no doubt that some condition of irritation or exhaustion secures for the brain the first malignant infiltration; but what that condition is, we cannot say. Grissolle believed that cerebral cancer preferentially attacks old people, with brains past their meridian, and on the decline; but that generalisation is not borne out by figures. In forty cases of primary cancer of the brain, recorded by Dr. Ogle, the average age was forty-three years; in thirty-six cases recorded by Berthier, it was forty. When the cancer is secondary, its presence in the brain is more readily understood. The enormous supply of blood which the brain receives, must conduce to the deposition of the *materies morbi* in it, and must favour its germination and growth, when it is once deposited. Occasionally, also, it reaches the brain by continuity of tissue, and cancer seems to have a special proclivity to run along nerves. In many instances, medullary cancer has been known to spread from the orbit, by the optic nerve, to the brain. Mr. Soelberg Wells gives such a case, in which he removed the contents of the orbit, for a medullary cancer, and in which the optic nerve appeared healthy on section, but was found to contain, between its inner and outer sheath, small diffused patches of cancer-elements. The man died one year and eight months after the operation, when a large cancerous tumour was found in the middle fossa of the skull. When cancer stretches in this way from one organ to another, its elements insinuate themselves amongst the textures of the organ secondarily affected without definite limits; but when, on the other hand, it seizes upon the brain, not by continuity or contiguity of tissue, but by virtue of a previous development elsewhere, or when it occurs in the brain alone in the organism, then it may either appear as a distinct tumour, spherical or lobulated, or as a diffused mass, nowhere sharply demarcated from the normal structures. In whatever shape, and with whatever boundaries it occurs, it destroys the cerebral tissue by preying upon it, and causing its absorption, or compressing it, while it, at the same time, forms attachments to, or perforates any membranes that may be in its vicinity. It presents itself as one, or as several tumours, connected, or distinct from each other. In an interesting case, published by Dr. Manning, there were two tumours, one of the size of a walnut, in the convexity of the hemisphere, and not extending into the white substance; and another, of the size of an orange, occupying the middle of the hemisphere; while in three cases reported by Dr. Chapman, there were several tumours, varying in size from a pea to a walnut, dotted over the cineritious substance of the cerebrum. Then the tumours may vary in dimensions, position, and kind, as much as in number. Occasionally, a whole lobe of the brain is implicated, and again, the adventitious growth is no larger than a pea. Any part of the encephalon may be the site of a cancerous tumour, but the hemispheres suffer most frequently, and in these the largest tumours are always seen; for, as Lebert has pointed out, with great justice, a tumour at the base of the brain, and especially near the pons Varolii, or medulla oblongata, is likely to cause death before it has attained any great size, whereas a tumour in the hemispheres may be compatible with life, even when it is of comparatively huge volume. All the different species of cancer are represented in tumours of the brain, except, perhaps, epithelioma, which, though met with on the serous layers of the arachnoid, has never been encountered in the brain itself. By far the most common species, however, is the medullary, the most exquisitely malignant of all malignant growths, which appears as a white, reddish-white, or grey, lobulated and cancellated mass, of soft consistence, and with traces of a fibrous structure, consisting of albumen and phosphorus, holding fat, and yielding a milky or creamy juice. That mass may appear to the eye to be distinctly sundered from surrounding textures, but its intimate union with the neighbouring parenchyma is discovered when any attempt is made to dissect it out. Next in frequency to the medullary is, probably, melanotic cancer of the brain; and, after that, comes schirrus. The melanotic variety is mostly secondary to deposits in other organs. Jane M., who died in this asylum on the 13th of August, 1869, had been operated upon in December, 1868, for the removal of a melanotic tumour, which had become developed on the site of a *nævus* on the outer aspect of the left arm, and which had become intensely painful, and liable to frequent bleeding. At the *post mortem* examination of the body, the axillary glands on the left side, and the inner third of the right clavicle, were found converted into melanotic tumours, of large size, soft consistence, and a deep black colour. Melanotic tumours were also found in the liver, kidneys, suprarenal capsules, and ovaries; and melanotic blotches on the mesentery and pleuræ. On the occiput there was a fluctuating swelling, which, on being cut into, was shown to be composed of clot and fluid blood. Beneath this, the occipital bone was blackened, eroded, and, in some places, eaten through. The bones of the skull generally were of a dark tinge, and presented several distinct melanotic patches, which were black and very soft. Beneath all these patches the *dura mater* was blackened. The occipital lobes of the brain were really melanotic

