

**Medical compend for masters of the Naval Auxiliary Service and others : to accompany medicine box and boat box.**

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**MEDICAL COMPEND**  
**FOR MASTERS OF THE**  
**NAVAL AUXILIARY SERVICE**  
**AND OTHERS**

(MEDICINE BOX AND BOAT BOX)

—  
**1918**



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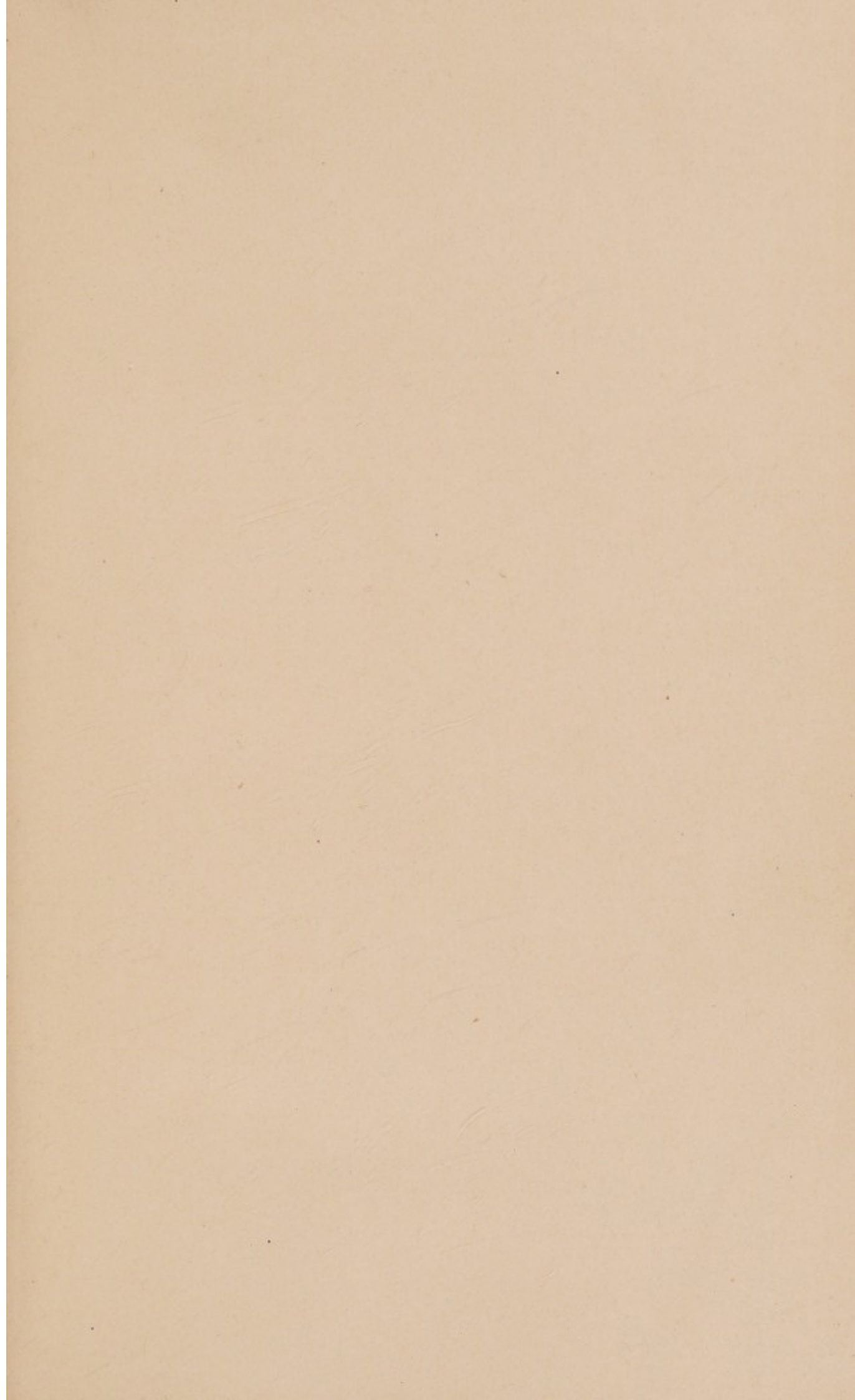
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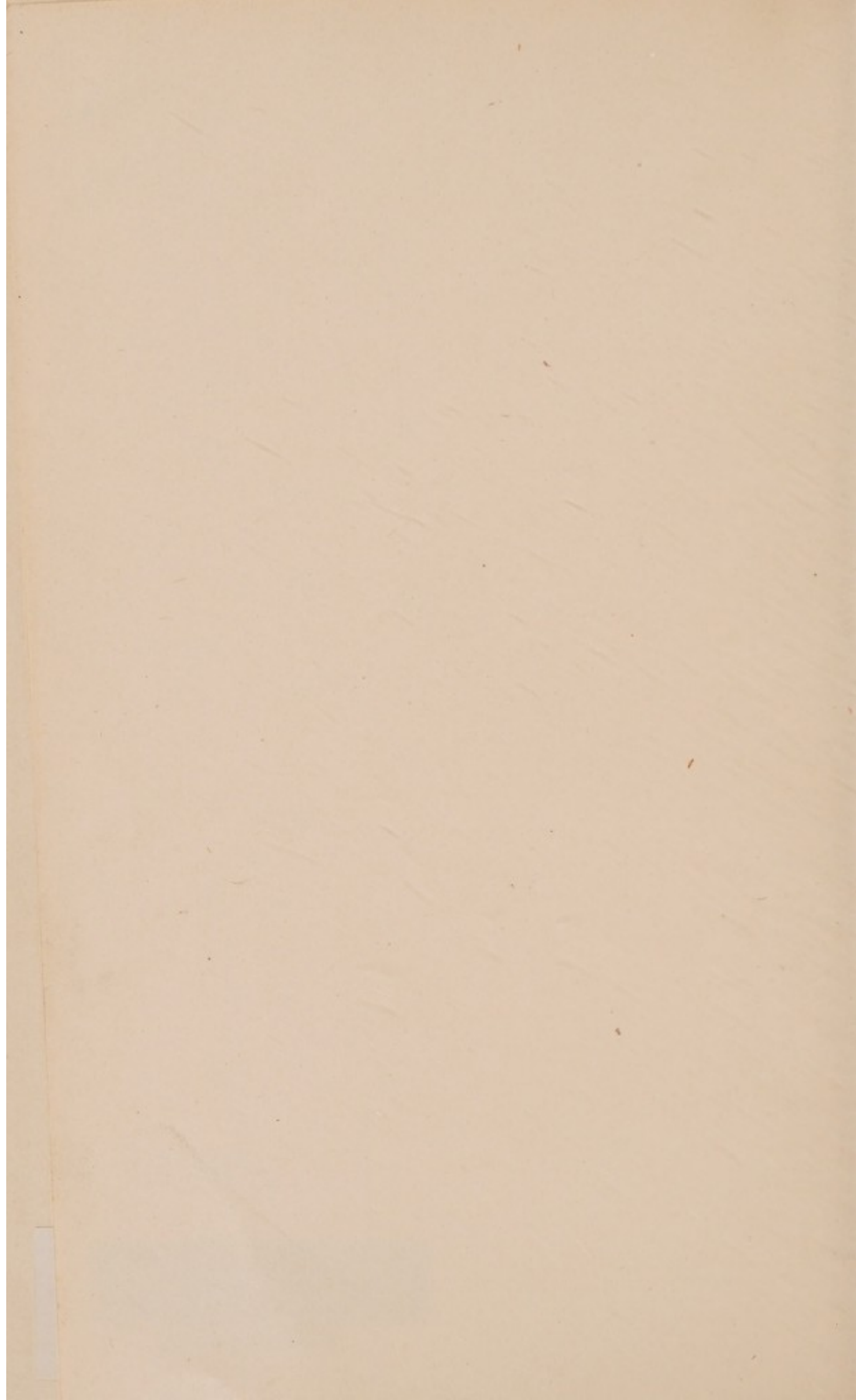
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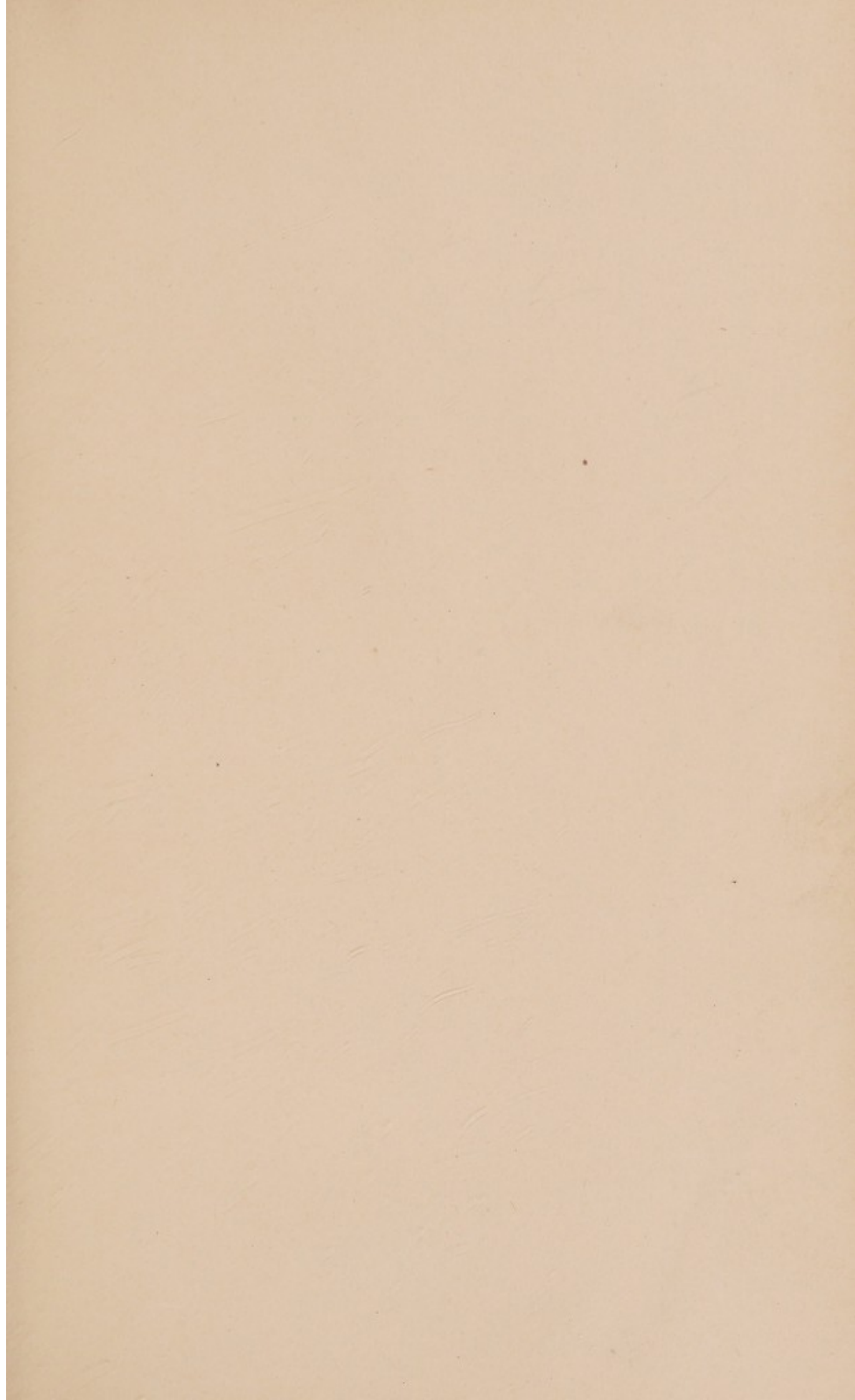


