate, and with indignant expressions of "Shame!" "Punish him!" echoing from nearly the whole crew, the arm was, with the slightest effort, made perfectly straight; and such was the effect it had upon the man himself, that unconsciously he raised the hand of the now-restored arm to his forehead, and entreated forgiveness. He was punished, and went immediately to his duty, without ever complaining again

during the two years I remained in the ship; and such was the effect of this example upon the minds of the men, that very few sculkers ever troubled us again.

If such another case were to occur to me, I should not go to work the round-about-way I did in the above to satisfy myself or others that the joint was not ankylosed or permanently stiff. I should merely administer an emetic to the person, and take advantage of that deadly sickness which immediately precedes the act of vomiting to straighten the limb, when all muscular power is gone,* or have recourse to the plan adopted in the case that is to follow.

An excellent seaman, six feet high, was admitted under my care at Deal hospital, labouring under a paralysis of the right arm. Circumstances connected with this man's case led me to suspect him to be an impostor; and after nearly two months' residence in the hospital, immediately before a survey for invaliding was to take place, I caused fifty drops of tinctura opii to be administered to him in his tea, unknown to him. At eleven o'clock that night I visited him, accompanied by four hospital mates, and one nurse from each ward. Most of the patients in his apartment, which contained fourteen, were asleep. I approached this man's bed, stood up against the wall on his right side, and tickled his right ear

* This practice is followed with great advantage in the reduction of dislocations.

with a feather; when, to the astonishment and mirth of the assembled party, the paralysed hand was instantly raised to his ear, which he rubbed with no small degree of force, and then turned round upon his left side, dragging the bedclothes over him with his heretofore useless arm. He was not aroused, there being only the usual light in the ward, a common rush-candle; and, when he was again supposed to be asleep, the same operation of the feather was repeated, but with greater irritation; the paralysed arm was again raised as before, and from the loud laughing that now prevailed, he instantly awoke, and, finding himself detected, sprung out of his bed, and caught me with both arms round the neck, saying, in a whisper, "I hope I shall meet with you, sir, some day in a dark corner." This man was sent to his ship; and I afterwards learnt that he zealously performed his duty.

Another man was brought to the hospital, for the purpose of being invalided, on the day when the surveying officers were assembled upon this service. The patient was stated to have lost the use of the extensor muscles of the right hand, so that this member was always found hanging down, apparently powerless. It was winter; and my colleague, one of the surveying officers on the occasion, suggested that the hand, in its relaxed and useless state, might be placed over the edge of the table round which we were all seated, and some assistants, who stood by, were directed to

keep the arm and shoulder firmly fixed, so that the patient might not be able to withdraw his hand from that situation: my colleague then turned round to the fire, took from the grate a red-hot poker, and placed the heated point near the extremity of the insertion of the flexor tendons, on the inner surface of the fingers. The hand was then gradually seen rising, as the hot poker approached it, until the extensor muscles had raised it to its utmost. The man was returned to his ship *cured*, and performed his duty as formerly.

This part of the subject might be illustrated by numerous other instances; but those that have been here advanced, I am of opinion, are sufficient to put the medical officer upon his guard, when placed under similar circumstances.

INFLAMMATION OF THE EYES. — Various are the instances of the loss of vision which I have witnessed from mal-practices on this organ, and numerous are the individuals who have received pensions for the injuries they have themselves produced.

In the year 1801, whilst serving as surgeon's mate on board the Alkmaar hospital ship in the Baltic Sea, a patient laboured under the most active ophthalmia I had ever then witnessed. It was soon discovered, however, that the disease was much less acute during the intervals of the visits of the physician to the fleet, and the surgeon of the ship, Dr. Baird and Mr. Jamieson. This

led to some inquiry and investigation, when, on a strict examination of the bed and person of the patient, a paper was found concealed under the pillow, containing powdered alum, which the unhappy man had more than once been seen to introduce into his eyes. One eye was totally lost by this circumstance; and three years afterwards the writer met the identical person in Darkhouse Lane in London, and was addressed by him thus: "Although you would not favour my views, you see I have at length got rid of the service; and have, besides, obtained a pension for the loss of my eye."

Several such cases occurred to me at Deal hospital. Alum, lime, and tobacco-juice are the substances most generally used to produce this disease; and we found no better remedy than to confine the patient's hands by the application of a strait-waistcoat, a strict watch to be kept over him, and a perseverance in the common treatment to subdue inflammatory action in this organ.

INCONTINENCE OF URINE.—Numberless are the instances of this deception on board ships of war, and numberless are the brave men who have been lost to the naval service, by invaliding, from such cause.

After having attentively examined the urethra and bladder, by means of a sound or staff, the method I have found most effectual in detecting this imposture has been to administer a large dose of opium, and when the patient is sound asleep,

to place gently under him a clean, dry, folded sheet, and which is to be frequently examined during the night by the nurse of the ward, or by an hospital-assistant, with the view of ascertaining whether the sheet remain dry whilst the patient is asleep, and under the influence of the narcotic. If the sheet remain dry for four or six hours, and be only found wetted after he has awoke, the natural conclusion must be, that the individual is an impostor; and I have no hesitation in stating this to be my decided opinion, without referring it to the influence of the medicine.

VOMITING.—On board the Alkmaar hospital ship in the Baltic, a patient laboured under such constant and violent irritation of the stomach, as to lead us all to believe that there was considerable morbid action going forward in that organ.

It was the duty of the hospital-mates to be much on the watch, and to notice more particularly such patients as were considered labouring under any acute disease: my attention, therefore, was attracted, among others, to the case under consideration; and observing, for two or three days, that the vomiting only occurred at certain periods, — namely, when the physician to the fleet was paying his morning or evening visit to the sick, — we determined the more narrowly to watch this patient, and the result was a complete detection of the imposture. It was effected in the following manner: —

Seeing (as has been already observed) that the vomitings only occurred at stated periods, and that the patient ate his provisions, in the absence of the medical officers, without any vomiting, at Dr. Baird's next visit I watched, and distinctly observed the patient, before the vomiting began, to make violent pressure with his hand, under the bedclothes, on the region of the stomach; and so convinced was I that the vomiting was entirely produced in this way, that I mentioned the circumstance to the Doctor, and requested that he would suffer me to visit him a few minutes on the following morning, before he appeared on the hospital deck, that I might secure his hands outside the bedclothes; and I would answer for it the patient would not vomit on that occasion, even if he were to administer any medicine to him, short of an emetic, however nauseous.

The arrangement was made: I sat upon the bed, with the patient's hands in mine. The Doctor came at the appointed time, took a chair by me, and exhibited to him an ounce of castor-oil, uncovered by any vehicle, and remained by him one whole hour, without the slightest disposition to vomit evincing itself during the whole period.

In the course of my practice, and in conversation with other medical men since, I have been thoroughly convinced of the existence of this power in certain persons to excite vomiting, by pressure on the region of the stomach, whenever

they pleased. The patient above adverted to was discharged cured to his proper ship, and an account transmitted to the surgeon of the imposture practised.*

The Prince, 98 guns, Captain Grindell, arrived at Plymouth with a party of marines, who had been embarked for a longer period than usual; they were in a high state of discipline, and therefore Captain G. was desirous to retain them still longer.

As soon as the men learnt this, the majority of them were suddenly seized with repeated vomitings and other alarming symptoms, which the surgeon of the ship considered to be the commencement of fever, and therefore, under this impression, he sent a great many to the hospital, which was the object of all the party.

When Dr. Baird inspected the state of the ship, he found the seamen totally exempt from the symptoms so prevalent among the marines, and was not long in discovering that deleterious drugs were daily brought on board for the marines, by the wife of one of them: the supply of this drug, whatever it was, being thus cut off, and the Doctor assuring the men that no one else should be sent to the hospital, they all speedily recovered.

DISEASE OF THE LOINS, FROM HURTS, FALLS,

* See an account of Blash de Manfré, who died in 1651 at the age of 72, and who is styled the "water spouter."

OR SPRAINS.—This is no uncommon source of complaint and imposture among men employed in king's ships and dock-yards, and is very difficult to detect: close observation, watching, and a variety of concurring circumstances, can alone lead to a just conclusion and detection in such cases.

The most remarkable case of this kind that occurred in my practice, was that of a man named Bradley, who was admitted into Deal hospital from his Majesty's ship of the line the *La Hogue*. He was stated to have fallen from the fore-yard into the sea, striking the region of his loins, in his descent, against the anchor-fluke. A few hours after the accident, I visited this man in the hospital; and after the most attentive examination of the part pointed out to me by the patient as that which had been so severely injured, I found, to my utter surprise, that there was not the slightest mark of injury, either on the lumbar region or on any other part of his body; but the howling and screaming noise made by the patient at this examination was sufficient, with the circumstances above adverted to, to raise strong doubts in my mind as to the existence of any injury whatever, beyond the alarm occasioned by his fall from the yard into the sea; and which opinion I then distinctly stated to the patient.

Bradley was young, vigorous, and obstinate, and a thorough-bred seaman withal; every attention was therefore paid to him; but for weeks

together he declined to take any kind of sustenance, alleging "that it made him sick, and injured his spine, which was broken;" and as a proof of this, his trunk was bent to nearly a right angle with the lower extremities. He continued throughout each night to make such a groaning noise in the ward, from actual pain as he said, that I was constrained at length, at the earnest request of the other patients, to move him into a small room by himself, and which stood somewhat back from the line of the main building.

When a rug was spread on the floor of his ward, and the patient placed on his back upon it, for the purpose of examination, his legs and thighs were standing upwards at the same angle with his body as when he walked; and when his legs were pressed down to the floor, his body started up, and he then appeared in a sitting posture, to the great amusement of the hospital-mates, who assisted me on these occasions. Bradley continued to state, however, that his back being broken by the villanous anchor, he was no longer fit for the service, and hoped I would invalid him; while the loud and incessant noise he made, even in this distant abode, continued to annoy every body within the sphere of his vociferations.

About this time, a companion of his in the lower ward, from whence he had been removed, addressed me one day in a whisper, and said he wished to speak with me alone. This fellow, Hopkins, had just had his own leg emancipated

from the wooden boot, and by way of making himself useful to me, with the view that he might not himself be sent off to his ship with a branded ticket (of which seamen stand in great terror), he addressed me as follows: — “ You are quite right, sir, with respect to Bradley: he is a great rogue, and pretends not to be able to eat or to stand erect; but I have watched him, — have seen him get out of bed in the middle of the night, when he thought we were all asleep, and walk to the cupboard at the end of the ward as uprightly as you can walk, and where he uniformly every night made a hearty repast from the left provisions. He would then return to his bed in like manner, observing the utmost care and quiet, lest his comrades should be disturbed, and detect him.” Hopkins further stated, that Bradley had sent for him that very morning, when the latter bade him good bye, if he would not accompany him; and, in confidence, told him that, as the hospital clock struck eleven that night, he would make his escape in a certain direction across the green, and over the burial-ground wall; but at the same time strenuously urged the latter to join him in his escape from the lower ward.

Upon this information, I directed the serjeant of the guard, after dark, where the soldiers should be planted to secure the deserter; placing myself in the operation-room, with all the hospital-mates, and the nurse of Bradley's ward; when, sure enough, just as the clock struck eleven, it was

announced that there were white sheets thrown down from the window of Bradley's room on the first floor, by which he descended very gently and safely. He then ran across the back green, to the wall mentioned by Hopkins, with all the uprightness and agility of a young man free from disease or injury of any kind; and on the following morning, when I visited him in the guard-room, he was very penitent, but appeared, when standing, to be still bent double. On his asking me to shew him mercy, and not report him for punishment, I told him, that if he expected mercy at my hands he would that instant stand erect as he was when I saw him run across the green the previous night. He complied, stood up like a soldier on parade, and was discharged to his duty on board his ship.

In this very dock-yard from which I write, a man complained of having sprained his loins in the execution of his duty. He was put on the hurt list, which entitles the individual to receive half his full pay; and there he continued a considerable time. He was declared not to be a fit object to receive the bounty of government for his reported injury, and he was discharged the yard without a pension. On the following day, this very man, who for weeks before had been bent double, and stated himself to be perfectly unable to work, was recognised by an officer, now here, at the top of a long ladder in the town, with a bricklayer's hod upon his shoulder, and, on de-

scending, he was observed to walk away perfectly upright.

EPILEPSY.—This is another disease not unfrequently simulated among seamen and soldiers, and sometimes even in domestic life.

The state of the pupil will, in most instances, lead to a discovery of this fact—namely, as to the influence of light upon the iris occasioning a contraction or dilatation.

I have, however, had brought to my recollection, by my friend and former messmate, Dr. Burnet, late assistant physician to Greenwich Hospital, the case of a man on board the *Isis*, fifty-gun ship, on our passage to Newfoundland in 1802, who had epileptic fits very frequently, and to which he said he had been subject for some years. His pupils, during the paroxysm, were uniformly natural when light was opposed to them; we were therefore satisfied that the disease was feigned. But to put the patient to another test, I introduced some fine dry Scotch snuff into a quill, and while the patient was in one of his fits, the snuff was blown up his nostrils, which induced another fit—a fit of sneezing, that lasted nearly a quarter of an hour.

I have since tried snuff in real cases of epilepsy, and never once could produce that effect, although the individuals were not snuff-takers. This, then, is a simple and gentle mode of detection, to which there can be no possible objection.

The person in the *Isis* never had another fit while Dr. Burnet and I remained in the ship.

During the first year or two that the Penitentiary at Millbank was in operation, Jane Malcolm, a female convict, feigned epilepsy; and, upon being convinced of the fact, I directed the resident apothecary to dissolve some aloës and salts in a pint of water, and which I administered to her myself on one occasion, when she was labouring under a very severe paroxysm of this disease. The bitter and nauseous taste of the medicine made her resist taking it with vehemence, and, in the struggle, she bit the tin vessel which contained it, and broke a rotten tooth; of which she afterwards complained, to the visiter, as very cruel and unkind treatment received at my hands.

The above remedy, however, cured the disease; for she never had another fit while I continued attached to the institution, which was some years.

ŒDEMATOUS SWELLINGS OF THE EXTREMITIES, &c.—It occasionally occurs that arms and legs in this state are presented to the notice of medical officers, not only in the navy and army, but to those of prisons and prison-ships also; and I have a perfect recollection of such cases having occurred in my own practice many times, in the hospital and elsewhere. This swelling is produced by the tight application of a ligature higher on the limb than is thought proper to ex-

hibit to the view of the surgeon. Detection is here obvious enough, and need not, therefore, be more adverted to in this place; but perhaps the most complete mode of detection would be to visit the patient, and examine the part, while the ligature is actually applied and in operation, which is generally from a quarter of an hour to an hour and a half, or two hours, earlier than the customary visit of the medical officer.

When detection has taken place in this way, I have more than once been replied to by the person, with more ingenuity than truth, that the ligature was applied for the purpose of allaying pain. In one case, indeed, I felt considerable embarrassment; for while the mark of the ligature had been distinctly witnessed by me two or three different times, yet the arm continued to be swelled afterwards, certainly without its use, for there was no mark: when at length we discovered that it was produced by his hanging his arm over the back of a chair, and making considerable pressure upon the course of the axillary vessels, for some time previous to our customary visit.

HÆMOPTYSIS, HÆMATEMESIS, OR SPITTING OF BLOOD, &c.—being a communication from a friend.

“As several devices are resorted to by persons belonging to the public service to obtain pensions undeservedly, I beg to relate a few of the many attempts practised for that purpose

which have come under my observation in this dock-yard.

“ A robust, powerful man, of middle age, stated himself to be unable to work, from an injury of the slightest description, and resolutely persevered in denying himself the common means of sustenance, by which, with close confinement to his miserable lodging, and keeping constantly in bed, some degree of debility and fever were induced.

“ When he was tired of this mode of punishment to gain his ends, he endeavoured to work upon the minds of the officers, by creeping into their presence, claiming their compassion, and sometimes enforcing the representations of his sufferings by disgorging small quantities of blood from his mouth (which it was well ascertained he had procured at a butcher's shop in the town), feigning a hectic cough at the time, and thus exhibiting symptoms which were thought infallible. Even this expedient failed; and at length, finding all his ingenuity of no avail, he thought proper to regain his usual health when discharged without a pension.

“ Another character, with similar views and pretensions, while on night-watch, quietly walked into one of the docks, placed himself in an immovable position, bellowing out for help, as he had fallen from the brow of the dock, and was almost killed. Immediate notice was taken of this supposed accident, and, on inspection, the total absence of all external marks of injury,

together with regular pulsation, made his case very suspicious. However, after using all means of advice, admonition, and remonstrance, assisted by the frequent use of blisters and medicine of no very palatable cast, he still carried on the farce, with the hope of ultimately succeeding, and, by privations of all sorts, reduced himself to a mere shadow.

“ Finding his friend’s scheme of spitting blood fail him, a paralysis of his lower extremities kept up the deception a little longer; and, when placed on the discharge-list, he took his departure without the much wished-for pension, and very shortly recovered the use of his limbs.”

In my own practice, both public and private, I have known instances of hæmoptysis feigned by cutting the gums, or roof of the mouth, with a penknife or other sharp instrument. The incisions being visible, no doubt could be entertained of the reality of the imposture; and a worthy colleague of mine, at the Westminster General Dispensary, has mentioned to me the case of a young lady, a private patient of his, who feigned hæmoptysis by mixing with her saliva some vermilion paint.*

* A young female friend of my own, at school, was exceedingly anxious to have a few holidays at home with her mamma; and, taking advantage of one of her schoolfellows being removed to her parents on account of psora, my young friend pricked her hand between two or three fingers, with a needle, and afterwards by scratching the parts so pricked with some violence, she gave

CALCULUS, OR GRAVEL.—I had only one case, a boy, with this disease simulated, and who, on his admission into the hospital, had a small stone impacted in the urethra, immediately behind the corona glandis; and to ensure the account of his case being received as correct, he shewed me two or three small pebbles which he said had been passed by the urethra, and which were readily recognised to be small pieces of gravel from Deal beach, and having no analogy whatever to urinary calculi.

The boy, in this instance, had introduced a larger piece of beach stone than was convenient to him, because it gave him a great deal of pain, and for the removal of which he was sent from his ship to the hospital.

Before any attempt was made to remove it, he was accused of imposture, and threatened to be left to die if he did not acknowledge the fact. He then told the truth, and expressed his sorrow and regret. The calculus was then readily removed, by dilating the meatus urinarius with a common pair of dressing forceps; and he was discharged to his ship, cured, the next day.

PAINS, SPASMS, AND DISEASE OF THE STOMACH AND BOWELS.—In a convict hulk at this port, entirely for the reception of boys, who are either employed as shoemakers, tailors, or bookbinders (some of whom recognised me as an old

them somewhat the appearance of this disease,—and thus she effected her purpose.

Penitentiary acquaintance), several instances of feigned disease have occurred: but here I wish more particularly to advert to the class of shoemakers, several of whom, to avoid work, and be sent on board the hospital ship, produced actual and very serious mischief to the stomach and bowels, by swallowing quantities of the sulphate of iron (copperas), used in their trade.

One of these cases was shewn to me by the intelligent surgeon of the hulk, Mr. A. Robertson; and who has informed me since, that this boy is dangerously ill, and likely to die, in consequence of such malpractice.

“ A soldier had been long in the hospital in consequence of having lost, as he asserted, the use of his right arm: nor could the motions of the limb be restored by any means whatever. There were the strongest reasons for believing that the complaint was wholly fictitious. At length Mr. Charlton suggested the following plan:—the man was prevailed upon one evening to suffer the *sound* arm to be fastened securely to the side, with the hope, as he was told, of gradually restoring the motions of the *diseased limb*, by making him entirely dependent upon its use. In this condition the man went to bed as usual; and, in the middle of the night, the orderly man was directed, in the presence of the resident assistant-surgeon and some of the patient's comrades, to irritate the nostrils with a feather: this produced an instantaneous motion of the diseased arm, which was applied with great energy to the part

tickled. The man was then awoke, and congratulated by the spectators on having thus suddenly recovered the use of his limb. The cure was complete and permanent.”*

STRICTURE.—It is very painful to me, although quite necessary in this place, to state, for the information of the medical officers in the king's service, that, in hospital practice, we are frequently called upon to examine officers, who present themselves for admission into naval hospitals in consequence of some disagreement with their captain or messmates, in order to be removed from their ship; and stricture is more frequently the disease feigned by them on such occasions than any other: but by this remark it is by no means meant to be inferred that the majority of cases of this kind are feigned; on the contrary, there are certainly numerous instances of this disease among officers, that are, unhappily for the individuals, but too well verified.

When an officer has been presented at Deal hospital under these circumstances, it was my uniform practice to place the patient's back against the wall, so as not to admit of retreat. A bougie was then passed into the urethra, when, in many cases, the passage of the instrument beyond the perinæum has been very difficult to accomplish. To ascertain whether this stop were really a stricture, or merely a voluntary constriction of this part of the canal by the neighbouring

* See Lond. Medical and Physical Journal, vol. liv. p. 93.

muscles of the part, the following has been the plan adopted to decide the question. On the arrival of the bougie at this place in the urethra, gentle pressure is made with the instrument, by moving the bougie somewhat quickly backwards and forwards against the stricture, and yet without using any force. The patient, during this period, is engaged in conversation with the surgeon as to the ships, climates, and battles he has served in,—the captains' names of his respective ships,—his part of the country, relatives, prospects of advancement in his profession, &c. ; and when there is reason to suppose the mind at any time to be taken off from the operation, a gentle movement of the instrument forwards will, if there be not real stricture, readily pass it on into the bladder.

In this way a case of simulated stricture may be detected, nine times out of ten ; and immediately that such officer has been pronounced as not labouring under this disease, the true state of the case has occasionally been mentioned by the patient,—namely, that a disagreement existed in his ship ; and that, if he had not made use of this plea, a court-martial may have been the issue, and possibly the loss of his commission, which is such a powerful appeal to the feelings of the surgeon, that it is sometimes difficult to stand out against it, particularly when the officer has a family depending upon him.

The naval-hospital surgeon, under such circumstances, has a very difficult and serious duty to perform ; and I hardly know of any situation, at least in some instances which came under my own observation, more distressing to the feelings than the one now adverted to : yet there is a paramount duty to which we are pledged, and from which we cannot, in conscience, as servants to the public, deviate. It is the straight-forward course, then, in all such cases, that ought to be pursued.

Spasmodic stricture, as it is commonly called in private practice, may generally be distinguished from strictures of a permanent nature by the means above described.

HERNIA.—In examining new recruits, either for the army or navy, it is essential that they be free from hernia, both on account of their efficiency, and to preclude the possibility of seamen afterwards making a pretext of being ruptured in the service, and thereby obtaining *smart-tickets*, which will entitle them to pensions for life ; and, as many ruptures are easily reduced, particularly those of an old date, it has been, to my knowledge, not an unusual practice for such men to appear on their entrance into the service to be perfectly free from this affection.

Recruits should therefore be examined naked, and should be made to jump, and to cough as violently as they can, by which means a hernia,

if it do exist at all, will in most cases become sufficiently apparent to authorise the surgeon to reject them.

I have one or two remarks more to offer, before I take leave of this subject. No class of men are more subject to hernia than seamen, from the great bodily exertions they are frequently called upon to make, either in furling sails in a gale, or in heaving up the anchor, besides various other severe duties; and yet I have never once found it necessary to perform the operation for strangulated hernia upon a seaman. I have never seen a case of it, indeed, among this class of men, excepting in one solitary instance, and this was not known until dissection shewed it after death. It happened to be a singular case of strangulation of the colon through the diaphragm. I have learnt also, from other naval-hospital surgeons, that it is very seldom they have had occasion to perform this operation. The great and repeated distention of the abdominal apertures in seamen who are affected with hernia, by the nature of their occupations, as above noticed, may possibly in some degree account for it; or it may be accounted for by the constant residence among them of a medical officer (to whom seamen are always most ready to apply for relief when in any way indisposed), and who, being early applied to, may in many instances have succeeded in reducing the hernia, which, but for such timely aid, might have become strangulated.

We have already shewn that seamen will occasionally conceal the fact of their being ruptured on their first entrance into the service, with a view afterwards to deceive the surgeon into a belief that the disease was produced in the navy, and obtain from him a smart-ticket. But it more frequently happens that hernia is made a *plea of unfitness* for the king's service, with those persons who prefer a merchant ship to a man of war, because they have higher wages there, and possibly more liberty. A curious physiological fact, illustrative of this, I shall relate to the professional reader, because it came under my own personal observation.

In July 1806, or 1807, during a cruise off the island of Madeira, in H. M. S. *Druid*, a merchant ship from the coast of Africa, bound to Glasgow, was boarded, from which an English seaman and a negro boy were impressed, and, according to the custom of the service, were, previously to their being finally detained, ordered to the cockpit for the purpose of examination, by the surgeon, as to their fitness for the king's service. The man, on stripping himself, said that he was ruptured in both groins; that he had been "overhauled" (examined) a dozen times by the surgeons of different ships of war, and that he had as frequently been discharged again as unserviceable from this cause.

There certainly was a swelling in each groin, very much resembling hernia; but the weather at

this time being extremely hot, and the scrotum therefore very pendent and flaccid, my attention was particularly called to it; and, on examination, I found the scrotum to be an empty bag, and the testes (of their natural size) lodged in the groin. As soon as this discovery was made, the poor man, from being at length and so unexpectedly detected, became quite unnerved, and so agitated, that, upon re-examining the parts, the testes were found to have descended into their proper places in the scrotum. After commending the man for his ingenuity, and, in place of physic, administering to him a glass of grog, his spirits were rapidly restored; and, seeing no longer any chance of eluding the king's service, he displayed before us several remarkable feats of the power he possessed over these organs. He pulled both testes from the bottom of the scrotum up to the external abdominal rings, with considerable force, and again dropped them into their proper places, with incredible facility. He then pulled up one testis, and after some pause the other followed, as the word of command was given; he then let them both drop into the scrotum simultaneously. He also pulled one gradually up, whilst the other was as gently descending; and he repeated this latter experiment as rapidly as the eye could well follow the elevation and descent of the organs, so that my assistant and myself were not only surprised, but so exceedingly amused, that we could hardly believe the evi-

dence of our senses. This man afterwards proved to be a willing and hard-working man.

Except in the above remarkable case, I know of no instance on record of the cremaster muscles being muscles of will; and as it was so singular a case, I shewed the man to several of the medical officers of the squadron we happened to meet with during the remainder of my service in that ship.

It is hoped, that enough has been here stated to put the medical officers in his majesty's service sufficiently on their guard to enable them to detect such abuses as have been described; at the same time, that all due consideration and feeling should most scrupulously be exercised by my professional brethren on so very delicate and important a duty as that which has been the subject of this chapter.

As, however, it may be apprehended that I have over-stated the frequency, and over-rated the detriment, which such feigned complaints have produced in the king's service, I beg to state that two men were brought to the hospital from ships of war in the Downs,—the one having cut off the half of his foot with an axe, and the other his four fingers close to the hand, merely for the purpose of obtaining their discharge; in which object, however, they failed, it having been deemed highly advisable to check such wicked practices in the fleet. I beg also to subjoin the following letter, *verbatim et literatim*, from one of the most

impudent impostors that ever came under my notice.

“ TO A. COPLAND HUTCHISON, Esq., Surgeon, Royal Naval Hospital, Deal.

“ June 21, 1810.

“ Sir,—I beg your pardon for taking the liberty of writting to you. Sir, all the information I can give you against that man is, that I know him to bring stuff to James Chapman, but I do not know the name of it. He brought dragon's blood and oil of vitriol to James M'Donald, that was in the 13th ward. He brought vinegar and corkwood, which was burned and mixed together, and taken by Handover, in the 13th ward. There was some stuff brought to Gego, that he used to his leg, and Pattison. There was many more got things of this kind, but I am not sure of them. But all I have said I am sure of. He has taken out many suits of sailors cloths, and sold them for to by these things and licker. Sir, it would be better for I had cast myself into the sea than told you of this, if you let it be known, for every one that does not lake the sarves would think little of my life.

“ The only thing that made me speak of it was, that I thought you used every one under your care well, and I am sure that man did corrupt many in hospital, and hurt much of your handy work. Sir, I am on board the gard ship at the Noar, and expects to be sent to you.

Richard Hobdey is the man. All from your
humble servant,

(Signed) "JAMES MITCHELL."*

In palliation of the moral turpitude which truth has compelled me to impute to our brave defenders, be it recollected that the late revolutionary war was one of unexampled length, in which human endurance was put to the most severe trial. From the year 1793 to 1815, the efforts of the navy were unremitting, except a short breathing after the peace of Amiens; and, of all lives, one constantly engaged either in long dreary voyages, cruises, and blockades, or in combating the elements and the enemy, tends most to wear out patience; not only through the hardships, dangers, and *ennui* inseparable from them, but by the long absence from friends, kindred, and sweethearts; so that some of the best feelings of our nature are arrayed against the sense of public duty, and plead loudly in extenuation of the offence which is the subject of this chapter.

From the foregoing observations, it may be supposed, and naturally enough, that I may have now and then erred in my judgment, and occa-

* This man (Mitchell) had written before, to say that a labourer belonging to the establishment was much employed by the patients in the hospital, in the manner above explained; and the above communication was in answer to a letter I had written to him, to name the person. Inquiry proved the correctness of Mitchell's statement, and Hobdey was forthwith dismissed from his office.

sionally accused an innocent man of imposture. I now take this opportunity to declare, on my honour (and there are many living witnesses to bear me out in the assertion), that it has been my good fortune never once to have accused an individual of being an impostor, or even to have treated him as such, who was not eventually proved to be one. The candid reader will, I am sure, admit that I owe to myself this justification, after the melancholy catalogue of impostures which have been here detailed.

Before concluding this part of the work, I shall mention, for the information and guidance of the naval medical officer in particular, the plan I adopted, when serving afloat, to lessen the sick list of sculkers, as they are technically termed in the navy, and which had the desired effect; and it is very gratifying to me to find that the plan is now almost universally adopted throughout the naval service.

The sick list having been previously delivered in to the captain, with a particular mark against the name of every man either sculking or suspected of sculking,—the letter *S*, for instance, would answer both purposes,—all those on the above list, therefore, who are not actually confined to their hammocks, are to be arranged on one side of the captain's cabin door, ready for his inspection on his coming out after breakfast, and who is to be requested to examine each person, and

address to him such remark or observation as may suggest itself to him on the occasion, or as the particular case of the individual may require. This line of proceeding, day after day, will soon clear the list of such persons, of the description we are adverting to, as have any soul or feeling; for there are but too many seamen who would feel not the smallest scruple, or injury to their pride as men, to appear twice a day before the surgeon, for months together, without the vestige of disease of any kind, when they would feel all that could be desired of them by being seen daily, and spoken to, or admonished, as the case may be, by their leader in battle; and I know the character of seamen too well to be deceived on this point.

But it is not the mere dumb review of these men that will answer the purpose:—the captain must be respectfully and earnestly entreated by the surgeon to address each man arrayed before him, more particularly those against whose name the mark before mentioned has been made; and to address to them a language, more to operate on their pride as *British seamen* than on their feelings as common men; and such persons will be found to be influenced in this way much more than by using the language of reproach.

I am the more particular in pressing this plan on the minds of medical officers serving afloat, because, in my own experience, I found no other

to answer so well; and I have known many instances where seamen have continued to complain, week after week, and month after month, to the surgeon, when there has been little or no disease to complain of, as regarded their efficiency for duty, but rather with the view of being invalided, and so get home to their friends, or into the merchant service, where their pay is greater and restraint less, as has been already shewn, than in the king's service.

CHAP. IV.

ON HOSPITAL GANGRENE, AND THE SLOUGHING PHAGEDENIC ULCER, WHICH OCCURS ON BOARD SHIPS OF WAR AND IN NAVAL AND MILITARY HOSPITALS.

ABOUT the period I entered the naval service as a medical officer, it was no uncommon circumstance for the greater part of whole fleets to be obliged to quit their stations, and return into port, on account of this destructive malady ; but which, of late years, has been gradually on the decline from a variety of causes, that will be adverted to in their proper place.

The true hospital gangrene is a disease I never saw an instance of except on board ship and in naval and military hospitals, although I have heard of its occurrence at the Westminster and some other of the London hospitals, particularly St. Bartholomew's, in a well-written paper by Mr. Welbank, published in the 11th volume of the Medico-Chirurgical Transactions ; and we all know the ravages committed by this disease in the Hôtel Dieu of Paris, a great many years ago. A short, but clear and masterly account of hospital gangrene, and of all authors, ancient and modern, who have treated of this disease, will be found in a small volume published, in 1818, by Mr. Blackadder, to whom, and to

Dr. Hennen, both of the army, the profession are much indebted for their description and treatment of the disease as it came under their particular observation: and the same may be said of Mr. Welbank's valuable paper, already adverted to. But as hardly two writers agree in every point of the description or true character of this destructive malady, no more than they agree in the best mode of treating it, I shall stand acquitted, I trust, for describing it as it came under my own observation. The treatment pursued by me, and other naval hospital surgeons, will appear in some official documents which shall be subjoined.

In situations where hospital gangrene prevailed,—and an ulcer or amputated stump were the parts attacked,—the previously healthy secretion of pus became first greatly lessened; and such secretion as did appear on the dressings, or upon the surface of the parts, was thin, dark coloured, and acrid; the surface of the ulcer lost its florid appearance, and assumed a comparatively pale and glossy aspect. The disease would sometimes commence from a point or vesicle on the margin of an ulcer, or upon a slightly-abraded surface, as stated by Mr. Blackadder, and at other times from various parts of the surface of an ulcer; but when the disease has so appeared, there has been no vesicle on the ulcerated surface, but only a small gangrenous point; and I have observed that when the disease has shewn itself in this manner,

it spreads sometimes more in one direction than in another, and not as when the vesicle has been the precursor of the disease; for in such case the gangrened spot spreads from the vesicle, as from a centre, equally in all directions: but I cannot say that I have uniformly noticed the vesicle on the margin, and certainly never on the surface, of an ulcer; and I have once or twice seen the disease attack the whole surface of an ulcer, as it were, spontaneously, in the course of one night.

I have never known hospital gangrene to attack the sound skin, but uniformly either an old ulcer, an inflamed pimple, or a wounded or abraded surface of some kind; and it is inconceivable how very minute the wounded part has sometimes been on which the disease has established itself, and with what rapidity, also, it advances when once established. Swelling and inflammation, immediately around the wounded part, will sometimes commence in a few hours; at other times these symptoms proceed more slowly. The inflammation nearest to the wound, or injured part, is exceedingly dark or high coloured, which, as it extends from the central point, becomes gradually less and less red, until it becomes blended with the healthy skin; and indeed, in this respect, the areolar inflammation in hospital gangrene very much resembles that which attends the vaccine vesicle when at its height, with this difference, that it is much more

violent in degree, more extensive, and attended with a great deal more pain, tension, and tumefaction of the neighbouring parts.

