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THE LOT OF THE WOUNDED SAILOR.

By SURGEON HORACE E. R. STEPHENS, M.B., R.N.

BEFORE the fateful month of August, 1914, there were few among naval medical officers who were able, from actual knowledge and experience, to realize fully the problem which they are called upon to solve in a modern naval action. It is true that the Boxer rising in 1900 and the Boer War provided a means for testing the general utility of a small section of the medical branch; but even these opportunities were confined to a very limited number of fortunate officers and men who happened to be stationed within the vicinity at the time. Nevertheless these were essentially land operations, and such being the case could not be expected to enlighten those who have to work under the utterly different conditions which prevail at sea. Each type of ship has its own arrangements for dealing with the wounded; and these depend upon the staff, the accommodation, and other resources which the ship is able to furnish. Although the difficulties had been considered with the utmost thought and care, none of the schemes prepared had received the sanction which must come from success in practice.

Prior to 1914 the modern British Navy as a whole lacked the opportunity of proving by actual fighting whether it remained worthy of the glorious traditions of the past. A glance through the Navy List would have shown that the "Victory," still flying an Admiral's flag in Portsmouth Harbour, was the only ship which had seen real active service. The most recent naval actions were those fought in the Chino-Japanese and Russo-Japanese Wars; and much was learned from the experiences gained by the surgical staff at that time.

Of the various important conclusions based on the observations made in those wars perhaps the most interesting was that in relation to the prevention of sepsis. The whole foundation of modern surgery is built upon this rock; and probably the most important part of the duties of medical officers after a naval action is to do all in their power to keep wounds clean and prevent infection. In land fighting it is impossible to reach conditions from which the dangers of sepsis can be other than grave. Much may be done to arrest its development even in severe and lacerated wounds, but no one has yet devised a means of dealing with this evil plague by the way of prevention. Such an ideal, however, was aimed at by the Japanese surgical staff. It was argued that, provided the individual is not himself a source of septic mischief, his wound is not likely to be infected by the fragments of metal driven into his tissues from an exploding shell. To follow this line of argument into practice, the rule was made that all officers and men must wash themselves thoroughly and don clean clothes which had been sterilized by steam. In the larger and later

ships of the Japanese Navy the increased facilities for bathing and the laundry were important features. The results fully justified the hopes of those who introduced this measure: for there followed a striking diminution in both the extent and severity of this dreaded suppuration.

Other conclusions will be referred to later in this paper; but while we were willing and anxious to learn all that we could from the experience of others, the fact remained that, generally speaking, the medical branch of the Royal Navy possessed little or no first-hand acquaintance with sea-warfare at the outbreak of hostilities.

Looking back over a two and a-half years' struggle against an enemy full of skill, resource, and ruthlessness, we view the result with equanimity. The majority of our plans and our methods of organization have stood the test of hard experience well; while, on the other hand, many lessons have been taken to heart which must prove of inestimable value in the days to come. For such a state of affairs we are indebted to those Director-Generals who have striven for all that is best, both in personnel and *matériel*, wherewith to equip the Naval Medical Service; and in this connection the Service as a whole owes a deep debt of gratitude to the untiring work of Sir James Porter. The principles and reforms which he advocated have been carried on and amplified by his successor, Sir Arthur May, the present Director-General, on whose shoulders fell the responsibility of supplying a vast fleet with adequate and efficient medical supervision. The number of medical officers on the active list has been enormously augmented by the inclusion of civilian consultants, specialists, and general practitioners. Without their assistance the immense problem of meeting the increased needs of the Service afloat would have remained unsolved. At the same time it should never be forgotten that the effective personnel on the permanent list has enhanced the value of the temporary surgeon at sea to a degree which can only be appreciated by those whose home is on the water. The extent of success attained by the Naval Medical Service as a whole may be gauged from the official despatches; but its true worth can only be estimated when the full history of this war has been written.

"The exigencies of the Service," to use a time-honoured phrase, are chiefly responsible for the difficulties and hardships encountered in the treatment of those wounded in a naval action. These are so complex and peculiar that an accurate detailed description becomes impossible. Only the broad outlines of the general principles involved can be recorded, while the remainder may be left to the imagination of the reader.