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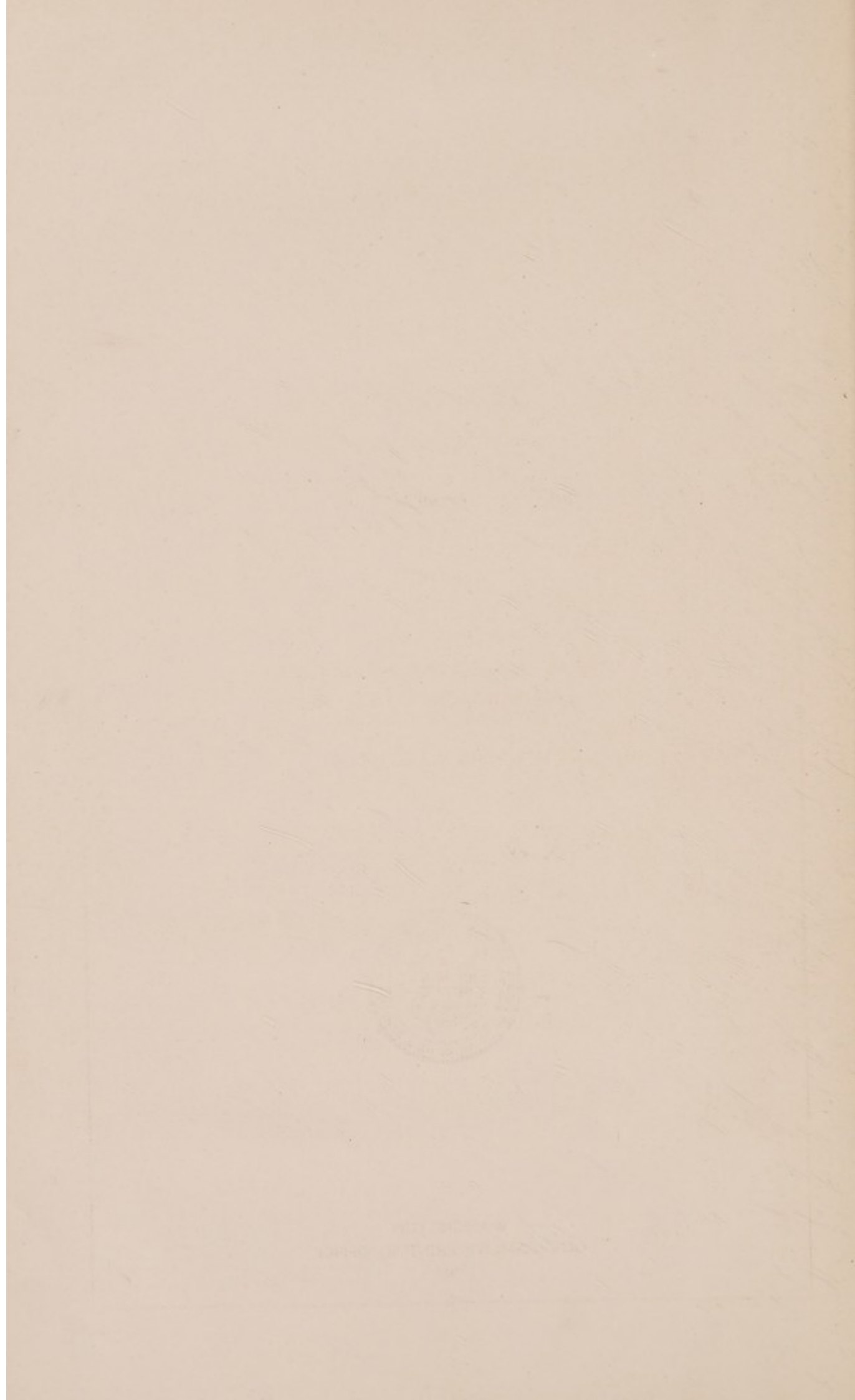












# MEDICAL COMPEND

## FOR MASTERS OF THE NAVAL AUXILIARY SERVICE AND OTHERS

To accompany Medicine Box  
and Boat Box

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PUBLISHED BY THE  
BUREAU OF MEDICINE AND SURGERY  
UNDER THE AUTHORITY OF THE  
SECRETARY OF THE NAVY

(M. & S. File Number 127219)



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1918



# MEDICAL COMPEND

FOR MASTERS OF THE  
NAVAL AUXILIARY SERVICE  
AND OTHERS

By *James M. Smith*  
and *John P. Smith*

THE WELLCOME INSTITUTE  
FOR THE STUDY OF  
DISEASES OF THE  
NAVY

1918

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BUREAU OF MEDICINE AND SURGERY,  
NAVY DEPARTMENT,

*Washington, D. C., March 22, 1916.*

This Medical Compend for Masters of the Naval Auxiliary Service is published for their aid in the knowledge and use of the contents of the Medicine Box, United States Navy, as well as to be a general guide in the preservation of the health of the personnel under their command.