The disease is now attended with a pricking or stinging pain, as described by Mr. Blackadder. After a day or two, a circular sloughing ulcer, somewhat depressed in the centre, will be found to occupy the place of the original injury: the edges of the ulcer are frequently pectinated or jagged, of a bluish-purple colour, having underneath "numerous small elevated and angry-looking points," like irritable granulations, of a brick colour; and they are possessed of acute sensibility.* The areolar inflammation now extends equally in all directions: these parts are exceedingly painful to the touch, and if the disease be seated over the tibia, the pain is greatly increased by the tightening of the inflamed skin, from the weight and dragging of the muscles on the posterior part of the leg, if due attention be not paid to the position of the limb.

The slough, which occupies the whole of the circular ulcer, is of a dark brown colour, and of a glairy, gelatinous or slimy consistence; although I have sometimes found it to possess a certain degree of firmness, and, in this latter case, the disease has appeared to me to be always of a more inveterate character.

* These two last characters of the disease have not, certainly, it is but correct to say, been always met with in my practice.

In hospital gangrene the smell is very peculiar — it is “*sui generis*,” and approaches more to that sour, disagreeable smell which we meet with from ulcerated toes, attended with a carious state of the bone, than to any other smell I can describe. There is very little discharge at first, but which increases, and is of a thin, dark-coloured sanies; and to the silver probe it gives the appearance of an unpolished copper wire. In cases where the bone has been affected by the disease, and when the sloughs have been thrown off, and the ulcer restored to a healthy state, I have remarked, also, how very rapidly the discoloured portion of bone has been cast off by the process of exfoliation.

I have never known the attendant fever to *precede* hospital gangrene; but when this disease has once invaded a part, the fever is commonly smart, with a hot, dry skin, generally full pulse and furred tongue, and sometimes delirium. The disease proceeds rapidly, if not arrested, and occasionally terminates fatally, or in the loss of a limb, or of an eye, if the disease have been seated on or near either of these parts. The following conclusions come to by Mr. Blackadder, according to my observations, are most strictly correct.

1st. “That the morbid action could, almost always, be detected in the wound, or sore, previous to the occurrence of any constitutional affection.

2dly. “That in several instances the constitution did not become affected until some con-

siderable time after the disease had manifested itself in the sore.

3dly. "That when the disease was situated in the inferior extremities, or hand, the lymphatic vessels and glands in the groin and axilla were observed to be in a state of irritation, giving pain on pressure, and were sometimes enlarged before the constitution shewed evident marks of derangement.

4thly. "That the constitutional affection, though sometimes irregular, was in many cases contemporary with the second or inflammatory stage.

5thly. "That all parts of the body were equally liable to become affected with this disease."

To which I would add, that the disease has, in my practice, been more frequently met with on parts of the body where the bones are but slightly covered with soft parts, such as over the tibia, the cranium, carpal, metacarpal, tarsal, and metatarsal bones: but I have very seldom seen a case of it situated over the costæ; probably from the circumstance of the chest being less liable to ulcer or injury than these just noticed, excepting from gun-shot wounds.

6thly. "That when a patient had more than one wound, or sore, it frequently happened that the disease was confined to one of the sores, while the other remained perfectly healthy, and that even when they were at no great distance from each other."

The above, then, is a short sketch of the disease I call hospital gangrene, and which came under my management and observation, at Deal hospital, between the years 1807 and 1816. I cannot, however, but think, from the great variety of opinions that have prevailed among writers on the subject of this ulcer, — particularly before Dr. Hennen's paper appeared in the London Medical Repository for March 1815 (vol. iii. p. 176, &c.), which I believe to be the first *accurate* description of the disease published in this country from any thing like an experienced writer in the management of the disease, — that it had before his time been blended with what I should call the sloughing phagedenic ulcer, and the scorbutic ulcer, of some naval medical writers : and although I do not mean to deny but that the former may be a *variety* of hospital gangrene, and possibly to be subdued by the same means, yet I deem it very essential that the military and naval surgeon should bear in mind the particular diagnostic marks of these diseased surfaces.*

* The most scientific foreign writer on the subject of this disease is Delpech, who published a distinct tract, in 1815, entitled “ Mémoire sur la Complication des Plaies et des Ulcères, connue sous le Nom de Pourriture d'Hôpital ;” but his description of the disease does not appear to me to be so correct and adherent to the true hospital gangrene as that of the English surgeons before quoted ; and his mode of treating the disease has never been had recourse to by us, and possibly never may ; yet, at the same time, as this memoir has received from the class of the Royal Institute of France its distinguished mark of appro-

The scorbutic ulcer is so self evident, and attended by so many peculiar constitutional as well as local appearances on various parts of the body, and arising from certain peculiarities of diet, air, and exercise, so very opposite to those of hospital gangrene, that it will be here unnecessary farther to draw a distinction; but, with regard to the phagedenic ulcer, there is a much greater analogy; and, as I have before remarked, it may be considered a variety of hospital gangrene. By the sloughing phagedena, I mean that ulcer which, while it has a healthy, healing aspect on one side, is spreading by the process of sloughing phagedena on the other; and to which description of ulcer I would suggest to Mr. Blackadder, with great deference, the propriety of the term *phagedena gangrenosa*, rather than to that which we have known so long under the designation of hospital gangrene.*

bation, I think that I shall be doing a service to the profession in this country by giving a translation of the report of MM. Portal and Deschamps on the memoir, and which I shall do at the end of the chapter, as their report gives the marrow of the whole work, not any part of this tract having ever before appeared in the English language.

* With regard to mercurial gangrene, and that species of scrofulous ulcer which some writers have supposed might possibly be mistaken for hospital gangrene, I can say little more than recommend the surgeon to bear in mind the true character of hospital gangrene, as described above and by the authors quoted, as also the previous history of the case; and then there can be no question about his mistaking the one disease for the other.

To advert again to the true hospital gangrene ; —there can be no doubt of its highly contagious or infectious nature ; but, according to the common acceptation of the word, I am more inclined to apply to it the latter term, from the single fact that I have had patients with healthy ulcers in one ward, when in another of equal size on the same floor, and only separated by a hall or passage with the doors immediately opposite to each other, there were between ten and fourteen patients labouring under this disease, without its ever having spread to the healthy ward, except in two instances, which in one case was satisfactorily traced to the nurse of the clean ward having taken a pillow from the passage belonging to the foul ward, that happened to be wanted in a hurry for a case of compound fracture of the leg ; the pillow having had a clean slip put upon it, it was not at the time detected, and was therefore placed under the limb of this poor man ; which very shortly put on the appearance of hospital gangrene.

The pillow in question had, in fact, been a couple of days under the leg of a patient labouring under hospital gangrene, which was attended by some sanious discharge that had wetted the ticking ; and as the discharge from the compound fracture was profuse, the partially-dried matter on the ticking had become again moist ; and from the heat of the limb which lay in this bed of infection, it was for the time mentioned in a steam

bath, as it were, of this specific infectious matter. The nurse who was guilty of the irregularity was discharged; and by great care and attention the poor man's life and limb were saved, with considerable difficulty.

A singular instance of this disease occurred in the case of a patient in one of the upper wards (which is the second case adverted to), far removed from that part of the hospital where hospital gangrene prevailed; and we were never enabled to trace, satisfactorily, through what means the infection reached him, for it could not well be by our hands or instruments, as the latter were always put into boiling water and well cleansed on coming out of the foul ward, and which was invariably the last we visited, with the view of guarding against the extension of the disease as much as we possibly could.

The patient who was the subject of this case had been long in the hospital, and had suffered a very extensive exfoliation of the left parietal bone, exposing the dura mater to the extent of about two square inches and a half; the dura mater had begun to granulate, and the wound altogether was proceeding as favourably as we could wish, when, to our great disappointment, the too well-known gangrened spot appeared upon, and about half an inch from, the margin of that exposed membrane. In about three days the dura mater was destroyed, and the brain itself attacked by the disease,

which at each dressing sloughed away in teaspoonsful at a time. The brain came away thinned or broken down in its structure, and as if it had been mixed with common dark-coloured vinegar; and, although the same peculiar smell of hospital gangrene prevailed here, it appeared to our senses as partaking more of a disagreeable sourness than when adipose matter or muscle were the subject of the disease: and what is very remarkable, the man lost more than half a teacupful of brain before fever and delirium came on, the patient having been perfectly sensible and collected up to this period. He died, I think, on the 10th day from the attack of hospital gangrene, and in 36 hours, only, after he became delirious.

A young man, a seaman, of the *Chatham* 74, was struck on the eyebrow by a loose rope, which merely abraded the surface: he was attacked by hospital gangrene, and early sent to the hospital, and was the only case we lost from that ship, which is to be chiefly ascribed to the eyeball being involved in the disease when landed; for we were, therefore, precluded from using the same applications that had been so successful in all the other cases (see my official letter) received from that ship. The eye burst during the progress of the disease; and what remained of its coats, with about an inch of the optic nerve, separated and came away in five or six days afterwards. The patient was removed into a clean

airy ward, by himself, and was narrowly watched; the position of his head was such as favoured the exit of any secretions of pus forming within the cranium or orbit, which was now healthy; but he died in a few days, sensible to the last hour. In a post mortem dissection, we found inflammation and pus along the whole course of the nerve, nay, even to the very posterior parts of the brain.

The portion of this man's eye and optic nerve which sloughed away during the progress of the disease is now in Mr. Brooks's museum.

Mr. Lahee, an hospital mate, while assisting me at an amputation, had, by his own imprudence, a portion of skin removed from the knuckle of the fore-finger of his right hand, and so slightly, that the part only oozed a little coloured serum: the part injured was not larger than a corking-pin head, which he neglected, and continued to dress patients with hospital gangrene, without any covering to the part. In a very few days the finger was attacked by the disease, the joint became exposed, and eventually I was obliged to remove it close to the hand.

Lahee was an honest, good-tempered Irishman, and said to Mr. M'Ternan, one of the other hospital mates, and now a surgeon in the navy, who happened to come into the room rather late, and at the moment I was in the act of separating the finger by the last touch of the knife, "Ah Pat!

my boy, you are just in time to be too late." Poor Lahee died afterwards in the West Indies of yellow-fever. It may be right here to repeat, that I never knew an instance of hospital gangrene attacking the sound skin; for, with sound hands, the hospital assistants and myself never were attacked by the disease, although we invariably washed the ulcers. Dr. Hennen, therefore, must labour under some error here. See Repository, vol. iii. page 182.

In whatever situation hospital gangrene may originate, whether it be in an hospital, a ship, or in a private house, the first step to be taken by the surgeon is the immediate removal of the attacked into any other situation more elevated, if possible, more airy, and more roomy than that which he has previously occupied; and in the meanwhile proper measures must be taken to cleanse and thoroughly ventilate, by a *perflation of air*, the place from whence they came, both to prevent others from being attacked who may happen to be left, and to secure an immunity from a relapse, to such as have gone through the the disease by removal, and have been returned to their old quarters.

The strong and nervous language of Mr. John Bell was never used to better purpose than when, writing on this very subject, he says, "Let him" (the surgeon) "bear in mind, that this is a hospital disease; that without the circle of the in-

fectured walls the men are safe ; let him, therefore, hurry them out of this house of death ; let him change the wards, let him take possession of some empty house, and so carry his patients into good air ; let him lay them in a school-room, a church, on a dunghill, or in a stable (like Paree's gangrened soldier),—let him carry them any where but to their graves. No expense should be spared ; for these are men who have entitled themselves to care by every claim which men can have ; and no one will dare to check the surgeon in these his most important duties. You are not sent out with only the amputating knife in your hands ; you are appointed to save the lives of your sailors or soldiers by all possible means ; you are to conduct yourselves, not like mere mechanical surgeons, like men capable only of doing over again what you have seen or heard described in schools, nor like men without sense, reflection, prudence, or those free and manly conceptions which your distinguished situation and new and various duties require : you would willingly expend your own fortune in such a cause, —then do not grudge to employ the revenue of the state, for it is employing and not abusing it ! This is not profusion, but the wisest and best economy. If in the course of a few weeks sixty men die of the disease in your hospital, government have lost a sum which would trebly buy your hospital itself ! The gross value of so many men in money, as they are reckoned in

the muster-books, being full fifteen thousand pounds," &c. *

Before the documents that are to follow be read, it will be but proper to state, that in the end of the year 1815 an official circular letter, from the Commissioners for Transports, Sick and Wounded Seamen, &c., was transmitted to the surgeons of all the naval hospitals and hospital ships in the kingdom on the subject of this destructive ulcer; and it affords me the greatest satisfaction to be enabled, through the kindness of Dr. Burnet, one of the medical commissioners of the navy, to lay the answers to the above official circular before the profession.

As these documents contain the opinions of all the hospital surgeons employed in the different establishments on the coast, it only remains for me to state, that as I am not personally authorised by these gentlemen to publish their letters, although furnished me for that purpose, I nevertheless deem it the more correct mode of proceeding to withhold their names from the respective communications, lest any offence be taken by the parties: their having been kindly furnished me from the medical records of the navy will be a sufficient guarantee for their authenticity; and I am sure when these subjoined interest-

* See Mr. John Bell's Principles of Surgery, vol. i. page 117, quarto.

ing papers have been attentively perused, it will be remarked by the reader, how extraordinary is the coincidence of opinion as to the causes of hospital gangrene in the navy, its prevention, and general treatment.

“ Royal Hospital Haslar, 9th Nov. 1815.

“ GENTLEMEN,

“ WE beg leave to acknowledge the receipt of your letter of the 3d inst., directing us to furnish you with replies to your questions relating to the ulcer formerly so prevalent and destructive in the navy; and we inform you, in reply to the first question,—‘ To what cause do you ascribe the decline of ulcer, formerly so prevalent and destructive in the navy?’—

“ That we ascribe the decline of the ulcer, which was so prevalent for several years subsequent to the equipment of the fleets in 1793, to better information being acquired of the nature and treatment of that disease; the construction of sick births; the change in the mode of supplying medicines and necessaries to the surgeons; the improvement in the quantity and quality of the provisions; and the distribution of lemon-juice in such a manner to the whole crew, with a view of maintaining health, instead of supplying it only to those actually diseased.

“ In explanation of the different parts of this opinion, we have to observe, that ulcer in the

fleets was commonly ascribed to a scorbutic diathesis, instead of contagion. There were few, if any, sick births in the ships, and as the diseased men could not, on that account, be early separated from the healthy, the number rapidly augmented; the quantity of lint, linen and necessaries was insufficient; the medicines, procured at the expense and discretion of the surgeon, were seldom adapted to the extent of the disease; and the provisions, in the equipment of the first fleets, were inferior to those supplied at later periods.

“ ‘ 2d. Does the general treatment now, in ships or hospitals, differ in any material degree from the method understood to have been recommended by the late Sick and Hurt Board?’

“ ‘ The treatment of ulcer, at present, in this institution, is grounded on an opinion that the malignant ulcer, so destructive to men whose health had been impaired by other causes, is of an highly contagious nature, likely to affect men in every condition of health; but we have not a perfect recollection of the thoughts of the late Sick and Hurt Board on the subject; nor can we exactly describe the period at which opinions of an opposite nature were relinquished; for, improvements in this, as well as in other matters, arise from the gradual acquisition of information.

“ ‘ 3d. If any change of treatment has taken place, what is the nature of such change; and to whom do you ascribe the merit of it?’

“ ‘ The most important changes of treatment

have been, the separation of men who have been infected from the healthy, by placing them in separate wards in hospitals, and adopting the best means for the same purpose in ships; using distinct sponges, and pure dressings in every case; arresting the progress of inflammation and gangrene, in full habits, by spare diet, depletion, by purgatives and the lancet; moist applications to the parts, of such a nature as may be calculated most effectually to allay irritation and conduct the generated heat; and, finally, encouraging cicatrization by the use of adhesive plaster, instead of the indiscriminate administration of wine, tonics, and vegetable acids.

“ It is difficult for us to state the names of those who have been instrumental in bringing the treatment of this malady to its present state of perfection; but in justice to Dr. Baird, the inspector of hospitals, we beg leave to state, that his zealous and unremitting exertions in every situation within the limits of his authority, in recommending and enforcing proper measures for the prevention and cure of this disease, have conferred lasting advantages on the naval service.

“ ‘ 4th. Whether do you consider malignant ulcer a malady in which increased action of the system prevails, or the reverse; and what do you understand to be now the general opinion of surgeons in the navy on this subject?’

“ We have stated, in answer to the second question, that men in every condition of health

are liable to the disease; and we think that it is a malady in which increased action of the system prevails, and that no case of the disease can occur without constitutional disturbance. But whilst we perceive the urgent necessity of abating the increased action in men who had been previously in health, by the means we have stated in our answer to No. 2, we must observe, that persons who are reduced by climate, long voyages, innutritious diet, or scorbutic taint, will not bear the active means required by those of an opposite description. The increased action in them is transitory, and the disease advances from distinct causes: their condition resembles the state of aged persons, suffering mortification from a weak circulation and arterial inaction, who require nutritious diet, wine, and tonics.

“ The state of the others resembles the gangrene arising from an access of inflammation in persons of robust habits, who require abstinence and depletion. To those opinions we have not met any opposition arising among the surgeons of the fleet.

“ We are, &c.

“ _____, }
 “ _____, } Surgeons.
 “ _____, }

“ To the Commissioners for Transports,

“ &c. &c. &c.”

An Account of the Number of Seamen and Marines received for Ulcer at the Royal Hospital at Haslar; and the Number who were discharged cured, were invalided, or died; with the Number of Amputations from the 1st of January, 1803, to the 31st of October, 1815.

Date.	Number received.	How disposed of.			Amputations
		Cured.	Unserviceable.	Died.	
1803	144	109	20	1	16
1804	300	180	40	8	10
1805	369	264	83	5	18
1806	388	308	66	7	7
1807	338	268	59	12	9
1808	292	234	38	4	12
1809	244	197	43	8	8
1810	276	240	52	8	12
1811	197	153	44	3	1
1812	268	202	24	1	..
1813	302	251	38	3	2
1814	318	196	60	4	5
1815, } 1 Jan. to 31 Oct. }	286	23	32	3	..
Total	3,722	2,808	599	67	100

599 unserviceable.

67 died.

218 discharged by the pleasure of the Admiralty, as Englishmen or Foreigners, during the war and since the peace, by an order of their Lordships, which admits of voluntary retirement.

“ Royal Hospital, Haslar, 29th Dec. 1815.

“ GENTLEMEN,

“ Every effort has been made to convey the information which the commissioners have desired, in their letter of the 20th instant, by an examina-

tion of all the records in the possession of the agent as well as the surgeons, but the columns relating to foreign service, in the form sent with your letter, cannot be filled, as the list of men admitted into the hospital does not describe from whence these ships arrived; and if a statement were to be transmitted from an exertion of recollection, we apprehend that it would not be satisfactory: the enclosed form will convey all the information we have been able, by reference, to obtain.

“ The malignant ulcer, which makes the subject of this report, has been declining in the navy in a degree proportionate to the improvement of the medical arrangements; and at present is a disease, in our opinion, under such control as to be of little importance.

“ The decline of the disease, however, is not so apparent in this account as it would be in a report from any other hospital for invalids; men incurable in foreign hospitals, and cases of ulcer from a variety of causes, arriving from distant stations, are generally received here, and efface the improvement on the home stations which would otherwise be apparent. At the close of every month, the prescription tickets of the patients discharged in any way from the books of the hospital are deposited in the different medical departments, for the advantage of occasional reference; and by an examination of them, from the commencement of 1809, we have been able to

give the number of amputations in that and the following years, to the present time; but, during the preceding six years, the prescription tickets of all the men who died, or suffered operations, were forwarded to the board by an existing order, which was superseded by the new regulations, and we are, therefore, only able to insert the cases that were of such a nature as to induce the surgeons in those years to retain copies of the tickets. The number of amputations, therefore, during the first six years, must be greatly below what we should return if we had not transmitted the tickets to the board; and there is no other record that we can refer to.

“ We are, &c.

“ ——— ———, } Surgeons.
“ ——— ———, }

“ To Commissioners for Transports.”

“ Royal Naval Hospital, Plymouth, 8th Nov. 1815.

“ GENTLEMEN,

“ In reply to your letter of the 3d instant, we do ourselves the honour of sending you the following answers to your queries, and also the list, as directed by your letter of the 4th.

“ ‘1st. To what cause do we ascribe the decline of ulcer, formerly so prevalent and destructive in the navy?’

“ To the nature of the disease being better understood; and to the court-martial which took place on the surgeon of the *Salvador del Mundo*, in 1807, on the subject of this ulcer, which

thereby excited greater attention and care in the prevention and treatment of it throughout the service.

“ ‘2d. Does the general treatment of ulcer now, on board of ships or in the hospital, differ in any material degree from the method understood to have been recommended by the late Sick and Hurt Board?’

“ ‘Totally different, as we understood, for the plan laid down by the late Sick and Hurt Board never was sent to us.

“ ‘3d. If any change of treatment has taken place, what is the nature of such change ; and to whom do you ascribe the merit of it?’

“ ‘In treating the malignant ulcer (which before was considered and treated as arising from a debilitated and vitiated habit) as a highly inflammatory and infectious ulcer ; and we ascribe the new and very successful treatment to Dr. Baird, the inspector of hospitals, as we stated in our observations on this ulcer transmitted to the Transport Board on the 31st August, 1807, to which we beg leave to refer.

“ ‘4th. Whether we consider the malignant ulcer as a malady in which increased action of the system prevails, or the reverse ; and what we understand to be now the general opinion of surgeons in the navy in this respect?’

“ ‘We consider the malignant ulcer to arise from increased action in the system, as we stated in our report above alluded to,—and which is the general opinion of intelligent naval surgeons

on this point; indeed, so thoroughly satisfied are we of the efficacy of the plan and mode of treatment, that we are of opinion, if the surgeon's efforts and recommendations are properly seconded by the commanding officer on board, that the malignant ulcer can never make any progress but through the surgeon's neglect and ignorance.

" We have, &c.

" ——— ———, } Surgeons.
" ——— ———, }

" To the Commissioners for Transports."

A Statement of the Number of Cases of Ulcer received into the Royal Hospital at Plymouth between 1st May, 1803, and 31st March, 1815; and shewing the Result.

When received.	Number received.	Discharged cured.	Invalided.	Dead	Run.	Amputations.
1803	87	81	3	3	..	..
1804	621	542	38	19	..	12
1805	377	271	68	9	..	25
1806	505	394	50	23	..	33
1807	346	333	39	8	..	18
1808	223	160	41	5	..	2
1809	220	139	45	..	..	3
1810	226	189	45	1	1	3
1811	149	121	46	..	..	..
1812	149	128	23	2	..	..
1813	208	175	27	5	..	2
1814	202	135	58	2	..	..
1815, between 1st Jan. and 31st March	30	23	13	..	..	..
Total	3,343	2,691	490	77	1	98

“ Royal Naval Hospital, Deal, 9th Nov. 1815.

“ GENTLEMEN,

“ In answer to the questions contained in your letter of the 3d inst., I have the honour to return the subjoined replies.

“ ‘ 1st. To what cause do you ascribe the decline of ulcer, formerly so prevalent and destructive in the navy ?’

“ To the greater cleanliness and attention to ventilation in his majesty’s ships and vessels than formerly ; to the more regular supplies of vegetables, combined with the introduction into the service of that highly valuable preventive and remedy, lime-juice ; to the superior dryness of the atmosphere in the between decks and tiers, from the decks being less frequently washed ; and to the very general practice, in late years, of whitewashing : for a humid atmosphere appears to me to be the most favourable to generate contagious diseases, or to disseminate any morbid poison among men, particularly in a crowded situation.

“ ‘ 2d. Does the general treatment of ulcer now, on board of ship or in the hospitals, differ in any material degree from the method understood to have been recommended by the late Sick and Hurt Board ?’

“ I am not sufficiently acquainted with the treatment of ulcer, as recommended by the late

Sick and Hurt Board, to make any comparison between it and the plan now adopted.

“ ‘ 3d. If any change of treatment has taken place, what is the nature of such change; and to whom do you ascribe the merit of it?’

“ I have remarked, during the last few years, that the depleting plan has been more pursued by surgeons in the navy than formerly, and I think with evident advantage in the generality of cases, and the plan of treatment with bark and wine has consequently fallen, in a great measure, into disuse. The precautions recommended in the late instructions respecting the confinement of every patient to the use of his own sponge, and the immediate immersion of the foul bandages into boiling water, I consider to have been of general utility.* The introduction into the service of the depleting plan of treatment having been gradual, I cannot possibly ascribe it to any particular individual. I am, however, from personal observation, enabled to remark, that the service in the Baltic, in the year 1801, owed much to Dr. Baird, then physician to the fleet, for his indefatigable exertions in eradicating this malady from among the seamen; and I have been informed that he was equally successful when

* My friend, Mr. Bampfild, has informed me, that, in one of the ships in which he served, great advantage was derived from dipping the sponges and bandages into dilute sulphuric acid after each had been used.

employed in the fleet off Ferrol, under the command of Sir Alexander Cochrane.

“ ‘ 4th. Whether do you consider malignant ulcer a malady in which increased action of the system prevails, or the reverse ; and what do you understand to be now the general opinion of surgeons in the navy in this respect ?’

“ I have been long confirmed in the opinion that malignant ulcer, such as we are accustomed to see on board ship and in naval hospitals, is a disease in which increased action of the system always prevails in the first instance ; and I believe such now to be the general opinion of surgeons in the navy. I draw this conclusion, first, from the results of the treatment by bark and wine or by depletion, the latter having proved so much more successful in my practice ; and, secondly, from having remarked that this malady has appeared to be more general among new raised men, and particularly those who have been accustomed to subsist almost entirely without animal food previous to their entrance into the service, and who, from this sudden change to stimulating diet, became predisposed to inflammatory actions : the truth of this remark was exemplified in the malignant ulcer that broke out on board the Chatham 74, in 1812, a new ship, run up in great haste, and possibly with unseasoned timbers. The crew of this ship consisted partly of new-raised men, several of them from Ireland, who had not been at sea before ;

and it was remarked, both by Mr. Leslie, the intelligent surgeon of the ship, and myself, that the disease appeared chiefly among those men, and but in a very few instances among the older seamen. There were too old seamen, indeed, belonging to that ship, Smith and Hodgskins, who had ulcers on their legs of some standing, that, to the best of my recollection, totally escaped the contagion; but among the other class the *slightest scratch* degenerated into it.

“ REMARKS.

“ I beg permission to make a few observations on the treatment of this destructive malady, as pursued by me in this hospital.

“ In 1809, his Majesty's ship York arrived from the West Indies, and landed about forty cases of this ulcer, of whom *five* died from gangrene before they were a week in the hospital; others had the whole of the foot and lower part of the leg destroyed, and most of them at the same time were labouring under dysentery or diarrhœa: some amputations took place; the stumps, however, mostly did well; and I remarked that the dysenteric and diarrhœal symptoms left those patients operated upon with great rapidity, by the usual treatment, when the absorption of the putrid and contagious matter was cut off by the removal of the limb.

“ I consider it of much practical importance not to delay an amputation under these circum-

stances, with the view of first endeavouring to subdue the bowel affection; for in far the greater proportion of cases it will not be accomplished so long as absorption of the diseased parts is going on, as these symptoms will most probably be found to arise from that cause.* Immediately on the admission of a case of contagious ulcer, I make it an invariable rule either to apply leeches to the circumscribed inflammation surrounding the ulcer, or to make deep scarifications on the inflamed skin, of about an inch in length, similar to those I have recommended in the treatment of erysipelas phlegmonoides. After this I pour *undiluted* lime-juice over the *ulcer* and *incisions*, sprinkle the surface of the ulcer with Peruvian bark, and doubling a piece of lint, well moistened in the same acid, I lay it over the parts, and pass a bandage loosely round the whole, repeating this dressing twice or three times a-day.

“ At bed-time three grains of submuriate of mercury is administered, and the following morning a saline cathartic; the former is continued for some days every evening, and the latter repeated every third or fourth day. An opiate is also prescribed when the constitutional irritation is great: lemonade is given as common drink; and, when the attending fever runs high, antimonials are found useful. Under this treatment, in *eight and forty hours* the areolar inflammation

* See page 91.

begins to disappear, and the slough from the diseased parts is thrown off, leaving a clean healthy ulcer, but most commonly with the bone exposed, if the ulcers have been situated near it.

“ The wounds of many of the soldiers from Waterloo, and placed under my care, took on this malignant action; but, under the treatment above described, they soon recovered a healthy appearance, without one exception.*

“ I have the honour to be, &c.

“ ———, surgeon.

“ To Commissioners for Transports, &c.”

—————
“ Plymouth Dock, 12th November, 1815.

“ GENTLEMEN,

“ Agreeably to your board's directions, expressed in your letter of the 3d instant, I accordingly transmit herewith replies to the queries contained in that letter.

“ I am, &c.

“ ———,

“ Late physician to the Channel fleet.”

The questions having been already three times mentioned, it is deemed unnecessary again to repeat them.

* All the soldiers admitted into the naval hospital at Deal under my care, and who were wounded at Waterloo, were discharged cured, with the exception of two, or at most three, who were convalescent when the naval hospital was reduced, on the 31st Dec. 1815. See page 6.

“ To the nature of the disease being now better understood, and, consequently, the more successful treatment of it.

“ It does very materially.

“ The mode of treatment now and for several years successfully adopted, differs from that understood to be recommended by the late Sick and Hurt Board in the medical and surgical treatment, and in the diet of the patients. In adverting to the change of treatment in a medical point of view, it will be perhaps sufficient for me to state, that it now consists of, in the first stage of ulcer, depletion, by bleeding and purgatives, an antiphlogistic regimen, &c. ; the mode of dressing the ulcer is now calculated to obviate pain; and every irritating application, excepting in some particular cases, is carefully avoided: no animal food, or stimulating beverage, is allowed a patient until every symptom of constitutional disorder has subsided, and that the ulcer assumes a clean and healing disposition. In my answer to this question, I have submitted to your board the result of 14 years' experience in the nature and treatment of ulcer, and of 10 years' experience and successful practice, uniformly adopted, not only in the Channel fleet, but in divers other ships placed under my care (whilst ulcer prevailed among their people) by the different commanders-in-chief at this port; which practice I have endeavoured to diffuse and establish throughout the service: but in preferring my pretensions to some

portion of merit in promoting this satisfactory change, I must conscientiously declare my conviction that it owes its introduction chiefly to Dr. Baird, inspector of naval hospitals.

“ I consider the malignant ulcer to be a malady accompanied with increased action of the (vascular) system, and I believe that the majority of naval surgeons now consider the disease of the same nature as above described.

“ ————,
“ Late physician to the Channel fleet.

“ To the Commissioners for Transports, &c.”

“ His Majesty's Hospital Ship Trent, Cove of Cork,
15th Nov. 1815.

“ GENTLEMEN,

“ I have the honour to acknowledge the receipt of your letter of the 7th inst., desiring I would furnish you with my replies to the four queries therein mentioned respecting ulcers. In answer thereto, I beg leave to reply as follows:—

“ 1st. In my opinion the decline of ulcer, formerly so prevalent and destructive in the navy, is to be ascribed to the improved discipline and regulations adopted in keeping ships dry, clean, and well ventilated, and the better regulation of victualling; as also to the acquired knowledge of medical treatment resulting from naval practice.

“ 2d. I am not in possession of any method of treating ulcer recommended by the late Sick

and Hurt Board, nor can I charge my recollection with ever being furnished with any particular direction from them to that effect. The general treatment of ulcer now on board ships, and in hospitals, I believe principally to consist in confining the patients to bed,—attention to cleanliness (particularly in that of using a separate sponge for each person),—dressing the sores with dry lint, and a piece of the same spread with some emollient ointment over it,—cataplasms, adhesive straps, bleeding and purging : these means, severally applied, according to the age, constitution of the patient, and character the ulcer assumes.

“ 3d. I am not aware of any very late change that has been adopted in the treatment of ulcers. The best method of treating callous indolent ulcers is, I think, unquestionably due to Mr. Baynton, of Bristol.

“ 4th. I certainly consider malignant ulcer a malady depending upon increased action of the system ; and this I believe to be the opinion generally received by naval surgeons.

“ I am, &c.

“ ———, surgeon.

“ To the Commissioners for Transports, &c.”

“ Argonaut Hospital Ship, Chatham, 11th Nov. 1815.

“ GENTLEMEN,

“ I have the honour to acknowledge the re-

ceipt of your letter of the 7th inst., and shall annex hereto my answers to the queries therein contained.

“ To greater attention being paid to the ventilation of his majesty’s ships; to more wholesome diet, &c.; to better clothing, enforcing cleanliness, and attending more to the comforts of seamen.

“ I think it often does : purgatives and venesection at the commencement of the attack, fomentations and emollient cataplasms *every two hours, night and day*, will sooner arrest the progress of the fever and ulcer (for it is always attended with fever); pulse being from 100 to 120, hard and small; tongue loaded, and moist; skin hot; great pain and sensibility of the ulcer, and integuments surrounding it. When I took charge, as surgeon, of H. M. ship Dreadnought, cruizing off Rochfort (1804), I found from 60 to 70 patients in the sick list, chiefly afflicted with the ulcer in question: nearly half of the tibia in several cases was denuded. For several days fresh cases came into the list; but at the end of three or four weeks (on account of a former report of the state of the ship), we were ordered to join the fleet off Brest, and orders for our going into port made out: upon Admiral Cornwallis seeing the number of sick reduced to 17, and all convalescent, he cancelled the orders, expressed his surprise and satisfaction, and thanked me for my successful exertions in restoring the ship’s company

to health. We cruized for seven weeks, and I think had only ten in the sick list upon our arrival at Plymouth; but my journal is before the Board, and may be referred to. I should add, I did not then use *v. s.* so freely as I would now in similar cases.

“ Few surgeons agree exactly on this point, some recommending stimulants, others soothing anodyne and emollient applications; some giving bark, steel, and other tonics, thinking to prevent debility: others, like myself, considering the disease as highly inflammatory, use *v. s.*, purgatives, and soothing applications to the ulcer,—every one, of course, supposing his practice the most rational; it therefore must be facts or proofs produced, as in the Dreadnought, to decide who is right. If fomentations and cataplasms be used, they will do more harm than good, if not renewed every two hours: this duty ought not to be trusted to nurses; either my assistant or myself were always present among the Russians.* Some of the superintending physicians differed in opinion from Dr. Dobson and myself on this point: we conformed to their wishes, and, after all, concluded in favour of the soothing plan, in the sloughing or malignant ulcer now under consideration, many such cases having occurred to us.

“ I have no doubt of increased action prevail-

* Part of the Russian fleet was at this time in the river Medway, and attended by the surgeon of the Argonaut.

ing, and most of the medical officers I have conversed with on the subject are of my opinion; there are, however, some exceptions to this general rule.

“ I have the honour to be,

“ ———, surgeon.

“ To the Commissioners for Transports, &c.”

“ His Majesty's Hospital Ship Batavier,
Woolwich, 21st Nov. 1815.

“ GENTLEMEN,

“ I beg to submit the following replies to the queries put in your letter of the 7th instant.

“ To the greater care and attention of surgeons to the men on the slightest appearance of ulcer; the disposition of men in sooner having recourse to the surgeon; a superior cleanly mode of dressing; the comfort and rest of the sick birth; washing the decks less frequently; the better clothing and victualling of the navy; the liberal supplies of lemon-juice, medicines, and necessities.