First of all it should be remembered that medical officers afloat are of necessity bound to carry out their professional duties under conditions and in circumstances which at once preclude approach to the ideal obtained ashore. The reason for such a state of affairs must be obvious, since the prime object of a ship of the line, on which her very existence depends, is to *fight*. Nothing can be sacrificed which would impair her efficiency and capabilities as a unit of force. The accommodation for the living spaces of both officers and

men, the stowage of stores and provisions, and the necessary arrangements for the water, heating and ventilation supplies are contingent matters of secondary import in relation to the chief objective. The guns, with their magazines and elaborate system of control, the torpedo department, the engines and stokeholds occupy the greater part of the ship. Such considerations naturally recoil on those whose duty lies in rendering assistance to the sick and wounded. For instance, the sick bay or hospital itself cannot always be placed in the most favourable situation possessing light, quiet, good ventilation and ample accommodation, four standard essentials, which "the exigencies of the Service" preclude to a greater or less degree. Nevertheless much skill and ingenuity have been displayed in the construction of the later types of men-o'-war so as to make the sick bay as comfortable as needs permit.

For the purposes of description there can be no fixed rule, for no two ships are ever identical; and the details of the various types are constantly changing in order to conform to endless innovations. We will consider, then, only those ships designed expressly for the purpose of war and leave out of account the immense fleet of merchant vessels, drifters, trawlers, yachts and smaller craft, for the moment an integral portion of the Royal Navy; over all these a keen medical watch must be kept to render them efficient, but this question hardly comes within the scope of the present article.

For those whose knowledge of the Service afloat is somewhat esoteric, it may be as well to summarize briefly the points of the various units of our striking force as they appear to the medical officer. The battleship and battle-cruiser carry a Fleet Surgeon and two Surgeons, with a sick berth staff, equivalent to orderlies, of half a dozen. Both of the aforementioned classes of ship may be regarded as being steady at sea, from the medical standpoint, a most important particular which must be patent to all. The armoured cruiser usually carries three medical officers with three or four sick berth ratings. Being an older pattern of ship her accommodation is limited, her stability at sea is slight, and so the work of the surgical staff is carried out in the midst of many difficulties—again due to "the exigencies of the Service." The light cruiser possesses a Fleet or Staff Surgeon and Surgeon, with three members of the sick berth staff. Her accommodation is "as good as can be expected and nothing more." At sea her "liveliness" must be experienced to be realized, and this unfortunate but irremediable quality handicaps the work of the medical staff severely. Destroyers carry a Surgeon probationer who belongs to the Royal Naval Volunteer Reserve, and one sick berth attendant. The former is a fourth or fifth year student; and whenever an opportunity presents itself, that is to say, "when his services can be spared," he returns to his hospital or university, gradually completes his medical curriculum, qualifies, and then automatically joins up as a temporary surgeon. Much valuable work has been done by these officers, as the official despatches bear witness.

The sick bay (the hospital on board) in almost every ship lies in close proximity to the upper deck, in order to procure natural

light and ventilation as far as possible. Owing to its exposed position it is practically never employed during action; and this rule has been justified by results, as many instances have occurred in which the sick bay has been utterly wrecked by shell-fire.

During action the medical officers and their staff are stationed below in the most sheltered position the ship is able to offer. Experience shows that there is no absolutely safe place in any ship under fire; some are merely less exposed than others. Now each ship is provided with two medical distributing stations, one forward and one aft, which have been carefully chosen and contain permanent fittings for the requirements of the medical staff. These stations form the two centres from which medical assistance can be sought. An ideal medical distributing station should conform to the following requirements, all of which, however, cannot be expected in a single ship.

(1) It should be situated behind and below armour. Projectiles in long range firing drop almost vertically at the end of their trajectory—the so-called plunging shots, so that it is of the greatest importance that there should be sufficient protection above as well as at the sides.

(2) It should be accessible to the upper deck or mess deck where there are a large number of men and where casualties most commonly occur. The engine rooms and boiler rooms should also be within reasonable distance.