W. C. BRAISTED,  
*Surgeon General United States Navy.*

Approved:

JOSEPHUS DANIELS,  
*Secretary of the Navy.*



The Medical Department of the Army  
 is pleased to announce the results of the  
 examination for the position of  
 Surgeon General, held at the  
 Army Medical School, Washington, D.C.  
 on the 15th of June, 1914.

The following gentlemen have been  
 appointed to the position of  
 Surgeon General:

1.	Dr. J. H. Henshaw
2.	Dr. J. H. Henshaw
3.	Dr. J. H. Henshaw
4.	Dr. J. H. Henshaw
5.	Dr. J. H. Henshaw
6.	Dr. J. H. Henshaw
7.	Dr. J. H. Henshaw
8.	Dr. J. H. Henshaw
9.	Dr. J. H. Henshaw
10.	Dr. J. H. Henshaw

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# MEDICAL COMPEND FOR MASTERS OF THE NAVAL AUXILIARY SERVICE AND OTHERS.

TO ACCOMPANY MEDICINE BOX AND BOAT BOX.

## CHAPTER I.

### THE MEDICINE BOX.

The outfit of medicines and medical supplies furnished auxiliary vessels of the Navy having no medical officer or member of the Hospital Corps, consists of (*a*) one medicine box, Navy standard, and (*b*) a box of additional medical supplies in an ordinary packing case, or of (*c*) boat box. The contents of these boxes with simple directions for their use are given below.

#### MEDICINE BOX (CONTENTS).

[Medicine case. Tablets. 1-ounce bottles.]

Aloin, belladonna, podophyllin.		Phenacetin (5 grains).	
Alkaline (Seiler's).		Potassium chlorate 2½ grains, sodium	
Brown mixture (1 dram).		borate 2½ grains.	
Calomel (½ grain).		Potassium bromid (5 grains).	
Cathartic, vegetable.		Quinin sulphate (3 grains), 2 bottles.	
Chlorodyne.		Soda mint.	
Coryza.		Sodium salicylate (5 grains).	
Dover's powder (5 grains).			
Aromatic spirits of ammonia,		Colloidal silver.....bottle..	2
bottle.....	1	Formalin.....bottle..	2
Beef extract.....bottle..	2	Iodin tincture, 4 per cent.....bottle..	1
Bichlorid of mercury (antiseptic)		Liniment, soap.....bottle..	1
tablets.....bottle..	1	Ointment, aristol and opium.....jar..	1
Castor oil.....bottle..	1	Ointment, sulphur.....jar..	1
Collodion.....bottle..	1	Ligature, silk, No. 8, with	
Ointment, zinc-oxid.....jar..	1	needle.....tubes..	12
Petrolatum.....tin..	1	"Medical Compend".....number..	1
Picric-acid solution.....bottle..	1	Medicine glass.....do..	1
Salts (magnesium sulphate).....tin..	1	Muslin.....yards..	5
Sodium bicarbonate.....can..	1	Packages, first-aid.....number..	6
Bandages, assorted.....number	36	Penis syringes, glass.....do..	12
Basin, dressing, agate.....do..	1	Plasters, belladonna.....box..	1
Binders' boards.....set..	1	Plasters, mustard.....do..	1
Camel's-hair pencils.....number..	6	Plaster, adhesive (2-inch).....spool..	2
Cotton, hospital.....roll..	1	Spatula, small.....number..	1
Forceps, pins, scissors, scalpel,		Thermometers, clinical.....do..	2
case.....	1	Tourniquet, rubber, instant, num-	
Gauze.....roll..	1	ber.....	2
Knife, small (bistoury).....number..	1		



## DIRECTIONS, ETC.

Aloin, belladonna, and podophyllin tablets. Laxative, for use in constipation. Dose: One or two tablets taken at bedtime.

Alkaline and antiseptic tablets (Seiler's). For sore throat. Dissolve one tablet in a half glass of water and use as gargle or nasal douche.

Brown mixture tablets (1 dram). For coughs and bronchial affections. Dose: One tablet every hour dissolved on the tongue. Limit, 10 tablets in 24 hours.

Calomel tablets, one-half grain. Cathartic in fevers. Dose: One every hour until five are taken. Should be followed in a few hours or the next morning by a dose of salts (magnesium sulphate).

Cathartic vegetable tablets. Purgative. Dose: One to three tablets.

**Poison.**—Chlorodyne tablets (contain morphin). Should be used with care. For spasmodic pain. Dose: One tablet; repeat in an hour if necessary. Stop when three tablets have been taken. For diarrhea: One tablet every 3 hours until four tablets have been taken.

Coryza tablets. For commencing colds in head and throat. Dose: One tablet every 15 minutes until four tablets have been taken, then one tablet every 30 minutes for four doses, and then one every hour for four doses. Limit, 12 tablets taken as directed.

**Poison.**—Dover's powder, 5 grains (contains opium). Should be used with care. Dose: Two tablets.

Phenacetin, 5 grains. For neuralgia or fever. Dose: One tablet, may be repeated in an hour. Stop when four tablets have been taken.

Potassium chlorate and borax. For sore throat: Dissolve on tongue or dissolve tablet in a little water and use as a gargle. Limit, 8 to 10 tablets a day.

Potassium bromid, 5 grains. For sleeplessness or as a sedative. Dose: Two to four tablets, repeated in an hour or two if necessary.