“ I am not aware of any material alteration in the treatment of ulcers except what is answered in query 1st; and perhaps I may add, a more particular attention to the bowels, and the anti-phlogistic treatment, where fulness or local inflammation exists.

“ Mr. Baynton's mode of dressing, recommended by Dr. Magennis and the late Sick and

Hurt Board, I estimate as the greatest improvement in the treatment of ulcer: since its adoption, which I believe to be general, the healing of ulcers has been accomplished in half the usual time; a better cicatrix is made, and consequently more security for the future obtained.

“ My opinion on this question is, that in malignant ulcer, either an increased action of the system, or the reverse, may prevail, dependent on the state of the habit, the temperature of the atmosphere, and particular customs, in some ships. I am not sufficiently informed of the opinions held by surgeons of the navy.

“ REMARKS.

“ Having answered the queries you were pleased to require, and herewith enclosed, I cannot help adding a few remarks, and particularly on the effects which the temperature of the atmosphere has on ulcer.

“ In a dry, warm temperature, ulcers heal rapidly, even under the same unfavourable circumstances in respect to habit and diet, which if cold and moist, would be directly the reverse. Thus, even in the hospital, in the cooler months, ulcers are more difficult to heal. In the wards of this ship, which are very warm and dry, ulcers heal with more rapidity than I have ever seen them do on shore, particularly in winter.

“ When surgeon of the *Leopard*, in the Red Sea, in 1801, at Suez, ulcers became very numerous

and alarming in the squadron of the late Admiral Blanket. I was sent, intrusted with upwards of a hundred of these men, in a deplorable state, more or less labouring under ulcer, particularly effecting their extremities, on board of an hospital ship, for the purpose of proceeding down the Red Sea to Mocha, and there landing them.

“ The climate of Suez, where we then were, though hot in the day, was cold at night. As we approached Mocha, a warm, dry climate, without the aid of diet, most of these men, whose ulcers were large, foul, sloughing, even to gangrene and mortification, painful and rapidly spreading at Suez, very soon became easy. The foul parts were thrown off. In forty-eight hours, healthy granulations began to appear. The dressings were only either simple or rice poultices, nearly all the remedies I had in my power to bestow, and the diet nearly such as they had before. This favourable change could only be attributed to the change of temperature. A short residence at Mocha, a very dry, hot climate, rapidly healed many, and universally produced the most favourable effects. But these advantages were lost by the men being again conveyed and landed at Bombay, a moister, cooler climate, where they were removed from under my care. Since that time, I have frequently seen the same effect from the state of the atmosphere in the Mediterranean, and particularly at Malta.

“ I believe the above circumstances will be

found of much importance, and will pretty often account for the frequency and malignancy of ulcer in particular ships and places.

“ I am, &c.

“ ———, surgeon.

“ The Commissioners for Transports, &c.”

—————
“ His Majesty’s Hospital Ship Sussex,
Sheerness, 14th Nov. 1815.

“ GENTLEMEN,

“ The following are my answers to your queries of the 7th instant.

“ To the liberal use of citric acid during long voyages or cruizes; to the judicious directions laid down in the 12th and 14th articles of the surgeon’s general instructions in case of ulcers becoming prevalent in ships; to the improved system of cleanliness introduced into the navy with respect to the men, as well as that of the ship; also to the better clothing, victualling, and ventilating.

“ I am not acquainted with any instructions given by the late Sick and Hurt Board respecting ulcers.

“ Citric acid, and various other stimulating dressings, are now generally applied to foul ulcers, in lieu of poultice and fomentations, which are, of course, applied in all cases attended by inflammation, which is ever met with when the patients have been long in harbour, and indulged in the use of ardent spirits or excess of any kind. I am

indebted to Dr. Weir, inspector of naval hospitals, for his instructions to me thereon, in 1807, which improved mode of treatment I have followed with the greatest success in the East Indies and Cape of Good Hope; and, during the two years that I have been surgeon to this hospital ship, I have received 140 patients with ulcers, all of whom I have discharged cured.

“ I am of opinion that there is a decreased action of the system previous to the commencement of ulceration in all those ulcers received from ships after long cruizes or voyages; and I agree with the naval surgeons now at Sheerness, that when commenced after the indulgences and irregularities mentioned in my third answer, there is, without doubt, an increased specific action, attended with symptomatic fever.

“ I am, &c.

“ ——— surgeon.

“ The Commissioners for Transports.”

On a perusal of these reports, it will be observed, that the writers do not all confine themselves to hospital gangrene, which is more especially the subject of this Chapter, but that some of them have considered ulcer in its more extended sense. I have nevertheless deemed it advisable to give their statements precisely as they were received, without making any selection.

I have stated at page 200, that Dr. Hennen of the army, in his paper published in the Medical

Repository for March 1815, was the first in this country to give a very accurate account of the character, rise, progress, and destructive effects of hospital gangrene, from the great experience he gained among the military hospitals in Spain; but in saying so much, it was not my intention to withhold from the surgeons of the navy their due share of merit; for the disease will be found to be described with tolerable accuracy in the second and third volumes, 2d edition, of Dr. Trotter's *Medicina Nautica*, by various naval medical officers, as also in a distinct Essay by Mr. James Little, of the same service; all nearly twenty years antecedent to the appearance of Dr. H.'s paper on the subject. But my friend Dr. Gillespie, physician to the fleet, preceded them all in noticing this disease, while serving at a naval hospital in one of the Leeward Islands, first in the year 1785, and again in 1800; and who, according to my judgment, has pointed out one of the best modes of local treatment.*

Mr. John Bell's description of it, already adverted to, ought also to be here noticed; but it appears that the only cases of the disease this able writer ever saw, were in the naval hospital at Yarmouth, after Lord Duncan's victory.—See page 12 of this work.

The causes that have hitherto engendered and

* See Dr. Gillespie's work, entitled "Observations on Putrid Ulcer," &c.

propagated this destructive malady, and their prevention or eradication when once engendered, have been so fully entered into, at least as far as is at present known, by the official documents and previous remarks, that there does not appear to me to remain one single fact to add to this part of the subject. It now only remains, therefore, that I should give an abstract or summary of the treatment of hospital gangrene as recommended and pursued by the different authors quoted in this chapter, for the guidance of the young medical officer in the king's service.

Dr. Gillespie recommends undilute citric acid, or lime juice, as a local application to the ulcerated or diseased part; and his medical treatment, consists chiefly of a perspirable skin, free alvine evacuations, and pure air.

Dr. Hennen had first recourse to emetics and occasional purgatives, taking care, at the same time, that the skin was kept perspirable, if possible. He states afterwards, that he found venesection, and an antiphlogistic regimen, introduced by staff-surgeon Bogie, the best treatment.

In the local treatment, he used large fermenting poultices over the sores; and if great tension and inflammation of the limb existed, cloths dipped in saturnine solutions were applied, and the more irritable ulcers were dressed with lint moistened in tinct. opii, or camphor dissolved in oil, or a paste of camphor and opium. Where the fetor was very great, levigated charcoal or pow-

dered bark was employed, or, as he says, at last diluted nitric or citric acid were applications from which he derived some assistance.

The sores were kept clean, and exposed during dressing to the fumes of nitrous acid gas. The walls, roofs, and floors of the wards were daily whitewashed, and he preferred tow for washing the sores to sponges, because it was not used twice.

Mr. Blackadder recommends the local use of solutions of arsenic, such as Fowler's, or the liquor arsenicalis of the London Pharmacopœia, and condemns the arsenical paste of the French surgeons. He strictly enjoins cleanliness of the person, and also that of the ulcer: over the latter he pours a tepid solution of the subcarbonate of potass; and the solution of arsenic, he says, is to be diluted with an equal quantity of water, or in recent cases more dilution will be necessary, and a piece of lint moistened with this solution is laid over the ulcer.

This practice of dressing should be continued until a dark-coloured and dry slough occupies the whole surface of the sore, and until the patient is relieved from the burning and lancinating pain which is characteristic of the disease: afterwards, as the slough is being thrown off, the sore is to be dressed with an ointment composed of ol. terebinth. and unguent. resin. flav. in equal proportions, and poured over the parts as hot as can be borne.

This dressing is to be repeated two or three times a day, carefully washing the sore with the solution of potass, and covering it afterwards with a piece of dry lint, and passing a bandage. Common dressings and a well-applied bandage are to be used when the ulcer is clean and free from sloughs.

Mr. B. does not seem to place much confidence in depletion, excepting when circumstances point out its necessity. After long-protracted disease, a nourishing diet and cordials, with opium, are recommended. The bowels at all times to be particularly attended to.

Mr. Welbank recommends the local application of undilute nitric acid to the ulcer, after having washed the parts and removed as much of the loose slough as can be done with convenience; and, according to his statement, this practice has been uniformly successful. He protects the neighbouring skin with a thick coating of lard or cerate; he then proceeds to press steadily, for some minutes, a thick pledget of lint, previously immersed in the undilute acid, on every point of the diseased surface, till it appears converted into a firm and dry mass, and the parts are afterwards covered with simple dressings, and evaporation kept up externally by cooling lotions.

The medical treatment he suggests is precisely the same as that generally employed—venesection in the early stages of the disease, purgatives and opiates to allay local irritation.

Report made by MM. Portal and Deschamps, to the First Class of the Royal Institute of France, on the Subject of a 'Mémoire' by M. Delpech, Professor at the Medical School, Montpellier, on the Moist Gangrene (la Gangrène Humide), or Hospital Gangrene (Pourriture d'Hôpital).

It is known that gangrene is actually the death or mortification of a part of a living body ; and it may be divided into moist or dry gangrene (*gangrène humide, ou gangrène sèche*), and into what is termed hospital gangrene (*pourriture d'hôpital*).

There is no reason to suppose that hospital gangrene is an entirely new disease, unknown prior to the seventeenth century. No mention, however, is made of it by any ancient writer, as far as our researches have enabled us to ascertain. Yet it is evident from Lamotte's observations,* that he was acquainted with it, as he speaks of the grangene of the *Hôtel Dieu* at Paris, but merely adverts to it as an ordinary disease. It is certainly not a little astonishing that our army surgeons should have taken no notice of it in their writings : even Belosti says nothing on the subject ; and M. Larrey,† in his work entitled "*Chirurgie Militaire*," merely points out its existence. But that which is still more surprising is, that the celebrated Quesney, in his "*Traité*

* Lamotte, tom. iii. p. 75. edit. 1722.

† Larrey, tom. ii. p. 223.

sur la Gangrène," does not notice it at all. There is every reason therefore to suppose that this disease has been confounded with the *gangrène humide ordinaire*, particularly in our hospitals.

Pouteau appears to us to have been the first writer who has distinguished this species of gangrene from all the others, in a learned treatise (*mémoire*) which is included in the third volume of his posthumous works. This eminent surgeon, who examined it with considerable attention, has established its diagnosis by those indications which he has there pointed out, and which particularly characterise this disease;* and he would doubtless have perfected his work on the subject, had circumstances permitted him so to do.

"Persuaded," he says, "of the incompleteness of my observations and reflections on a dis-

* "It is now more than forty years ago since I first detected this disease in the *Hôpital de la Charité* at Paris; where the wounded patients who occupied the beds (from eight to ten in number) adjoining the ward in which were those who were either attacked by fever and in a dying state, were almost invariably afflicted with *pourriture d'hôpital*; yet, from the precautions adopted, it was rarely attended with fatal consequences." For the last twenty years, this word having during that time been applied to other purposes, the disease has not been observed. It was about the same time that M. Dussosoy, surgeon at the *Hôtel Dieu* at Lyons, published a pamphlet on the same subject, in which he treated more particularly of the modes of cure. M. Boyer, in an excellent work which he has lately published, entitled "*Sur les Maladies Chirurgicales*," has noticed this disease as fully as it was possible to do in a general treatise.

ease that has till now occupied the pen of no medical writer, although they are as perfect as my own personal researches have been able to render them, let me be permitted in this place to call upon the surgeons of our large hospitals to supply my own deficiencies, and to correct the errors into which I may have fallen. Engaged in attendance by the bedside of my patients, I have no longer the leisure to make myself the necessary corrections; and I am well aware how very liable to mistake, and how justly open to suspicion, must be the first essays on a subject which demands the most scrupulous and minute study and examination."

The wishes of this able surgeon are now completely fulfilled by M. Delpech, Professor at the Medical School of Montpellier. For a considerable number of years he has turned his attention to this disease, the opportunities of observing which have, unfortunately, been so multiplied, that he has been enabled to give us a complete work relative to it; and it is of this that we have been charged (M. Portal and myself) to make our report.

It is observed by M. Delpech, in his Introduction, that in the years 1799, 1800, and 1801, when the patients in the military hospital at Toulouse were a prey to this horrible contagion, every effort made to stop its ravages proved ineffectual. So long as the medical practitioners did not venture to deviate from the ordinarily-

received ideas on the subject, no success attended their attempts. Thus the first observations of the author may be dated from 1799. It was not until the last of these years that he was appointed clinical professor at the hospital of Montpellier, where thousands of wounded men, attacked with this disease, were crammed together into the wards—a circumstance that enabled him to study it more minutely, to distinguish its various characters, and to ascertain the best methods of treating it.

M. Delpech's "*Mémoire*" is divided into fourteen sections. In the first he establishes the specific differences that exist between gangrene, properly so termed, and the disease called *pourriture d'hôpital*. The latter depends uniformly upon external causes: gangrene, on the contrary, arises either from a predisposition of the constitution to the disease, or from external causes: in the latter, it is nature that acts; in the former, it is art that has the greatest influence.

In sections II., III., IV., V., VI., the author examines the various species of *gangrène humide* of the hospitals; of which he more particularly points out three, as the principal forms under which the disease exhibits itself; viz., the ulcerous, the *pulpous* (*pulpeuse*), and the third primitive form, which appears to be a variety of the preceding one. To these he adds a fourth, which is rather a morbid state of the suppurating parts, arising from the same causes.

In his VIIth and VIIIth sections, M. Delpech observes, that, unless the case be evidently a complicated one, the symptoms of general disease accompany and keep pace with the gangrene. He marks, as nearly as may be, the precise period at which the patient is attacked, the different gradations of the disease, and the general symptoms which accompany it: he then draws a sad picture of the ravages it makes when left to itself. In almost every part of the body the membranes, the muscles, the vessels, the nerves, and the ligaments, are in a state of decay; nor are even the bones exempt from the same destructive effects.

The IXth section treats of the causes of the disease. These do not appear to the author to arise from any particular state of the atmosphere, as, although the disease was extremely general among the soldiers, with whom all the South of France was then crowded, it nowhere occurred spontaneously among any other wounded men than those who were crammed together into the hospitals. If in any instance it was observed among other persons, it was where the infection had been communicated either by linen, lint, the dressings of the sick, or even by their clothes. It is in this section that the author proves the influence which the contagion had on the typhus, with which numbers of the patients were attacked.

The diagnosis forms the subject of the Xth section; this is different in the case of ulcerated

from what it is in the puffy gangrene: the former is known by the sore daily increasing in size, and extending in every direction, yet without any considerable enlargement of its extremities. When the cellular pimples (*bourgeons*) have lost their fungous character, and assumed a conical form, there is great reason to suspect putrefaction (*pourriture*); and if there be, besides the odour peculiar to suppuration, a continual and sometimes excruciating pain, the functions being hitherto not affected, there is no longer any doubt.

With regard to the puffy gangrene (*pourriture pulpeuse*), even from the very first, and while the sore is still covered with a thin pellicle, the sharp pain which is felt there, and the redness of its edges, are sufficient reasons for suspecting the disease, should there be no other cause to account for such phenomena; and there can hardly be any danger of a mistake whenever these symptoms occur in a crowded hospital, more especially where gangrene had prevailed before in the same place. The diagnosis is much less difficult when the sore is covered with a putrid matter (*pulpe putrilagineuse*), and exhales the offensive smell characterising the disease, &c.

That variety of the *pourriture pulpeuse* (puffy gangrene) which is accompanied by any extravasation of blood in the diseased part, might, at first sight, be taken for the effect of hæmorrhage, were it not that the characteristic smell is in this case more marked than in any other. In the second

place, the disease is attended by intolerably excruciating pains, which cannot be possibly accounted for on the supposition of hæmorrhage, &c.

The XIth section treats of the prognosis. The author here lays it down as a general maxim, that the *pourriture* when left to itself becomes one of the most serious diseases. It may, however, heal spontaneously, or at least remain stationary, and so far be exempt from danger; yet it most generally destroys the affected parts, and may either occasion the loss of a limb, or endanger the patient's life.

Sections XII., XIII., and XIV. point out the mode of treating this horrible disease; and the first explains the local treatment.

The author acknowledges, that, before he had ascertained the contrary by long experience and attentive observation, he regarded, in consonance with the generally-received opinion, *pourriture d'hôpital* as the symptom of an epidemic; but that a more accurate study of the disease, and numerous opportunities of examining it, had corrected this error; for, having carefully watched the disease during three fatal epidemics, he was convinced that it was the result of local contagion. Previously to this experience, the author had employed, in the epidemic of Toulouse, different substances as topical applications, such as Egyptian ointment; citric, sulphuric, and muriatic acid (more or less diluted); the essence of turpentine;

&c. Among these, powdered charcoal seemed to be efficacious only in the *pourriture ulcéreuse*, for he never perceived that it was attended with any advantage in the *pourriture pulpeuse* (puffy gangrene). In those cases, too, where the *pourriture ulcéreuse* (ulcerated gangrene) proceeds by one or more insulated points, the charcoal cannot be applied so as to be in immediate contact with the flesh; and then the fetidity of the sore is only diminished, without being entirely removed:—neither does the pain cease, which is a certain sign of the advance and progress of the disease. The separate ulcerations also continue to extend themselves.

Contrary to the received opinion, M. Delpech has no faith in quinquina (Peruvian bark), which he employed in the Toulouse epidemic. This substance he considers to be merely tonic, and not antiseptic. Persuaded, says he, that the *pourriture d'hôpital* (hospital gangrene) is produced solely by contagion (inoculation), I am of opinion, that the most certain means of arresting its progress is to destroy life in the parts that conceal the contagious matter, and in those also which are on the point of becoming affected by it.

Speaking of the different substances imbued with the spirit of turpentine, such as powdered quinquina (Peruvian bark), and even a paste made of cheese during the fermentation, the author observes, that this mess, or, to use a term which he has underscored, this *masonry*, being

applied to the sore, and attaching itself to the edges of the ulcerated part, acts upon the surface; while, from the *couche putrilagineuse* harbouring the contagious matter, this is imbibed by the absorbing system; and the infectious miasmata, being no longer carried off by evaporation, communicate it to the adjacent parts, and act likewise upon the surfaces from which they are generated; whence second inoculation, if we may so express ourselves, takes place. This remark, which is of the greatest importance, we can here merely point out: it is in the work itself that this and similar observations must be studied.

After having taken a review of the various caustics, and examined their effects, M. Delpech gives a decided preference to the actual cautery in those severe cases where the putrefaction is making rapid progress. We here find the author attacking the seat of the disease with the red hot iron, and even employing the knife, in order to reach the affected parts, or those that are in danger of becoming so, that he may destroy the disease by the application of the cautery.

In the XIIIth section M. Delpech treats of the internal remedies. He considers the internal disorders accompanying the *pourriture d'hôpital* rather as depending on that local affection which disturbs the animal economy, than as a cause contributing to the *pourriture* (gangrene). He allows that the internal affection may itself be a disease, or the tendency to a disease, independent

of the ulcer, against which internal remedies are the more necessary in proportion as the patients shall have been exposed to privations and fatigues, or have the germ of some idiopathic malady. But he is of opinion, that the internal treatment has no effect on the gangrene or *pourriture d'hôpital*.

M. Delpech cites a number of facts that appear to confirm this opinion; yet, as this able surgeon does not prove that the internal treatment generally adopted by medical men is injurious, we think that, before his opinion be implicitly adopted, it ought to be examined by practitioners, and that we ought to await the result. Nevertheless, M. Delpech's observations seem to us to be of the utmost importance.

The XIVth and last section is devoted to the subject of the prophylactic treatment. M. Delpech proposes that the patients who are attacked with the disease be removed into another ward, a method which it was not in his power to put into practice, the hospital of Saint Eloi being quite crowded with unfortunate wretches. He observed, that in those patients who were situated near a window, or exposed to a current of air, the progress of the disease (*pourriture*) was less rapid; as it was also whenever circumstances admitted of their being removed into another ward,—that is, in both these cases the *pourriture* proceeded gradually. In placing, too, at a distance from each other those wounded men who were thus infected, there was

less risk of danger to those wounds which had escaped the disease ; but it is of no service where the disease has actually taken place. M. Delpech positively disapproves of the wards being washed, as he considers it dangerous. He observes, that in a place where there are so many persons labouring under disease and fever, the atmosphere becomes heated, and the water in consequence is quickly evaporated. By this means the air is in the state most favourable to the decomposition of animal matter. Of all the antiseptic remedies (*moyens désinfectans*) to be employed, oxygenated muriatic acid is, in his opinion, the most efficacious. Three or four times a day, the windows being closed, a *capsule guytonienne* (chlorine fumigation) is slowly carried up and down the room several times, care being taken, during the evaporation of the gas, to saturate the atmosphere, so that after the fumigation the odour was hardly perceptible, and a very thin white cloud was visible in the air. Similar fumigations were made around those patients who would otherwise have formed a dangerous focus of infection. Not even the most minute details connected with the subject of salubrity escaped M. Delpech : the linen, the lint, the clothes of the patients, &c., were all the objects of his attention. He was not satisfied with these articles being merely washed ; thinking that the best means of destroying contagion in those substances is to cause them to be steeped in water impreg-

nated with muriatic acid, and afterwards to place them in some distant apartment, and not in the wards, where they would be liable to contract the contagion.

Such is the account we have to render to the Class of M. Delpech's "*Mémoire*," the most extensive and complete work we possess on the subject of the hospital *gangrène humide*. It will be seen that we have suppressed the greater part of the observations and reflections of the author; for, had we noticed all the interesting particulars, our report, already too long, would have equalled the volume itself.

The opinions of M. Delpech will doubtless experience some opposition. With all other medical practitioners, he admits the tonic qualities of quinine; but in observing that its antiseptic virtue is merely a popular prejudice, how many experiments, a thousand times repeated, have been requisite to prove its inutility! Will new experiments be made? New experiments! But who can flatter himself that he will ever have, unfortunately, such opportunities of examining this horrible disease, after thousands of bodies infected with the *pourriture d'hôpital* have been examined through a lens by this learned professor, and his skilful *collaborateurs*, who have shared in his labours and studies?

We are of opinion that M. Delpech's work is deserving of the approbation of the Class; and

that it ought to be inserted in the collection of the
'Mémoires des Savans Etrangers.'

(Signed) PORTAL and DESCHAMPS.

Oct. 31st, 1814.

The Class approves the report, and adopts the
opinions contained in it.

The Perpetual Secretary, Counsellor of State,
Chevalier of the Legion of Honour, and of the
Order de la Réunion.

(Signed) CUVIER.

SECTION II.—*On the Treatment of Ulcers of the
Legs by Strapping.*

IF Mr. Baynton's plan of treating ulcers of the
legs by adhesive straps were as generally pur-
sued in the different London hospitals and dis-
pensaries as it is in the royal naval hospitals on
the coast, I am thoroughly convinced that its
great superiority over every other mode of treat-
ment would soon become apparent, and be more
generally adopted in practice.

The expense of strapping in these institutions
cannot, surely, be the cause of its almost total
disuse; for, when the more speedy recovery of
the patient under this treatment is taken into
consideration, and hence his or her discharge from
the institution the sooner effected, the argument
of expense must necessarily fall to the ground.

In the application of the straps and roller, there has been nothing left for future observation by the ingenious deceased author of the plan; and therefore it were almost useless to repeat, that it ought to be done with great care and attention as to smoothness of application and equality of pressure. But there is one circumstance, which, however trifling it may appear, is yet of some consequence, both as it regards a freedom from pain to the patient, expedition, and an appearance of adroitness in the surgeon, which, I believe, has not been noticed by any writer on the subject. It is the manner of removing the old straps in order to replace them by new ones.

The removal of adhesive straps one after another, by detaching one end, and bringing that end round the circumference of the limb, is a tedious process; and, if the hairs on the sound skin, which may have been shaved in the first instance, have again grown, considerable pain and inconvenience will be produced. In order to obviate this as much as possible, it has been my plan to insinuate or introduce a probe underneath the straps, and in contact with the skin, on the opposite side of the limb to the seat of the ulcer: the straps are thus easily detached from the subjacent parts; and, by gently raising one end of the probe so introduced, a pair of crooked surgeon's scissors, passed in the direction of the probe, will very readily divide the whole at two or three snips of the instrument. The divided ends of the

straps are, as a whole united body, to be then turned off to the right and left, so that the ulcer shall be the last part uncovered, and the new-formed skin surrounding the circumference of the ulcer will thus be left undetached from its subjacent tender adhesions.

The hint I am now offering to the profession may appear to some of so trifling a nature as hardly to merit being recorded; but it has not been so considered, when seen put in practice, by some physicians of eminence in London, one of whom was the patient; and it was at the suggestion of my lamented friend Dr. Baillie, that I now give it publicity.

While on this subject, I deem it incumbent on me to notice thus publicly, with a view to its being remedied in the proper quarter, the very parsimonious allowance of adhesive-plaster that is annually supplied to ships of war: and it is, at the same time, but justice in me to state, that every representation of mine to the heads of the medical department of the navy, which related either to the good of the service generally, or to the comfort of individuals, being seamen or marines, has hitherto been invariably most promptly attended to.

On referring to Form 91 of the Naval-Hospital Instructions, I find that but three pounds of adhesive-plaster are annually allowed to a frigate of the first class; while ten pounds of Peruvian bark is the allowance for the same period and

class of ship, — a tenth part of which is possibly never used; and, on inquiry at a respectable wholesale druggist's, I find sticking-plaster only 1*s.* 5*d.* per pound, while the best bark is 12*s.*

Let us now examine what will be the effect of a more liberal or proper supply of this most necessary article. There is not any class of medical men more zealous and humane in performing their professional duty than the surgeons of the British navy; and it will be admitted, I believe, on all hands, that there is not a class of men who have greater calls on both. To such men, therefore, it must be exceedingly vexatious to be under the necessity of sending to an hospital patients labouring under ulcer, who might as well be cured on board, if the surgeons were sufficiently supplied with the means; and the effective exertions of such men would be thereby equally preserved to the service as if no disease existed; for it will be readily conceded, I imagine, by those best acquainted with the treatment of ulcer by strapping and a well-applied bandage, that such patients are, generally speaking, as competent to perform the duties of their office whilst under this treatment, as if they were free from disease. Ships of war would not then be deprived of active hands at a period when they are most required, and cannot be replaced, and the country would be spared the expense of an hospital treatment.

Again: suppose a ship to be called into action with the enemy, and amputation performed on

one or more men,—how distressing would be the situation of the surgeon, who might almost as well be without instruments—(his head, I was about to say)—as without adhesive-plaster! Had our gallant little squadron, after the battle of Algiers, not gone immediately to Gibraltar, where they were so kindly received and liberally supplied with this necessary article, among others, by the army medical officers of the garrison, I can hardly conjecture what would have been the result to the unfortunate sufferers on that occasion.

Ulcers form a great majority of the cases that fall under the treatment of naval-hospital surgeons, from the cause above adverted to; but, during the several years that I filled the situation of surgeon to men-of-war, previous to being appointed surgeon to Deal hospital, I find, on a reference to notes, that I had only sent four cases to hospitals; namely, one case of compound fracture of the thigh, one of fractured cranium, one of dysentery, and one case of gun-shot fracture of the leg. Ulcers occurred in the ships of which I was surgeon, as well as in other ships; but I pursued Baynton's plan of treatment, and procured plaster at my own expense to follow it up with; and this I believe to be the reason why no patients of this description were ever sent to an hospital from the ships of which I had the professional charge.

From the numerous accidents the toes are exposed to on board ships of war, ulcerations on these parts, and particularly on the elevated mar-

gin that surrounds the nails, are very common, and sometimes very difficult of cure : and I notice the subject merely to mention, that in my practice, the best application to such ulcers has been copper-filings sprinkled over the surface of the ulcered parts, and down between the nail and adjoining soft parts, which is most frequently the seat of this ulcer.

Where the bone or the joint has not been affected, I have never seen this application fail in effecting a cure in a very short time. The practice was first mentioned to me by Mr. Jamieson, a very old naval surgeon, and from what source he had it, I was not informed ; but that it has acted almost as a specific in my hands, is most certain.

CHAPTER V.

OBSERVATIONS ON IMPERFORATE ANUS,
ILLUSTRATED BY CASES.

ON referring to the works of surgical writers in all ages up to the present, so little has been found on the subject of imperforate anus, and so few cases recorded, as well as the more frequent occurrence of this *lusus* than has been generally believed, that I deem it a duty I owe to the profession, to lay before them such observations on this subject as the result of my experience in the treatment of some cases that have fallen under my care will enable me to do, and which occurred principally in my practice at the Westminster General Dispensary. I am the more induced to the performance of this task, because I know of no case on record, where such a depth of substance was cut through in this operation before the gut was penetrated, as in one of those I am about to describe, and which terminated favourably.

There can be little doubt, from the paucity of information on this subject, that many infants, labouring under this defect, have perished from the want of timely surgical assistance, owing, in some instances probably, to the neglect of the midwife or nurse; and, from what we have noticed, there is but too much reason to believe, that there are among such persons some who would rather

sacrifice the life under their charge than that their own ignorance or neglect should be exposed : but, happily, the practice of employing medical men at this important crisis has, within the last forty years, been so progressively increasing, among all classes of society, that little may henceforward be feared from such a cause ; and it is not improbable that this very circumstance, the general employment of women, may, in some measure, account for the few cases of this description that appear to have occurred to the older practitioners in surgery.

No accoucheur ought to be satisfied at the birth of a child, that such child is perfect in this respect, without the most minute examination ; and he should, moreover, during the first day or two, satisfy his mind most fully, by an examination of the excretions as well as of the parts, that such is the fact ; or he cannot stand acquitted either in his own conscience or in the opinion of the public.

If a case of imperforate anus be discovered immediately after birth, the surgeon, we conceive, ought not to operate until after the expiration of from twenty-four to sixty hours, and not later, if possible ; but by this rule it is not meant to imply that the operation may not be done with perfect safety and success at a later period ; but merely that the time specified appears to us to be the most proper ; for within this period no great inconvenience can arise ; and it is absolutely neces-

sary that the rectum should be somewhat distended with meconium when the operation is performed; otherwise the instrument, coming in contact with an empty gut, may divide two or three of its folds, and thereby do all the mischief we would wish to avoid: besides, a proper distension of the gut is essentially necessary, with a view to the success of the operation; and hence it ought not to be attempted until the expiration of the time specified after birth, when the rectum may be supposed to be well distended.

It will be of considerable importance in these cases to ascertain, if we can, before the operation is commenced, what may be the probable distance of the "cul de sac" of the gut from the surface, because our prognosis will be chiefly influenced by this circumstance; and I think, generally speaking, where the usual hollow between the nates exists, and the natural situation of the anus is well marked by a depression, the intestine will be in proportion near; and where these do not exist at all, the chances are that it is at some distance; but I do not mean to lay this down as a decided rule for the contiguity or distance of the gut from the surface. I am also strongly inclined to believe, from observation, that in such cases where not any hollow or mark at all exists, the sphincter muscle will in them be found to be wanting.

There is one other mode, however, by which I have been greatly assisted in coming to a just

conclusion on this point ; namely, that when there is reason to believe the intestinum rectum is distended with meconium, and the surgeon gently tickles the natural situation of the anus with the point of his finger, the infant will strain as if to force out its contents, and thereby produce a protrusion at this part, which will be conspicuous or felt in proportion to the contiguity of the gut ; unless, indeed, it terminate very high up, and in which case there will be no protrusion of the parts whatsoever.

The operation to make an artificial anus under such circumstances being determined upon by the surgeon, and the consent of the parents obtained, the next consideration will be the manner of performing it.

The infant should be placed upon a table, close to its edge, and having its legs and thighs kept up by an assistant, nearly in the same manner as in the lateral operation for the stone ; and, if the child be a female, it may be an advantage to pass a director up the vagina, as recommended by Mr. Mantell of Dover,* which will be a guide to the operator, and lessen the chance of his wounding either the vagina or uterus. The surgeon, sitting on a chair before the patient, or with his right knee upon the floor, should make an incision, with a small double-edged

* See Memoirs of the Medical Society of London, vol. iii. p. 389.

scalpel, nearly an inch and a half in length, in the direction of the raphe, provided the gut intended to be cut into be supposed to be at some distance, and immediately upon the situation of the natural anus, taking care to cut upwards and backwards, towards the hollow of the sacrum, lest the bladder of the male or uterus of the female be injured by the instrument—the forefinger of the left hand being occasionally introduced into the wound as a further guide to the direction of the incision; and, after having cut to the depth of about an inch and a half with the scalpel, which will be as deep as can be done with safety with this instrument, and there is no appearance of meconium, we should then lay aside the scalpel, and recommend the introduction of the point of a middle-sized common trocar to the bottom of such incision.

This instrument should be then pushed gently upwards and backwards, inclining rather to the left of the hollow of the sacrum and natural descent of the rectum, as far as the surgeon thinks it prudent, or until he imagines, from a want of resistance to the force employed, that he has penetrated the gut: at the same time that pressure downwards be made by the hand placed upon the abdomen; when the stilette is to be withdrawn, and the contents of the bowel may, possibly, flow through the canula. If, however, on withdrawing the stilette, the surgeon finds he has been deceived, and that no meconium

follows its removal, the latter instrument must be re-introduced through the canula, and the triangular point of the instrument forced further upwards, in the direction before stated, as far as will be consistent with safety: the stilette is now again to be withdrawn, when most probably the meconium will follow it.

This being effected, and the intestine emptied, I should recommend the canula to be retained in the parts for the first two or three days, securing it in its situation by tapes and a napkin, taking care to direct the nurse, in removing the latter, not to disturb this instrument; for I am strongly inclined to believe that many instances of failure in this operation have arisen from not attending to this circumstance, and not preserving a continuity for the excretions between the punctured gut and the external parts for a sufficient length of time.

Should the instrument, however, not have reached the intestine, even after the surgeon has penetrated as deep as was consistent with prudence, and there being no hæmorrhage, I do not conceive that any surgeon, competent to the operation, will stand acquitted to his own conscience, in leaving an infant to perish, because he may happen to have failed in penetrating the intestine in the manner we have endeavoured to describe. It will then, in this case, become the duty of the surgeon to mention to the father the failure of the usual operation, and to suggest to him, for his

consideration, that there is still one other resource which may possibly save the life of his child, although attended with more danger than the last-named operation, and with greater inconvenience in after-life, should his child survive, viz. to make an incision into the *cæcum caput coli*, as recommended by some writers, or perhaps more advantageously into the sigmoid flexure of the colon.