(3) The ventilation should be adequate. The medical staff, in view of their arduous task once the action is over, must be kept fit; and nothing is more liable to incapacitate them for such work than being placed below in a polluted atmosphere during a prolonged action.

(4) The accommodation should be ample.

The preparation of these two medical distributing stations entails much labour and is always carried out very thoroughly. Too much thought and care cannot be expended on making these arrangements, as the whole success of the treatment of the wounded depends on the ability and skill with which they are organized. The work must go forward in an orderly manner, else chaos will ensue. One of our greatest difficulties lies in coping with a large number of badly wounded men who are thrown on our hands in a single moment.

During war time the stations are always partially ready, and the medical stores and surgical equipment are divided as equally as possible between the two. Such a division becomes a necessity when it is remembered that one or other station may be wrecked and all the gear lost. Should time permit, the remaining stores, books, and instruments which are in daily use in the sick bay are removed to these sheltered positions. In many ships, especially the smaller unprotected ones, more decentralization has been recommended. Subsidiary medical stations are utilized. These are all connected to the main ones either by telephone or messenger; and the advantage of such a scheme lies in the fact that whatever happened there would remain a sufficiency of staff and material to carry on.

During this period of preparation it is the usual custom to draw an extra supply of blankets and pillows from the paymaster's store, the need for which will be seen subsequently. The surgical instruments, after being sterilized, are placed in a weak antiseptic solution ready for immediate use. Similarly ligatures, and needles threaded with catgut, horsehair, or silkworm gut, are laid out in trays. Dressings such as cyanide gauze, boric and white lint, sponges, operating gowns and towels, and *mostig battiste*, a kind of waterproofing akin to jaconet, are unpacked and placed handy in the drawers and cupboards fitted in the distributing stations for the specific purpose. One sick berth steward attends to the sterilizing of the basins for washing, the supply of water and soap, the preparation of antiseptic solutions of the requisite strength, such as perchloride of mercury, tincture of iodine, hypochlorates or salt, according to the individual taste of the medical officer in charge.

In each station a tank is fitted which holds from ten to thirty gallons of water, from which a hot supply is available by means of a steam geyser attached. The importance of a free supply of both hot and cold water cannot be overrated; and this must always remain a source of anxiety on account of the vulnerability of the pipes and connections. An additional supply is usually kept in buckets or "fannies"—a term used to describe mess kettles—in case of emergency.

Light is another essential requirement, of which three kinds may be employed:—

(a) The usual electrical supply from either the main or secondary circuit. If both of these fail, the ship is plunged into darkness until the dynamos or connections are repaired.

(b) Oil lamps. These are unreliable, as excessive vibration, a very common occurrence, will immediately extinguish them. In addition they are cumbersome and require constant attention and care to be satisfactory.

(c) Portable electric hand lamps and torches. These have proved invaluable. They are compact, very "handy," and throw a concentrated beam of white light on the object under examination. An electric torch and a hypodermic syringe with a supply of morphia are two indispensable items for a medical officer proceeding to his action station.

The efficient ventilation of a fighting ship presents many difficulties in times of peace, and these are markedly increased during action. Air fouled by smoke and fumes must be quickly removed from the compartments below and replaced by a supply of pure air from the upper deck. The arrangements made to ensure this vary greatly in different ships, and consequently during action the practice differs. The effect of fumes on the men will be dealt with subsequently; at this point it is only necessary to note that steps have been taken to meet such an untoward event by the employment of suitable respirators and goggles. Experience has shown that by this means many lives have been saved and many casualties from gassing averted.