tumours, large, flattened, softened, and everywhere of a black or brown colour. The melanosis was decidedly most marked on the left side. On the upper surface of the right lobe of the cerebellum there was a single melanotic spot.

[To be concluded.]

ON THE CLAIMS OF SICK AND WOUNDED MERCHANT SEAMEN.

By WM. R. E. SMART, M.D., C.B.,
Inspector-General of Hospitals and Fleets.

JUST now, when the Government is likely to be persuaded to undertake an authoritative supervision of the material of the mercantile navy, with a view to prevention of the great sacrifice of lives of seamen through the wreck of unsound vessels, it will not be inopportune to notice what it is possible to effect in the way of their systematic care when sick or hurt.

Our own data on this subject are limited, because we have only one great institution—the *Dreadnought*—devoted to this purpose, and I am not aware that her statistical reports have ever been published. In the United States, the care of mercantile seamen is a duty fully accepted by the Government. The Marine Hospital Service, entirely distinct from the United States navy, was instituted in 1798 by an Act of Congress which exacted a tax of 20 cents, or tenpence a month, from every person employed in the foreign and coasting trades, for the relief and maintenance of sick and disabled seamen in hospitals or elsewhere, as the President of the United States should direct, and provided that the sums thus collected at the various custom-houses should be expended in the district where collected.

The recipients of relief include women employed in vessels as stew-ardesses, etc., and foreign seamen for whom a charge of 3s. a day is made. Of late, it has been found that the general expenses have increased; and to meet that an Act was passed in 1870 raising the tax to 40 cents, or 1s. 8d. per month, reorganising the service, and placing it directly under a supervising surgeon, Dr. Woodworth, by whom there has been issued the *First Annual Report*, up to the end of June, 1872. This is a very creditable official document, reflecting much honour on the department by its mastery of historical details and statistics, as well as by its fearlessness in suggesting reforms of a system that has grown up somewhat wildly from wanting a general medical supervision.

It is noticeable that the United States navy was dependent on the marine hospitals for the treatment of its men, who contributed like merchant seamen to the fund, and received its benefits previously to the year 1811, when navy hospitals were first established. A table gives the aggregate receipts and expenditure between 1798 and 1872, as follows:

Collection from ships	6,733,966 dollars
Appropriations by Congress	4,705,994 "
Receipts, total available	11,439,960 "
Total expenditure	11,241,156 "

For this great expenditure, amounting to two and a-quarter million sterling, there is shown the hospital service of the mercantile marine through 172 years, and of the United States navy through 112 years, forming a striking result on the whole. During the period there have been at various times 32 hospitals, in different ports where most required, but disestablished when the necessity had ceased at the port. The first of these were all on the Atlantic shore; but, as the annexation of the Western States advanced, a call arose for such provision on the banks of the great central rivers that fall into the Gulf of Mexico, and in 1837 an Act was passed authorising a board of medical officers of the army to select and purchase sites for hospitals on the Mississippi and Ohio rivers, and on Lake Erie. Since 1850 many hospitals have been constituted in other localities.