To advert to the operation I have performed in making the artificial anus: after the canula of the trocar has remained in the parts one or two days, according to circumstances, such as the excitement of pain or irritation, I should recommend its removal by passing through it the largest-sized hollow elastic bougie which the canula will admit, and then to withdraw the canula over that instrument; by which means the continuation between the gut and external parts will be preserved; and when the cause for its removal has somewhat subsided, the silver canula may be re-introduced, if necessary, by passing it over the bougie, either instrument being properly secured, as before mentioned.

After some days have elapsed, the hollow instruments may be laid aside, and a sponge tent used, to keep the newly-made anus from contracting in diameter. I have used both old and recently-made sponge tent; but the result of my experience confirms the observations of Mr. Benjamin Bell, that the common bougie is the best

instrument, increasing it in size according to circumstances; sponge tent and gentian root producing too much irritation: and, on this subject, I have but one more remark to make, which is, that, however it may be necessary to increase the thickness of the bougie employed, its *length* of introduction ought gradually to be diminished after the first fortnight, until the instrument be reduced to one inch; for, in this particular, I think I erred in the case of James Smith, afterwards to be detailed. I have some reason to believe that, in this case, had I used bougies instead of sponge tents, gradually reducing them in length at an earlier period, as before stated, the communication between the rectum and urethra might possibly not have existed, for no such communication was noticed until about three months subsequent to the operation.

After the child is about a month old, I should advise the removal of whatever instrument is used during the night, and to keep it in its place only through the day; and after two months, if the shortened instrument, as above described, be permitted to remain in the parts for an hour or two, merely by way of keeping the newly-formed canal sufficiently pervious, until complete cicatrisation of the parts be supposed to be effected, it will be all that is necessary; but after we are assured that the newly-formed canal is completely cicatrised, the introduction of any instrument whatever may be injurious.

In all, four cases of imperforate anus have

fallen under my care at the Westminster General Dispensary, during the last seven years; but as notes were not taken of any of them except of the last, it is hoped that a short notice only of the three former will be required.

The first case was a male child, only one day old when brought to the Institution by the attending midwife; and as the gut visibly caused a protrusion of the parts, when gentle titillation was made over the situation where the anus should have been, which was well marked, the point of a lancet was introduced about the eighth of an inch or upwards, which entered the gut, and was sufficient to liberate the contained meconium. This opening was afterwards enlarged with a bistoury: a small piece of lint, dipped in oil, was now introduced, to prevent the sides of the incised wound from again uniting; and the infant was discharged, cured, in about three weeks, with a well-formed anus.

The second case, likewise a male child, was, as to external appearances, so precisely like the last, which I am about to detail at more length, that I shall only state its unfavourable termination, about thirty-six hours after an unsuccessful operation with the scalpel and trocar, in the presence of Messrs. Chevalier and Thomas, and from which there was some bleeding, but which was stopped by the introduction of a dossil of lint dipped in oleum terebinthinæ.

A third case of imperforate anus was brought to me by one of the midwives of the Dispensary,

about four or five years ago; it was a female, four weeks old, and passed its *fæces per vaginam*. It was my wish to have operated also upon this child; and, with that view, I prescribed an astringent medicine, so that the gut might be well filled before the operation was performed; but on the day fixed, the mother evinced an unwillingness that it should be done, stating, that she had been advised by a medical friend of the Institution, to postpone the operation until the subject was of adult age; but in such cases it is my *decided opinion* that the operation should be performed forthwith, as the longer it is delayed, the wider and more extensive will become the aperture communicating with the vagina; and hence the difficulty will be increased in any attempt that might afterwards be made to shut it up, by making raw the edges of the communicating aperture *per vaginam*, and laying down over the opening a piece of skin removed from the neighbouring parts, after the Talia-cotian mode, or, as has more recently been done, in constructing a portion of the male urethra, by Mr. Henry Earle. My friend, Mr. Bathurst of Strood, had a case where the *fæces* came *per vaginam*, the natural anus being barely sufficient to admit of the entrance of a good-sized probe, but communicating with the gut. By gradually dilating the natural anus with bougies in early infancy, the *fæces* were expelled with as much freedom, after a certain time, as if the

passage had never been closed; and, what is remarkable, the communicating aperture in the vagina experienced a spontaneous cure. The child is now, he says, Nov. 1825, ten years of age.

The fourth and last case, was the son of Mr. Smith, a tinman, residing at No. 43, Whitcomb Street, and had been born forty-eight hours when the operation was performed, on the 17th Nov. 1822, in the presence of my colleague Dr. Granville, the father of the child, and the midwife.

The raphe was the only guide we had for the operation, there being neither hollow nor depression to mark the spot where nature had failed in completing her design. Dr. Granville kindly assisted me (at the operation), by securing the child, and by keeping its lower extremities in a proper position during the operation, which was done by making an incision about an inch and a half in length with the scalpel, through the skin and fat, nearly as deep as the incision was long, but narrowing it two-thirds at its fundus. Not having reached the intestine with the scalpel, and considering that we could not so safely proceed further upwards in the direction of the gut with that instrument as with the trocar, the latter instrument was preferred, and directed gently upwards, backwards, and inclining to the direction of the sigmoid flexure of the colon for about an inch; when, on withdrawing the stilette, we found the intestine had not yet been reached: the stilette was therefore again passed through

the canula, which was still kept in the parts, and pushed upwards half an inch farther, when, from a want of resistance, I suspected we had at length succeeded, and on withdrawing the stilette a second time, meconium flowed through the canula in considerable quantity; and here it was curious to witness the instinctive straining of the child to relieve itself for the first time, and which would suggest the advantage to be derived from the practice of gently irritating the external skin over the situation of the anus in such cases, with a view of ascertaining the probable distance of the gut from the surface, as before noticed; for, on this occasion, the contorted features of the infant were precisely those of an adult who was constipated, and straining to relieve himself.

The canula was secured by tapes, and retained in the parts three days. It was then withdrawn, cleaned, and again introduced, the fæces passing through it during that period.

After about a week or ten days, the canula was removed, and an old-made sponge tent introduced in its stead; but whether from its age, or from there being too much wax in its composition, it did not expand, and consequently did not dilate the parts. Some sponge tents recently made were also tried, and likewise laid aside, from their inefficiency. The common smooth-made bougie, of the largest size, was, after some weeks, substituted, and was found to answer the purpose

much better. The tents used were about three inches and a half in length, and, as they were introduced close up to their thickest extremity, we ascertained precisely the distance of the intestine from the surface, by measuring the tent with a scale; the end of the part tinged with bile indicating the termination of the gut, and the verge of the newly-formed anus marking the length of the artificial canal, and which we found to be exactly three inches.

The child's bowels were occasionally constipated for two or three weeks; but this was as frequently obviated by the administration of small doses of the *ol. ricini*. Two months had now elapsed from the operation, when the mother was directed to introduce the bougie for a few hours only every day, and I then took my leave.

At the end of three months the mother brought the child to my house, and stated, that although its bowels were regular, and the usual quantity of *fæces* evacuated, she had that morning observed, for the first time, that its urine was in some degree tinged with *fæces*; but on being further questioned, she stated that she had no reason to believe the urine ever passed per anum. The child fed well, grew, was healthy, and some teeth appeared at the usual period; yet still the urine continued to be occasionally tinged with *fæces*, and until the morning of the day on which it died, the 29th Sept. 1823 (being more than

ten months after the operation), I heard of no one circumstance to lead me to suppose that the child had been otherwise than well.

The mother was reproached for having forborne to send for me during the six days that the child had been observed to be out of health from teething, and a slight bowel complaint: she replied, that she did not conceive the child to have been in any danger, as her other children, who are alive and healthy, had all, during dentition, suffered in the same way.

It may also be necessary here to state, that during the last seven months of the child's life, I had observed that its evacuations per anum were as healthy and well formed, or figured, as were ever passed by any child of its age.

On examining this child, post mortem, the artificial anus was found situated in a hollow, so precisely as if it had been originally natural, that the best anatomist would have been deceived by it; and this fact is the more worthy of record, when it is borne in mind, that at the period the operation was performed, there did not appear the smallest depression or fissure on any part along the line of the raphe, both nates preserving a continuous convex surface.

When the abdominal contents were exposed to view, by reflecting the divided parietes, a somewhat extraordinary disposition of the bowels presented itself; for the small intestines were, apparently, all lying on the left side, resting on the sigmoid flexure of the colon; the intestinum

rectum was very large, and distended with air, being at its widest part (viz. five inches above the external aperture or artificial anus), *six inches and three-fourths in circumference*; and, passing from the centre above the pubes to the right side, it rested upon the cæcum caput coli, and then turned downwards behind the bladder to the artificial anus. The lower part of the rectum adhered to the bladder by its peritoneal reflexion in the usual manner.

The sigmoid flexure of the colon was found in situ, and of its natural size, owing probably to the small intestines resting upon it; and the transverse arch, though in its place, was also somewhat larger than natural, and likewise distended with air.

The omentum was wanting. The stomach, quite empty and flaccid, lay hidden by the arch of the colon. The small intestines were not at all distended with air, were of an healthy appearance, and almost empty. The bladder was empty, natural, and adhering to the pubes up to its fundus, evidently pressed into that situation by the contact of the distended rectum posteriorly; and at its fundus there was found a long round substance or membrane, something like the uracus found at this part of the bladder in calves. There was also a corresponding mark in the interior of the bladder, which would almost lead one to suppose that this chord had once been pervious.

All the other viscera were in a healthy and

natural state, there being, in fact, not any mark of diseased action any where to be found throughout the whole examination, if we except a slight appearance of inflammation on the villous coat of the great arch and sigmoid flexure of the colon.

The alimentary canal was removed from the stomach downwards, including the artificial anus, with its surrounding fat, bladder, and part of the urethra, with all their adhesions to each other, left entire; and, during this part of the examination, we found the sphincter ani muscle wanting, but the levatores ani were perfect and strong.

A section of the bladder and urethra was made anteriorly, when a small valvular aperture was discovered communicating with the rectum, and situated about the eighth of an inch anterior to the caput galinaginis or verumontanum; the aperture into the urethra admitting only of the passage of thin fæces, it being barely sufficient to admit the end of a common probe, but from its valvular structure precluded the urine from passing per anum; and not any appearance of fæces having ever been in the bladder was observable: the lining membrane of this viscus was also perfectly healthy.

It is also worthy of remark, that, throughout the extent of the intestinum rectum, the parietes of this gut were *considerably thicker* than usual, but particularly towards its lower part; the muscular coat being here probably increased in thickness, because of the additional muscular

force required to project the fæces through the long and narrow canal from the termination of the gut to the external parts, a distance (even after the removal of the parts, and maceration in spirits for a fortnight) of one inch and two-eighths : and there appears to me to be no other way of accounting for the shortening of the artificial canal *since the operation*, than by supposing that the lower part of the rectum had been, by its own muscular action, forced gradually down towards the external part in the acts of stercoration ; and such constant pressure on this immense thickness of adipose matter thereby occasioning the condensation and absorption of great part of the latter.*

The substance through which the artificial anus passed was so compact and condensed, that it seemed almost semicartilaginous ; and it is somewhat curious to observe, in the preparation, how in one part the mucous membrane of the rectum approaches, in a conical form, towards the verge of the artificial anus ; and how, in like manner, the external skin passes upwards to meet the descending mucous membrane, so that in one part of the artificial canal will be seen meeting each other the villous coat of the intestine and the external skin, like a dove-tailing of conical processes ; or, as Mr. Clift (the able and intelligent

* See Observations on the Principal Diseases of the Rectum and Anus, by Thomas Copeland, Esq., 2d edition, page 107.

curator of the Royal College of Surgeons, who was present at the examination of the parts, and of their admeasurement, as have been here described) aptly remarked, a vandyking of the parts into each other.

I am also inclined to believe, that the situation in which we found the rectum (on the right side) was not its situation at birth, but that it occupied its natural place; first, because, from the direction in which I made my incision, upwards, backwards, and inclining to the left side, I think I should not, otherwise, so readily have struck it with the trocar; secondly, from the unusual size of this gut, it is to be presumed, that, from the length and narrowness of the artificial anus, and its frequent distension by *fæces*, it may have been gradually thrown out of its place; thirdly, had it remained in its usual situation, attached to the sacrum, its muscular power in expelling its contents may possibly have been considerably lessened; and, fourthly, because, in a case of intussusception of the ileum and cæcum which lately came under my observation, the whole of the latter gut and ascending colon were lodged in the left side, resting upon the sigmoid flexure. The preparation alluded to I presented to the Royal College of Surgeons; and, at the time, published a short account of the case in the *Medical and Physical Journal of London*.*

* The preparation of the child Smith's bladder and rectum is, also, deposited in the College Museum.

There is yet one more remark, as it strikes me, which the post mortem examination of the child Smith seems to call forth; viz. the obliteration of the aperture between the rectum and urethra. In the first place, it was so minute, that no very material inconvenience might have resulted from it had it remained open; secondly, from its situation in the urethra, and the progressive increase of the prostate gland as the child grew up to manhood, it may by this circumstance alone have eventually been closed; and, thirdly, if this latter result had not occurred, the stimulus or irritation communicated to the part (at a proper period) by the introduction of a common or armed bougie might have produced the desired effect,—or otherwise the part might have been cut down upon, as in fistula in perinæo.

In conclusion, I have only to observe, that this case has proved so highly satisfactory as to the result of the operation for imperforate anus, notwithstanding the great distance of the gut from the external parts, that I should hope there is not any surgeon who will now abandon an infant to its fate, under similar circumstances, until he has proceeded with his incision as far at least as was done in this case, taking care that the incision be made in a proper direction,—the operator being guided by the pressure of the gut on the finger introduced into the wound.

Since the preceding observations were sent to the press, I was called upon by Mr. Cullen, of

Sheerness, to operate for imperforate anus on the infant son of Mr. H., at Queenborough. The child was otherwise well-formed, and the anus marked so distinctly, that a small bougie was passed upwards in the apparently natural passage, for nearly half an inch, when it met with a total obstruction: even the smallest probe could not pass; in fact, there was a total closure of the gut above the external well-marked anus.

After waiting the period prescribed in this chapter, in the presence of my friend, Mr. Cullen, I made an incision, with the scalpel, of proper length and depth, and then introduced a small-sized trocar, with great caution, for fully three inches; but no meconium, only a very little blood, escaped on withdrawing the stilette.

The patient died in a few hours afterwards; and, on examination after death, we found, by the introduction of a bougie, that the gut was grazed by the cutting instrument, which had it penetrated, there was every chance that the child would have survived. The situation of the rectum, sigmoid flexure of the colon, and of all the intestines, was so *precisely corresponding*, in every particular, with the dissection given at length in the case of the child Smith, at page 265, that it is here deemed unnecessary to repeat the particulars of the dissection in this case: yet this fact is of too much importance to be slightly passed over.

In the case of the infant of Mr. H., at Queen-

borough, we had an immensely large muscular rectum, pretty well filled, but not distended. This intestine, at the sigmoid flexure, passed immediately across and before the small bowels: the upper part of the rectum rested on the cæcum, and then turning from this situation it passed down behind the bladder, and in close contact with it, and terminated in a cul de sac, *only one quarter of an inch* from the fundus of the external cul de sac, which arrested the progress of the bougie and probe.

As the position of the rectum has been precisely the same in the only two dissections I have had after this *lusus naturæ*, it is but reasonable to conclude in the majority of cases of this nature that we may expect the same result. The practical conclusion to be drawn from this last case therefore is, that we must in future make our external incision, and point the trocar, when that instrument is necessary, more forwards in the direction of the bladder, than as before described in this chapter, and in that case success in the operation is more likely to follow.

The protrusion of the gut upon the finger when titillation was made, was, in Mr. H.'s child, so very apparent, that I hesitated not to give rather a favourable opinion to the father as to the probable result of the operation, according to all probability; and when the operation failed, and before the dissection, I could in no other way account for the apparent deception of this hitherto

unquestionable test, than by supposing that we were deceived by the powerful pressure against our fingers of the sphincter muscle.

Since this very important point, the position of the rectum in this lusus, so strictly analogous to the situation of the rectum in the post mortem examination in the case of the child Smith already adverted to, is now so far established by these two instances, it is to be hoped that the lives of many children, now unborn, may be saved by the suggestion herein contained. I have only now to entreat, that, before this operation be performed, the surgeon will not lose sight of the disposition of the intestinum rectum in the two cases here cited.

CHAPTER VI.

CASES OF DISEASE IN THE BRAIN PRODUCED
BY EXTERNAL VIOLENCE, AND THEIR CONSEQUENCES.

THERE are so few cases recorded of disease of the brain arising from external violence, and relating to a change of structure of that organ, or of its membranes, after a great lapse of time, that I have been induced to lay the following facts and observations before the profession.

Thomas Turnfield, a serjeant of marines, aged 36, was admitted into Deal hospital from his majesty's ship Dictator, on the 14th of April, 1810, labouring under occasional attacks of stupor, as stated in his case transmitted by the surgeon of the ship. He was about five feet nine inches in height, muscular, of a sanguineous temperament, and without any marks of a scrofulous habit.

Six years previous to this period, he was wounded on the left parietal bone by a cutlass, in boarding an enemy's vessel.—The wound, by report, healed readily without any exfoliation; leaving a cicatrix two inches in length, parallel to, and a little to the left of the sagittal suture.

From the period of the infliction of the wound, he had complained of a constant headach, which, at the commencement, was more or less acute, but in time became gradually obtuse.

During the last seven or eight months, he had

been subject to fits of stupor, which came upon him at very irregular intervals; sometimes once or twice a week, at other times only once a fortnight, until about the beginning of March 1810; when the paroxysms became much more frequent, seldom lasting longer than an hour or an hour and a half; and he had always sufficient warning of their approach to lay himself down. During the intermissions, he was perfectly sensible. His pulse, pupils, and countenance were natural. His appetite was good, and the kidneys continued to perform their functions naturally. His bowels, for the last two or three months, had been so torpid, as to require the powers of the strongest cathartics to move them.

On the 15th April (the day after his admission), while I was in conversation with the patient, who was dressed, and had been walking about in the ward, he suddenly became silent, — stepped a little aside, and quietly laid himself down upon his bed. In less than three minutes, his pupils were dilated to the utmost, and the iris of both eyes insensible to the stimulus of light. His pulse was slow and intermitting, not exceeding 52 strokes in the minute; his breathing laborious; and in half an hour he was foaming at the mouth.

This paroxysm lasted a full hour and a half; but in less than another hour, he was walking about as before, free from every complaint, except slight languor, and his usual degree of headach.

The patient died in one of those paroxysms, on the 19th of April, being the fifth day after his admission, and the fourth attack he had experienced while in the hospital.

On the day of his admission, he had a brisk cathartic given him, and eighteen ounces of blood were abstracted from the jugular veins, both which were opened. On the following day, a seton was cut in the nape of the neck; his head was shaved, and directed to be frequently rubbed with a hard dry towel; and he was prescribed five grains of the pilula hydrargyri thrice a day.

Appearances on Dissection Twelve Hours after Death.

The scalp had its natural appearance, and the citratrix of the cutlass wound did not seem to adhere to the subjacent bone; but moved over it with the other parts, though in a somewhat less degree.

On removing the skull-cap, the adhesions between the dura mater and bone were found stronger than usual; and the inner table of the skull, immediately under the cutlass wound, was free from any mark of disease.

Upon detaching the dura mater from the brain, a portion of completely-formed bone was found deposited upon its inner side, of the size of a finger nail, and tolerably thick. It was attached to the left side of the longitudinal sinus, and corresponded nearly with the direction of the wound on the scalp. The veins traversing the left hemi-

sphere were rather more distended with blood than on the right; otherwise the surface of the brain possessed its natural appearance.

On cutting into the substance of the brain, I found a tumour, of a scrofulous nature, larger than a hen's egg, occupying a considerable portion of the middle lobe of the left hemisphere, and extending, in depth, to nearly on a line with the corpus callosum. The tumour was not detached from the adjoining cerebrum, but seemed merely as a condensed, or, more properly, indurated portion of brain. There was no appearance of pus, and the ventricles contained about an ounce of serum.

The plexus choroides and optic nerves were natural, the former containing very little blood. The other parts of the brain and cerebellum were free from any mark of disease.

The thorax and abdomen, I lament to say, were not examined.

That the morbid appearances just described originated in the wound on the scalp, we have, I think, considerable reason to believe—first, from their situation being immediately under the wounded part; and, secondly, from the constant headaches with which the patient was afflicted having commenced at the period when the wound was received.

Osseous deposits on the dura mater are not unfrequent; but it is worthy of remark, that this is the second instance I have met with, in which

a deposition of bony matter, on the side of one of the great sinuses, has been accompanied by a tumour of the brain contiguous to it.*

With regard to the mode of treatment to be pursued in such cases of organic affections of the brain as that now described, I confess myself not very competent to give an opinion. A course of mercury, at an early period of the complaint, as recommended by Sir Gilbert Blane, appears to me, for the reasons stated by that experienced physician, as likely to be serviceable.†

I cannot, however, here omit to urge the necessity of copious blood-letting, in the first instance, in all affections of the brain arising from external injury, concussion not excepted;‡ and in such cases, I do not know of any mode so good as that of puncturing the temporal artery. When

* See the case of the gunner of the Fly, hereafter to be noticed.

† See a History of some Cases of Disease of the Brain, with an Account of the Appearances upon Examination after Death, &c. by Sir Gilbert Blane, M.D. F.R.S., in the second volume of the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge. See also a valuable paper in the first volume of the Transactions of the Medico-Chirurgical Transactions, by Dr. Yellowly.

‡ In the extensive practice of some years at Deal hospital, I do not recollect a single instance in which I had reason to lament this practical conclusion. It is necessary to remark, however, that as all the cases admitted into the hospital came from ships of war lying in the Downs, some few hours generally elapsed before the patients could be conveyed on shore, and thus an opportunity was afforded, during the interval, for vascular reaction to succeed the sedative effects of concussion.

it is found necessary to cut through the scalp, with the view to examine into the state of the bone underneath, I would also permit such vessels as may have been divided in the operation to bleed freely.

The propriety of this practice cannot, I think, be placed in a clearer point of view, than by briefly relating the particulars of a case of fractured cranium, attended with considerable depression, that came under my care at Deal.

Patrick Connelly, aged 23, was admitted into the hospital from his majesty's ship York, on the 16th Sept. 1812, having fractured his skull that morning, by a fall from the main deck into the orlop.

He was taken up senseless, and continued so for two hours. When I saw him at the hospital, his senses were restored, he was perfectly coherent, and gave me a correct account of the accident; but he complained of irritability of the stomach, and much headach and giddiness. His pulse was slow, sharp, and slightly irregular; the vessels of his eyes were turgid, and I perceived a slight rotatory movement of the head, corresponding with the pulsations of the carotids.

The lacerated part of the scalp was about three inches above the left ear. I made a crucial incision upon it, and, by this means, discovered a fracture of four inches in length, on the parietal bone, running from before, backwards; and a

depression of the inferior, or squamous part, about its middle, the whole thickness of the bone ; but which gradually rose to its proper level as it approached the extremities of the fracture.

That the depression was thus considerable, there can be no doubt, since, on placing the scalpel flat upon the depressed bone, in the presence of Messrs. Wooley and Mitchell, hospital-mates, the edge of the instrument passed with facility under the inner table of the upper or undepressed part of the cranium.

In the operation, a branch of the temporal artery was divided, which was permitted to bleed freely ; and as symptoms did not authorise us to do more, the divided scalp was brought together by slips of sticking-plaster. The patient was prescribed a cathartic ; and, late in the evening, twenty ounces of blood were abstracted.

Two small spiculæ of bone exfoliated, and in little more than a month the wound was cicatrised ; but the violent attacks of headach and giddiness with which the patient was affected during the greater part of this period, called for so frequent a recourse to the lancet, that on adding up, from his prescription ticket, the whole quantity of blood withdrawn at these different bleedings, within the first three weeks, I found it to amount to nearly two hundred ounces, without taking into the calculation the quantity procured by the repeated application of leeches to the

temples. He had also several blisters applied to the head; and latterly a seton was cut in the nape of the neck.

With a view to promote the absorption of the asperities of the depressed bone, which was beaten down upon the brain, and to round its edge, that the compression might be as slight as possible, the patient was put on a gentle course of mercury, which was continued nearly three months, during the greater part of which time his mouth was slightly affected; and on the 28th Jan. 1813, he was discharged to his duty, free from every affection of the brain, or other complaint.

The successful issue of this case, without having recourse to the application of the trephine, strikingly illustrates the justness of Mr. Abernethy's opinions on that highly important subject.*

Thomas Dawson, seaman, ætatis 28, of low stature, and of a full and healthy habit; while assisting to get up the top-gallant masts, on the 11th of March, 1813, the leading block gave way, and his feet being entangled in the rope, he was tripped up, and his forehead struck with considerable violence on the deck. The part was contused and slightly discoloured, but the skin was scarcely abraded; he was a little stunned by the blow, but spoke sensibly soon after.

* See Mr. Abernethy's book on Injuries of the Head.

On examination, no fracture nor fissure could be discovered; his pulse was regular, and his eyes natural; he had no nausea, but bled freely from the nose, and complained of a severe pain over the fore part of the head. He was prescribed a cathartic, and compresses wetted with saturnine lotion were kept constantly applied to the contused part.

In the afternoon, he had slight nausea with vomiting; the headach was the same; and as the cathartic had not operated, it was directed to be repeated.

Second day.—The symptoms continued nearly the same; the bowels not being sufficiently opened, the purgative was repeated. Towards evening, febrile symptoms began to shew themselves; the pulse was increased in fulness and frequency; the skin was hot, face flushed, and eyes irritable. He had some stupor, with a disposition to sleep; the bowels were open. He was bled to twenty ounces, which entirely removed the febrile heat, and, in some degree, relieved the headach. Ever since the accident he had been unable to walk straight, and seemed to totter, not unlike a man intoxicated, the few times he tried that exercise.

Third day.—He said the pain was chiefly confined to the posterior part of the head; the bowels were open; there was no febrile affection, and his eyes were less irritable. A blister was

applied to the nape of the neck, the pediluvium used, and he took camphorated saline draughts every four hours.

Fourth day.—There was no change, except that he rested rather better, throughout the last night, than he had done since the accident:—the camphorated saline draughts were directed to be continued.

Fifth day.—He had considerable febrile heat, with much irritability and restlessness, and some thirst; his face was flushed, pulse frequent and rather hard; respiration hurried, and tongue white. He passed his urine unconsciously last night and this morning; pain now, he says, chiefly confined to the fore part of the head. He was bled again to twenty-four ounces, and, during this operation, the pulse kept its fulness. Immediately after the bleeding, he said his head was much relieved; the febrile heat, flushed face, and hurried respiration were certainly diminished, and he seemed more tranquil. The blood exhibited a dense buffy coat. Within a very few hours afterwards, every symptom increased,—his pulse became small and frequent,—his pupils dilated,—low muttering delirium and restlessness succeeded,—and at half past twelve o'clock on the sixth day, (the 16th of March) he expired without the least convulsive struggle.

It appears, by the concurring reports of his messmates, that he was always a healthy man, of a lively disposition, and not so much addicted to drunkenness as sailors generally are. It was

stated that in the early part of his life he was in the capacity of a groom, when, it appears, he had been thrown from a horse, and had fallen upon his head with some degree of violence; but that, during two years' service in the Christian, he had never made any complaint. The immediate consequences of that accident could not be ascertained.*

Dissection.

On the 17th March the body was received at the hospital for interment, when I embraced the opportunity of examining the state and appearances of the brain.

Upon inverting the scalp over the eyes and occiput, a slight degree of extravasation of blood was discovered a little above the superciliary ridge, where the blow had been received; but the bone was uninjured. The upper part of the skull being forced off, and the dura mater exposed to view, its vessels were found unusually distended. Between the os occipitis and posterior lobe of the right hemisphere, resting on the dura mater, about half an ounce of coagulated blood was found; which, by its remoteness from the injured part, was owing perhaps to the rupture of a small vessel, preternaturally distended with blood, a short period previous to dissolution. On removing the dura mater, the vessels of the pia mater were also unusually turgid.

* Dawson having died on board, these particulars were related to me by Mr. Williams, the intelligent surgeon of that ship.

The right hemisphere, being divided on a level with the corpus callosum, and the ventricle exposed by another incision, six drachms of a colourless fluid escaped; and on examining this cavity, a portion of a small encysted tumour was found projecting into it at its anterior cornu. The tumour was imbedded in the corpus callosum, and a considerable part of it rested on the anterior crus of the fornix. It was of the size of a garden bean, felt smooth externally, and when pressed between the finger and thumb, communicated the sensation of its being filled with a cartilaginous substance.

Its connexions were traced to the falx cerebri and internal carotid artery, by the side of the sella Turcica; and some very minute filaments of vessels were also traced in the direction of the ophthalmic artery, where it enters the foramen. There was neither the appearance of pus nor inflammation in the vicinity of the tumour, and the surrounding brain exhibited no mark whatever of morbid affection.

The left ventricle contained nearly two drachms of a colourless fluid, similar to that found in the right; but every other part of the brain and cerebellum appeared to be wholly free from disease.

When the tumour was removed, and suspended by its numerous vessels, all of which entered together at one point, it exactly resembled a garden bean that had been planted a sufficient time for the radicle to have attained length to suspend it

by, — the vessels entering where the radicle shoots.

The cyst was thick, opaque, and very strong, and contained a smaller cyst, the size of a barleycorn, imbedded in a semi-medullary and adipose substance, studded with minute portions of bony matter. The small cyst was filled with a piece of bone of an irregular round shape, composed of layers, which the preparation clearly demonstrates, from a portion of the outer layer having been broken off by the instrument in laying open the cyst.

That the tumour had existed a considerable period antecedent to the accident which was the immediate cause of the man's death, there is not any doubt; and that the preternatural appearances observed on dissection, independently of the tumour, were sufficient to account for his dissolution, appears to me equally certain.

This case, therefore, seems to evince, in addition to the evidence already existing upon this subject, that a morbid structure of the brain may exist for a very long time, without much inconvenience to the patient, or the slightest interruption to the various animal functions; and, with other cases on record,* is, in my estimation, sufficient to

* See Dr. Lettsom's case in the Medical Memoirs before quoted; Sir Gilbert Blane's, in the second volume of the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge; and Serjeant Turnfield's case, at p. 274.

authorise the conclusion, that a variety of chronic and other affections of the head are referable to blows or falls received in early life; when, probably, the accident that originally occasioned them had wholly escaped recollection.

How long Dawson might have lived with the tumour on his brain, had the accident of which he died not occurred, is matter of mere speculation.

A short but imperfect account of the extraordinary and singular case of a seaman named Jones is already published in the Lectures of Sir Astley Cooper by Mr. Tyrrel. I think it but proper, therefore, having the means in my power, to give a more detailed account of it in this place; the more especially, as it is just in point on the subject we are now treating of, and corroborates the opinions I advanced several years ago, in the preceding remarks.

It is a case, too, in which, medically, chirurgically, and physiologically speaking, there appears to me to be much interest; and I shall give it as detailed in the official documents which were addressed to the friend who furnished me with them, only omitting a name which might give pain: but as I believe most of the persons concerned in them are alive, they can be easily authenticated, the originals being in my possession.

The first letter on the subject is from the venerable and highly-revered father of modern surgery in this country, Mr. Cline, then surgeon to St. Thomas's Hospital. It is as follows:—

“ Lincoln's Inn Fields, 14th July, 1800.

“ DEAR SIR,

“ Thomas Jones, whose case I related to you on Friday, was admitted into St. Thomas's Hospital on the 9th of May, when he was quite insensible. Near the summit of his skull there was a considerable depression of a portion of bone nearly two inches in length and one in breadth, which I removed by an operation, and the next day he could hear, see, and speak; but his recollection was very imperfect for several days after.

“ I have been able to obtain the following extraordinary history of this man, from Mr. Baidon, the surgeon of sick and wounded seamen at Deptford, from two patients in this hospital; one who knew him in the hospital at Minorca, the other at Gibraltar. His own account is, that he was a seaman on board the Santa Teresa, and he remembers she was cruising off Minorca in April and May 1799, since which he knows nothing until he found himself in St. Thomas's hospital after my trepanning him in May last; so that one complete year had passed without his being conscious during the whole time.

“ A seaman remembers this man being brought to the hospital at Minorca in May 1799 ; he then appeared quite insensible, and he left him in the same state about a month after. Another seaman came with him from Gibraltar ; they were on board together for two months, and he was then quite insensible during that time. They sailed from Gibraltar the latter end of September : I believe he arrived at Deptford in December, and continued under the care of Mr. Baildon from that time until he was admitted into St. Thomas's, and during this period remained in the same insensible state.

“ Now, sir, I shall be much obliged if you will obtain the account from the surgeon of the Santa Teresa, whose name he thinks was Goodwin, why this man was sent to the hospital in Minorca, and at what time ? Any other information you can procure will greatly oblige, dear sir,

“ Your faithful and obedient servant,

(Signed) “ HENRY CLINE.”

The above procured the two following letters from Mr. Goodwin, the surgeon of the Santa Teresa, and from the surgeon of the Minorca hospital, at the time Mr., now Dr., Gray, late physician to Haslar hospital. They are as follow.

“ His Majesty’s ship Santa Teresa,
Port Mahon, 9th Jan. 1801.

“ Thomas Jones, ordinary, aged 22, was attacked on the 9th of June, 1799, with a total privation of sense and a loss of speech; his pulse at this time being somewhat full, I took to the quantity of xvij oz. of blood from the arm, and gave him a brisk aperient draught, which procured him three or four evacuations. Upon my seeing him in the evening, and making some necessary inquiries, I was given to understand by one of his messmates that he had had a very severe injury on the head about four years previous to his present complaint, but that no unpleasant symptom had occurred until the present.

“ On my examining his head, I immediately found two or three depressions of the cranium, one of which appeared to be very deep, and upon my making some pressure upon this part, I found it evidently gave him pain. The next morning he appeared much in the same state as in the preceding evening, excepting a continued motion of the fingers of each hand. He was now prescribed medicines of an antispasmodic nature, but he continued in precisely the same state for the space of three weeks, and not taking the smallest notice of any one: so that, from these circumstances, I concluded there was certainly some pressure on the brain which occasioned all these symptoms, and, therefore, my principal determination was to use the trephine.

“ But the Teresa being at this time bound for Minorca, I wished to have the opinion of another surgeon, and on our arrival, I went on board the Queen Charlotte to beg of Mr. Frazer to see him previously to his being sent to the hospital, which he did, and gave it as his opinion that it was merely an affection of chorea sancti viti, but that he thought the patient an object for the hospital.

“ I accordingly took him immediately, and you may probably recollect, sir, my saying that I thought the man a very great object, and that had we been at sea another day, I certainly should have used the trephine.

“ I am, sir,

“ Your obedient, &c.

(Signed) “ RICHARD GOODWIN.”

“ To John Grey, Esq.”

“ Naval Hospital, Port Mahon,

9th January, 1801.

“ DEAR SIR,

“ I had the honour to receive yours of the 22d July, 1800, inquiring into the state of Thomas Jones, seaman, belonging to the Santa Teresa; and as you desired to be acquainted with his situation previous to his reception into the hospital, I waited until I had a report from Mr. Goodwin, surgeon of the ship, which I now enclose.