Quinin sulphate, 3 grains. For malarial fevers. Dose: One to three tablets every 4 hours. Limit, 12 tablets in 24 hours.

Soda-mint tablets. For sour stomach and heartburn. Dose: One every 2 hours dissolved on the tongue.

Sodium salicylate, 5 grains. For rheumatism. Dose: Two tablets every 4 hours. Limit, 12 tablets in 24 hours.

Colloidal silver. Prepare solution of 1 part of colloidal silver to 10 parts of water. To be used as injection in gonorrhea (clap). Solution should be prepared in small quantities, as it soon deteriorates.

Aromatic spirits of ammonia. For stimulating purposes. Dose: One-half to 1 teaspoonful in a little water.

Beef extract: Two teaspoonfuls in a cup of hot water.



**Poison.**—Bichlorid of mercury tablets (antiseptic): Dissolve one tablet in a pint of water and use externally as an antiseptic and disinfectant. *Great care should be exercised with these tablets.* The hands and utensils should be carefully washed after their use with the solution. The solution should never be used in metallic vessels nor on metallic instruments.

Castor oil. Cathartic. Dose: Two tablespoonfuls. Wet the mouth with hot liquid (milk, coffee, or tea) and give the oil floating in some of the liquid.

Collodion, flexible. For holding on small cotton dressings. (Keep bottle securely closed to prevent evaporation.)

**Poison.**—Formalin. A 40 per cent solution of formaldehyd gas. Formalin should be kept well stoppered and in a cool place. The escaping vapor is very irritating to nostrils and lungs. A 1 to 3 per cent solution of formalin may serve as an external antiseptic, etc., as in a tray for knives, forks, etc.

**Poison.**—Iodin tincture, 4 per cent. External use only. For disinfecting wounds. Apply with hair pencil or cotton on match.

Liniment, soap. External use only. For lumbago and rheumatic pains. Apply locally with rubbing.

Ointment of aristol and opium. For painful sores and wounds. Apply spread on gauze.

Ointment, sulphur. For itch and ringworm. Rub on affected part.

Ointment of zinc oxid. For eczema, sunburn, etc. Apply locally.

Petrolatum (vaseline). For sunburn, chapped hands, etc.

**Poison.**—Picric-acid solution, about 1 per cent. For scalds and burns. Wet strips of gauze with this solution, apply directly to burned surface, and lightly secure with bandage. Dressing should be kept moist with the solution.

Salts (magnesium sulphate). For constipation. Dose: One to two tablespoonfuls dissolved in half glass of water taken on empty stomach.

Sodium bicarbonate (baking soda). For burns. Turn top of can to open holes and sprinkle well over surface, cover with gauze, and bandage.

Bandages, gauze.

Basin, dressing, agate.

Binder's boards. Splinting for fractures.

Camel's-hair pencils. For application of tincture of iodine.

Cotton, hospital. For dressings.

Dressing forceps, pins, scissors, and scalpel.

Gauze for dressings.

Knife, small. For opening boils. Should be thoroughly disinfected before use. (Immerse in boiling water for two minutes.)



Ligature, silk, with needle in tube. For sewing up wounds.

Medicine glass for measuring.

Muslin, bleached. For preparation of bandages.

Packages, first-aid. Directions on package.

Penis syringes, glass. For injection of colloidal silver.

Plasters, belladonna. For rheumatic pains. Also see directions on box.

Plasters, mustard. See directions on box.

Plaster, rubber, adhesive. Two-inch spool. For holding dressings in place.

Spatula, small. For spreading ointments.

Thermometers, clinical, in case.

Tourniquets, instant rubber. For stopping flow of blood from wounds or constricting circulation.

The additional supplies in PACKING CASE are largely supplementary, and are as follows:

#### MEDICINES, ETC.

**Poison.**—2 bottles picric-acid solution, 500 c. c. For burns.

3. bottles collodion, flexible.

2 bottles formalin (antiseptic).

3 tins magnesii sulphas (salts).

4 tins petrolatum (vaseline).

6 bottles ricini oleum (castor oil).

2 bottles saponis linimentum (soap liniment).

4 boxes sinapis emplastrum (mustard plasters).

2 boxes sodium bicarbonate (perforated-top tin can).

#### TABLETS.

1 bottle acetphenetidin (phenacetin).

1 bottle aloin, belladonna, and podophyllin.

2 bottles cathartic vegetable.

**Poison.**—One bottle lead and opium. (One tablet for severe pain or diarrhea. Repeat in 2 hours if needed.)

2 bottles glycyrrhiza mist. comp. (Brown mixture).

3 bottles quinin sulphate, 0.2 gm. (3 grains).

1 bottle sodium salicylate.

#### HOSPITAL STORES.

12 bottles extract of beef.

#### SURGICAL INSTRUMENTS.

1 set catheters, soft rubber.

1 syringe, fountain.

- 1 thermometer, clinical.
- 2 instant rubber tourniquets.

## SURGICAL DRESSINGS.

- 3 dozen bandages, gauze, assorted.
- 6 bandages, suspensory.
- 6 rolls cotton, plain, absorbent.
- 1 roll gauze, plain, absorbent.
- 2 spools plaster, adhesive.

## DISPENSARY FURNITURE.

- 2 scissors.

## HOSPITAL FURNITURE.

- 2 medicine glasses.
- 1 bag, hot-water, rubber.
- 1 bag, ice, rubber.