The system followed is to maintain hospitals where most wanted, and elsewhere to provide for the sick in the corporate or private hospitals of the place which are ready to devote a part, or the whole, if needed, to the accommodation of seamen; the expenses being limited to 20 cents, or 10d. a day for medical charges, and 2½ dollars a week for boarding, lodging, nursing and washing, amounting in all to about 16s. 6d. a week, in no instance to extend beyond four months; the regulated charge for foreign seamen being about 21s. 6d. per week. In this way relief was administered, under State supervision, in 1871-2, at 81 different localities, proving the great extent of an organisation to which we have nothing analogous. There are large hospitals, built of stone or brick, and one of cast-iron, on plans to admit of indefinite

extension without loss of symmetry, at Boston (Massachusetts), Portland (Maine), Pittsburg (Pennsylvania), Key West (Florida), Cleveland (Ohio), St. Louis (Missouri), Detroit (Michigan). These have permanent staffs; while at Louisville (Kentucky), and Mobile (Alabama), the marine hospitals are "leased for seamen" to private hands. The hospital at San Francisco is unoccupied, having been damaged by earthquake in 1868; that in Chicago, destroyed in the great fire, is being rebuilt; and that at New Orleans is also unfinished.

Thus we see that this important department has much real property, of which Dr. Woodworth does not speak with unqualified satisfaction. That at Boston, he states, endangers all surgical cases by erysipelas, in its ill-constructed wards; that at Portland had better be rebuilt in pavilion form; that at Pittsburg, seated amidst iron rolling-mills and blast furnaces, is always filled with smoke and soot; that at Key West is often damaged by storms; and of the new hospitals, that at New Orleans, of cast-iron, had better be allowed to rust away than be used; and that at Chicago is situated too far from the port; those at St. Louis, Cleveland, and Detroit, are in faultless working order.

Dr. Woodworth approves of the pavilion system; and he recommends the construction of a pavilion hospital convenient to the port of New York, and states in general terms, "*I particularly favour constructing all the hospitals of wood, and destroying them after ten or fifteen years, both as a sanitary and an economical measure, and building new ones in their stead.*" In this, his views correspond with those of the late Sir James Simpson. Such, then, is the *status quo* of the grand marine hospital system which will probably undergo a gradual reorganisation and reconstruction, now that it is entrusted to responsible professional management.

With all its faults, it affords a very strong contrast to the manner in which the interests and welfare of sick merchant seamen have been dealt with in our country; where for 139 years a tax of 6d. per man per month was levied on merchant seamen's wages—not for their own direct benefit, but to subsidise the State in providing for its seamen disabled in war or by long service. While in the United States, as shown above, to meet the wants of merchant seamen, there have been appropriations of public money by votes of Congress exceeding two-thirds the amount raised by taxation of the seamen, in England things have been managed on an entirely different principle. In 1695 an Act was passed for the *encouragement of seamen and the improvement of navigation*, etc., which instituted registration and a tax of 6d. per month per head from all seamen, whether in the royal or in the mercantile navy; which, being paid into the fund of Greenwich Hospital, was expended on the Royal Navy for the maintenance of its pensioners, while the merchant service received no direct consideration whatever from that fund. Thus, between 1695 and 1829, when the tax was abolished, a period of 134 years, an annual average subsidy of £22,000, amounting in total to £3,068,000, had been paid by merchant seamen for the support of seamen disabled or worn out in the service of the State.

On the occasion of closing the hospital at Greenwich in 1869, the Government obtained the sanction of Parliament to appropriate its properties of extensive lands, as well as the funded property, amounting to £3,813,000. An outcry being raised for the restitution of part for the benefit of the merchant service that had contributed so much, the Government conceded to its use the meagre sum of £4,000 *per annum*, representing the interest of £115,000 of the great property thrown into the consolidated fund, together with the conditional occupation of a small portion of the buildings at Greenwich. Thus, the merchant service has obtained a feeble recognition of its claims on the Government for hospital accommodation, as well as for aid in the very questionable form of pensions which may soon become mal-appropriated, as such things too often are.

It may be asked whether the time has not arrived for the State to take more notice of the claims on it of sick and disabled merchant sailors, by superintending a system for their benefit, supported by a tax such as the merchant navy endured so long for the benefit of others, and which, we believe, it would readily submit to again for its own direct advantage.

Unless the spirit of our mercantile marine has become denationalised by the amalgamation of so great a proportion of foreign seamen as now exists, it can scarcely be apprehended that any unwillingness would be shown on its part to an authorised system that would secure the rights of seamen to efficient care and treatment when sick or hurt, on the principle of self-help, and of provision for sickness, while in health, for those misfortunes to which they are all liable.