“ Thomas Jones was received into the hospital on the 9th of July, 1799, and discharged the 1st of August following. The symptoms were the same as described by Mr. Goodwin, being in an insensible state, the pupils of the eyes much dilated, with a constant convulsive motion of the fingers of both hands, as also of the muscles of the arms ; in whatever situation he was placed, there they remained : regular in passing his urine, and going to stool, which he made known to the nurse by moving his legs as if he wanted to raise himself up, and shewing other signs of uneasiness : when food or drink was put to his mouth, he eat and swallowed the same, sometimes with great avidity, but never called for any thing : he was thrown into strong convulsions on touching the upper part of his head, where there appeared to be an evident depression. ————, who was here at the time, and who was appointed Inspector of Hospitals, took upon himself the sole charge, in both the medical and surgical department, and gave it as his decided opinion, that the complaint was *feigned*, and discharged him on board the Dolphin hospital ship. Mr. Gardner, surgeon of her at that time, very often remarked to me the singularity of the case, and particularly the strong convulsions of the whole body when pressure was applied to the upper part of the head ; and who gave it as his opinion, that there must be compression on the brain from this symptom ; but from a delicacy in not wishing to act contrary to

———, did not choose to apply the trephine. As the patient was for a length of time under the care of the surgeon of the Dolphin, he will be able to give you his sentiments on the case.

“ I cannot say what were the principal reasons for ———’s opinions of this man’s case ; but I feel exceedingly uneasy in my mind, that the poor man should have laboured so long under this malady, particularly as the symptoms of compression were so evidently defined.*

“ I am, &c.

(Signed) “ JOHN GRAY.”

A Case of Fracture of the Occipital Bone, extending to the Great Foramen ; in which that Bone was trephined, and the Dura Mater of the Cerebellum punctured.

At four o’clock P. M. of the 30th November, 1808, Charles A. Cameron, aged 14, midshipman of his majesty’s ship Leviathan, fell from the

* It is but too evident that ———, the Inspector of Hospitals in the Mediterranean at the time specified, was greatly in error as to the case of Jones ; but the melancholy catalogue of impositions practised by seamen, which have been detailed in this volume, shew how much and how justly suspicion may be excited, and also how it may sometimes mislead. This, however, is a lesson which cannot fail to inculcate great caution in the mind of the humane medical officer, and which will not therefore be readily forgotten.

booms into the hold among provision casks, a height of between 27 and 30 feet, without touching any thing in his descent by which his fall might have been broken. At first there was no mark of external injury to be found on any part of the body; but as the blood gushed from his nose and ears, accompanied with total insensibility, stertorous breathing, dilated pupils, &c., no doubt remained of the brain being compressed somewhere. The head was accordingly shaved, when a puffy tumour upon the os occipitis became apparent; through which the surgeon of the ship made an incision, upon its upper part, three inches in length, on a line with, and a quarter of an inch above, the superior transverse ridge of that bone; by which means a fracture was discovered bisecting the incised wound at right angles, and a little to the right of the great tuberosity, or spinous process.

In this state the patient was admitted into Deal hospital, only a few hours after the accident, with his extremities cold, and no other signs of life than a deep laborious breathing, and a slow intermitting pulse, not exceeding fifty strokes in the minute.

In order to trace the fracture downwards, in which direction the bone seemed to be most shattered, I made an incision, commencing at the former one, nearly two inches in length, through the fibres of the trapezius and complexus muscles to the bone, which I here found to be very much

depressed, and the fracture maintaining a direct line towards the foramen magnum, the two incisions forming the figure T. There was one small and detached portion of bone, so depressed and jammed under the sound bone, that it was impossible to raise it without the application of the trephine—the fracture of the inner table of the skull being more extensive than that of the outer.

The angle of the integuments and muscles of the right side being therefore separated from the bone, and raised so as to give room for the working of the smallest-crowned trephine I had, a circular piece was cut out with that instrument between the superior and inferior transverse ridges of the bone. And here a very perplexing and unexpected embarrassment occurred, occasioned by the protrusion of the dura mater through the trephine-hole, filling completely the whole foramen, and extending considerably beyond the outer surface of the bone, which from its tenseness greatly retarded the subsequent parts of the operation, viz. that of elevating the depressions, and removing the bony spiculæ. The dura mater looked healthy, not at all injured by the saw or spiculæ; and, from its elasticity when pressed upon, evidently shewing that extravasated fluid underneath was the cause of the protrusion. The pressure upon the cerebellum was thus in a great measure removed; and this the patient himself very clearly evinced, by repeatedly raising his

hand to his head during the application of the dressings.

Satisfied with what had thus far been done, half an ounce of castor oil was exhibited; four ounces of blood were taken from the arm, as there had been but little hæmorrhage during the operation, and the patient was put to bed. I intended, however, should symptoms authorise it, to puncture the dura mater of the cerebellum, in order to liberate the compressing fluid underneath; but this part of the operation was delayed until I could consult with my friend and colleague Dr. Wright. I wished also maturely to consider of the propriety of such a step; and felt a thorough conviction that the delay of a few hours could add but little to the danger of the case, as the bony depressions were all either removed or elevated, and the protruded part of the dura mater contained the fluid which would otherwise have pressed with greater force upon the cerebellum.

Dec. 1.—During the night and this morning the patient remained pretty nearly in the same state as when admitted, with the exception of his extremities being warmer, and of his raising his hand two or three times to his head; but the dressings were not disturbed. Although he vomited soon after the castor oil had been taken, and several times through the night, yet he had two tolerably copious stools, which with his urine were voided unconsciously.

The parts being now exposed in the presence

of Dr. Wright, the hospital assistants, and Mr. Griffiths, surgeon of the Leviathan, the dura mater had the same tense and elastic feel when touched as on the preceding evening. It was therefore determined unanimously, that I should make a puncture with a lancet or fine-edged scalpel through this membrane. This I preferred doing by gentle scratches with the latter instrument upon the most prominent part of the protrusion, until I had got through; and when I had done so, nearly half an ounce of serum, slightly tinged with blood, was discharged, and the dura mater instantly collapsed. A probe-pointed bistoury was then introduced at the opening, and the incision of the dura mater carried downwards to the bottom or lower edge of the trephine-hole, bringing its probe point out between the sides of the fracture, leading to the foramen magnum. The patient now seemed restless, and endeavoured to extricate his head from the assistant who held it, with a hand upon each ear. A little lateral pressure was therefore necessarily made, which caused the sides of the fracture, at the bottom of the wound, to come into such close contact, that in place of its allowing room for the bistoury to pass through, it had more the appearance of a fissure, and would not have admitted the finest hair; but as soon as this pressure was relaxed, the sides of the fracture receded to their former limits; which circumstance, taking into consideration the contiguity of my perforation to the

foramen magnum, appears to me an incontrovertible proof that the fracture did extend to that foramen.

A piece of dry lint was now applied to the dura mater, the flap laid over the perforation, and the parts, as before, were superficially dressed.

Seven o'clock P.M.—Pulse 98, and more regular; the iris of both eyes contracts a little, and the breathing is uninterrupted.

Dec. 2.—Passed a tolerable night, swallowed a few spoonfuls of arrow-root early this morning, and called out, when I spoke to him, “Drink!” being the first time he had spoken since his admission. His pulse, when counted at nine A.M., was 110, and rather full; and as there was a slight flush over the countenance, I directed eight ounces of blood to be taken from the arm, the nitre julap for his medicine, and the dressings to be covered with a light emollient poultice. The extremities continue warm, the breathing free, and his eyes natural.

Dec. 3.—About four o'clock yesterday afternoon his face became more flushed, and the pulse full and hard. He was restless, tossed his arms about from one side of the bed to the other, and his head did not remain two minutes in one position upon the pillow. The bleeding was therefore ordered to be repeated, a blister to be applied to the crown of the head, and a purgative enema to be injected. At eight o'clock these unfavourable symptoms disappeared; he became com-

posed, and slept three hours during the night. I was agreeably surprised to learn from the nurse in the morning, that, an hour previous to the time of my visitation, he called out to her "Pot!" in the same sharp and peremptory tone as yesterday when he wanted drink; and, on being supplied with the utensil, he placed himself upon it, supporting himself in that posture by resting his hands upon the bed, and had a very copious stool.

Dec. 4.—The pulse this morning was soft and regular, his answers to questions put to him coherent, but uttered in a loud and quick tone of voice, which appear to imply, "Your inquiries are troublesome." He now asks for the urinal when in want of it, and for every thing else that he stands in need of. The wound looks well, and suppurates kindly. A slight serous oozing was observed from between the labia of the punctured dura mater, when the piece of lint was removed at dressing, but no discoloration of that membrane was observable. Continued the nitre julap and emollient poultice as before.

Dec. 7.—Not one disagreeable symptom remains. He now sits up in bed half the day, and the arrow-root, which has been his only sustenance ever since his admission, he eats with an appetite. The wound looks well, and discharges freely; but the oozing from the punctured dura mater still continues, though daily lessening in quantity.

During the remainder of the time that this

young gentleman was under my care, little worth noticing occurred. A fungus arose from the dura mater, and three or four small portions of both tables of the cranium exfoliated, in consequence of the pericranium having been detached by the accident. To the fungus the hydrarg. nitrat. ruber was applied every other day, which, with gentle pressure, in about two months had the effect of removing it completely.

On the 5th of April, 1809, the wound being cicatrised, he quitted the hospital for Sunderland, accompanied by his father, Lieutenant Cameron, of the navy, in full possession of all his faculties. Three months after this period, his father wrote to inform me that he was enjoying perfect health, good spirits, and extremely anxious to rejoin his ship.

I have been induced to relate the particulars of this case to the society, because a similar one has not come within the compass of my reading. It clearly proves, as much so at least as a single fact can prove any thing, that the great danger which hitherto has been ascribed to fractures of the occipital bone, attended with depression and effusion, evidently compressing the cerebellum, does not really exist; and that where an operation is admissible over any part of the cerebrum, it is, in young subjects at least, equally so here.

The celebrated Morgagni relates the case of a cook*, in whom he found, on dissection, the

* Alexander's translation, vol. iii. page 480.

greater part of the cerebellum in a state of scirrhusity, and yet that man had been ill a twelve-month with this very disease.

A case not very dissimilar to that of Morgagni's is related by Dr. Yelloly;* and one came under my own observation not long ago, in which, on dissection, there was found a considerable deposition of osseous matter upon that part of the tentorium which is immediately under the origin of the left lateral sinus, and a scirrhus tumour in the substance of the left lobe of the cerebellum. This last-mentioned person was gunner of the Fly sloop of war, and had been ill many months: he was sensible to the last, and always gave a coherent answer to every question; but when not spoken to, he lay nearly in a state of coma or low muttering delirium; which symptoms, however, only occurred four or five days previous to dissolution. He never had a fibre paralysed, his pupils were uncommonly contracted, and he could not bear the light. His stomach for the last month was extremely irritable, vomiting almost every thing he swallowed.

There is another circumstance very clearly elucidated by the relation of the above case, viz. the proneness of the vessels of the encephalon to pour out a serous effusion in disease, or after any external injury, and in how very short a time this effusion will take place; as from the period of

* See Medico-Chirurgical Transactions of London, vol. i. p. 191.

Mr. Cameron's fall, until a portion of bone was cut out with the trephine, when the dura mater protruded with its contained fluid, not more than four hours had elapsed.

Mr. John Bell says, when speaking of the division of the dura mater,* "I will not disguise from you that this operation of puncturing the dura mater is *sometimes* successful, that it is reported so by creditable authors, but it is my duty to *warn* you, that *I have always found it fatal.*"

An assertion like this, and from such high authority, will undoubtedly have its influence, as the experience of an able individual: the result, however, of another's experience, when candidly given, and fairly compared, may be beneficial; and it is with this view only that I offer the following remark: Out of three cases in which I have had occasion to puncture this membrane, two have recovered, without the occurrence of any untoward symptom, farther than a fungus from the dura mater, which in Cameron's case only proved in any degree troublesome; and I have seen the same success obtained by others.

For my own part, I should conceive that man highly culpable indeed, who could trust to time and chance for the absorption either of blood or serum extravasated under the dura mater, without giving it vent by puncture; more especially when symptoms of compression were present, or begin-

* J. Bell's Surgery, vol. ii. part ii. page 839.

ning to manifest themselves. And again, although it be universally admitted, that absorbents do exist in the brain, as well as in other parts of the body, yet, as they are so very minute as to have hitherto eluded the researches of the most accurate anatomists, we ought not to trust too confidently to their powers, when the effused fluid can be removed with so little risk, and by so simple an operation as that of puncturing the dura mater.

CHAP. VII.

ON THE COMPARATIVE INFREQUENCY OF URINARY
CALCULI AMONG SEAFARING PEOPLE.

ON perusing Dr. Marcet's valuable essay on the chemical history of the different species of urinary calculi, and the medical treatment of the diseases consequent thereon, I was pleased to find that he had embraced the subject of the comparative frequency of calculous disorders in certain countries and districts, although he candidly acknowledges, that it still remains for future inquirers to discover whether the frequency of stone cases in one particular district over that of another be imputable to some peculiarities in the habits and occupations of its inhabitants, or to locality of situation and climate.

Impressed with the importance of the subject as it regards a knowledge of the disorder, its pathology, and treatment, which such an inquiry cannot fail materially to promote; and feeling it to be the duty of every professional man to contribute the result of his observations in aid of an investigation so ably commenced; I beg leave to submit to the attention of the profession a few remarks on the comparative infrequency of calculous disorders among seafaring people. I feel myself the more strongly impelled to the task from having noticed the circumstance many years

ago, and from the distinguished author of the above essay not having devoted any portion of his work to the consideration of a class of men to the treatment of whose diseases my attention has been principally directed for a period of sixteen years.

The number of seamen and marines annually voted by parliament to man the British navy, from January 1800 to the 31st of December, 1815, has on an average amounted to 132,000; now if we take into consideration the vast expenditure of human life by battle, disease, and various other casualties, and which unavoidable loss is necessarily required to be constantly replaced, the total number cannot be estimated at less than 162,000, making an annual fluctuation of 30,000 new-raised men to supply the deficiencies; but we must bear in mind, that nine-tenths of this number were men who had served at sea from a very early period of life, or, in other words, were old and experienced seamen.*

* The number of men lost to the service from various causes during three of the last years of the war I procured at the Admiralty Office, and is as follows :

In 1811.....	33,898
1812.....	27,009
1813.....	26,049

Seamen and marines voted by parliament	} 145,000
for each of these three years	

The average loss of these years gives only about 29,000, in place of 30,000 as stated in the text, and according to the num-

I have taken considerable pains to ascertain the prevalence of calculous disorders in the naval service ; and the result of my inquiry is, that out of the mass of individuals of which it is composed, only *eight cases* have occurred in the period of the *sixteen years* before specified, all of whom had been operated upon in the naval hospitals of Haslar, Plymouth, or Deal, and of whom one only died. In the other royal hospitals, namely, Yarmouth and Peighton, no patient labouring under urinary calculus having been admitted, I have purposely omitted taking them into the account, as well as the foreign hospitals of Halifax, Jamaica, Antigua, Barbadoes, Gibraltar, Malta, the Cape, and Madras ; being satisfied, after the strictest examination, that the operation of lithotomy had never been performed at any of these establishments. If cases of this kind had occurred abroad, and owing to the unfavourable nature of the climate or other causes the surgeons had deemed it not advisable to operate, the pa-

ber voted it makes a waste of about one in five ; but in these three years the war was chiefly conducted at home, the number of ships serving on unhealthy stations was considerably reduced, and during this period no general action had been fought at sea. There is another circumstance which caused a greater waste in the earlier years of the war than has been here stated from documents ; namely, the very little prospect that appeared to the seamen of any termination to hostilities, which certainly influenced the men to desert in greater numbers than in the last years of the war, when the probability of a speedy termination of their labours and consequent liberation was at hand.

tient so circumstanced would have been forwarded to the great naval hospitals at home ; and, therefore, we shall be fully warranted in concluding, that eight cases of stone only had really occurred among the vast mass of seamen and marines composing our naval force at home and on foreign stations during that eventful era, that is, between January 1800 and December 1815.

The commissioners for conducting the sick and wounded department of the navy, with their accustomed liberality, directed that I should be furnished with the subjoined document, shewing the total number of seamen and marines received into the three hospitals during the above sixteen years, exclusive of soldiers, Russians, and prisoners of war, making the grand total of 96,000, which, on deducting in round numbers 10,000 for gun-shot wounds, accidents, &c. admitted into the hospitals beyond the average number of such cases received into the London and provincial hospitals on account of the peculiar service to which the naval hospitals are appropriated, gives only one calculous case in 10,750 patients.

VICTUALLING OFFICE, 23d MARCH, 1818.

An ABSTRACT shewing the number of sick and wounded Seamen received into Haslar, Plymouth, and Deal Hospitals, between the 1st January, 1800, and the 31st December, 1818.

Year.	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812	1813	1814	1815	Total.
Haslar	4835	2781	1925	1144	1496	1727	1900	1892	1907	2521	3236	3273	3018	2890	3056	2442	40,043
Plymouth	6028	4683	2111	1420	3596	3490	3137	1897	2453	2624	3019	2660	2806	2917	3644	1967	48,452
Deal	965	538	92	226	548	554	391	357	562	781	625	347	658	585	584	389	8,202
Grand total																	96,697

By order of the Board,

(Signed)

J. T. LEE.

Dr. Marcet states the proportion of stone cases received into the different British and continental public hospitals, Norwich alone excepted, to be *one* for every *three* or *four hundred* patients of all descriptions admitted. In the Norwich hospital it appears to be *one* in every *thirty-eight* cases, a proportion prodigiously great, and which places in a striking point of view the untoward prevalence of this afflicting malady in the Norfolk district over that of every other throughout Europe, as far, at least, as our present knowledge extends, from whatever cause that extraordinary circumstance may arise. The paucity of stone cases occurring in tropical climates has also been remarked by Dr. Marcet; and as far as the fact already stated goes, of no patients labouring under the disease in question having been admitted into our foreign hospitals, it tends to strengthen the observation.

Of the eight cases of calculous concretions before mentioned, as having occurred out of the vast mass of patients admitted into our naval medical establishments in England, two were boys about fourteen years of age, who had laboured under symptoms of stone for some years previously to their admission into the service, and into which they had recently entered expressly for the purpose of deriving benefit from our magnificent institutions: one was a marine, about twenty-two years of age, who had been at sea a few months only: three were adult seamen,

and the seventh a marine; but their length of service afloat *could not be at all* ascertained:* the eighth and last case was a warrant officer, advanced in years, who had been serving in ordinary, that is, in a ship in harbour, for a considerable time previously to the operation, and the only case which terminated fatally.

For these short historical particulars I am chiefly indebted to my friend Dr. Baird, late inspector-general of naval hospitals, who, with his wonted zeal for the public service, furnished me with the above facts.†

In the admissions into naval hospitals, both officers, under the rank of captain, and privates are included; and excepting the case of one warrant officer, whose diet differs not materially from that of the seamen, it will be found that no officer has undergone the operation of lithotomy in any of these establishments. It is but just, however, to notice the cases of two naval gentlemen, the one a captain, the other an hospital surgeon, who were operated upon in London, as

* Since this part was sent to the press, the author has ascertained that one of these patients, cut by Dr. Veitch at Plymouth hospital, was a Prussian by birth; but how long he had been at sea could not be ascertained.

† Subsequently to the period embraced in these returns, viz. in May 1816, a boy was operated upon in Haslar hospital, and recovered, who had been turned ashore from a merchant-vessel at Barbadoes, and was by the captain of the *Espiegle* sloop of war humanely taken on board and brought to England for the purpose of undergoing the operation.

I have been since informed ; but whether the first contracted symptoms of the complaint at sea or while residing on shore, I have not been fortunate enough to discover.

It is necessary to observe, that the general food of the superior class of officers is infinitely more acescent than that commonly used by the seamen and marines ; and also, that they command distinct apartments to sleep in, more cool, and consequently better ventilated than the parts appropriated to the men ; but the water for general use is common to every description of persons on board ships of war.

In well-regulated messes of the principal officers, their diet differs but little from people on shore : but with respect to other classes of the ship's company the difference is considerable, as they are unavoidably compelled to subsist, often for months successively, on salt beef and pork.

On the ship's arrival in port, the men are amply supplied with good fresh beef, vegetables, and sound table beer, while victualling and watering, which, however, in time of war, is generally limited to a very short period, especially when commanded by an active and zealous captain. On those occasions it is incredible to see what quantities of salt the seamen will use with their fresh beef. During their stay in port, and for some days after, each man is allowed a gallon of good beer ; and at other times, when this wholesome beverage can no longer be pro-

cured, a pint of wine, or half a pint of spirits in lieu thereof; the latter previously diluted with three portions of water, is served out daily to each man at two distinct periods.

The beef or pork commonly issued to the ship's company at sea is so highly salted, and frequently kept so long in its briny pickle, that its bland and nutritious juices are in great measure exhausted. Excepting in ships of war of the first and second rate, a portion of one deck only is appropriated to the whole ship's company to sleep in, and this is consequently so crowded with hammocks, and the men so impacted together, (fourteen inches in width being the total space allowed to each individual,) that some dexterity is requisite to obtain ingress and egress to and from their beds. The lower deck being always the part allotted for repose, the ports are for the safety of the ship necessarily closed all night, and the temperature of the surrounding air is thereby so exalted, that the place becomes a kind of steam-bath from animal exhalation, the men being literally immersed in their own perspiration.*

Dr. Dobson remarks, that calculous disorders are much more frequently met with in the cider

* See Sir Gilbert Blane's excellent paper on the comparative health of the navy, published in the sixth volume of the Transactions of the Medical and Chirurgical Society; and also, chap. ii. of this work.

counties than in other parts of England;* and as it would appear from what has been here advanced, that seamen who have rarely opportunities of indulging in the use of malt liquors are in great measure exempt from urinary concretions, it may therefore be asked, whether all kinds of fermented liquors be not favourable to the production and accretion of such disorders?

From Dr. Marcet's and Dr. Prout's remarks it would appear, that an active and healthy state of the digestive organs is one of the most effectual preventives against the formation of calculi. May it not therefore happen, in the instance of seafaring men, that the peculiarities of their regimen, and especially the great quantities of muriate of soda they habitually take with their food, contribute to produce this effect?† or, in other words, shall we be justified in imputing to the stimulus communicated to and maintained in the whole chylopoetic viscera by the muriate of soda, a power to counteract the aggregation of calculous matter in the urinary organs independently of any direct chemical agency?

It has been already stated, that seamen belonging to ships of war are so closely impacted

* See Dr. Dobson's Commentary on Fixed Air, 3d edition, published in 1779.

† See Dr. Marcet's Essay, 1st edition, page 176, and Dr. Prout's valuable paper in the eighth volume of the Transactions of the Medical and Chirurgical Society, pp. 543—545.

whilst in their hammocks, that they continue suffused with perspiration during the whole period allotted to repose: and there is also such a perpetual mutation in the various stations appointed to ships of war to cruise in, that few seamen escape the performance of their round of duty in tropical and other hot climates, bearing an equal proportion to the time spent in the more temperate climate of Europe; and consequently there must be a much more profuse discharge from the exhalents on the surface of the body of this class of men, than of those residing in Great Britain or in more northern latitudes.

I am the more particularly induced to notice these circumstances, because it has been ingeniously suggested among other causes, “whether there may not be some essential connexion between the state of the cutaneous functions and the greater or less prevalence of this class of disorders?”*

That an intimate connexion does subsist between a particular state of the cutaneous functions and a tendency in the urinary secretions to form calculous concretions, I am inclined to believe; but in this early stage of the inquiry into the grounds for such opinion, I deem it more consonant to the circumspection necessary to be observed in speculative medicine, to withhold the view which I have taken of this part of the

* See Marcet's Essay, page 44.

subject, till confirmed by more certain and conclusive *data* than we at present possess.

With the view of ascertaining with every degree of accuracy, and through every possible channel from which information could be derived, the validity of the opinion herein maintained, of the almost total exemption of seafaring people from calculous affections, I made due inquiry of Sir E. Home and my friends Messrs. Cline, sen. and Sir Astley Cooper, whether, in the course of their extensive practice, both private and public, they could recollect having performed the operation of lithotomy on any of the description of persons here alluded to? The two former gentlemen fully answered in the negative, to the best of their recollection at the time; and Sir Astley Cooper informs me, that he had been consulted a few years back by Admiral B. D——s, then labouring under evident symptoms of stone, but that he had not been operated upon; the stone, however, was ascertained to be of that species called Mulberry, by a portion being broken off by the sound, and passed *per urethram*.*

Excepting this solitary case, conjoined, however, to that of the captain and hospital surgeon before mentioned, Sir A. Cooper stated that no other instance had occurred in the course of his

* Admiral B. D. died only about ten years ago, and I learn at the Admiralty Office that he had *not* been employed at sea for the last twenty years of his life.

practice. This eminent practitioner also asserts, that the surgeon here alluded to had been affected with calculous symptoms from his very *childhood*.

The circumstance mentioned by Dr. Dobson, page 153 of his work, likewise deserves notice in the present investigation, viz. the rare occurrence of stone cases in the Liverpool hospital, compared to that of other public institutions appropriated to similar purposes. May not this singularity arise from a great proportion of patients admitted into the hospital of this great emporium of British commerce being composed of seamen or seafaring people?

The various and concurring facts already enumerated, tend to illustrate and confirm the position we are endeavouring to establish, namely, that there is something in the occupation, food, drink, and general habits of seamen, added to frequent change of climate, which render this class of men more peculiarly exempt from calculous depositions than any other.

The life of a seaman is one of great activity, and often of considerable labour and exertion. I have frequently observed, in common with other officers, that sailors never fail to empty the bladder on the first symptoms of distension; and the facilities afforded them, as far as regards unmixed society and locality, favour greatly this salutary habit. It is also of importance to notice, that no description of people are less subject to

dyspepsia,* or more prone to strictures in the urethra.

People of sedentary habits, on the contrary, offer great facility of aggregation and increase to any minute calculous depositions in the bladder, where they gradually acquire magnitude by continual accumulation of fresh matter, so as to render the distress and acute sufferings of the patient intolerable, and compel him to submit to the operation of lithotomy as the only mode of obtaining permanent relief: and hence it is, that lawyers and other studious men who sit much, and are in habits of retention, are said to be more subject to the disease in question than those devoted to the more active scenes of life and greater muscular exertion.†

To these observations it may be objected, that calculi are more generally formations of early youth than those of adult or of advanced age; and the men who enter or are impressed into the public service, undergo an examination respecting their state of health, and are rejected if found to be labouring under any serious complaint; but when we reflect on the manner of carrying on the surgical examination on these occasions, it will be acknowledged by those best acquainted with the nature of the service, that

* See various parts of Murray Forbes's work on Gravel and Gout.

† See also page 38 of the same work.

they are not *particularly* scrupulous as to admissions: besides, it has been shown in the cases of the two boys operated upon, that they entered the navy for the express purpose of getting cured, and consequently took care to conceal their disease. The fact is, that boys are frequently embarked at the early ages of nine and ten years; and when we take into consideration the vast exertions made by officers, and the various impress gangs to man ships of war fitting in harbour, or to keep up their numbers in those already at sea, the validity of the above objections will be greatly lessened, if not wholly removed.

Again, in the number of patients received into the naval hospitals, as compared to the admissions into the different London and provincial hospitals, it must not be forgotten, that in the latter, those admitted are composed of both sexes, whereas in the former, the admissions are confined solely to the male sex; and it will be found on a reference to Dr. Marcet's report from the Norwich hospital, (page 26,) that the proportion of females operated upon, is to that of males as *one* to *seventeen*. It is therefore but just that these facts should also have their due weight in balancing the argument.

Moreover, it is not to be omitted, that out of the *eight* cases stated to have been admitted into the naval hospitals from 1800 to 1815, both years included, *three* out of the eight were known to have entered the service labouring under the

disease ; so that, in point of fact, *five* only are justly to be considered as having originated among the vast mass of individuals composing the British navy in the eventful space of sixteen years, and these years of unexampled efforts and more strenuous exertion than any in British annals.*

In that magnificent and extensive asylum for decayed seamen, the royal hospital at Greenwich, Dr. Robertson, the physician to the institution, informs me, that during his professional attendance there for twenty-seven years, he cannot recollect a single instance of the operation of lithotomy having been performed, and only one case in which symptoms of calculus were manifest. He states, however, that on dissection he discovered small calculi in the kidneys and ureters of some of the pensioners after death.

The number of mutilated or otherwise infirm seamen and marines accommodated in that noble institution, exclusive of officers, is 2710; and the admissions on an average annually to fill up the vacancies occasioned by death or removal as out-pensioners, is about 213. All ages, from twelve years to the most advanced period of life, are eligible for admission.

From various parts of the preceding premises, then, we may with some degree of probability

* *Five* cases of stone occurring out of 86,000 hospital patients give only *one* in 17,200.

infer, that animal food, combined with a certain portion of the muriate of soda, in conjunction with farinaceous aliment, on which seamen principally subsist, are favourable to the prevention of calculous aggregation.

To acquire this prophylactic property, it may be essential that the animal food should be saturated with salt previously to its use, as we learn from Dr. Wollaston, that when free from saline matter, animal food favours the generation of lithic acid, at least in carnivorous birds :* whether similar effects follow its application to the human stomach, has not yet been ascertained, I believe; but reasoning from analogy, we might be induced to conclude that such would be the consequence.

With respect to the practical inferences to be deduced from almost the total absence of calculous disorders in tropical regions, the exhibition of sudorifics would appear to be indicated, as offering a prospect of preventing the malady altogether, or of arresting its further progress when once established. It is well known that the cuticular exudations are vicarious with the renal secretions; and the most superficial observer must have witnessed, that when the cutaneous discharges are abundant or increased, micturition is proportionably diminished. Dr. Wilson has remarked, that Dover's powder and tartarised

* See Philosophical Transactions for 1810, page 229.

antimony, (which are powerful sudorifics,) when administered to individuals, invariably lessen the quantity of lithic acid in the urine.*

From the foregoing observations it would appear, that exercise is not only conducive to general health, but acts as a preventive to the disease in question, and probably may be used with material advantage even when calculi are known to exist, the *quantum* of course to be regulated by the magnitude or irritation produced by the calculus on motion.

It is generally believed, that acid and the acescent fluids, such as cider, malt liquors, and French wines, favour the generation of lithic gravel: if similar results arise from the use of fresh animal food, according to the analogy which Dr. Wollaston's experiments have suggested, farinaceous and that species of food opposed to the acescent would necessarily be indicated. On these points, however, I beg to speak with much diffidence and reserve, not possessing sufficient *data* or experience to hazard any thing like decisive opinion: but from the active and extensive labours of my friend Dr. Prout and some others, on this subject, we may expect sooner or

* See Dr. A. P. Wilson's experiments detailed in an appendix to his book on Fever, &c. pp. 494, 500, 527, 529, and 533. See also a treatise on Gravel and Gout, by Murray Forbes, page 235; a work that will be read with pleasure and improvement by all who are interested on this subject.

later, that it will receive ample investigation and elucidation.*

I have made very minute inquiry throughout the medical department of the service, whether any seamen or marines had ever been invalided at the great medical establishments labouring under calculous affection; and the general reply officially returned was, that no records were preserved of the diseases for which seamen had been invalided; but the surgeons positively assert, that no instance had occurred at the royal hospitals of patients so affected being invalided previously to having undergone the operation of lithotomy.†

I have extended my researches to every seaport town in the kingdom where public hospitals or dispensaries had been established, and from which I could derive information by epistolary correspondence or personal application; and I

* For some very interesting and valuable information on urinary calculi, see a paper by W. Brand, Esq. Secretary to the Royal Society, in the volume of the Philosophical Transactions of London, for the year 1808; and some facts illustrative of the above paper by Sir E. Home in the same volume: also a paper by Sir Gilbert Blane in the third volume of the Medical and Surgical Transactions.

† All invalidings from the service must necessarily take place at one or other of the naval hospitals at home, whether the objects for survey be patients in the hospital, or are brought on shore from ships in port; and the principal medical officers of the hospital, physicians and surgeons, form part of the surveying officers on all such occasions.

embrace this opportunity to acknowledge publicly the very liberal and polite attention paid to my letters by gentlemen to whom I am personally unknown, answers having been returned to all, excepting from Edinburgh, which will be found conclusive on the subject under discussion, as far as the testimony of gentlemen of the highest professional character can vouch to the fact; and indeed, I presume the general result of this inquiry will now be deemed to have been satisfactorily established.

I shall, therefore, without further comment, briefly lay before the reader the substance of the different communications received on the occasion.

Dr. Armstrong, physician to the Public Dispensary at Sunderland for nearly twelve years, says that he does *not* recollect having been *once* consulted by any seafaring person affected with calculus, and that certainly *no operation* for the stone had been performed there during the above period.*

Dr. M'Leod, physician to the Westminster General Dispensary, visited Aberdeen during the summer of 1818, and he informs me, that in the last five years *ten* operations for the stone had taken place at that hospital, but that, *none* of the patients were mariners or seafaring people. Not-

* Dr. Armstrong is now physician to the Fever Institution in London, and the author of several valuable medical works.

withstanding the fact, he observes, that Aberdeen is the principal port in the north of Scotland, and the proportion of seafaring people admitted into the hospital consequently large, he cannot call to mind a single instance of a patient labouring under calculus being admitted during the whole period of his previous attendance as pupil at that institution.

Dr. Ramsay, physician to the Newcastle-upon-Tyne Infirmary, acquaints me, that no record of the occupation of patients has hitherto been kept by the surgeons; that *twenty-one* male cases of urinary calculi had been admitted during the last *ten years*, and the surgeons of this establishment state, that, to the best of their recollection, *not one* of the description of persons under consideration had formed the subject of operation.

From the last annual report of the Newcastle Infirmary, with which I have been favoured, and which now lies before me, it appears that the admission of patients from the 1st of April, 1817, to the 31st of March, 1818, inclusive, is as follows; viz. in-patients, 778, out-patients, 637; total 1414.

Dr. Bostock has had the politeness to procure for me the following information from a professional friend on the spot; namely, that the total number of annual admissions into the Liverpool Infirmary has been, upon the average for the last *ten years*, 1884; that is, 1033 in-patients, and 851 out. The number operated upon for the stone

in that institution during the above term of years, is stated to be *eight*, and that *none* were of the seafaring class. This fact is very remarkable: that in one of the first commercial cities in the world, no instance had occurred in the space of ten years of a seaman being admitted into the hospital for a calculous complaint; which circumstance *alone* fully demonstrates the *infrequency* of the disease among that class of men.