The first-aid parties comprise those officers and men not required for executive duties during action, namely, the chaplain and paymasters, writers, cooks, officers' stewards and canteen hands. All of these have attended a course of lectures given by the medical officer and passed the resulting examination. Thus they become qualified to take charge of a stretcher party and render first aid to the wounded. A theoretical knowledge, however sound, does not mean practical ability and common sense; and it is an excellent plan to let them attend occasionally at the sick bay where they might assist in stitching up a lacerated scalp or watching the reduction of a dislocated shoulder. A little practical education of this nature exerts a tremendous influence over those who have seen no suffering before. A simple illustration of the need for practice comes from a ship on a foreign station in peace time. The Fleet Surgeon had taken great pains and trouble to form a sound and efficient first-aid party. The examination took place in due course, and this proved that a certain ship's steward was *facile princeps*. The first-aid manual was to him an open book; in fact, theoretically, he was almost perfect. Shortly afterwards an accident occurred in the CO₂ machinery room, and the Fleet Surgeon, on reaching the scene, discovered a stoker petty officer bleeding profusely from a compound fracture of the leg which had been mangled. The man was actually bleeding to death, and required very prompt treatment. The aforementioned member of the first-aid party was already on the spot before the P.M.O. had arrived, but the sight of his friend suffering intense pain had blotted out completely all his knowledge of first aid, and he was discovered kissing the patient! However, this extreme case must be regarded as a single unfortunate incident. During the war these first-aid parties have accomplished all that has been asked of them, as the published reports of several medical officers testify. Their course of instruction covers a wide field, but stress is laid on such important duties as the arrest of hæmorrhage, dressing a wound with antiseptic gauze, the administration and dosage of some form of anodyne, or "pain mixture" as it is known on the lower deck, and the general nursing of the sick. The stokers and engine room ratings receive lectures on the treatment of burns and scalds, and are supplied with bags containing the requisite dressings. It is generally acknowledged that little benefit is derived from teaching first aid to the ship's company as a whole, at any rate in the larger ships. The average blue-jacket will tend and comfort a fallen shipmate with a brotherly affection, yet he shrinks from touching his wound and always seeks help from the trained staff. All men are, however, instructed in the use of respirators, and the need is made clear for changing into clean clothing before action.

Canvas bags containing packages of dressings, a bottle of some kind of sleeping draught, one or two tourniquets, cotton wool, bandages, safety pins and labels form the equipment of each member of the first-aid staff. The stretcher parties are recruited from those who may not be required at the time, such as the stokers off watch. Strong, hefty men are needed, as the work of moving patients along mess decks, up

and down hatches, is no easy task. The stretcher in general use is of a Japanese pattern, modified by the late Fleet Surgeon Neil Robertson, whose name it bears. The framework consists of small strips of bamboo, which are lined and held in position with strong canvas. When the patient is placed on the open stretcher the sides fold over and are secured by two broad straps. Thus it acts like a huge splint for the whole of the body, the arms at the sides being enclosed and the head steadied by means of a special band. At each end is attached a steel ring, so that a man can be lowered in a comfortable posture from such inaccessible positions as the foretop or bridge down to the deck some eighty feet blow. Similarly men can be hoisted up through hatches from compartments below. Being light, strong, and very adaptable, it has proved of the greatest value after action. In the modern light cruiser the sharp turns and narrow passages appear to limit its sphere of utility; on the other hand the account of a modern action demonstrates its worth even in small ships. In those ships where it cannot be used conveniently man handling becomes the more general method. Great difficulty is then experienced in getting the wounded down hatchways with steep ladders. To meet this contingency canvas chutes have been employed in several instances with success. The description given by Holmes will convey the general idea which was carried out in a modern light cruiser.

"The chute consisted of a wide strip of canvas attached at one end to a spar, the spar being some inches wider on either side than the canvas, and with 2-inch lanyards at the other end to pull the canvas taut. The narrowness of the hatches and steepness of the ladders made man-handling of patients down them an impossibility. The sailmaker bored two holes in either end of the spar and a 2-inch lanyard rove through. By means of these the spar was lashed on to the stanchions on either side of the coaming of the hatch; and the two other lanyards at the bottom of the canvas part of the chute were held away a sufficient distance from the ladder, so that when it sagged the patient did not bump his head against the two or three upper treads of the ladder. The chutes worked splendidly during the night of the action: the wounded were man-handled to the top of the ladder, placed on the chute, which was held taut by the stokers below, slid gently down, lifted off and carried to the dressing station, a couple of yards distant. The chute did not interfere with any patients who could walk down the ladder, as it was simply rolled on one side."