Supplies listed above may be procured as required, by requisition Form 4 of the Bureau of Medicine and Surgery. Requisitions, when approved, will be filled by the naval medical supply depot most convenient to the ship; that is, if in Atlantic waters, by the depot in Brooklyn, N. Y.; if in Pacific waters, by the depot at Mare Island, Cal.; if in the Philippines or on the Asiatic station, by the depot at Canacao, P. I.

Advantage should be taken of opportunities, when in the vicinity of a supply depot or when at navy yards or in dry dock, to replenish the stock of medicines, etc.

A supply of requisition Form 4 may be secured from any supply depot, but if this form is not available request may be made by letter addressed to the Bureau of Medicine and Surgery. Requisitions should be limited to the articles listed above and should be arranged by classes and correspond in amount with packages as indicated.

## THE BOAT BOX.

Adhesive plaster, 2-inch wide,		Lead and <i>opium</i> tablets <sup>1</sup> __bottle__	1
spool _____	1	Liquid extract of beef <sup>1</sup> __bottles__	2
Bandages, gauze, assorted,		Muslin _____yards__	2
number _____	8	Mustard plasters _____box__	1
Brown mixture tablets <sup>1</sup> __bottle__	1	Pins, scissors and dressing for-	
Calomel tablets, $\frac{1}{2}$ -grain <sup>1</sup> __do__	1	ceps (set in case)_____set__	1
Carbolated vaseline_____jar__	1	Quinin tablets, 3-grain__bottle__	1
Cathartic pills <sup>1</sup> _____bottle__	1	Soda bicarbonate _____can__	1
Chlorodyne tablets <sup>1</sup> _____do__	1	Tourniquets, instant, rubber,	
First-aid packets_____number__	6	number _____	4
Gauze, bichloride, compressed,			
packages _____	6		

<sup>1</sup> See "directions" under "Medicine Box."



## CHAPTER II.

### FIRST-AID.

Do not attempt to rival the doctor, but aid him through emergency measures, and thus put the patient into his hands with a better chance of recovery than would have been the case if prompt and efficient emergency treatment had not been rendered.

In the presence of an accident the "first-aider" must take charge, if the services of a doctor can not be obtained, and he should observe the following general rules:

1. Be quiet and cool, don't get excited, and do the best you can with the facilities at hand.

2. Give the patient plenty of air; keep the crowd from gathering around, many of whom will be there only for curiosity's sake. Keep only those around you whose assistance you may need.

3. Lay the patient on his back, with head lower than the body, except in cases with marked flushing of the face, when the head may be raised a little on folded clothing or other suitable material.

4. If there is vomiting, turn the head to one side so the vomited matter may easily escape from the mouth, thus eliminating the risk of its going into the windpipe and choking him.

5. If the patient is unconscious, do not try to force him to drink, for he can not swallow, and you may choke him.

6. Do not move patient from place of injury unless his condition justifies it. Often the injury will have to be attended to before it is safe to move him.

7. Loosen tight clothing which may be present around the neck, chest, abdomen, legs, and ankles, such as collar, belt, garters, and shoe lacings.

8. If stimulants are needed, whisky and brandy are not always indicated. In fact, there are conditions in which they do harm. Aromatic spirits of ammonia, if on hand, is safer for general use.

9. In order to treat the injury the part has to be exposed and the clothing, in some cases, has to be removed. This should be done in such a manner as to disturb the patient as little as possible. The outer clothing should be ripped up the seam; the underclothing torn or cut. The sound side should be undressed first. In removing the shoes it is often necessary to cut them off when they can not be removed otherwise without causing great pain or increasing the injury.

10. An injured person often wants a drink of water. If conscious and able to swallow, a few sips of cold water will be very refreshing.

11. If several injuries are present, care for the most severe one first.

12. *Don't put your fingers into the wound;* they carry germs, and you will infect the wound.

#### THE RESUSCITATION OF THE APPARENTLY DROWNED.

The indications in treating one apparently drowned are to remove the water from the lungs, to make the patient breathe, and to stimulate the weak heart.





Various methods for the production of artificial respiration have been described, but the one that is considered the best, namely, Schäfer's, will be outlined here.

Schäfer's description of his method is in substance as follows:

*The subject*, whether a drowned person or not, *is allowed to lie prone, i. e., face downward*, no preliminary manipulation of the tongue being required. *The operator kneels or squats either across or on one side of the subject, facing the head*, and *places his hands close together upon the back of the subject over the loins, the fingers extending over the lowest ribs*. By *now leaning forward upon the hands*, keeping the elbows extended, the *weight of the operator's body* is brought to bear upon the subject, and this not only *compresses the lower part of the chest* but also the belly upon the ground, the pressure being fairly equally distributed. The result of this is that not only is the chest diminished in extent from before back but owing to the pressure which is communicated to the belly the belly contents are compressed and tend to force the muscle partition between the chest and belly up, so that the chest is diminished in capacity from above down. The *pressure is applied* not violently but *gradually during about three seconds, and is then released by the operator swinging his body back, but without removing his hands*. The elasticity of the chest and belly causes these to resume their original dimensions, and air passes in through the windpipe; after two seconds the process is again commenced, and is continued in the same way, *the operator swinging his body forward and backward once every five seconds, or about 12 times a minute*, without any violent effort and with the least possible exertion.

This last condition, viz, the absence of muscular exertion other than that involved in swinging forward and backward, renders it possible to continue the process without fatigue for an indefinite time. Its advantages in drowning cases over a method which involves the position on the back are sufficiently obvious, for with it there is no risk of obstruction by water or slime or the contents of the stomach. These can not accumulate in the throat, but must come away by the mouth, and the tongue, instead of falling backward, as in the position on the back, falls forward and is unable to produce obstruction.