Dr. Rigby, now physician to the Norwich Hospital, noted for receiving a greater number of calculous cases than any hospital in Europe, acquaints me, that he has been connected with this celebrated institution ever since its first establishment in the year 1772, during which time he witnessed most of the operations performed therein, and that out of between *five and six hundred stone cases*, he *cannot* recollect a *single instance of a mariner having been the subject of lithotomy*. Mr. Hardy, the apothecary, who has resided many years in the hospital, makes the same remark; but he also observes, that the employment or particular occupation of the men admitted has not been noted in the books. The doctor mentions, however, that he recollects a sailor having been operated upon many years ago by Mr. Lynn in the Westminster Hospital, which, it may be presumed, was about the period of his settling at Norwich, and that only, perhaps, because the man happened to wear a blue jacket and trowsers. If, however, the doctor could so

accurately call to mind a solitary case after such a lapse of years, the probability is, that had any similar circumstance or event occurred at the institution where he has so long presided, and where also, I believe, he performed the duties of surgeon, he could hardly fail of recollecting it.

The local position of Norwich, its contiguity to Yarmouth and other seaport towns on the coast of Norfolk, Suffolk, and Lincolnshire, joined to the celebrity acquired by its surgeons for dexterity and success in operations of lithotomy, the necessary result of constant practice; from these combined circumstances, Norwich seems to be well adapted for, and to court the admission of seamen into its hospital; and yet there is no recollection of any patients of the description under consideration having been subjected to the operation of lithotomy; a still farther and striking corroboration of the infrequency of calculous diseases among seamen.

Mr. Baynton, formerly of Bristol, wrote me as follows: * “ I received the earlier part of my education at the Bristol Infirmary, between thirty and forty years since, and at that time resided seven years in the house: I very distinctly recollect that *no sailor was ever cut* for the stone during the period of my residence there; and I am equally certain that no sailor has ever applied

* This gentleman is well known to the profession by his valuable publications; and has since paid the debt of nature.

to me for the relief of that disease since I have been in the profession. These facts would, perhaps, be of little value to you if they were to stand alone; but as they are accompanied by the very interesting communication of my friend Mr. Smith, one of the surgeons of the Bristol Infirmary, I hope that the information will assist," &c.

Extract of Mr. Smith's letter to Thomas Baynton, Esq.

"MY DEAR SIR,—It being my intention to publish a memoir on the subject of calculus, I have taken some pains, and therefore the following may be considered as accurate.

"The Bristol Infirmary has now been established eighty-three years, during the whole of which period there *is no stone case marked 'Mariner,'* which it *would* have been, had a sailor applied to the recommender. There has been no seafaring man cut within my remembrance, which amounts to thirty-one years, and your own recollections will carry you ten years above that. Between us, therefore, we may answer for *forty years.*

"Our stone cases have declined in number very remarkably of late years, which is the circumstance that first turned my attention to the subject.

From the Year		Number of patients cut for the stone.
1735	to 1740	..... 16
1740	1750	..... 61
1750	1760	..... 83

From the Year		Number of patients cut for the stone.
1760	to 1770	62
1770	1780	40
1780	1790	36
1790	1800	32
1800	1810	16
1810	1818	10

“ From 1750 to 1760, there passed the books, as in and out-patients, 29,604, and during the last ten years there are probably about 31,000.*

“ The cases of lithotomy have come to us comparatively in the following order of frequency, as to the city and neighbouring counties : Bristol, Somersetshire, Bath included, Wiltshire, Gloucestershire, South Wales, Devonshire. No cases from North Wales or Herefordshire.”

Mr. Russell, the distinguished professor of clinical surgery in the University of Edinburgh, writes as follows :—

“ I have made inquiry among my professional acquaintances respecting the lines of life of the patients who have been cut for the stone in Edinburgh, within these last eight or ten years, and I have not found that there was any one who might

* In the 29,604 admissions from 1750 to 1760, the number of stone cases is stated to be 83, which gives *one* in 356; and from the 31,000 admissions during the last ten years, we must deduct two-tenths—the ten stone cases that occurred within the last eight years, we shall then find gives *one* in 2,480: average of the two periods, *one* in 585.

strictly be considered as a sailor. One patient, from the neighbourhood of Musselburgh, was reported to have been at sea many years before he became a patient in the hospital ; but I have not been able to learn any *satisfactory* particulars respecting his history."

Dr. G. Kellie, of Leith, an old naval surgeon of great experience and talent, says, that, " Though I have no documents from which I can furnish you any very precise information respecting the prevalence of urinary calculi among seafaring men ; yet, having been long conversant with the diseases of seamen, and having practised for these last eighteen years in a seaport town, I think myself fully warranted to say, that urinary calculus is of rare occurrence amongst that class of the community."

The two last reports, from Edinburgh and Leith, were sent to me in 1823, five years after the appearance of my first paper on this subject in the *Medico-Chirurgical Transactions*, vol. ix.

In addition to the mass of information already adduced, I felt particularly desirous to acquire some knowledge on the subject from Ireland, that no possible source might be left unexplored that could enlighten or tend to remove doubts on the decision of the question. My friend and neighbour, Dr. Boyton, therefore, obligingly endeavoured to supply the wished-for intelligence ; but unfortunately he proved unsuccessful, the desired information not being attainable.

Bearing in mind, however, the experiments of Dr. Wollaston, as stated at page 324, I availed myself of the opportunity afforded by meeting, last summer, one of the professors of the Dublin College, to inquire whether urinary calculi were equally prevalent in the sister island as in England; for it is well known that the peasantry of Ireland are seldom able to indulge in the luxury of animal food; and his reply was, that, in his opinion, the disease was much less frequent there than in England. Should the aforesaid information prove to be justly founded, the analogy suggested as probably subsisting between carnivorous birds and human subjects, as far as regards the generation of lithic acid, may be considered as pretty well established.

An Account of a Successful Case of the High Operation for the Stone, in a Letter to Sir. E. Home, Bart.

8th August, 1825.

DEAR SIR,

As your two successful cases of the high operation for the stone, published in the third vol. of *Strictures*, have encouraged me to adopt that mode of operating; and finding, also, that you have since that time operated in the same manner twice at St. George's Hospital; these

being the only cases, I believe, that have occurred since the days of Cheselden,* I am induced to send you an account of the following case and operation, with full permission to make any use of it you may think proper.

Mr. C., aged 20, the son of an officer of Sheerness dock-yard, had laboured under symptoms of stone from his earliest infancy, and was twice sounded, between the age of five and six, by a distinguished surgeon in London, but who was unable to satisfy himself of the presence of a calculus in the bladder. The patient and his father informed me that throughout his whole life he had never been able to retain his urine more

* In one case upon a man 54 years of age, October 29th, 1824, in which the stone was extracted entire, weighing about $3\frac{1}{2}$ ounces, though its texture was so loose beneath the external crust, that it afterwards broke to pieces in the hands of a gentleman who was examining its surface. In this case the patient died on the third day after the operation; but upon examination after death, the operation, in itself, was not the cause, the bladder having suffered so much by disease from the presence of the calculus as not to admit of his recovery.

The other case was a boy 11 years of age; the operation was performed on the 3d December, 1824, and the patient got well, though the wound, from his bad state of health, did not completely heal for two months. From his birth the water had always dribbled from him: the stone was small and spherical, and its external surface made up of spiculated crystals.

I have added this note from your letter to me, with a view that all the operations of the kind which have come to my knowledge may be recorded together.

than half an hour, night or day: the pain was occasionally so severe, also, in these frequent acts of micturition, that his life had become burthensome to him; and before this act could be effected in childhood, they were sometimes under the necessity of placing him on his head.

These symptoms continuing without any abatement, he consulted me about three months ago, when, on passing the sound, a calculus was discovered. Under these circumstances I determined to perform the high operation, and indeed there seemed to be no choice left; first, because I considered the stone to be too large for extraction by the lateral operation; and, secondly, because the bladder could not bear distension, for it never had been distended sufficiently with urine to enable any one to perform the lateral operation with safety to the patient, and satisfaction to the surgeon.

The patient having been kept upon low diet for a month, his bowels frequently acted upon by purgative medicines during that period, and the bladder purposely made accustomed to the frequent touch, and sometimes rather rough treatment with the staff, the operation was performed on the 18th June, 1825, in the following manner, and in the presence of Dr. Lewis and Mr. Melin, of the army, and of Messrs. Brown, Cullen, and Keddell, surgeons, of Sheerness. The patient being placed on a mattress upon a table of ordinary height, with a pillow under his head;

the pelvis raised considerably higher than his shoulders, with the view of removing the peritoneum as far from the parts to be cut as possible, while his feet rested upon chairs: standing on the right side of the patient, I made an incision, nearly four inches in length, with a scalpel, in the line of the linea alba through the integuments downwards over the front of the pubes, which latter step I found of great advantage both during the operation and in the subsequent treatment of the case. The incision was carried on down towards the bladder, between the pyramidales muscles, and through the linea alba; the latter being first punctured, and afterwards cut *transversely upon the symphysis pubis*, dividing some of the fibres of the pyramidal muscles on each side as we proceeded, so as to give a more free passage for the extraction of the stone. I then, with a director, detached this tense membrane (the linea alba) from its subjacent adhesions, and divided it upwards with a probe-pointed bistoury, introduced into the groove of the director, until I could readily insert the forefinger of my left hand, which is, on all occasions, the best director, and which was most conveniently done by standing between the legs of the patient. When about two inches and a half of the linea alba were thus divided, I thought we should have had sufficient space for cutting into the bladder and extracting the stone; but as the wound appeared deep and narrow, and there was a large calculus

to extract, I cautiously extended the incision half an inch more, in the manner already described.

The bladder, very much contracted, was now clearly seen covered by fat, and was raised through the fat, upwards and forwards, to the external wound of the integuments upon the point of a silver staff, with a groove in its concave part, extending from close to its point downwards about two inches, and which I preferred to the sonde-de-dard used by the French surgeons, that instrument appearing to me both unnecessary and unscientific: the handle of the silver staff being held in a depressed position by my friend Mr. Brown, and the point of the staff kept steady by the fingers of my left hand, the anterior part of the fundus of the bladder was pierced from without, by a straight sharp-pointed bistoury, passing its point into the groove of the staff, and carrying the incision downwards and forwards to the pubes, until there was room for the fore-finger, which was introduced for the purpose of ascertaining the size of the calculus, that the opening in the bladder might be enlarged accordingly. Having satisfied myself on this head, I hooked up the fundus of the bladder with my finger, and enlarged the incision towards its cervix, sufficiently to admit of the free extraction of the stone. Some little difficulty here arose in disengaging the stone from its situation, notwithstanding the great assistance obtained by the introduction of the fore-finger of my right hand into the rectum, while

the fore-finger of my left was in the bladder to cant or turn the stone, so as to extract it by its smaller axis; and, indeed, this was not effected until the single blade of a pair of small stone forceps was introduced. The stone being thus turned, it was easily removed with the finger and thumb. In point of fact, so firmly did the bladder grasp the calculus, that the idea was conveyed to our mind of its actual adhesion to the coats of that viscus.

One small cuticular artery was divided at the first incision, and secured at the time, to prevent the future steps of the operation being obscured by the bleeding, and the subsequent issue of blood into the cavity of the pelvis.

Two slips of linen, dipped in oil, were introduced through the external wound on each side of the bladder, but not *into the bladder*, as was done in your first case, published in the *Philosophical Transactions*;* a gum elastic catheter was passed into the bladder so as just to enter its cavity, and no farther, and was secured in this situation by tapes attached to the instrument, and to an elastic band, or retainer, in the manner described by you, but which in this case was made of flannel, lined with calico. The sides of the wound were brought together by slips of sticking-plaster, and the parts supported by a flannel roller, passed three or four times round

* Afterwards republished in your third vol. of *Strictures*.

the pelvis and the lower part of the abdomen. The patient, by means of pillows, was placed on an inclined plane, a vessel was secured to the end of the catheter to receive the urine, and he had an anodyne draught administered to him.

I am fully aware that there are those who may imagine the trifling difficulty we experienced in extracting the stone arose from the depth, narrowness, and consequently from the supposed tightness, as it were, of the wound, through the parietes of the abdomen; but I can assure them that such was not the fact, for I enjoyed the most perfect freedom in that respect. The circumstance in my mind arose rather from the position of the stone, its size, and the strong contraction of the bladder upon it; for it will be borne in recollection, that the bladder, in this case, had never been distended beyond the size of the calculus, and that which two ounces of urine would occasion. What the bladder wanted in capacity, it possessed in the increased thickness of its parietes, for it was fully a quarter of an inch thick at the part divided; so that its muscular power must, therefore, have been considerable. I cannot avoid, in this place, repeating the great advantage to be derived from dislodging the stone, in such cases, by the introduction of the finger into the rectum, and which appears to me a great improvement in this mode of operating.

19th June. Slept two hours during the night; about six ounces of urine came through the ca-

theter, the rest by the wound. His pulse this morning was 120, and full; he was bled, therefore, to twenty ounces, and I prescribed saline draughts every three hours, each containing ten drops of liquor antimonialis. He was otherwise free from pain, and only complained of a smarting in the wound.

20th. Had four hours continued sleep during the night, *for the first time in his life*: urine passed equally by the instrument and the wound: pulse about 100, and soft, and he perspired profusely during the night: the draughts were continued, and he was supplied with barley-water for his common drink. An aperient draught was prescribed for the following morning.

21st. Slept nearly six hours last night: pulse 90: skin moist: no pain whatever: his bowels were well moved by the draught: urine passed as the day before, and he sat up about two hours, with his feet hanging over the side of the bed, and resting upon a chair.

No one bad symptom occurred afterwards; the urine continued for about five weeks to come occasionally by the wound in small quantities, the rest by the natural passage; the wound itself continued to look healthy from the first, and gradually closed until the 31st July, when it was completely healed, and the patient voided his urine in a full stream through the urethra.

Thus terminated this successful case; and I am strongly inclined to believe, that the pa-

tient's recovery would have been still more speedy, had the catheter been sooner altogether withdrawn from the bladder; for it was retained almost constantly in that situation about three weeks, removing it night and morning only, for the purpose of clearing it of mucus.

The stone weighed eleven drachms, two scruples, and four grains. It is two inches long, and one inch and an half in width. A section has been made of it, and my friend Dr. Prout has had the kindness to analyse it for me. The result will be found in the Doctor's note addressed to me.

I have the honour to be, dear Sir,

Your very obedient humble servant,

A. COPLAND HUTCHISON.

To Sir Everard Home, Bart., &c. &c. &c.

Sackville Street.

London, July 12.

MY DEAR SIR,

The nucleus of the calculus which you were kind enough to leave for me, consists essentially of the lithate of ammonia, mixed with some oxalate of lime (and probably a little carbonate of lime,) the phosphates, and animal matter. The exterior laminæ are chiefly composed of the phosphates; but two or three small fragments detached from the surface were found to consist chiefly of the phosphate of lime; and this circumstance made me anxious to see the urine, as

I had never before known this salt *deposited alone* from that secretion, and hence had been led to believe that calculi composed entirely of that substance were not of urinary origin, but formed in a manner analogous to those met with in the prostate gland.

The specimens of urine * which you were good enough to send me arrived in safety, but I am sorry to say that they throw no light on the subject, or rather on the point in question. They are alkaline, and of a very bad character, and abound in the *mixed* phosphates, (that is, the phosphate of lime and the triple phosphate of magnesia and ammonia,) as is usual in such cases.

I am, my dear sir,

Yours, &c. much obliged,

40 Sackville Street.

W. PROUT.

* March 26, 1826, Mr. C. sent me from Chatham a quantity of urine which he had voided at one time, and which measured a pint, being only nine months and a few days after the operation in the preceding June. This urine was sent up to town, to my friend Dr. Prout, by the doctor's desire. One cannot readily quit this subject without remarking, that it is perhaps the first case on record which proves the great dilatability of the urinary bladder, after an infantile contraction of twenty years. The patient has now not any occasion to get out of bed for the purpose of micturition from the period he retires to rest until he gets up in the morning for the day's avocations.

Dr. P. informs me that the urine of this patient has considerably improved since he last examined it, the patient having swallowed the juice of two lemons every day since the operation, and now he takes the muriatic acid.

Case of Hæmorrhage into the Urinary Bladder, proceeding from Fungoid Tumours of the Prostate Gland, and requiring the Performance of the High Operation for the Removal of the Coagula.

S. W., Esq., aged seventy-three, had been my patient, during a period of between eight and nine years, for an affection of the bladder, under which he had laboured about twelve years previously to his consulting me. The disease, from the first, appeared to be seated in the prostate gland; and whatever may have been the gentleman's habits in very early life, he had to my knowledge, for the period I attended him, been most temperate in his mode of living; and, by those of his friends who have known him thrice that period, the same testimony is borne to this fact.

Mr. W. had very frequent desire to void urine, although the bladder at such periods might not contain more than one or two ounces; and the irritation was sometimes so great, that ischuria or complete suppression was the consequence, as I have had occasion several times to introduce a catheter. His bowels were naturally constipated, and required the frequent aid of medicine; but in all other respects he enjoyed a good share of health and spirits, considering his age. The practice pursued during the first six years of my attendance was that which is usual under such

circumstances; namely, warm baths—emollient enemata—opium, in the shape of pulv. Doveri—the potassæ nitras cum gum. acaciæ—uva ursi, or alkaline remedies: these were all alternately had recourse to with advantage.

About the end of the year 1821 his disease became less easily controlled: and about this time, too, his urine was occasionally tinged with blood; which circumstance, combined with a pain he had in the loins and down the fore part of the thighs, as well as an irritation of the glans penis, led me attentively to examine the bladder with a sound; but no calculus could be discovered. I have also, at his own request, within the two last years, several times introduced this instrument; for, notwithstanding my reiterated assurance that there was no stone in the bladder, and that the disease was confined to the prostate gland, the impression was strong on his own mind that there certainly must be a calculus.

A lithic deposit from the urine, which at one time was considerable, having entirely disappeared with a return of a more regular state of bowels, and considering the occasional bloody state of the urine, he was now prescribed the tinctura ferri muriatis, which certainly removed this appearance as frequently as it recurred; and so sensible was the patient of the utility of this remedy on such occasions, that he never afterwards travelled any distance without being provided with it.

He complained also of a sense of weight or fulness about the hollow of the sacrum; and, on examining the prostate *per anum*, it was found considerably enlarged—so much so, as occasionally to prevent the free passage of fæces through the rectum. He could not now walk more than a mile or a mile and half without suffering from the consequences afterwards. He could ride in an easy carriage on a good road for fifty miles without much inconvenience; but such was not the case over the stones of London, for they always occasioned him great pain.

We now come to the more interesting part of this case; and deeply interesting it was to me personally, for the subject of it was a very valued friend.

It is to be understood that for years past he was under the necessity of voiding his urine from three to six times during each night; and on the 26th February last, at two o'clock in the morning, he was seized with a retention of it, which he ascribed to his having taken too long a walk a few days previously; but, although in great pain through the remainder of the night, he would not disturb the servants until their usual time of moving.

A surgeon in the neighbourhood introduced a catheter, and, on my visiting the patient about ten o'clock, stated, that, an hour or two before, he had drawn off about a pint of urine; but on examining the patient at this time, the bladder

seemed considerably distended, and he appeared to be in a good deal of pain; but all our efforts to introduce the catheter now proved fruitless. Leeches were applied to the perinæum; the hip-bath was used every two or three hours; ol. ricini and enemas were had recourse to; he was bled at the arm; and, in the evening, Dr. Walshman and Sir Astley Cooper were summoned to our assistance. Sir Astley, however, did not arrive until the next morning early, two hours after I had succeeded in introducing the instrument and emptying the bladder of upwards of a quart of dark-coloured urine, with several clots of blood floating in it. The patient was kept quiet in bed, and the instrument retained in the bladder until next day, when it was removed and replaced by one of elastic gum.

Every bad symptom had now abated—he felt easy—his mind was tranquil, and he expressed a wish to go down stairs, which he did for some hours, and felt very little inconvenience from the exertion. At the end of two days he complained of the irritation the residence of the instrument in the bladder occasioned, and entreated that it might be removed, which was complied with.

As I slept in the house, the instrument was passed as frequently as it was necessary, without the pain and anxiety of any delay; and my absences in the day did not exceed from three to four hours. His bowels were kept soluble and his skin permeable by proper medicines, and he

had occasionally recourse to the hip-bath. It is necessary here to mention, also, that his urine was perfectly clear and free from any appearance of blood since the second day of this attack.

At one o'clock in the morning of the 2d March I introduced a catheter with the same facility as I had been accustomed to do during the last few days, and drew off half a pint of perfectly clear urine. I left him comfortable and free from pain. A quarter of an hour had hardly elapsed when I received a sudden summons to attend him. He was then suffering greater pain than ever from distension of the bladder, although it had been emptied so shortly before: it was quite evident, therefore, that this must have been occasioned by internal hæmorrhage, which was confirmed by the introduction of the catheter; and, as he had not lately complained of pain in the loins, we did not suspect the kidneys to be the source of it.

I now endeavoured, by injecting warm water and by the frequent introduction of the wire of the catheter, to break down the coagulated blood, but to no purpose.

In this embarrassing situation, I proposed to Sir Astley Cooper, who was sent for, to cut into the bladder from above the pubes — the diseased and enlarged state of the prostate gland alike precluding the operation being performed either through the perinæum or rectum. This proposal was acceded to, as the only chance left of prolonging the life of our patient.

In the presence of that gentleman, therefore, I made an incision into the bladder of between two and three inches, cutting between the pyramidal muscles, as in the high operation for the stone, and, with a spoon, scooped out upwards of a pint of coagulated blood, there not being more than a very few ounces of urine likewise contained. The operation was not performed until upwards of twelve hours subsequent to the hæmorrhage. On examining the interior of the bladder with our fingers, we discovered two fungoid tumours projecting into this viscus from the prostate gland; and from which tumours, we conclude, the hæmorrhage must have proceeded, for the bladder in every other part seemed perfectly healthy. The entrance of the urethra was situated between the two tumours; the left being about the size of a hen's egg, and the other that of a large walnut.

A syphon was now made of a leaden catheter, one end of which was introduced into the bladder by the wound, and a calf's bladder was made fast to the other, as a reservoir for the urine. The head and shoulders of the patient being raised by pillows, an opiate administered, the instrument properly secured, and the air exhausted from the long leg of the syphon by means of a common syringe, we left him in a comparatively easy and comfortable state, and the syphon performing its office efficiently.

During the first three days after the operation

no case could proceed more favourably; the bowels were naturally open; there existed no tension of the abdomen; the wound looked healthy; the patient's spirits and relish for food were tolerably good; and, upon the whole, the general aspect of the case was favourable.

On the fourth day, however, from the operation, a great change took place: his spirits became depressed; he declined all kind of sustenance; his looks were sunken; his pulse was feeble, and a want of action in the wound was but too apparent; and, notwithstanding every effort to save him, he continued to sink gradually until the 7th March, being the sixth day after the operation, when he died—in full possession of his mental faculties up to the latest period.

I lament to say that permission to inspect the body was not obtained.

I have related the particulars of this case at some length, as it is the first of the kind that ever came under my observation, and only the second which had come under that of Sir Astley Cooper.*

* A syphon was used every few hours to empty the bladder, in preference to a catheter; the latter being more likely to produce irritation, and renew the hemorrhage. The bladder being cut into from above the pubis was not a matter of choice, but of necessity; for the prostate gland was so very much enlarged that we could not reach its summit with the finger introduced per anum. Another reason may be urged in favour of the pubic opening, namely, the facility it afforded us of arresting the hemorrhage, if it had recurred, or of adopting such

measures as might have suggested themselves to our minds of destroying or otherwise of diminishing the growth of these tumours.

I have now only to add, from the period of the operation to the patient's death, there was no appearance of extravasation of urine into the surrounding parts — that the peritoneum was not wounded, and that, as stated in the text, the patient's death seemed to be entirely owing to great despondency, rejection of food, and extreme debility, added to his very advanced period of life.

CHAP. IX.

THE HISTORY OF A CASE OF ANEURISM OF THE POPLITEAL ARTERY, IN WHICH A NEW METHOD OF APPLYING THE LIGATURE WAS PRACTISED, WITH OBSERVATIONS.

IN the ingenious experiments performed by Dr. Jones with the ligature on the arteries of dogs and horses, it appears that he completely succeeded in obliterating the canals of these vessels, by the consequences resulting from the mere rupture of their internal coats, and almost instantly removing the ligature by which the lesion was produced.

This circumstance appeared to suggest a valuable improvement in the mode of tying arteries for the cure of aneurism, and to justify a trial of it on the human subject. The subsequent experiments, also, of Mr. Travers on the arteries of other quadrupeds with similar views, fully corroborate, as I am credibly informed,* the deductions and results of Dr. Jones's experiments on this curious and highly-interesting subject: and to the above facts I may be permitted to subjoin the experiments performed by myself on the brachial arteries of two dogs with corresponding effects,

* See Mr. Travers's valuable papers on this subject, published in the Medico-Chirurgical Transactions, since my case occurred, and these remarks were written.

as far back as the year 1800, when I was house-surgeon to the Dumfries and Galloway Infirmary.*

Notwithstanding the improvements that have recently been made in this department of surgery, secondary hæmorrhage is an occurrence too frequent and dreadful, to allow us to conclude, that the application of the ligature has arrived at its highest degree of perfection. The destruction of the artery by ulceration is, unquestionably, the most frequent cause of secondary hæmorrhage, and the residence of the ligature in the wound is a constant exciting cause of this destructive process.

In the experiments above quoted, no foreign body is left in the wound which can impede or prevent its immediate adhesion, and, consequently, the chances of ulceration and secondary hæmorrhage are thereby greatly diminished. Upon the whole, I was so fully convinced of the importance of ascertaining the actual result of this mode of operating on the human subject, that I resolved to employ it on the first suitable case that should offer in the course of my practice; and I was

* These latter experiments were performed by the desire and under the directions of my friend Mr. Alex. Copland, senior surgeon to that institution; and the animals which were the subjects of them were destroyed three weeks afterwards. The ligatures were removed immediately after their application; and in both instances, the complete obliteration of the canal of the artery was the consequence of the operation.

farther encouraged to undertake the experiment from a well-founded conviction, that, should it ultimately fail, by the artery becoming pervious to the circulation immediately on the removal of the ligature, no additional risk would be incurred by the patient, as two fresh ligatures could with equal facility be applied, and the customary treatment in such cases pursued, as if no deviation had originally been made from the usual mode of performing the operation.

It appears, however, that the experiment of Dr. Jones has not proved equally successful in the hands of other surgeons: this failure, I am informed, induced Mr. Travers, with some variation, to repeat it, by allowing the ligatures to remain on the artery a few hours, so as to afford sufficient time for the first process of adhesion to be effected; and in this object he completely succeeded.

From these concurring testimonies, then, joined to analogical reasoning and reflection, I was induced in the following case to perform the operation according to Mr. Travers's plan, as that which appeared to promise the greatest probability of a successful issue; and, from the previous history of the subject of the case in question, there was every reason to believe the arteries to be in as healthy a condition as they are generally met with in aneurismal patients: I undertook the operation with confident hopes of a happy termination.

To those professional gentlemen who may be of opinion that the experiments performed on the brute species were not sufficiently numerous, varied, and modified, to justify a similar procedure on the human subject, or who may imagine that the operation for the cure of popliteal aneurism, as practised at the present enlightened period of surgical knowledge, is sufficiently safe and efficacious without farther attempts at greater simplification, in the hope of shortening its duration and lessening the danger of so important an operation, I must beg to refer to Dr. Jones's ingenious observations, pages 135 and 136 of his valuable book, and only remark, *en passant*, that objections such as these would equally militate against all the great discoveries and improvements which have taken place in the arts and sciences, especially in that of surgery, during the last half century.

Dominico Dalmiero, by birth a Venetian, a seaman, aged 40, was captured in an Italian frigate, in the year 1810; and soon after his arrival in this country as a prisoner of war, he entered into the British naval service in his former capacity. On the 4th November, 1813, he was admitted into the hospital, from His Majesty's ship Norge, for the cure of popliteal aneurism of the right leg. He could assign no probable cause for the production of the disease, and had no recollection of having met with any injury or accident to which it could reasonably be imputed,

unless his muscular exertions in ascending the ship's rigging, whilst in the necessary execution of his duty. At the period of his admission, the tumour was about the size of a small orange, and of a month's duration; its pulsations were strong, accompanied with considerable pain in the surrounding parts, extending to the leg beneath; but there was neither discolouration of the immediate integuments, nor œdema of the limb; the circulation in the saphena vein seemed to be sluggish, and the muscles were yielding and flaccid. He was a short muscular man, dark-complexioned, quick and animated, and very desirous that every thing might be done which could tend to relieve him from the disease under which he laboured. On the 5th a brisk cathartic was prescribed, which was repeated on the 9th; and on the 10th, about sixteen ounces of blood were abstracted from the arm, preparatory to operating on the following day. On the 11th of November, fifteen minutes before eleven A. M., an incision, nearly four inches in length, was made on the *outer* margin of the sartorius muscle, which being raised a little from its bed by the handle of the scalpel, the theca of the femoral artery was exposed to view exactly in the middle of the thigh; the inner side of the wound was kept raised by means of the finger-instrument so useful in this operation,* which enabled me to detach

* In justice to Mr. G. Young, I ought here to mention, that subsequently to the publication of my pamphlet on the operation

the artery from the vein and nerve with great facility and dispatch; and when about a quarter of an inch of the vessel was so detached, a double ligature was passed under it. The artery appearing healthy, it was elevated a little upon the curved handle of the bistoury, whilst the upper ligature was firmly tied with a loop or slip knot, keeping the running end in reserve for its more easy disengagement: here my colleague, Dr. M'Arthur, by request, did me the favour to press the noose upon the handle of the instrument with his finger, to prevent its giving way, whilst I made a second and similar knot, by passing the loop part through the fixed single end of the ligature, the other being the slip or running end. In like manner the lower ligature was tied, leaving a space somewhat less than a quarter of an inch undivided*.

for popliteal aneurism, in which I have given a plate of this instrument, that gentleman showed me two such instruments he had made for himself some time before, and which were constructed of plates of iron. I am inclined to think, from past experience, that his would answer better than mine of worked wire, as they possess an advantage of stopping, by pressure for the time being, the flow of blood from any small vessel, as effectually as the application of an assistant's finger.

* I have described the knot as accurately as I can; but some of my friends, to whom I had shown it, having made Mr. Travers acquainted with it, that gentleman has given a very good drawing of it in the 6th vol. of the Medico-Chirurgical Transactions, so that the reader is left to suppose it to be his own invention. In his experiments on brutes, he found one

The wound was just sufficiently covered to exclude the external air; and all that remained of pulsation in the tumour, from this period, was a slight undulatory motion.

The patient continued pretty free from pain during the afternoon, and the thigh perfectly at rest: a few minutes before five P. M., six hours having nearly elapsed from the application of the ligatures, the wound was carefully opened in the presence of several professional gentlemen, who had favoured me with their attendance in the morning. An assistant was directed to make pressure with his thumb on the artery, as it passes over the pubis, in order to lessen the impetus of the blood against the tender adhesions which there was reason to believe had been formed between the divided edges of the internal parietes of the artery; then placing the fore-finger of my left hand on each noose, with a pair of dissecting forceps in the right, the running ends of the ligatures were seized and untied, without the *slightest disturbance* to the vessel. The ligatures being thus left loose under the artery, two ends on the same side were snipped off close to the vessel, and they were drawn from beneath it, keeping the fore-finger of my left hand still on the part, to guard against the possibility of raising the artery from its bed during this operation. In less than half a minute after the removal of the ligatures noose sufficient; whereas, in my case, being anxious to prevent its slipping, a second was made, as above described.

the artery became distended with blood, and the pulsations in the tumour were equally strong as they had been previous to the operation. Carefully reflecting on what Dr. Jones says on this subject, viz. "that in making experiments of this sort, the restoration of the circulation through the vessel should always be obtained, although, in a practical point of view, it may be an advantage for the internal parietes to adhere, and thus their wounded surfaces may escape that impediment to their adhesion, which a stream of blood passing between them must occasion in a greater or less degree," (page 134); I determined, however, not to trust to this reasoning, though founded on actual experience, as a failure would endanger the formation of a second aneurism, in consequence of the previous rupture of the internal coats of the artery. The vessel was, therefore, insulated a little more upwards and downwards, and two fresh ligatures passed under it, taking care to tie them as close as possible, that no part of the artery above or below the ligatures should be left detached, which afterwards might favour secondary hemorrhage, and the intervening space was left undivided: the ends of the ligatures were brought out in a direct line with their respective nooses, the sides of the wound approximated by means of the dry suture, and the patient was carried to bed, with the limb placed on a pillow, in a position most favourable to a relaxation of the muscles; thus reducing the operation to that

generally pursued, as stated in the exordium to the case.

It may be here worthy of remark, that although the pulsations of the tumour returned with equal force, after the removal of the ligatures, as those that preceded their application, and the artery, at the parts constricted, was equally distended with blood, as in its natural state, clearly demonstrating that there existed no impediment to the circulation, yet, on placing our little fingers on the space between where the two ligatures had been applied, no pulsating action could be discovered, either by my colleague or myself. May we not infer from this circumstance, in opposition to the opinion of modern physiologists, that there is a contractile power inherent in the coats of arteries independent of their elastic one * ?

On the 5th day, when the dressings were removed, slight adhesions were found to have taken place between the sides of the wound, from which issued a small discharge of well-secreted pus. On the 10th day the wound had a favourable appearance, the patient's health and appetite were good, though his spirits seemed greatly depressed ; he complained of fatigue from the affected leg having been kept so long in one position, which, however, retained its natural heat. Up to the 16th day, not one unfavourable symptom occurred ; the ligatures were, for the first time,

* Dr. Jones certainly leaned to this latter opinion, as may be seen by a reference to the Preface of his book, page 4.

examined this morning, and being found still attached, they were gently twisted; the undulatory motion in the tumour had increased to a slight pulsation. On the 21st day, both ligatures projecting, they were removed with ease, unaccompanied by blood, or even pus: his general health did not seem to be at all impaired, and during the whole progress the thigh was free from pain, tension, or inflammation, and no collections of matter had formed underneath the sartorius muscle. About three o'clock, however, of the afternoon of this day, whilst sitting in an adjoining room to the patient, I was very unexpectedly informed by the nurse, that hemorrhage had just occurred, which, on laying open the wound, was found to proceed from the inferior orifice of the artery. The blood did not flow in a saltus, but in a full and uniform stream; he did not lose, however, more than six ounces before the vessel was properly secured by a ligature attached about an inch below the open mouth. The fundus of the wound had an unhealthy appearance principally in the direction of the vessels.

Nothing further took place worthy of notice till the evening of the 5th of December; whilst in the act of feeling the increased pulsations, and gently pressing the tumour in the ham, the hemorrhage suddenly recurred. The immediate application of the tourniquet arrested the flow of blood, and the wound was again laid open. Upon a careful examination, we discovered that the present

hemorrhage proceeded from the upper portion of the artery, the extremity of which felt hard and thickened to the touch; the fundus of the wound was in a sloughing state, although all the surrounding parts were, and had been entirely exempt from tumefaction, inflammation, or pain.