To the medical officers and their staff the commencement of the action is the most trying period, sufficient to test the hardest among us to the utmost. Our portion remains to wait in patience; being down below we are denied the thrill of seeing the enemy ships or watching the exciting but terrible scenes enacted above. Work of any description would be doubly welcome at such a time. An instance of this occurred in one ship where one of the surgeons was at his appointed place of duty, twenty feet or so below the upper deck, which was considered one of the safest stations in the ship, when the hand of death came swiftly upon him. He was killed instantaneously by an accident no

one could have foreseen, and which in all probability will never occur again. The charred pages of a sevenpenny novel by his side was sufficient evidence as to how he had succeeded in keeping cool during the interval of suspense—a brave fellow indeed. The peculiar sensation of being “cooped in” below is intensified by the indescribable din. As each salvo is fired the whole ship vibrates with the shock; the trays and instruments rattle; the lights flicker; even the bulkheads themselves appear to shudder; and one has hardly time to collect one’s wits before the next crash follows. Amid all this can be heard the enemy’s shells whizzing overhead, the ricochets booming in an eerie, sinister fashion, while splinters flick against the armoured sides, producing an odd sonorous note like peas dancing on a drum. Suddenly a dull thud is felt, immediately followed by a terrific explosion—a direct hit—which makes the ship dip or lurch: then one can actually feel her right herself and wag her stern as she continues on her way, a welcome and reassuring sign. The surgeon of the “Sydney” describes an incident in which the ship heeled over and the operating table “took charge.” It seemed as if she had been badly hit, but they soon discovered this was only due to a sudden alteration of course!

A messenger arrives with information of casualties in a certain locality, and then our endless task begins. One of the first-aid staff moves off to the scene of disaster accompanied by his stretcher party. Here it may be emphasized that nothing but first aid can be attempted during the action itself. In some heavily armoured ships it may be possible to bring some of the wounded to the dressing stations, but more commonly they are placed as near as possible where they fell, out of the way of the combatants. After the action is over the medical officers are invaluable, and as they cannot be replaced, should not be exposed more than is absolutely necessary. Muir, of the “Tiger,” relates an incident in which he had to refuse a request asking for first aid to a turret. Events justified his decision, as shortly afterwards a 12-inch shell exploded in the vicinity, killing and wounding several men. During action then it is impossible to render great assistance; but in almost all engagements there are “lulls” during the period of fighting, which may be of short or long duration. Such spells present the medical staff with the desired opportunity. The medical officers emerge from the shelter of their distributing stations and proceed to deal with the injured. Their objects in view may be summarized briefly thus:—

- (1) To save life.
- (2) To alleviate pain and suffering.
- (3) To mitigate sepsis.
- (4) To remove the wounded to a place of safety.

The havoc wrought by the explosion of a heavy high explosive shell between decks must be seen to be realized. Perhaps the most apt description is “the abomination of desolation” spoken of by the prophet in olden times.

In such a crisis the great “stand-by” is our most valuable drug morphia, in some form or another. The majority of medical officers prefer the hypodermic method of administration rather than by the

mouth. Maximal doses, repeated if necessary, are the rule, and their effect is truly magical. Hæmorrhage is controlled, "shock" lessened, and in a moment the stifled moans of the wounded are lulled into a quiet orderly sleep.

Again the guns speak, the fight is renewed and we hurry back to our stations to await the next opportunity. By this time a number of the slighter cases will have found their way to the dressing station, and the hard, strenuous work is commenced in real earnest. The nature of the wounds themselves does not differ materially from those obtained elsewhere. Most of them are produced by splinters of high explosive shell, which cause extensive lacerations by tearing out the flesh and leaving ugly holes. Others are brought about by pieces of the ship herself, such as rivets, bolts and bits of wood being driven into the tissues. Muir, of the "Tiger," speaks of the "skin of nearly all patients being covered by a black, oily, sooty deposit. This was readily removed by turpentine, but nothing else seemed to have any effect." Hewitt, of the "Pegasus," writes of "large numbers of minute superficial wounds and burns looking like the pitting of black powder."