When respiration has been established and the patient is able to swallow, stimulants may be administered, consisting of a little warm coffee or whisky. The patient should be removed to a warm place, his wet clothes removed, body should be dried and rubbed, then wrapped in blankets surrounded by hot-water bags. The patient should be kept quiet and carefully treated, and if signs of collapse appear renewed effort should be made. Systematic rubbing of the



skin and muscles greatly assists in promoting the circulation of the blood.

Before commencing any artificial respiration see that all clothing or other constrictions about the neck, chest, and abdomen are loosened.

Do not get discouraged at the slow results that sometimes happen when resuscitating the apparently drowned. You often have to continue a long time before signs of life are apparent. Do not discontinue your efforts until you are certain that all chance is lost. Sometimes even after several hours' work recovery takes place.

In order to prevent drowning every person should learn the art of swimming and how to keep afloat for a sufficient length of time to allow assistance to effect rescue. In rescuing a drowning person the rescuer himself should be a fairly strong swimmer and have a knowledge of the different conditions that he will have to encounter. If possible, he should remove most of his clothes, especially the shoes. He should reassure the drowning man that help is at hand. The drowning man should be approached from the rear, seized by the hair, if possible, and turned upon his back, the rescuer assuming the same position, and with the drowning person's back to his stomach he swims for the shore or floats until a boat or other assistance comes to him. If the drowning person struggles, it may be necessary to render him unconscious by a blow in the face before he can be handled.

#### RESUSCITATION FROM GAS POISONING.

In treating this condition the patient needs plenty of fresh air. Artificial respiration as described under drowning should be started at once. Stimulants and rubbing are also helpful.

#### RESUSCITATION FROM ELECTRIC SHOCK.

A person accidentally shocked by electricity is not necessarily killed. He may be only stunned or the breathing be stopped momentarily. The following instructions should be followed:

- (1) Break the circuit immediately.
- (2) Separate the victim from the live conductor by quick motion, *using some nonconductor, as dry rope, dry coat, or dry board.* The victim's clothes if dry may be used to pull him from the live wire. *Use nothing metallic.*
- (3) Beware of touching the heels or soles of his shoes.
- (4) Do not touch his body with your hands unless they are covered with rubber gloves, mackintosh, dry clothing, or other nonconducting material.



(5) If you have to cut a live wire, use an ax or hatchet with a dry wooden handle, or insulated pliers.

After you have removed patient from wire, institute artificial respiration by the Schäfer method. Attend to the burns as described under treatment for burns (see p. 19). Apply warmth to body, rubbing skin and muscles and giving stimulants if patient can swallow.

#### BITES FROM DOGS OR CATS.

If bitten by a dog or cat let the wound bleed as freely as possible; encourage this by milking the part. Some advise sucking the wound, but this is not altogether safe, for if you have a cut or abrasion in your mouth you may infect yourself. Cauterize the wound with a hot poker, or carbolic acid, and dress with an antiseptic dressing (alcohol, bichlorid of mercury, or tincture of iodin).

It is a common error to assume that a dog with fits is rabid. As a matter of fact, fits are common from worms, from acute indigestion, and from exposure to excessive heat. On the other hand, the so-called "dumb rabies" occurs without fits and is common. No one but a skilled veterinary is competent to judge if an animal has rabies. Where a person is bitten by an animal suspected of being mad, it is not only important to treat the patient but to take steps to ascertain positively whether the bite was dangerous or not as a long time may elapse before any symptoms develop, and this period might be fraught with needless and terrible anxiety for the patient.

Keep the cat or dog under observation to see whether or not it shows signs of madness. If it does, *kill it, pack the body in ice, and send it to some near laboratory for examination.*

In the meantime the person bitten should, *as soon as possible, be landed at the nearest place for the Pasteur treatment for the prevention of rabies.*

A tourniquet above the wound is advised to limit the amount of poison entering the system. If this is done, the part should be carefully watched and if it becomes blue the constriction should gradually be released; after circulation has been reestablished the tourniquet may be reapplied. Strong ammonia may be used to cauterize the wound.

#### SNAKE BITE; STINGS BY INSECTS.

The treatment of the wound is about as above. If shock is present and stimulants are needed, whisky, brandy, or aromatic spirits of ammonia may be administered.

#### UNCONSCIOUSNESS AND INSENSIBILITY.

If the person is unconscious and the cause is unknown, let him rest flat on his back. If he is pale and surface of body is cold, apply



heat to body and hold smelling salts or a little ammonia under his nose. If the surface of the body is very hot, cold water may be applied to the head.

Unconsciousness is usually due to disease of the brain or heart, general diseases, injuries to the head, or to some poison.

#### FAINTING.

This results from diminution of blood in the brain, due to many causes. The person gets paler and paler; there is a sinking feeling, and he falls unconscious. This often can be prevented by placing the patient in a chair with his head forward between his legs lower than his hips. But after its occurrence patient should be laid flat on his back with head low; loosen clothes and give plenty of fresh air; a little ammonia held under nose will often revive him. After recovery give whisky or aromatic spirits of ammonia.

#### EPILEPTIC FITS.

The patient usually utters a cry, falls suddenly unconscious, has convulsions, foams at the mouth, and bites his tongue. After convulsions cease he passes into a deep sleep and remains in that state for several hours.