Perfectly satisfied in my own mind, that the parts concerned in the original operation had suffered no greater injury than what usually attends the application of ligatures to the femoral artery, for the cure of popliteal aneurism; and taking into consideration, also, the sloughy condition of the wound, as well as the diseased appearance of the end of the artery, when exposed and examined, I judged it more advisable to remove the limb as high up as could prudently be done, than to tie the artery again in the groin, or above Poupart's ligament; conceiving that, by so operating, a healthy action was more likely to be induced, and, consequently, less risk to be incurred of secondary hemorrhage. But I was still farther impelled to prefer the amputation of the limb, to tying the artery in the groin, from the gradual increase of pulsation in the aneurismal tumour, which latterly became so considerable, that there was every reason to believe the disease for which the artery had been originally tied, would not have been cured, had no secondary hemorrhage even ensued*.

* For the propriety of amputating in such cases, in preference to tying the artery in the groin, see Mr. Hodgson's Treatise on

Having thus deliberately weighed all the probable benefits and disadvantages of the different modes of proceeding, I gave a decided preference to amputation; and in operating, the femoral artery was divided nearly two inches above the diseased orifice, and where it appeared perfectly sound; the other arteries, to the number of twelve or thirteen, were drawn out with the tenaculum, and, when secured, a tolerably good stump was formed. The patient lost about ten ounces of blood during the operation, and when completed, he took a draught with fifty drops of tinctura opii. He passed, notwithstanding, a restless night, and in the morning his pulse was 110, and rather full. On the 10th of December, the dressings being for the first time removed from the stump, there followed a small discharge of ill-conditioned pus, and there seemed to be a great want of action in the parts, though the pulse indicated no extraordinary degree of debility. As the bowels all along were kept in a soluble state, the bark, with a pint of wine and more generous diet, were prescribed. The stump continuing to look unhealthy, without throwing out granulations, or showing any disposition to unite, the quantity of wine was increased to three half pints, and the bark continued as before. The 12th, the pulse increased in frequency, but was small and compressible. The 15th, the want of energy and

the Diseases of Arteries and Veins, page 289; and, also, Mr. Guthrie on Amputation, page 106.

healthy action in the stump was still more apparent, though the outer angle of the flap exhibited a small secretion of good pus; but the inner part of the thigh, in the direction of the great blood-vessels, manifested a strong disposition to gangrene.

On the 17th there appeared a slight oozing of blood from the stump, which on being opened out, soon ceased spontaneously. The 19th he appeared sinking fast, rejected all medicine, and could with difficulty be prevailed on to take any nourishment, as he felt persuaded he must die; which, he said, he was well assured of from the commencement. In the evening the oozing again showed itself from the stump, which, on being uncovered, and a coagulum of blood, about two ounces, removed, was found to proceed from the principal artery. This draining, for it did not issue in a stream, was stopped by the application of lint dipped in spiritus terebinthinæ, as before had been done on the 18th, though not previously mentioned.

The patient now continued gradually to decline, till the morning of the 21st, on which day he died. During the last few days he was directed to take a little brandy and water, with strong beef tea occasionally, in addition to the wine.

REMARKS.

Thus terminated this untoward case, in the successful issue of which I felt the deepest interest.

I am fully conscious, however, that the issue cannot be ascribed to the manner in which the vessel was tied in the first instance, as recommended by Dr. Jones; for it must appear to every candid and unprejudiced surgeon, on duly appreciating the foregoing statement, that similar results must, in all human probability, have inevitably followed any operation on so irritable a subject. The subsequent morbid action, assumed by the amputated femoral and profunda arteries, demonstrates and confirms the justness of this conclusion.

The above statement goes to prove the important fact, as far at least as the authority of a single case can vouch,* that adhesion and obliteration do not follow the application of ligatures on the femoral artery of the human subject, when subsequently removed, and even after having been continued on for some few hours. How far this conclusion may be applicable to vessels of smaller dimensions remains to be proved by those who may be inclined to put it to the test of experiment. It is a well-known fact, however, that the parietes of the smaller arteries are thicker and more dense, in proportion to their diameters, than those of

* Since this case occurred, the operation has been twice performed in one of the London hospitals; and although the patients recovered, the operation was found objectionable on two accounts — first, that seventy hours were required for the obliteration of the artery — secondly, that the artery ulcerated where the ligature was applied, and secondary hemorrhage ensued.

larger dimensions. It is, therefore, reasonable to presume, that a stronger barrier will be opposed to the transmission of blood in the former than in the latter, after the consequences resulting from the constrictive powers of the ligature applied in the manner described; and hence the probability of the experiment being attended with greater success in the one, than in the other.

But, admitting that the construction of arteries in the human subject be similar to that of other animals, and that the process employed by nature to unite or renovate parts injured or destroyed be also the same; yet the results of experiments instituted on the one may differ materially from those on the other; for, whilst they terminate favourably and successfully in the brute, they may be attended with fatal consequences in the human species; as, in the former, the calm and uniform progress of nature is not disturbed or counteracted by the operations of the mind as in the latter; and every intelligent practitioner must have often witnessed the powerful influence of mind over the body, while labouring under disease.* The truth

* At the period I joined the naval hospital at Deal, in 1808, I found, among other patients, one who had been a quarter-master of a line of battle ship, who had brought with him, to the hospital, the very best character.

This poor man had been *fifteen months* in the hospital, at the time I joined, with a callous ulcer on the leg, about the size of the palm of the hand, which had remained stationary. I was informed, by the hospital mates, that the late Mr. Nepecker, my

of these observations was fully exemplified in the case of the patient now under consideration ; for, from being apparently of a firm mind and cheerful

predecessor as surgeon to the institution, had pursued every possible treatment during the above period, so that there remained no treatment that was new for me to put in practice.

Prepossessed with the idea that this patient's mind was not quite at rest, from his melancholy cast of countenance, I was determined to be informed of the facts of his history. I therefore dressed the ulcer every day myself, and in a little time obtained from him his confidence and the following short history.

The patient's wife had written to him the most reproachful letters (all which he shewed me), accusing him of neglecting her and his children, for some mistress she supposed he had with him on board his ship—not believing, all the while, that he was in the hospital ; and she came to this conclusion merely because her allotment had ceased for upwards of a year.

The fact is, that a seaman is upon full pay for 28 days only after his admission into a naval hospital, and after this period his pay ceases altogether ; consequently this man's wife's allotment also ceased : but, notwithstanding he had given her every honest explanation on this head, she would not believe him, and continued, letter after letter, to reproach him with neglect and dishonour.

I told the poor man to keep his mind easy ; that I should set the matter at rest, by writing to his wife and to the clergyman of the parish in which she lived ; which I did : meanwhile, until answers could be received, I wished him to make a little boat for my boy, to engage his attention. I gave him a small block of wood for the purpose, and continued daily to dress his leg myself.

Very kind letters were received by the patient, both from his wife and the worthy pastor to whom I had written ; which so raised his spirits, that in six weeks after he became my patient the ulcer was healed ; and on the day he was discharged to his ship, cured, he thanked me most kindly, and said he only regretted that he had not remained a little longer in the hospital,

disposition previous to undergoing the operation, he afterwards evinced great despondency, and a constant dread of death, which evidently had a most unfavourable effect on the issue*.

DISSECTION.

On examining the artery and aneurismal sac, after the removal of the limb, there were two very minute specks of calcareous matter found deposited in the inner coat of the vessel a few inches above the sac, which we removed by slight scratches with a lancet. Half way between the sac and the part of the artery that had been tied, two considerable branches opened into the main trunk, sufficiently large to have carried on the circulation through the old channel, and would, thereby, have prevented the cure of the disease for which the operation was, in the first instance, had recourse to. The gradual increase of pulsation in the tumour, after the operation, for a period of

so that he might have finished the rigging of the boat for my son.

If any one case, more than another, can shew the influence of the mind over the body in disease, this is that case; so at least it has impressed me.

* See a parallel case to the above, detailed in the first edition of Mr. Abernethy's book of Surgical Observations. The patient was a lady, upon whom that gentleman operated for femoral aneurism, and she died of secondary hemorrhages. Mr. A. ascribes the death to the great irritability of constitution under which she laboured subsequently to the operation.

nearly four weeks, fully justifies the truth of this remark.

When we examined the stump, the extremity of the femoral artery was found thickened and diseased, exactly similar to what had taken place previous to amputation; three fourths of an inch above its extremity, the coats of the artery were, to all appearance, perfectly sound. The extremity of the *arteria profunda femoris* assumed precisely the same appearance with the femoral, and to a like extent upwards*.

The muscles had retracted from the bone, which was surrounded by the only appearance of granulation that could be perceived on any part of the stump.

I feel it a duty I owe to the public and the profession, to detail with candour and faithfulness the facts and circumstances attending the case in question, because as much practical information is often obtained from the issue of unsuccessful cases, as from those of a more fortunate termination: although, as Mr. Deschamps says, in his work on aneurism of the popliteal artery, "*En général dans les opérations on a toujours grand soin de noter les succès; mais les non-succès on les passe sous silence.*"†

* The diseased arteries taken from this case were, at the time, transmitted to Mr. John Hodgson, the author of a highly valuable treatise on the Diseases of Arteries and Veins, and are now, I suppose, in his possession.

† A considerable time previous to the publication of Mr.

MISCELLANEOUS CASES AND REMARKS.

*On the use of the Probe in any Operation in which
a Punctured Artery is to be Tied.*

WHEN an artery is wounded by any sharp instrument, it will, I am sure, occur to every good surgeon, that the best practice will be to tie the vessel above and below the punctured part, for reasons too obvious to notice : although it is not to be denied but that in some situations this may be a very difficult task. A case of such difficulty, we are informed, lately occurred in a large government hospital, in which the femoral artery was tied considerably above the punctured part, and which succeeded without any after-hemorrhage ensuing. That this method will not often so succeed, the knowledge we possess of the circulation by anastomosis too sufficiently proves, to authorise such a practice, when it is in our power to tie the vessel above and below the punctured part.*

Travers's papers, in the Medical and Chirurgical Transactions, on this subject, the foregoing case and observations were transmitted for publication in Mr. Hodgson's work on the Diseases of Arteries and Veins, at his own request : but which was, however, to my great surprise, deferred until Mr. Travers had performed his two unsuccessful cases at St. Thomas's Hospital, which he has detailed in the 6th volume of the Transactions of that Society.

* See Mr. Hodgson's book before quoted, page 469.

In cases where an artery is punctured by a sharp instrument, and it is our intention to tie it as recommended above, I cannot too strongly impress upon the minds of young surgeons the great facility with which the operation will be completed by the assistance of a common probe, introduced into the aperture of the vessel after the division of the external parts. The relation of the subjoined case will sufficiently illustrate the principle.*

Thomas Mellifont, a seaman of the York, 74, on the 16th of March, 1813, was attacked with incipient symptoms of pneumonia, for which the surgeon of the ship directed him to be bled. The assistant who performed the operation, owing to a pitch of the ship, then under sail, slit open the brachial artery more than a quarter of an inch in an oblique direction. The hemorrhage was suppressed by a thick compress and roller until the 17th, when the patient was placed under my care.

On the bandage and compress being removed, the blood gushed out in a saltus and in larger volume than I supposed it possibly could have issued from the artery, if the vessel had been completely divided in a transverse direction. Pressure was therefore made upon the artery near the axilla, so as to stop the circulation of the ves-

* The use of the probe in this operation was first noticed, I believe, by a Mr. Macgill, about the year 1732, in the Edinburgh Medical Essays, vol. ii. page 224.

sel below, when I made an incision two inches in length over the puncture, and in the direction of the vessel, until, by gentle scratches with the scalpel, the punctured part of the artery was reached:—before we could clearly see the aperture made in the artery, however, three small branches were tied, which bled freely and obscured our view. A probe was now passed through the opening into the canal of the artery upwards, which enabled us to divide the vessel completely at this part, to raise the divided upper end into which the probe had been introduced, and to detach it a little way from the great radial nerve and its cellular connexions, until we could lay hold of it with a pair of artery forceps, by which it was drawn downwards, and the artery firmly tied with a ligature, in the same manner as in an amputated stump. In detaching the lower divided end of the artery with the probe introduced, a few fibres of the tendon of the biceps were necessarily divided, and a ligature was in like manner applied here.

The wound was cleared of blood, and the sides were brought together by slips of sticking-plaster. The ligatures came away in a few days, the wound very soon cicatrised, and left the patient in as full possession of the use of his arm as if no such accident had occurred, and he was discharged to his duty.

In the year 1818 I performed the same opera-

tion, and for the same accident, on a patient of the Westminster General Dispensary. The operation in this case was conducted precisely in the same manner as that just described; and the great utility of the probe was here equally apparent. This man also recovered the perfect use of his arm in a very short time.

THE HISTORY OF AN EXTRAORDINARY CASE OF ABSCESS OF THE LIVER, AND OF A CYST SUPPOSED TO HAVE BEEN ATTACHED TO THAT VISCUS, OCCUPYING ALMOST THE WHOLE OF THE ABDOMINAL CAVITY, AND CONTAINING NEARLY EIGHT GALLONS OF WELL-SECRETED PUS, IN WHICH WERE THOUSANDS OF HYDATIDS.

Mrs. George, aged 31 years, the wife of a fisherman, residing in the village of Kingsdown, near Walmer Castle, was married in the year 1804, and had born four children, three of whom are now living, the fourth having been still-born, in the seventh month of pregnancy. In the year 1801, during a period of menstruation, she had been much exposed to cold moist weather, and shortly after was seized with an obtuse pain about the scrobiculis cordis, extending to the right hypochondrium, clavicles, and scapulæ: for these complaints she was copiously blooded, and the bowels were freely evacuated. The pain, however, at the scrobiculus cordis, and particularly in the region of the liver, continued all along more or less severe from the first attack, especially during the period of gestation, and at meal-times. Two years after its commencement, an enlargement of the right lobe of the liver was perceptible; but which occasioned no great uneasiness, as its increase was scarcely discernible. There was,

however, considerable aggravation of the symptoms after her first confinement, and a more manifest enlargement of the tumor which pointed through the abdominal parietes.

After the premature labour already mentioned, being her second, she was suddenly attacked with diarrhœa, and passed, at various times per anum, a large quantity of pus. The tumor, which had been constantly confined to the hepatic region, was found to have wholly disappeared on her recovery from the bowel complaint; but the dull obtuse pain still continued, though upon the whole much mitigated. In the year 1807, the painful sensations became much more acute, and the swelling in the right hypochondrium re-appeared, and continued gradually to increase downwards and on each side, with a degree of firmness and tension till the year 1812, at which period I was first requested to visit her.*

I found her labouring under considerable dyspnœa, owing to the pressure of the liver upwards on the diaphragm, diminishing the cavity of the thorax, and consequently impeding the due expansion of the lungs; and as she could not lie in a recumbent posture, recourse was had to pillows in order to elevate the head and shoulders considerably. The bowels throughout the whole time of indisposition had been irregular, either

* The above narration is the substance of the facts related by the patient.

constipated, or the contrary, and the *fæces* discovered a deficiency of healthy bile.

In the month of March, of the above year, the respiration became so difficult, attended with a short irritating cough, that she was constantly compelled to sit erect; the circulation was hurried, the pulse beating one hundred strokes in a minute, small and debilitated, with general emaciation, and occasional vomitings.

On examining the abdomen, the enlargement was found general, and even greater than in the last month of pregnancy; and a little to the right of the ensiform cartilage, where the pain first commenced, there appeared a disposition to point, though no discoloration of the integuments had taken place; but upon applying pressure with the fingers, a sensation of deep-seated fluctuation was clearly communicated.

As the patient had been particularly attended by Mr. Chambers, a respectable surgeon at Deal, I recommended the introduction of a trocar at the prominent part of the tumor; but some objections having been opposed to the operation, it was not then performed. In the month of May, there was little perceptible alteration, excepting a decrease of strength, and the pointing was more conspicuous, with a slight tinge of red surrounding its apex. About this time some friends urged her strongly to get into Canterbury Hospital, and Mr. Monins, the worthy pastor of Ringwould parish, had the goodness to procure her admission.

Her principal support, she said, while in that hospital was derived from wine, and her sufferings were somewhat mitigated by large doses of opium; but early in August, she was discharged at her own request, that, as she expressed it, she might die among her family.

After her return to Kingsdown, I was again solicited to see her, and it would be difficult to give an adequate description of her wretchedness. The pulse was small and about 125 in the minute, the stomach rejected every thing almost, as soon as taken, attended with obstinate constipation; the emaciation had increased, yet the tumour or abscess appeared neither enlarged nor more pointed; but the fluctuation had become more distinct from the diminished thickness of the abdominal parietes covering the sac. Mr. Chambers met me by appointment, and at my urgent request he now introduced a large-sized trocar into the most prominent part of the tumor, when only a few ounces of pus with three or four hydatids escaped through the canula, which was retained in its situation by tapes passed round the body of the patient.

We met again in the evening, and by means of a long probe cautiously introduced through the canula, and steadily pushing away or perforating some of the larger hydatids that obstructed the canal of the instrument, about two gallons of well-secreted pus void of smell, with several hundred hydatids from the size of a pin's head to that

of a kidney-bean were evacuated. The abdominal viscera were then supported by passing a large flannel roller round the body, the canula secured as before, and corked to guard against the admission of air, and to prevent at that time the escape of more matter from the cyst. All the painful symptoms were almost immediately relieved by the operation, and the patient felt comparatively happy; the vomiting gradually gave way, tranquillity was restored to her harassed mind, and the stomach now retained the light nourishing diet with wine directed to be frequently administered. The second day from puncturing the tumour, two gallons more of pus and hydatids were drawn off, and farther compression was made by tightening the roller. The patient slept more comfortably this night, which encouraged us to draw off another gallon on the following morning. After five days the canula was removed, and a sponge tent substituted. From this time more or less matter continued to flow from the puncture at each dressing, but which gradually decreased, and at the expiration of three months, it was computed the quantity discharged from this enormous cyst, amounted to upwards of seven gallons and a half.*

Tonic medicines were now prescribed, aided by which, her appetite, general health, and

* Whilst speaking of the quantity drawn off at different times I wish it to be understood, as of pus and hydatids together.

strength rapidly improved. During the two months succeeding to the three above noticed, the daily discharge might amount to six drachms, sometimes pus, and again serum mixed with fragments of hydatids. Throughout the progress to recovery small doses of the submuriate of mercury, with other suitable remedies, were occasionally exhibited, to excite a healthy action in the biliary viscus.

Eighteen months subsequent to the operation she bore a healthy full-grown child, without having suffered much inconvenience from pain during the period of gestation. But, posterior to this accouchement, she was compelled to poultice the wound, which had never completely closed; when nearly two quarts of good pus, free from hydatids, were discharged. From this time up to the 30th December 1815, when I last visited her, the perforation made by the trocar continued to discharge a few drops of matter daily, which was always increased in quantity whenever domestic duties required a greater degree of muscular exertion than usual, though the sponge tent had been long discontinued. Her general health was, at this period, as good as it had ever been; the biliary secretion in proper colour and proportion, and the menstrual discharge regular.*

* The subjoined is in answer to a letter I had written to Mr. Chambers making inquiries after Mrs. George's health, that

REMARKS.

This is one of the few desperate instances of internal abscess terminating favourably, to which, under all the circumstances, may be justly applied Celsus's rule—"anceps remedium potius quam nullum." In fact, the only possible chance of safety left to the patient rested on the doubtful success of an operation; which, however, fortunately succeeded; for, had that means been postponed a few days longer only, death must have necessarily closed the scene. It also proves the vast resources of nature, and what she can effect when her intimations are judiciously seized and her salutary efforts properly assisted.

We are, I think, fully warranted in concluding her history might be brought down to the latest possible period.

Deal, Sept. 6th, 1816.

"DEAR SIR,

"As soon as I received your letter, I went to Kingsdown to see Mrs. George.—I am happy to say she is in better health, in all respects, than she ever remembered. Into the orifice made by the trocar she now introduces a small piece of sponge tent every three or four weeks, not because there is any discharge through it, but because it is of no inconvenience to her; and she thinks it may prevent farther accumulations in the cyst. You are aware that she has had a child since the operation in 1812, and I shall put her to bed again about the middle of December.

"Yours, &c.

"E. CHAMBERS."

"To A. Copland Hutchison, Esq.
57, Spring Garden, London."

from the preceding history, that after the premature expulsion of the dead fœtus, the first abscess had opened into the colon, from a previous adhesion of the peritoneal covering of the liver to that of the intestine, and by which the diarrhœa was occasioned.

The natural tendency of the cyst, with its gravitating contents, was favourable to the direction which it afterwards took. When we consider, also, the antecedent symptoms, the position of the tumour, the deranged state of the alimentary canal, the deficiency or vitiated condition of the biliary secretions, and the existence of hydatids, all these combined circumstances will, I am inclined to believe, justify us in the conclusion that the disease had its origin in the liver.*

The hydatids in the present case were found floating in the pus, detached and wholly unconnected, each about three parts filled with a whitish serous-like fluid, their tunics not transparent as usual, but opaque; and from accident we had not ascertained whether they possessed any living principle like those found in sheep.

It has been remarked that among the various cases of hydatids, enumerated by different writers, scarcely any proved fatal, whenever an outlet could be found for their discharge; and that at

* See that excellent work, Dr. M. Baillie's *Morbid Anatomy*, 4th edit. pp. 134—5, and 228.

present under consideration fully corroborates the observation.*

The justness of the remark is also further strengthened by the termination of a case to which the attention of Dr. M'Arthur and myself had been called by Mr. Bennett, another respectable practitioner of Deal, in the year 1813. This gentleman was requested some time before to attend a patient in labour, which proved, I believe, a protracted one; but in place of a living child, about ten quarts of a serous fluid with numerous hydatids were expelled from the uterus. The poor woman had gone her full period, as she supposed, and throughout the whole time had no reason whatever to doubt the fact of real pregnancy. The hydatids were of various sizes, but unlike those previously described, they adhered in clusters like bunches of grapes. The recovery of the patient was rapid, and, I believe, no interruption to good health occurred for eighteen months afterwards.

* See Dr. John Hunter's paper on the subject of hydatids, in the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, vol. i. pp. 46—7.

LUMBAR ABSCESS.

REFLECTING on the generally fatal tendency of lumbar abscess, and on the various modes of treatment recommended or suggested by others for the cure of the disease, especially the ingenious observations published by Mr. Abernethy on the subject, I was glad to have it in my power to bring to the test of actual experiment a suggestion of that gentleman's, delivered in his lectures some years ago; namely, that of injecting the diseased parts with liquor calcis.

William Allen, a marine, aged about 24, was admitted into the hospital from H. M. ship Royal Oak on the 25th June 1812, labouring under lumbar abscess, occasioned by a fall three months previously. The tumour appeared in the groin, and when the patient was put into an erect position, it assumed the form and size of an inverted tea-cup, but without the slightest discolouration of the integuments; on resuming the recumbent posture, however, the tumour suddenly receded, its size diminishing to that of a pullet's egg. Having directed the bowels to be freely evacuated, I introduced, on the following day, an hydrocele trocar in an oblique direction into the abscess, and drew off a pint of pus, interspersed with flaky coagula.

From the rapid recession of the contents of

the tumour, when the patient had been placed in a recumbent position, we concluded that an injection could readily be brought into contact with the seat of morbid secretion: accordingly the patient was placed on his back, the canula still in the cavity, and half a pint of lime-water injected by means of a gum elastic bag fitted to the canula, which was retained about twelve minutes; but during this period, the body was frequently moved from side to side, in order to ensure a more effectual contact of the astringent fluid with every part of the diseased surface; the patient was then directed to stand erect, and nearly the whole of the injection was returned. The canula being removed, the wound healed in two days.

Three weeks subsequently, the tumour reappeared, but less in size than the former; recourse was again had to the operation by trocar, and ten ounces of pus were drawn off; but a double quantity of liquor calcis was thrown up at separate times, with similar treatment as had been observed in the first instance.

Six weeks after the second operation, the tumour made its appearance for the third time, but much smaller. Its contents were now removed by means of an abscess lancet introduced from below upwards, and the canula replaced as if the trocar had been used: five ounces of pus only were discharged at this time; and two half-pints of liquor calcis at two separate intervals, were again injected, allowing each to continue

in the cyst about eight minutes ; the instrument was then withdrawn, and the wound healed in a few days.

The patient was kept in the hospital several months after this last operation without the least return, or vestige of the disease again manifesting itself; he was consequently discharged cured.

The medical treatment in this case was confined simply to the exhibition of a few doses of sulphate of magnesia, as no febrile symptoms whatever occurred, or any inconvenience excepting some slight irritation about the seat of the *psoæ* muscles, during the retention of the injection, and for a few minutes after its evacuation.

One insulated case, successfully treated on any particular plan, ought not materially to influence the judgment of other surgeons, till farther experience shall have confirmed its utility. The publicity given, however, even to a solitary fact, has often a tendency to bring an important subject under the immediate consideration of the profession, and affords the opportunity of multiplying experiments, by which alone the value of every fact or theory must be ultimately determined. To say that the cure of the case under consideration was principally owing to the injection, would indeed be extremely inconsiderate and rash, as it might have equally taken place from the mere evacuation of the pus; but at all events, the case is worth recording, were it only to prove that injections of liquor calcis, or weak

solutions of the sulphate of zinc, may be used under such circumstances with safety and probable advantage.

Might not similar lotions have been employed with a view to destroy the catenations of morbid secretion, and to promote a speedy agglutination between the sides of the cyst, in the latter stage of Mrs. George's case?

ON UNUNITED FRACTURES.

DR. Physic, of America, has, within these last few years, communicated to the public a new method of treating ununited fracture; namely, that of passing a seton through the limb, between the fractured extremities of the bone, and retaining it therein for a certain length of time.

The successful results of this gentleman's practice, conjoined to the prospect held forth of applying an efficient remedy to a state of disease heretofore generally deemed incurable, naturally excited the attention of other surgeons, to ascertain, by actual experiment, the justness and accuracy of these transatlantic deductions. Accordingly, Messrs. Wardrop and Brodie, in this country particularly, have recently published the result of their experience and observations in cases of a similar description.*

As, however, it is only by the accumulation of numerous well-attested facts, that the profession at large can be justified in adopting any new theory, or in determining the utility of any supposed recent discovery in the practice of physic or surgery,—I shall take the liberty of briefly detailing a solitary case of ununited fracture of the humerus, which occurred in the course of my hospital practice, and which was subjected to

* See Medico-Chirurgical Transactions, vols. iv. v. and vii.

the above treatment, first recommended by Dr. Physic.

Edward Gardner, about 24 years of age, was admitted into Deal Hospital, in May 1814, from a line of battle ship. This man had the misfortune to fracture the humerus sixteen weeks previously, and had carried his arm in a sling ever since the accident. Upon examination, the arm was shortened fully four inches, from the overlapping of the ends of the fractured bone, which were quite moveable, and the limb wholly useless. After employing very powerful means of extension, in order to bring the fractured extremities of the bone into apposition, or nearly so, we were compelled, notwithstanding, to leave the arm an inch shorter than its original length, owing to the contraction and rigidity acquired by the muscles after such a lapse of time, preventing their farther elongation: and after maintaining the ground already gained for several weeks, some further attempts were made to overcome the opposing resistance, by increasing the powers of extension; but these also proved unsuccessful. I then tried the effects of friction of the ends of the bones, and over the part upon the skin, assisted by stimulating embrocations, and, subsequently, repeated blistering; but all these means proved equally inefficient to produce ossific union, or the consolidation of parts.

Foiled in every effort hitherto made to afford

relief, a seton, consisting of several portions of silk, was now passed through a kind of cartilaginous substance intervening between the sides of the overlapping extremities of the fractured bone, by means of the needle recommended by Mr. Wardrop, but of somewhat smaller dimensions. This seton was occasionally moved, in the hope of exciting some degree of vascular action in the parts affected. Splints and proper bandages were applied, and the most perfect quiescence, with respect to the limb, sedulously enjoined. The wounds were dressed, and all offensive discharges carefully removed every two or three days, regulating the intervals of this process according to the state of the discharge and the desire of the patient; but always so managed as not wholly to deprive the arm of the support afforded by the splints, &c.

After persisting in this mode of treatment for about a month, we found ourselves under the painful necessity of withdrawing the seton altogether, from the supervening of a violent attack of erysipelas over the whole member. As soon as the erysipelatous inflammation had subsided, the two portions of bone were found consolidated to a certain extent, the arm only admitting of slight lateral motion at the fractured part; but none whatever in the opposite direction. Some weeks having elapsed, it was my earnest wish to have introduced the seton again; but no entrea-

ties could prevail on the patient to submit. He was therefore invalided and discharged from the hospital, certainly so much benefited as to enable him afterwards to pursue the occupation of a fisherman, in conjunction with his father, to whom he rendered himself extremely useful.

Shall we be justified in assuming, that the seton would have completed the cure had it been continued in the arm a sufficient length of time, from the progress already made towards attaining that most desirable end? or, are we to impute any of the subsequent good effects to the attack of erysipelas? Certain it is, that the amendment which had taken place was only discovered after the subsiding of that inflammation. On the other hand, it is much to be regretted, that the perverseness of the patient prevented a farther trial of the seton.

Cases of this nature are not very common, and it becomes, therefore, the more incumbent on us, as has been already remarked, to lay them before the profession, that concurrent testimony may afford sufficient data upon which to establish the most useful practice.

TALIACOTIAN OPERATION.

I HAVE twice performed this operation with success ; and, although I have very little to add to the clear and distinct manner in which this subject has been treated by Mr. Carpue, in his book on this subject, published in 1816, in which he details two successful cases, I nevertheless think, that as I have been the second to perform this operation in England, it may not be altogether out of place to give a short account of the two cases that have come under my management, and they are as follow :—

On the 1st of July, 1818, I met a poor woman in the street without any vestige of a nose, there only appearing before me a face with a large and triangular opening in the centre, dark and chaos-like ; so that any female who happened to be in the family way, and meeting her, might have been taken prematurely in labour ; and under this impression I stopped her, and intimated it as my opinion that she should not so expose herself ; —that, on the other hand, if she chose to have the deformity removed, and would call upon me at the Westminster General Dispensary, in Gerard Street, on the following day, I would point out to her the means by which this desirable end might be accomplished. The poor woman was very grateful to me, promised to attend, and

said that she was anxious to have the deformity removed; for that there was not any family who would then employ her either as a charwoman or otherwise, on account of her hideous appearance: and that this was the more necessary, since her husband (who had been a carpenter's mate on board the Sea Horse frigate) had been for some time unemployed; they were therefore living on charity, and the sale of the few articles of furniture they possessed.

The next day she came to me at the institution, accompanied by her husband, whose name is Johnston, residing in Peter Street, Westminster, and his wife's age is 32. She has given birth to four legitimate children, two of whom are now living, and I believe her to be a respectable woman; so that there does not appear to be any reason to question her statement as to the cause of the deformity—namely, gangrene, succeeding to a severe attack of erysipelas of the face, which had entirely destroyed the whole nose, nasal bones as well.

The operation was performed on the 5th July, her bowels having been freely acted upon twice in the meanwhile; and there were present, among others, my quondam colleagues, Drs. Baird and Magenis, Dr. Granville, Messrs. Brookes, Bampfield, Chevalier, Copeland, &c. &c. It was performed in the manner following:—a small triangular portion was cut out from each side of the

cheek, in a line with the original nose, and also from the upper lip, for the insertion of the septum; a portion of integument was then accurately cut from the forehead, by means of a card which had been shaped for the purpose, and brought down, twisted at the lowest part of the forehead, and secured into the grooves already cut, by means of two stitches on each side, and one at the upper lip, to secure the septum, by which means the newly cut surfaces were kept in contact.

The sides of the wound on the forehead were brought as closely together, by means of stitches and sticking plaster, as it was possible,—short narrow straps of the same were applied to the sides of the newly formed nose,—bougies were introduced between the septum and the sides of the alæ of the nose, to keep the nostrils pervious, and at the same time to raise the new flap until such time as granulations sprung up, to give additional thickness, and consequently firmness, to the part. Simple dressings were applied over all, and the whole left uncompressed, and covered with cotton. On the second day, previous to the dressings being removed, a slight hæmorrhage occurred from the posterior or internal surface of the new nose, the blood escaping by the mouth. The stitches were cut away on the sixth day; and on the eleventh from the operation there was external hæmorrhage to the amount of about 33 ounces from the right angular artery, but which stopt spontaneously, there being no medical man

on the spot to render assistance. The blood issued from the very part whence the stitch had been removed, so that the bleeding, in this instance, must have been caused by ulceration of the coats of that small vessel, in consequence of the immediate contact of the ligature.

Every part of the nose, externally, was cicatrised in about a fortnight, and the forehead in about six weeks. The nostrils were kept pervious by means of sponge, tent, or dossils of lint, formed into plugs, and introduced into the parts. A discharge continued from within the new nose for nearly three months, at the expiration of which time it was completely cicatrised, and the nose was prominent and firm, with well-formed nostrils, so much so, that a stranger will now pass her in the street without remarking her countenance as any thing particular from the operation. Indeed, Sir Astley Cooper, Mr. Carpue himself, and others, say that the deformity is less visible in Mrs. Johnson's case than in any of the cases operated upon by the latter surgeon, probably on account of the whole nose, bones and all, having been removed by disease, which was not the case in any of Mr. Carpue's operations: and I take this opportunity of stating, that all the knowledge I possessed of this operation was by perusing Mr. Carpue's book on the subject.*

My patient, by this simple operation, is ren-

* Published by Callow, London, 1816.

dered a decent looking woman ; but what is of much more consequence to her, she is now better enabled to assist in providing for the wants of her little family, by finding that employment which her terrible deformity had before prevented her from obtaining.

SECOND CASE.

In the year 1819, Peter Lawrie, about thirty-five years of age, was a convalescent patient at the Westminster General Dispensary, under the care of one of the physicians, for the cure of an affection of his lungs, I believe. He had lost great part of his nose from syphilis some years before ; and having seen Mrs. Johnson frequently at the institution after her recovery from the operation, he became very desirous that I should perform the same operation upon him, and urged it most strenuously.

The nasal bones, and all the soft parts covering them, were, in Lawrie's case, entirely gone ; but the *alæ nasi* and septum were, to the extent of half an inch, left entire. The operation being determined upon, and the day fixed, I had so many applications from professional gentlemen of rank and talent in the profession, who had heard of the case, to be present on the occasion, that I was constrained to apply to my friend Mr. Brookes for permission to perform the operation in his anatomical theatre, which was readily granted.

The operation was performed in the presence

of nearly 300 gentlemen, by bringing a portion of integument down from the forehead, and ingrafting or dovetailing the piece in upon the previously incised parts below, as mentioned in Mrs. Johnson's case, placing the fresh cut surfaces in close contact, by means of stitches and small short straps of sticking plaster. Union by the first intention was, in the usual period, complete in every part, but latest in the cartilaginous parts of the old nares, which, however, became firmly adherent to the *new flap* in a short time, and the cure became eventually most complete.

About ten weeks after the operation, and when every part externally had been completely cicatrised, I divided the narrow twisted part of the integument close to the forehead, and by which the new part of the nose had been nourished or supplied with blood-vessels (which, by the way, Mrs. Johnston would never suffer me to do in her case); and what appeared to me somewhat remarkable, was, that the only artery which sprung on the occasion was a small one from the nasal portion of the divided part, and not from the frontal. The twisted portion of the new nose, thus divided, was then untwisted—its sides were cut and laid down upon a fresh-cut surface, and there retained until union was effected, which occurred in a few days.