At present, with the honourable exception of the Poplar Hospital established by Messrs. Green for the benefit of seamen in their employ, there would appear to be none but public charities to assist mercantile

seamen who return home in bad health. Such a want of system as this is more consistent with the practice of an age when almsgiving was held a "saving" virtue, than with that of our own, when every effort is being made to teach the working-classes the importance of self-reliance.

At a time when British seamen superabounded, and the State was concerned to see its mariners flying from their country and seeking employment under the Dutch flag, when the highest wages to our seamen were 22 dollars a month to those so fortunate as to obtain ships on East Indian voyages, the seamen of England were loud in their demands for help in unavoidable misfortunes at their own cost, but under State supervision and protection.

They had before them at that time the advantages derived by their brethren in the Royal Navy from the system of self-help inaugurated under the advice of Lord Howard and Sir John Hawkins and other naval heroes, who had saved the country from Spain and its inquisition, and they fully appreciated the spirit underlying the principle of self-help in every form: they were willing to undergo, and to pay for possibilities that might befall them.

In the year 1638, the owners, masters, officers and common seamen sailing out of the Port of London (East Indians excepted), petitioned through the Trinity Office, that the State would undertake "the relief of their poor maimed, etc., seamen and their widows," and to provide a fund for that object they voluntarily consented "to pay out of their monthly wages twelvapence from each master; sixpence from each mate, gunner, trumpeter, boatswain, carpenter, chyrurgeon, and purser; and fourpence from each common seaman."

The request was not acceded to by the King's council, although the spirit that actuated it was laudable; and it shows that the institutions of the Royal Navy were the guiding stars to a truly English mercantile navy. Since then, a great revolution has been wrought out; the State now acknowledges its duties to its sick and disabled royal seamen, but the merchant owners have not followed the example, and their disabled seamen have nothing before them but public charities or the union infirmary. Is there not in this state of things what may be benefited by inquiry, and is not the time ripe for action?

In the first place, it would be requisite to ascertain that the same willingness to pay for such advantages exists amongst seamen now as in 1638; and that being agreed on, there would be but small difficulties in instituting and working out a plan for its execution, as there already exists under Admiralty direction an organisation of medical men—the surgeons and agents at sick quarters at all the minor ports, who would gladly accept the charge; and at most of the larger ports there are hospitals that would set aside a part of their accommodation, or would increase it where needed to carry out the object in view; while in ports such as London, Liverpool, Bristol, Hull, and Glasgow, the extent of the demand would warrant the construction of special marine hospitals, as in the United States, dependent on the contributions out of the wages of the seamen of the several ports.

To meet the inquiry of what is effected by this wide organisation scattered over the face of the great republic, we find in Table A the following totals of results between the 1st of July, 1871, and 30th of June, 1872.

Treated.	Admitted to Hospitals.	Discharged.					Remaining.	Average No. of days' treatment.	Percentage of Deaths.	Average cost per diem.
		Cured.	Improved.	Not improved.	Deserted.	Died.				
11,948	11,028	8,760	1,656	135	69	497	831	33	4.5	97.6 cents or 4s.

There are no such numbers as these elsewhere to be dealt with in elucidating the diseases to which seamen are liable.

It would be exacting to expect that any *first report* brought out so quickly as this should contain collections of cases to illustrate special or endemic diseases; but, as Dr. Woodworth has under his supervision a large staff of officers who have given ample proof of their ability to report as well as to compile, we may confidently look forward to his future reports affording details of no mean value to all who have at heart the well-being of a very important class in every maritime state.

It is to be wished that it were within Dr. Woodworth's competence to commence early in these reports, which cannot fail to become a very valuable series, a more modern classification of diseases; but this can scarcely occur without a general adoption in the United States of a new nosology. If it can be done without being charged with national

prejudice, that lately instituted by our College of Physicians, which has been at once adopted by all our Government departments, might be commended to his notice.