All the wounds are very dirty, presumably septic, and require the greatest care in treatment, lest infection with its host of complications should supervene at a later date. Darby, of the "Sydney," gives a notable example of what may happen to neglected wounds. He describes the wounds of the Germans who were brought off to the "Sydney," thirty hours after injury, as being "very septic, with maggots $\frac{1}{4}$ -inch in length crawling all over them."

Hæmorrhage is less than one would anticipate. In a few cases it is of course terrific; but the vast number of smaller wounds are not troublesome in this respect, no doubt the morphia being the determining factor. The legs, arms and head are the parts of the body principally involved in injury, the chest and abdomen frequently escaping. The explanation of this probably lies in the fact that those with severe wounds of the chest or abdomen succumb quickly to shock and very little assistance can be given.

Burns form one of the most distressing results of a modern naval action. The first-aid treatment consists in applying wet picric acid dressings, and these are fairly satisfactory. They are more likely to be put on clean than any other kind. When more time can be given, they are redressed with a mixture of olive and eucalyptus oils and covered with a fomentation. Recently a preparation of paraffin wax, termed "ambrine," has been supplied to all ships as a first treatment for burns, and promises to prove of great value.

The deadly effect of fumes from high explosive shells and the measures adopted to combat them have been alluded to in a previous paragraph.

Here it may be mentioned that "mental" cases resulting from the nervous strain occasioned during a naval action are surprisingly small. The long months of weary waiting are far more likely to produce a nervous breakdown than the high pitch of temporary stress to which all are subjected when "The Day" has arrived.

The sick bay is rarely intact, and so other places have to be improvised from the most suitable place left undamaged, possibly the wardroom or the captain's cabin. Immediately after the action the wounded are placed on mess tables, kept dry and warm in blankets. This appears the most rational method to adopt, and the less a patient is moved about when seriously injured, the better are his chances of recovery. Rest is the first object in view; thereby shock is reduced tremendously. A man must be given time to recover from the initial violence before shaking him about by much movement, which jars and increases his affliction. In this connection morphia is again our most valuable asset. While under its influence the patients can be moved with the greatest ease and the least inconvenience. In some ships the accommodation required is insufficient, and the plan of employing superimposed cots has given satisfactory results. The cots are constructed of thick canvas material with wooden poles at either side. From the upper deck hang four wire ropes with three loops at suitable intervals. The poles of cots are then slipped into the loops, and the patients are thus arranged in tiers, one above the other. No one can foretell where the shells will fall, nor the extent of the resulting damage, and therefore the simpler the arrangements made beforehand the more likely are they to prove successful. An elaborate system is doomed to failure if the ship receives much "hammering."

After the action has been definitely broken off there is usually a considerable time, perhaps twenty-four hours, perhaps several days, before the base is reached. During this period much depends on the state of the sea and the steadiness of the ship as to how much can be done. After a tour of inspection the best position for the operating theatre must be decided upon, if the sick bay is not available. The light, ventilation, and a good water supply would be the main factors in influencing the choice. Possibly part of the upper deck screened off may be utilized, or the captain's cabin, or one of the upper deck cabins, as the use of these would inconvenience the least number of persons. Once the decision has been made the place is cleaned and dried thoroughly; and then the operating table, with the surgical instruments and stores, are removed thither from the medical distributing stations.

By this time the number and character of the injuries will be known, and those requiring most attention are dealt with first. One of the surgeons administers the anæsthetic while the others operate. Only urgent major operations are attempted. It cannot be expected that each ship should carry a first-rate specialist in surgery, and so the staff is left to do what lies in its power.