This operation was certainly a very great improvement in the poor man's appearance; but it would have been still more so, had I followed the

plan of operating which I had previously arranged in my own mind; but here, for the first time in my life, I was overruled by the suggestions of those around me. Should such another case occur, I would strongly recommend the total removal of the remaining parts, by which the new nose will be entirely of the same substance and appearance, and not as was the case in this instance; for the point of Lawrie's nose was of a much deeper colour than that which we brought down from the forehead.

One word more on this subject. In performing the Taliacotian operation, the surgeon must avoid making any pressure over the newly-formed nose, either by sticking plaster or bandage, else the languid circulation in the new flap brought down from the forehead will be compressed, and the operation totally fail, by the whole of the new nose, below the compressed part, becoming gangrenous, and eventually lost, as was the case very lately with a poor man who had undergone the operation in one of the London hospitals, which I myself witnessed with great regret.

The principle of the Taliacotian operation may be advantageously employed in many other cases besides that of making noses—for instance, in closing apertures in the urethra of the male or female, and in cases of imperforate anus, where the fæces are discharged through the vagina.—See page 265.

ON THE REMOVAL OF ATHEROMATOUS OR
MALICERIS TUMOURS.

THE true nature and origin of these tumours was first accurately described by Sir Astley Cooper, and he has gone far, also, in describing the best manner of removing them. In the few observations I have to make on this subject, it may be necessary to premise, that I claim no merit in perfecting an operation so much improved as this has been, by the observations of that distinguished surgeon; and, trifling as the disease itself appears, as well as the mode of cure by the removal of it; yet in practice, according to the old method of dissecting them out, there is often much pain inflicted, perplexity occasioned to the operator when the cyst happens to be opened; some risk in leaving part of the cyst behind, which will give rise to a reproduction of the disease; and, lastly, a much longer period in effecting a complete cure, than would *à priori* be imagined. For myself, I confess, that, until within these few years, I never performed any operation with so little satisfaction, and now there is not any that gives me more; for it is so simple, so little pain to the patient, so expeditious, and, with all, so neat and complete.

As Sir Astley observes, these tumours occur on every part of the body, but more particularly on the scalp and face, and vary in size from a

small pea to something considerable, but I have never seen one larger than an orange; and in selecting them for operation, they seldom come singly, there being generally a crop of them, especially on the head, those only of a certain standing should be touched, for a certain degree of tenacity in the cyst is necessary to insure a satisfactory issue to the operation, performed in the manner I am about to describe.

There is, also, another state of this tumour unfavourable to the operation; namely, inflammation or suppuration—the latter, indeed, being the result of the former, is an effort of nature to rid herself of it; and, therefore, tumours in this state should never be attempted to be removed; but the process already commenced by nature must be aided by such treatment as may appear to the mind of the surgeon most eligible to accelerate it.

It may be said, that there is no difference between the method of operating recommended by Sir A. C. and that I am about to describe; and certainly there is not much,—the only difference is my doing *less* than that gentleman, according to his statement. He says, page 224,* “If attempted to be removed whole, the dissection is most tedious, and before it is completed the cyst is either cut or burst; so many incisions, and so much pain, may be readily avoided by opening it

* Cooper and Travers' Surgical Essays, 1st Edition.

freely by one incision, and taking it between forceps, *to dissect it from its adhesion to the surrounding cellular membrane.*" If inflammation have not previously existed, there will be no adhesions between the cyst and cellular membrane requiring dissection to separate them, and therefore the use of the knife, after the first incision, becomes unnecessary.

My plan, after making an incision immediately over and into the cyst, as described by Sir Astley, is to empty the contents of the cyst, either wholly or partially, so as to bring the cut edge of the cyst into view; and having so exposed it, to seize it firmly with a pair of dissecting forceps, rather wider at the point than usual, and so tear it from its slight connexions, by directing the hand to the opposite side of the cyst seized, when it will be found to come away entire with the utmost ease—its external or posterior surface, before in contact with the surrounding cellular membrane, will also be found perfectly smooth and opaque, without even the appearance on its surface of the smallest point of blood denoting a lacerated nutritious vessel.

Should the operation have been performed early or soon after the appearance of the tumour, the cyst, in that case, may not possess firmness enough to bear the operation of the forceps without giving way; in that case I would recommend the cyst to be completely emptied of its contents, and the skin, at either point of the incision,

pinched up between the finger and thumb, so as to enable the operator, with the forceps, to lay hold of the corner or angle of the cyst thus doubled, by which means additional firmness will be given to the hold of the instrument, and thus it will be turned out, as above described, with great ease, and without any more cutting or dissecting.

I have performed this operation many times with facility and success, both on the head and face; and on the latter, particularly, the line of incision has been hardly perceptible: but if the knife be used in detaching the cyst from the slight connexions (which I am sure can hardly ever be necessary), a portion of the outer layer of the cyst may be sliced off, and the disease be thereby reproduced.

I once removed four of these tumours at a sitting, without the patient being aware that I had touched more than one, so expeditiously is the operation performed, and so slight the pain occasioned by it.

CASES OF NECROSIS, WITH SOME OBSERVATIONS
ON THE REGENERATION OF BONE.

SEVERAL cases of necrosed tibia have occurred to me, at various periods, and some of them apparently the result of attacks of erysipelas, either spontaneous or produced by blows or bruises on the shin-bone. It is my intention at present, therefore, to detail the particular circumstances of one case only, because of most recent date, attended with the most remarkable kind of sequestra, and because the treatment pursued has, in all, been the same.

In stating that some of the cases adverted to appeared to be the sequelæ of erysipelatous inflammation, I should wish it to be understood that not any of the patients were placed under my care until after the disease termed necrosis was completely developed; and that I have never known an instance of necrosis resulting from such species of inflammation, when the plan of treatment recommended by me, in erysipelas, had been pursued.

To prove that erysipelas and new depositions of bony matter are sometimes the consequence of blows, bruises, and lacerations of the periosteum, we have only to instance, in the first place,

the frequent attacks of this species of inflammation on the face and leg, after such accidents to the head and tibia: and to prove the latter, we need but advert to the cases daily witnessed in practice, of the cut end of the femur, after amputation, frequently ending in necrosis, owing to sufficient attention not having been paid to saw the bone through exactly where the periosteum is divided, but higher up, or above the part, so as to tear and lacerate this membrane with the teeth of the saw; and the recorded consequences of passing a seton through the ununited parts of a fractured bone, prove both facts.

I know not that I should, at present, have been induced to lay these remarks and the subjoined case before the public, were it not to fulfil a promise made to Mr. Russell, the distinguished professor of clinical surgery in the university of Edinburgh, whom I accidentally met in London at the house of a mutual medical friend.

John West, aged 26, a shipwright in Woolwich dock-yard, was, in the year 1814, attacked with erysipelatous inflammation of the right leg, extending from the knee to the ankle: this disease, after some time, terminated in two or three small openings, from which a discharge of ill-conditioned pus issued. The erysipelatous redness of the skin disappeared with the formation of these little abscesses, which ended in the openings already mentioned; but the accompanying swelling, or rather enlargement of the limb, con-

tinued. The patient, who was confined to the house during the period of acute inflammation, was now enabled to return to his duty in the dock-yard, and continued at his occupation until November 1816, when his rest at night was very much broken by the pain of his leg, and his appetite had become much impaired.

About this period the patient consulted me, when there were several openings in the course of the tibia, amounting, I think, to seven; and, on introducing a probe into some of these small apertures, the instrument descended an inch and upwards, in a sort of narrow bony case. The size of the tibia was thrice that of its natural dimensions. The discharge through these little openings was considerable, thin, bloody, and of a disagreeable smell. His pulse was hectic, and his countenance sallow.

In this state of the case, I proposed to him an operation to remove the sequestra, there being no doubt of the nature of the disease. To this proposal the patient readily consented, as he had prepared his mind for nothing short of amputation of the limb above the knee. Accordingly, in December 1816, in the presence of my friends, Mr. Brookes, of Blenheim-street, Drs. Dunn and Tainsh, of Woolwich, and Mr. Coomb, of the same place, I made an incision on the fore part of the tibia, ten inches in length, commencing at the tuberosity of the tibia, and carrying it downwards in the direction of the ulcerated openings.

The integuments and periosteum on each side of this extensive incision, were dissected off from the enlarged bone; and the crown of a full-sized trephine was applied immediately over the lower opening or ulceration, about three inches above the articular end of the bone; but, after cutting down to the shoulder of the instrument, a full inch in depth, the circular piece, so cut by the saw, could not be detached. The trephine was now applied immediately above the last perforation, when a circular portion was cut out, of three-fourths of an inch in thickness, of solid compact bone, with a fine membrane, or periosteum, lining its inner surface. On the introduction of a finger into this aperture made by the trephine, the rough sequestra was distinctly felt at the bottom, but apparently immovable. Similar portions were successively cut out upwards, to the number of seven in all, each portion being of the same thickness, density, or compactness of bone, and having the same smooth membrane, or periosteum, lining its under surface.

This continuous line of perforations in the new osseous shell was made a straight perpendicular excavation, by cutting, with Hey's head-saw, through the angular pieces left by the trephine down to the dead bone, or sequestra.

The first circular portion cut by the trephine was removed by means of a chisel and mallet, as recommended by Mr. Russell in such cases.*

* See Russell on Necrosis, published in 1794.

The portion of dead bone, lying at the bottom of this great bony cavity, was now found to move a little upwards and downwards, when given that motion to by the application of the finger, but could not be detached whole without extending the osseous cavity on each side at its fundus, by means of the aforesaid chisel and mallet; when, to our surprise, we found the sequestra nothing more than an exfoliated lamina of bone, lying upon a healthy granulated surface of the old tibia.

The whole operation occupied upwards of three hours, of the hardest labour I had ever before experienced; and, when completed, the limb had a frightful appearance to all around. There was very little blood lost; nor did the patient appear to suffer so much as one would have expected, excepting when the periosteum was dissecting off.

The patient was prescribed an anodyne, and left under the good care and management of Dr. Dunn, surgeon of the dock-yard; and, some months after the operation, he walked to London from Woolwich, to shew his leg, and to thank me for what had been done.

I saw West some time during the year, when there still continued a slight discharge from a small opening in the line of the excavation, but which had not precluded him from following his avocations during the preceding three years; and the immense enlargement of the limb had become so much reduced, by the gradual absorption of

the remaining new-formed bone, that it seemed a very little larger only than the sound one.

The operation described in the above case I have performed six times, and succeeded in restoring the limbs of all of the patients, excepting one, who, during the cure, had his wound attacked with hospital gangrene, and subsequently died at Deal hospital, after having suffered amputation above the knee, while I was on leave of absence.

Some of the portions of bone, removed in the operation described, are in the museum of Mr. Brookes.

James Smith, a marine, aged 19, while serving on board the *Dædalus*, in the West Indies, in May 1808, received a severe blow on the right knee, by falling over a carronade slide during a gale of wind, which terminated in an extensive sloughing ulcer, a caries of the patella exposing the cavity of the joint; and ultimately in the loss of the limb.

On the 14th September following, he was admitted into the hospital from the *Adamant*, being only sixteen days after the amputation; at which period, and subsequently, the surgeon of the ship reported to me that the integuments, muscles, periosteum, femur, and marrow, appeared perfectly healthy and natural when divided at the operation; but that he was under the necessity of bringing the flaps together by means of stitches, one of which still remained unsnipped

at the period of admission, when there existed also considerable tension, inflammation, and deep-seated pain: the stump was otherwise well formed. The patient was extremely emaciated, his pulse hectic, and withal, he laboured under a troublesome diarrhœa.

The symptoms characteristic of the disease termed necrosis became apparent soon after his admission; and before the expiration of a month, from the removal of the limb, the cut edge of the bone was nearly hidden from view by a thickening of the periosteum that overlaid it. A healthy-looking granulation from the medulla appeared also, from the first, and continued for several months, even after the death of the old bone; although it seemed gradually to diminish in circumference, leaving a space all round between it and the dead bone, as there was latterly between the dead bone externally and the thickened periosteum, now the new osseous shell. In other respects the stump did not, at any period of the case, assume appearances unusually met with under such circumstances.

In April 1809, whilst attempting to lay hold of the dead bone, to ascertain whether it were yet moveable, the forceps accidentally slipped, and coming in contact with this substance, still bearing the resemblance of a granulation from the marrow, though somewhat glossy, a sound was produced similar to that of the instrument striking against bony matter; and this proved to

be absolutely the fact. From the end of the stump, to the termination of the medullary cavity of the femur, the whole of the duplicatures of the internal periosteum, which form the cells or little bags for the marrow, were found completely ossified.

In July, the dead bone was detached, and admitted of a little play: about the middle of August some force was used in endeavouring to withdraw it, when the sequestra was left protruding fully an inch from the end of the stump. By the end of August another inch was gained; and on the 21st September, the whole was removed, leaving the ossified internal periosteum exactly in the centre of this great bony cavity, supporting itself thus insulated by its own firmness.

The discharge from the end of the stump, and the several small openings through the new osseous shell, now began to diminish, the patient's appetite to improve; and his bowels had acquired more tone and healthy action than at any one period since his admission. We were, therefore, not without some hope of a favourable issue.

In the beginning of October, however, his diarrhœa returned with considerable aggravation; the hip-joint of the affected side became also considerably swollen and inflamed, ultimately terminating in two extensive abscesses, which discharged a thin, fœtid pus: and, under this accu-

mulation of disease, the patient died on the 15th of the latter month, October 1809.

I think it proper here to notice, that foreseeing the probable result of the case, if nature were left wholly to herself, I proposed, in the month of February, in the absence of diarrhœa, and when the strength of the patient seemed equal to the operation, to remove the head of the femur from its socket ; but to this proposal neither the patient nor his friends would give their sanction.

Dissection of Smith's Stump.

The newly formed femur was found very slightly covered by soft parts ; the remains of the muscles were pale, and could not be traced but with the greatest difficulty. The capsular ligament was considerably thickened ; the acetabulum lined with a thick glairy matter ; and caries at its thinnest part, where there was a small opening, through which matter had found its way into the cavity of the pelvis. No vestige of the round ligament remained ; and the cartilage covering the head of the femur, excepting a very small portion, had been entirely absorbed.

OBSERVATIONS.

My principal object in laying this case before the profession, is to call the attention of some of

its members to the thickening of the periosteum externally, previous to the deposition of osseous matter, and to the *complete ossification of the medullary bags or cells*. This latter circumstance, alone, appears to me to afford the most satisfactory proof, that it is to the periosteum and its vessels the new osseous shell owes its origin, and to no other substance or description of vessels whatever.

Mr. Russell, of Edinburgh, has endeavoured to prove that the original periosteum has no share whatever in the formation of the new bone in necrosis.* Drs. Macdonald † and Macartney ‡, are of opinion that the osseous matter is secreted by the vessels of the thickened and inflamed periosteum, after the separation of this membrane from the bone, and deposited upon the inner surface of that membrane, *i. e.* between the periosteum and the bone, but not in the substance of the periosteum, nor yet between the layers of that membrane: for Dr. Macdonald, after describing the manner in which the periosteum becomes inflamed, thickened, and separated from the bone, &c. says, page 66, “*Eodem tempore, sive paulo post, liquor gelatinosus ex periosteo inflammato effunditur inter ipsum periosteum et os; at nun-*

* See his Practical Essay on Necrosis, page 16, &c.

† See Dr. Macdonald's Thesis de Necrosi ac Callo, published in Edinburgh in the year 1799.

‡ See Dr. Macartney's Letter, in Mr. Crowther's book on Diseases of the Joints. &c. page 183, published in 1808.

quam in substantiam ipsius periostei, uti David putabat; neque inter laminae periostei, ut à Troja, Blumenbachio, et Kœlero traditum est." And Dr. Macartney says, at page 183 of Mr. Crowther's book, "I found that the first and most important circumstance is, the change which takes place in the organization of the periosteum: this membrane acquires the highest degree of vascularity, becomes considerably thickened, soft, spongy, and loosely adherent to the bone. The newly organized periosteum, which, for the sake of distinction, one might call the vascular sheath or investment, separates entirely from the bone, after which it begins to remove the latter by absorption; and during the time that this process is carrying on, the surface of the vascular investment, which is applied to the bone, becomes covered with little eminences, exactly similar to the granulations of a common ulcer.

"In proportion as the old bone is removed, new osseous matter is dispersed in the substance of the granulations, whilst they continue to grow upon the old bone, until the whole or a part of it is completely absorbed, according to the circumstances of the case," &c.

The great similarity of opinion existing between these two gentlemen, after each had bestowed the most attentive inquiry upon the subject, both with respect to experiment and observation, added to the testimony of the older writers, who had investigated this question, some of whom have

been already quoted, tend very strongly to subvert the opinions of Mr. Russell; and it affords me considerable gratification, by the facts enumerated in Smith's case, so far to illustrate the accuracy of their reasoning.

With respect, however, to the remains of the periosteum, after the complete formation of the new bone, I am more strongly inclined to believe that the two extreme layers of the old periosteum (the osseous matter being deposited between them) continue to serve as an investment to the new bone, than that the original periosteum is invariably absorbed, and a new investment formed by, first, a condensation of the cellular substance surrounding the original periosteum, and then by a diminution of its vessels, as stated by Dr. Macartney. For it appears to me, that this theory would be ascribing to the vessels of the cellular substance a property we are endeavouring to prove they are not possessed of, namely, that of secreting bone.

If it be necessary that the remains of the original periosteum should be absorbed, and the new bone have a new investment, might we not as well argue in favour of new bone being possessed of the property of forming to itself a covering; and might not this process be going on at the very period and during the deposition of ossific matter?

These reflections arose in my mind on perusing Dr. Macartney's paper, and they have been

strengthened by subsequent inquiry, and the result of every case of necrosis that has fallen under my personal observation. In the one before us, indeed, the great bony cavity of the new osseous shell was lined throughout with a tolerably thick periosteum, and where there was no cellular substance from which this membrane could be formed, as the preparation now in the museum of Mr. Brookes, of Blenheim Street, will evidently shew. The ossified internal periosteum was also supplied with its distinct investing membrane; nor did this membrane externally or internally appear in any part to be in the smallest degree lacerated or loosely adherent to the new bone.

The excellent view we daily had of the thickened periosteum from the face of the stump in Smith's case, enables me to state with some confidence, that, in this instance at least, the whole substance of the thickened periosteum appeared to be converted into bone, forming what has been called the new osseous shell: but whether the bony depositions were made in the substance of this membrane, or between its layers, we had no possible means of ascertaining; it appeared very clear, however, that these depositions were not formed upon the inner surface of the thickened periosteum, *i. e.* between that membrane and the bone, as stated by Drs. Macdonald and Macartney.

The fact, therefore, of the periosteum being

the chief organ in the formation of the new osseous shell in necrosis, proves to my entire satisfaction that this membrane is perfectly distinct from all other soft parts; and that the actions of its vessels are peculiar to itself and the bone it envelopes: hence I would conclude, union in fractured bones, the formation of callus, and the regeneration of bone in necrosis, to be produced by a specific action in the vessels of both.

It will be generally admitted, I believe, that in all cases of fracture of the patella, as well as parts of other bones appropriated to similar uses, and uncovered by periosteum, such as the olecranon process of the ulna, the union that takes place is not bony, but ligamentous*.

Whence then does this circumstance of a want of bony union in fractures of these parts arise? Either, we must suppose, from our being frequently unable to bring into close contact the fractured surfaces, by the very powerful action of the muscles drawing the bones asunder, from some lacerated fibres intervening between the fractured edges of the bone, or from the great depth from the skin, as in the neck of the femur, and thus the two bony surfaces are prevented from being brought into and retained in direct and close con-

* I believe in some museums there are a few specimens where a kind of bony union had been produced in fractures of the patella; but it is a circumstance of very rare occurrence.

tact, or else from the entire deficiency of periosteum upon any entire part of the patella ; for its inner or under surface is covered with a smooth cartilaginous-like substance, to facilitate its movements upon the convexities of the condyles of the femur ; and its outer or upper surface is rough and uneven for the insertion of the great extensor muscles of the leg. The latter appears to me the more reasonable conclusion of the two, and, if admitted, is a strong argument against the doctrine inculcated by Mr. Russell. I am confident that, in very many instances, I have been enabled to bring into close and direct contact the fractured edges of the patella, and to retain them in that position for months together, by keeping the heel raised very considerably above the level of the bed, and yet I have never experienced in my practice a single instance of bony union in such fractures.

The patella has an ample supply of blood, for, like other bones, it has its nutritious arteries, and the points or canals where these vessels enter are very visible on its outer surface ; but it would seem, from what has been stated, that these arteries, owing to a deficiency of periosteum, cannot take on that action so necessary to the generation of callus, and consequently, to a proper bony union in cases of fracture.

The circumstance also of the new osseous shell in necrosis generally terminating at or near to the epiphysis of a bone, will still farther tend

to strengthen the conclusion, that where there is a deficiency of periosteum there can be little or no deposition of bony matter.

The foregoing remarks on the formation of new bone in necrosis are, verbatim, what were published in the first edition of this work, in 1816, and from all I have since read and seen of preparations in different museums, and from conversations I have held with those who have written on the subject, or who may have made necrosis more particularly their study, I find no reason to change the opinions I had before advanced.

I have already briefly adverted to fractures of the patella and ulecranon, and have now only to offer a few remarks on fractures of the neck of the femur, and of the probable cause of non-union by ossific matter, after this accident. I am the more impelled to the task, as the subject has but recently undergone so much discussion in this country, that it cannot but be still considered as interesting, the more especially as the point does not appear to be any thing like settled.

I have carefully dissected the capsular ligament of the hip joint in several subjects, after proper maceration, as I stated at one of the meetings of the Medical and Chirurgical Society several years ago, and in the majority of cases I was enabled to trace the lining or synovial membrane of that ligamentous bag fully half the distance between its insertion near the trochanter and the head of the femur, and in each it appeared

to me to be the *only membrane* which covered the neck of the thigh-bone throughout its whole extent; and I came to this conclusion after carrying my dissection from the capsular ligament over the neck of the bone, as far as above stated, and from the latter part back to its source—the lining membrane of the capsular ligament—leaving the neck of the bone quite denuded in each instance.

This part of the lining membrane of the capsular ligament which I had so detached from the neck of the femur, was again submitted to maceration; and when, with great care and attention, I endeavoured to separate it into two or more layers, thinking that a periosteum, or other membrane, might have been attached to its inner surface, but no such result was obtained; hence I conclude that no periosteum, properly so called, covered any part of the neck of this bone within the capsular ligament.

It has been stated, in contradiction to these observations, that fractures of the patella do sometimes unite by bony matter, particularly where the fracture has happened to be longitudinal; but in most, if not in all, of these cases, the union accomplished is positively not bony, but merely a gluing together, as it were, of the fractured parts, and such as I should suppose might possibly happen in certain longitudinal fractures, cracks, or fissures of the neck of the thigh bone; nothing like callus being produced in

any specimen I have examined, and which species of union is favoured and accomplished by the constant apposition and contact of the fractured or fissured parts,—such a description of fracture not being exposed to the action of muscles, to cause any separation of the divided edges of the bone during the progress of agglutination or cure;—patients of this kind being necessarily prevented from any use of the member until such union be accomplished, and all other consequences of the accident removed.

In fractures of the patella, therefore, or in other analogous parts of bones where there is no periosteum, or where we find the extension of this membrane arrested by a capsular ligament, no ossific union in these parts can ever possibly be expected.

I have no hesitation, therefore, in giving it as my decided opinion, that Sir Astley Cooper is correct in stating that fracture of the neck of the femur, within the capsular ligament, never does nor can unite by bony matter; and I say thus much, not for the reasons of such non-union as have been assigned by Sir Astley Cooper, but for those above advanced: for he says, that ossific union does not take place in transverse fractures of the neck of the femur, because the divided ends of the bone are apart, and the artery of the head of the bone, which passes along the ligamentum teres, can no longer contribute its nutrition to the

lower or shaft end of the fractured neck of the bone.

It remains for me now only to repeat my thorough conviction, that it is to the periosteum, external and internal, we owe the formation of new bone, under whatever circumstances it is secreted in fracture or in necrosis. The periosteum I believe to be a membrane *sui generis*; and which, as it would appear from the foregoing observations, performs the office of a gland, by giving to the vessels that traverse it the power or function of depositing bony matter, and which, having so traversed the periosteum, they are capable, to a *certain degree*, of secreting ossific matter from the fractured ends of the substance of a bone; the greater proportion of this ossific deposition, in such cases, being more immediately from the arteries of the injured and lacerated parts of the periosteum itself, both external and internal, and precisely in the same manner as if the bony matter were secreted in the substance, or on the inner surface of that membrane, according to some writers.

I have read, with great interest, Dr. Knox's papers in two numbers of the Edinburgh Medical and Surgical Journal for 1822, and, in the above remarks, he will perceive that we do not *altogether* disagree. I have also, through a friend, been favoured with Mr. Syme's excellent probationary essay,—a young surgeon, I understand, and, as it

appears to me, from this specimen of his talents and research, of great promise. I could have wished, however, that he had not treated Dr. Knox's opinions so uncourteously as he has done; and that he had shewn himself somewhat less the disciple of Leveillé; for it is quite evident, on a careful perusal of his papers, that the doctor has much more to say on the subject, but for reasons best known to himself, his farther observations and opinions are for the present withheld; and however much this delay is to be deplored, I conceive that such an interesting inquiry can hardly be intrusted to any one possessed of more zeal, ability, and candour, or otherwise more fitted for the task, than Dr. Knox.

The opinions of Mr. Allan, an eminent surgeon in Edinburgh, who has also written very scientifically on this subject, are treated, by Mr. Symes, I am sorry to say, with the same want of courtesy as those of Dr. Knox.*

* See Mr. Allan's very valuable work on Surgery, in three volumes; subject, *Necrosis*.

Description of the Plate.

A. A. The new osseous shell, supplied with a number of strong processes, in the situation of the *linea aspera*, not unlike the spinous processes of the *vertebræ*, but larger and more irregular.

B. B. Shows the termination of the new osseous shell, close to the epiphysis of the bone.

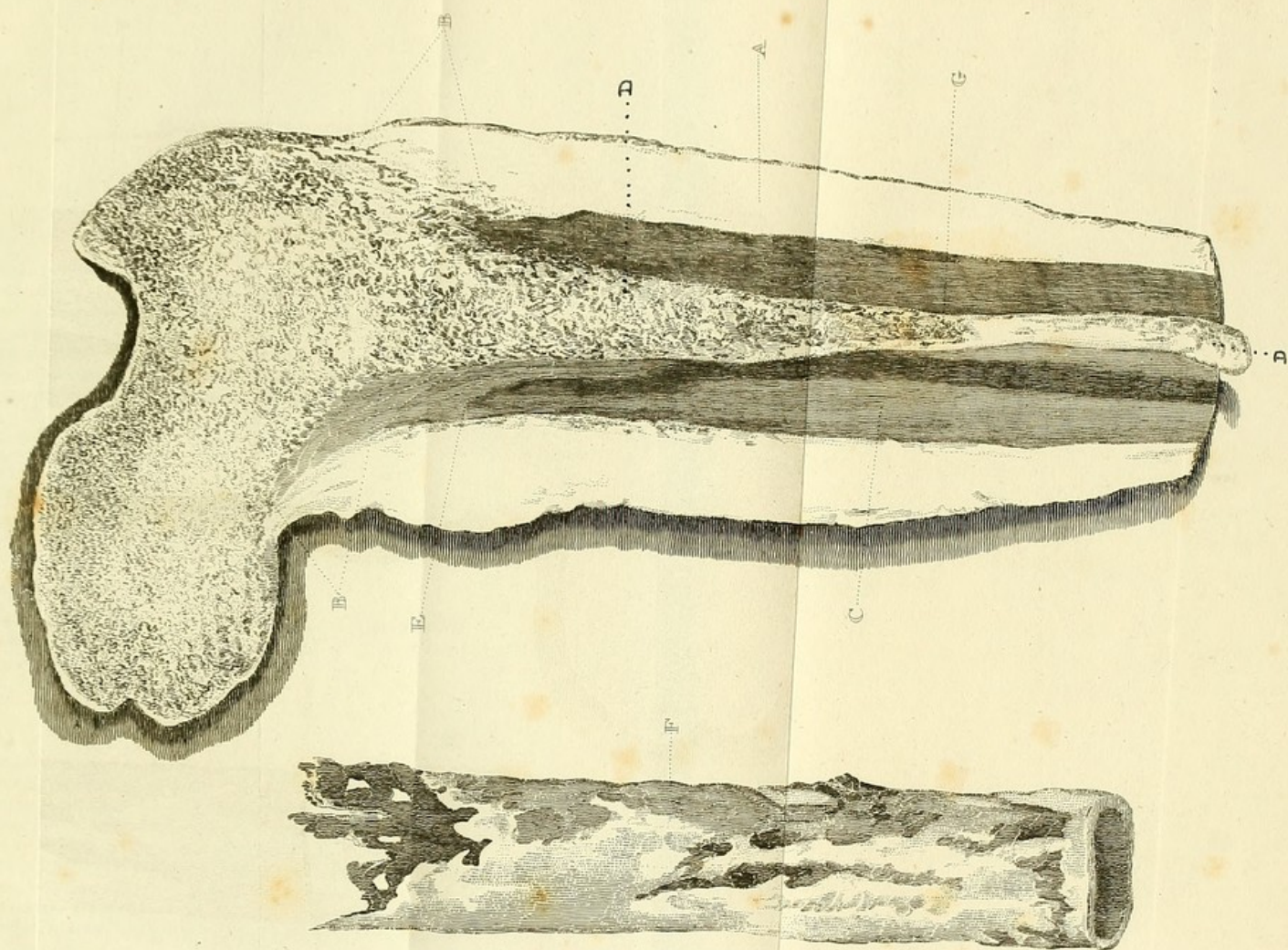
C. C. The internal periosteum of the new osseous shell smooth and unbroken, and without any appearance of irregularity on its surface, similar to ossific granulations, as described by Dr. Macartney.

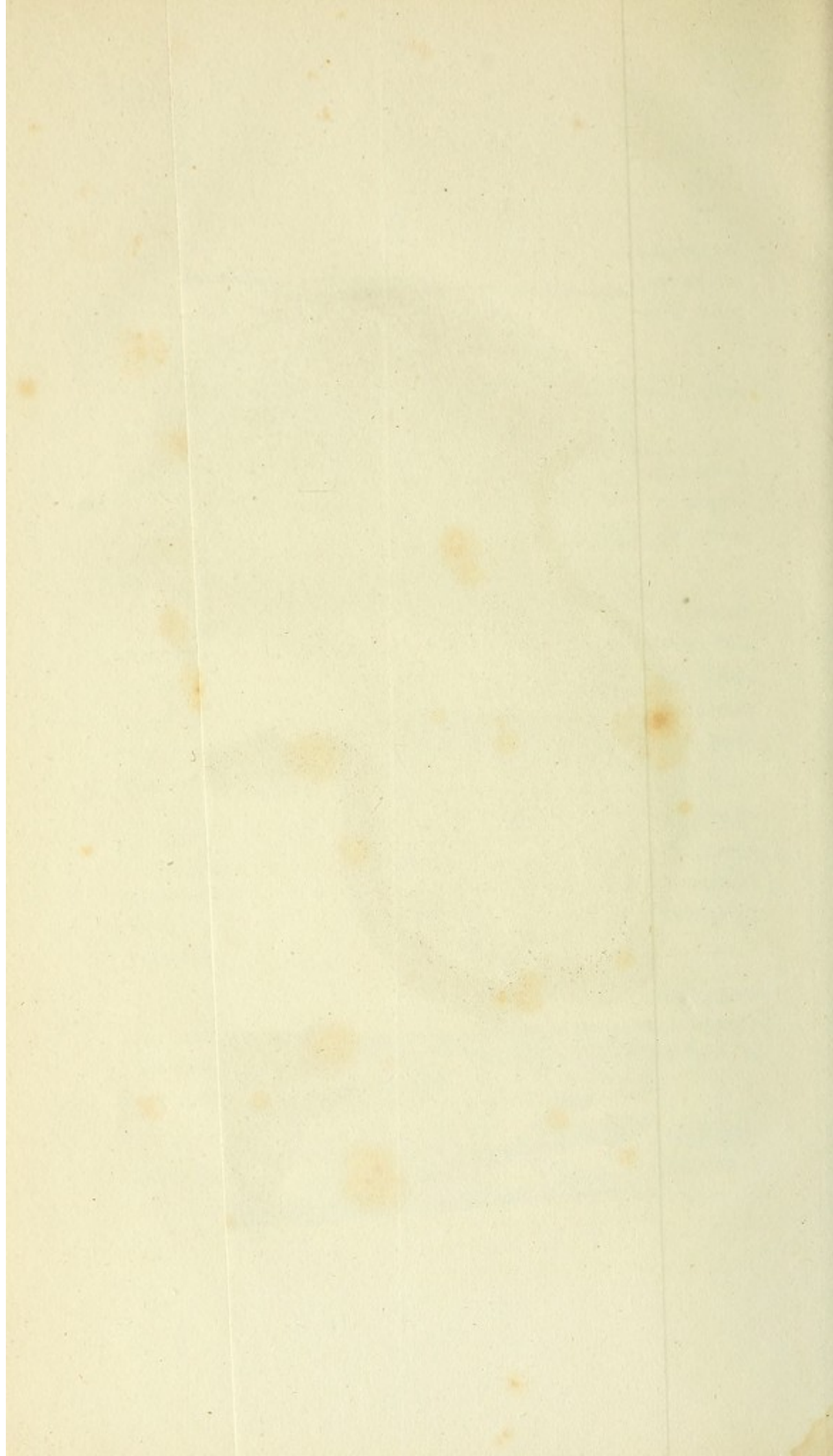
D. D. The duplicatures of the internal periosteum which form the little bags for the marrow in the original bone, in a complete state of ossification from one extremity of the great bony cavity to the other, forming cancelli or net-work; and which was also covered by its thin smooth membrane or periosteum.

E. The great bony cavity, apparently filling up, by a thickening of the internal periosteum of the new osseous shell, and a corresponding thickening of the investment of the ossified medullary bags, previous, as it would appear, to their becoming consolidated.

F. The sequestra, with the exception of two or three small portions that had been broken off during its passage through the new osseous cylinder, which were afterwards found loose in the cavity and extracted with the forceps.

G. The termination of the cut part of the ossified medullary bags, when a section of the new bone was made with the saw.





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ERRATA.

- Page 37, line 17 from the top, for *has* read *have*.
 103, — 13 ———, insert the word *free* immediately before *from*.
 107, — 13, for *othe* read *other*.
 140, in the note, for *Butler* read *Butter*.
 159, the last line, for *hæmoptisis* read *hæmoptysis*.
 170, note, the account of *blash de manfré* was taken from a work entitled “The Cabinet of Curiosities.”
 273, line 2, for *their* read *the*.
 294, — 26, for *withdrawn* read *abstracted*.
 304, — 19, dele *to the society*.
 341, — 17, for 00 read 100.
 366, — 3 of the note, insert the word *and* after *ship*.
 369, heading, for *punctured artery* read *the popliteal artery*.

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