Above all peoples, our American brethren are the consistent announcers of great social reforms, on the principle that, with advancing knowledge, the latest device, when it meets with ready acceptance by a large body of capable judges, must be the best, and on such ground we ought not to hesitate in recommending that which has been universally adopted by the profession in the old country. Admitting that, with so large a base, the reports of the United States marine hospital service may take pride in standing alone in this matter, yet, for the sake of comparison, which will be advantageous to a prominent class of men in the two greatest maritime countries of the world, it would still be well to facilitate, by every means, instruction by these reports side by side with what we have had for a long time placed annually before us in those of our own naval medical department.

This first report has aimed only at presenting concise notations of surgical cases, especially of operations, that extend further back than the statistics of the report itself, and therefore exceed the average of surgery for yearly periods by about one-third. These offer a very favourable record of the results of operative surgery which may be summarised as follows:

189 surgical operations, comprising, amputations of thigh, 2; of both legs, 1; of one leg, 10; of toes, etc., 15; at shoulder, 1; of arm, 2; of forearm, 3; at wrist-joint, 1; of fingers, etc., 25. Excisions of joints—of head of humerus, 1; lower end of, 1; elbow-joint, 1; wrist-joint, 1; of metacarpal bone, 1. Ligation of arteries—exterior iliac, 1; superior profunda, 1; brachial artery, 1. Trephining—frontal bone, 1; mastoid process, 1. Hernia—radical cure, 4; strangulated, 1. Lithotomy, 1. Tumours and diseased growths—of head and face, 4; of neck, 3; of leg, 1; of superior maxillary bone, 1; of half of inferior maxilla, 1; of sequestra, 2. Eyeball—extirpation, 4; cataract extraction, 4; iridectomy, 2. Genito-urinary organs—strictured urethra, 17; phimosis and paraphimosis, 42; castration, 4; hydrocele, 7; varicocele, 2. Rectum—fistula in ano, 7; stricture, 1; hæmorrhoids, 6. Extraction of bullets and shot, 3. Sutured intestine, 2. Paracentesis abdominis, 2. Tenotomy, 1.

In this summary of 192 surgical operations, it appears at first sight very remarkable that only 11 terminated in death; but this is accounted for, as it includes the successful cases of an indefinite period of which the fatal cases are unrecorded. Of course in future reports this want of precision will not recur. The fatal cases noted are:

Amputation of the leg, 3: of which 1 died on the 3rd day, cause not stated; 1 in 5 weeks, from gangrene, having Bright's disease; 1 in 40 days, from pyæmia. Amputations at shoulder-joint, 1, complicated with severe laceration of the chest and back, died on the 9th day; 1 in lower third of humerus, after erysipelas, subsequent to a preceding amputation of finger from frost-bite; 1 of a toe for frost-bite, death in two weeks from gangrene and pyæmia. Excision of the wrist-joint, case of caries, death by erysipelas and toxæmia in two weeks. Trephining of frontal bone, three months after an injury, death in 14 days from erysipelas. Strangulated hernia, 1, after three days, death in six hours. Punctured intestine, 2: 1 died of erysipelas on the 22nd day; 1 died two months after being wounded.

Thus the eleven deaths are accounted for, offering a very small percentage, which may be attributed in due regard to good surgery; but allowance must be made for treatment in hospitals under 200 beds, not over-crowded, and, in the majority of instances perhaps, in private dwellings.

In addition to these cutting operations, there is a good proportion of fractures of all parts; but no cases of dislocation beyond those of compound character, complicated with fractures, for which amputation was had recourse to. The frequency of severe frost-bite in the hospitals of the Northern States on the Atlantic shore, affords a very good criterion of the severity of the winter climate by comparison with that of our own shores, although ranging from 10 to 15 degs. higher in latitude.

Further analysis, if space permitted, would display more fully the character of the cases under each operation, and the mode of procedure, from which much that is useful might be derived; but my last observation shall be on a subject which at present occupies professional attention, to show the practical use of anæsthetics in the nation to which their first employment is due. In a total of 101 cases in which anæsthesia was produced, in 66 it was by the use of chloroform, 25 by ether, 9 by mixture of both, 1 by nitrous oxide gas.