The surgical toilet of the wounds is perhaps our chief objective. This implies that our energies are devoted to attempting to sterilize the wounds and so prevent them from septic poisoning subsequently. All wounds are thoroughly cleansed, pieces of shell removed, hæmorrhage arrested entirely, and the edges, after being trimmed, are brought together as far as possible. In dealing with deep and extensive lacerations this is a very difficult task, almost impossible, with the resources at our command and the time at our disposal. Amputations

are undertaken where there is no hope of saving the limb; but trephining and operations on the chest and abdomen are rarely performed. Whilst under the anæsthetic the patients can be overhauled systematically; and where this is done unsuspected injuries are frequently revealed. Notes on each case are made at the time, such as name, age, rating, nature of injury, and the treatment adopted. Thus they leave the theatre duly labelled and ready for transport at the earliest opportunity.

The nursing of the wounded afterwards is a most trying and exhausting ordeal. Their needs are great; and if the casualties are heavy our resources are strained to the utmost limit. An illustration of this comes from the description given by the surgeon of the "Sydney." In addition to their own wounded they took on board seventy German wounded, a hundred prisoners, and also twenty Chinamen from a sunken collier. Both the wardroom and sick bay were filled, and so the adjacent spaces and neighbouring corridors had to be utilized for additional accommodation. The cooks, who form part of the first aid parties, prepare soups, Bovril, or one of the many invalid foods issued under the general heading of "Medical Comforts." Brandy added to Bovril in the proportion of two ounces to the pint forms an excellent "pick-me-up." One of our chief difficulties lies in attending to the "needs of nature" of the patients. Appliances may be scarce as they are easily broken, and the wounded sailor is not as yet lying comfortably in a hospital bed.

The behaviour and demeanour of the injured has always evoked unstinted praise from all who have come in contact with them. They appear to realize that the best is being done for their misfortunes, and that pain and discomfort are merely unavoidable. In the past the pluck and courage of the sailor has been held up as a model of patient endurance; and this national characteristic remains unaltered to this day. Those, severely wounded, will discuss the various phases of the battle, the damage done to the enemy, or when they will be well enough to go on leave. So long as the action progresses in our favour they rest content; happy to be alive. Such cheerfulness and optimism are of untold worth, and undoubtedly render our work a service which is impossible to over-estimate.

The dead are removed from below as quickly as possible to the upper deck, where they are decently covered with the "Jack." Nothing is more likely to disturb the general morale or set up a morbid epidemic of sentiment among sailors than the sight of a dead man lying uncared for on the mess deck. Yet, in spite of all the stress and strain of ceaseless activity, it seems impossible to blot out entirely from one's mind that all were one's friends a few hours ago. The scene when the captain was reading the last rites over a large number of my fallen shipmates on the evening after action recalls the saddest and most awe-inspiring sight it has been my lot to witness.

On arrival in harbour our first thought is to make the ship ready for sea again as soon as possible. With that end in view the wounded are disposed of with the utmost despatch, and coaling commences automatically. The cots containing the injured are hoisted overboard

by means of a derrick and gently lowered into a lighter alongside. As soon as one is filled another is at hand, and so a continuous procession proceeds to the hospital ship in readiness to receive it. Cases of even the most trivial wounds are discharged, as there is no room for any but the fit on board a "ship of the line." Water transport has many advantages; the vibration is negligible, and for the first time since the action the patient rests in peace away from the noise and hustle inseparable from a man-o'-war.

The hospital ships are converted liners or transports replete with every modern convenience. Being forewarned, they are ready to deal with such an emergency. The average can accommodate about three hundred cot cases, some more, others less. Equipped as they are, the high hopes placed in their capabilities have fully realized expectations. The efficient transport of wounded of both services has proved one of the most successful features of the war. When filled, the hospital ship proceeds to a base possessing one of the large Naval Hospitals, and thus the wounded sailor at length reaches his destination.

In conclusion, I wish to acknowledge the great assistance gathered from articles written in the *Journal of the Royal Naval Medical Service*, by Fleet Surgeon J. R. Muir, R.N., Staff Surgeon J. McA. Holmes, D.S.O., R.N., Staff Surgeon A. J. Hewitt, R.N., and Surgeon A. L. Darby, R.A.N. Ships in which heavy casualties occur frequently do not return to harbour, a fact which increases the value of those records related by the fortunate few who remain. Individual references are many and varied; the above account is but an attempt to outline the broad principles which guide us in tending the wounded sailor after a naval action of the present day.