From the circumstance that these cases are gathered far and wide, over the surface of the United States, without any official direction or guidance which might lead to the employment of any particular mode of producing insensibility, we may accept it as a demonstration of a

strongly marked preference of chloroform to other anæsthetics in the hands of our professional brethren in America, notwithstanding the grand fact that the discovery of the powers of ether as a surgical adjuvant was due to them.

With these statistics before us for a mercantile navy of no greater extent than our own, the necessities of sick and wounded seamen can scarcely be doubted. We cannot but lament that, in our case, no special means are taken to relieve them among a class of men on whom the commerce of our country depends, and towards which in the prevailing policy of reducing the Royal Navy to the lowest peace scale, the nation must look to man its fleets in the event of war. Under such circumstances, I cannot hesitate to express a fervent hope that the great question of adequate attention to the necessities of sick and wounded merchant seamen, will meet with due consideration in the inquiry about to take place into the alleged causes of the preventable sacrifice of their valuable lives through the unsound nature of vessels in which they embark, because governmental supervision is evidently as much required to provide for their proper treatment when sick or hurt, thus tending to the prolongation of their lives, as in the prevention of their loss of life through the cupidity of their employers.

It would be gratifying to find this important question followed out by some member of the profession more intimately acquainted with the state of our merchant navy than I am.

SEPTICÆMIA AND THE CATHETER.

By DAVID FERRIER, M.D.,

Professor of Forensic Medicine in King's College; Junior Physician to the West London Hospital.

THE valuable paper read before the Royal Medical and Chirurgical Society on February 25th by Dr. Dickinson, on the suppurative condition of the kidney frequently seen in connection with pelvic and vesical inflammation, induces me to bring into greater prominence than is usually assigned to it what I conceive to be, in the great majority of instances, the starting point of these and allied disorders of the urinary apparatus; and to endeavour to show that the means taken to relieve the patient in many cases aggravate the disorder, or induce pathological processes which lead to a fatal termination.

It is a commonly received opinion, though accurate clinical observers are beginning to doubt its correctness, that the ammoniacal decomposition of the urine met with in paraplegia, or generally in cases where the urine stagnates in the bladder, is the result of the fermentative action of the vesical mucus, and is therefore especially to be found in connection with vesical catarrh, where the secretion is formed in large quantity. There is not, as far as I am aware, a single trustworthy fact or experiment in confirmation of this assertion; and that the causation is different, it is not difficult to prove.

The tissues and fluids of the body, with the exception of the contents of the alimentary canal, do not in themselves contain the elements of putrefactive decomposition, and may, with due precautions, be kept for an indefinite period entirely free from such change. Assertions to the contrary have been made by several eminent chemists, but it is easy to advance fatal objections to their method of experimentation. The almost universal existence of putrefactive germs is by many regarded as a hypothetical assumption; nevertheless, the evidence is sufficient to make it a demonstrated fact. And in special relation to the subject under consideration, the existence or non-existence of such germs ought not to be a mere matter of opinion, as the practical results are of sufficient importance to demand serious inquiry. Experiments which I made with Dr. Burdon Sanderson, and which I have since repeatedly verified, establish quite conclusively that fluids prone to decomposition may be kept unaltered for an indefinite period, and that decomposition may be at once initiated by the addition of a drop of water, or even contact with an apparently clean surface. Such contact, even with the finger, is sufficient to determine the growth and multiplication of microscopical organisms, which are the active and only agents concerned in the putrefactive process.

Urine in itself, apart from such contamination, is not liable to decomposition. In illustration, I adduce an experiment which I recently made. A small quantity of urine—phosphatic, containing mucus, but not ammoniacal—was passed directly into a flask previously purified by heat. A plug of cotton-wool was then inserted, and the flask set aside, without being boiled or otherwise interfered with. For a whole year the urine remained clear, with phosphatic sediment, but free from decomposition and organisms. After being opened for examination and again