During the convulsions the only thing to do is to try to prevent him from hurting himself. Something suitable (a piece of wood or cork covered with a handkerchief) should be put between his back teeth to keep his mouth open so he can not bite his tongue. *Do not let this gag fall down his throat.* When consciousness has completely returned a cathartic may be given, because in those subject to epilepsy clogging up of the bowels often brings on an attack. If some time must elapse before medical aid can be obtained or the epileptic discharged, give three or four potassium bromide 5-grain tablets three times a day. The tablets should be dissolved in half a tumbler of water. A man known to have fits should not be retained aboard ship. He is unfit for the service and may injure himself seriously by falling down a hatch or in the way of machinery, etc.

#### POISONS.

*Prevention.*—Keep all poisonous drugs and solutions locked up. Label all bottles with their contents and a **Poison** label. See that all bottles are properly labeled and no drug is put in them that does not belong there.

In treating patients for poisoning the indications are:

1. To neutralize the poison (give antidote).



2. To get rid of the poison from the stomach (produce vomiting).
3. To prevent further absorption into the system of the poison that may have remained in the stomach (oils, etc., except in case of phosphorus poisoning).
4. To cause elimination from the system of the poison that may already have been absorbed (large drafts of water, purgatives, etc.).
5. In case of collapse, to sustain and support the body strength (by stimulants, external application of heat, etc.).

*Unknown poison.*—Produce vomiting. This can be done by giving 2 teaspoonfuls of mustard in a cup of warm water; can also be induced by 2 teaspoonfuls of common salt in a cup of warm water; soap-suds; putting fingers down throat; and tickling back part of throat with a feather. Sirup of ipecac, 1 tablespoonful in cup of tepid water, is also a good emetic. After vomiting give whites of raw eggs, or milk, or flour in water. If signs of collapse are present, give hot tea, coffee, and other stimulants. Keep body warm and rub extremities.

*Bichlorid of mercury.*—Give whites of 2 raw eggs. If these are not on hand give milk, or raw meat chopped finely in water or milk, or give soap and water. Then cause vomiting, and later give strong tea, flour in water, flaxseed tea, or barley water. Keep patient warm, and if stimulants are necessary give strong coffee.

*Strong metallic acid (as nitric, sulphuric, hydrochloric, etc.).*—Give no emetic. Neutralize the poison by giving alkalis, such as large quantities of water or milk with chalk, borax, baking soda, soapsuds, or plaster; raw whites of eggs in water; later, flaxseed tea, gruel, or starch.

*Carbolic acid.*—Give equal parts of grain alcohol and water. If alcohol is not on hand, give brandy or whisky and a teaspoonful of glycerin. If none of these are at hand, give vinegar, raw whites of eggs in water, or soapsuds; then produce vomiting; then give solution of Epsom salts. Do not give oils. Milk, gruel, or flaxseed tea may be given later. If there is evidence of collapse, apply heat to body, give hot coffee and stimulants, and, if breathing stops, apply artificial respiration.

*Alkalis (lye, etc.).*—Give mild acids, such as vinegar, lemon or orange juice, hard cider. Whites of eggs may be given later. Assist vomiting by large amounts of tepid water; then give something soothing, such as oil, gruel, barley water, milk, butter or lard, etc.

*Opium, laudanum, paregoric, heroin, morphin.*—Give potassium permanganate solution (one-third teaspoonful in pint of water) or hydrogen peroxid (2 teaspoonfuls in pint of water); then give emetic. The best emetic in this case is mustard and hot water. Something irritating is needed to start vomiting, as the nerves of the



stomach are dulled by the opium. Give strong tea or coffee; if patient is unable to swallow, inject into bowel. Keep patient awake by applying cold water to head and face, slapping him with wet towel, and walking him about, but do not exhaust patient by overdoing this. Give no wines or liquors. When respiration is slow and irregular, apply artificial respiration.

*Arsenic, Paris green, rough-on-rats.*—The best antidote, if it can be obtained, is 2 teaspoonfuls of magnesia, 1 tablespoonful of tincture of iron in a cup of water; take as one dose. Give an emetic; the whites of raw eggs and a large amount of greasy or salty water may be given. Lime water, or plaster in water may be given. Later gruel, sweet oil, starch and water, and castor oil (1 ounce) may be given.

*Strychnin (nux vomica).*—Give strong tea, then an emetic. If available give, next, bromid of sodium or potassium, six tablets (30 grains) in water and repeat in a little while. Give whisky. Give Epsom salts. Apply artificial respiration if necessary. Remove patient to a dark room, keep quiet, avoid sudden noises, etc.

*Ptomaine poisoning.*—Results from eating bad meat, fish, or other articles of tainted or decayed food.

Treatment: Give emetic, then give a purge, castor oil or Epsom salts. If there is much pain in stomach, apply hot-water bag or hot cloths and a mustard plaster. Give stimulants if necessary. Give no food until symptoms have disappeared. Should be careful with diet for several days after recovery.

#### SHOCK.

As almost all injuries cause a certain amount of shock, it is well to know what it is and how to treat it. It is a profound depression of the nervous system and is sometimes called collapse, exhaustion, or prostration. In this condition the face is pale, expression is anxious, eyes dull, and pupils enlarged, skin cold and clammy; patient is listless and takes no interest in surroundings; pulse is rapid and weak; breathing may be gasping, spasmodic, or feeble.

Treatment: Place on back with head low, administer stimulants, hot coffee, tea, aromatic spirits of ammonia, whisky, or brandy. Keep up body heat, wrap in warm blankets, apply hot-water bags, and rub extremities toward body to stimulate circulation.

#### BURNS AND SCALDS.

Burns result from exposure of body to dry heat, while scalds follow exposure to moist heat, as hot water, steam, etc. These are very serious accidents, attended, at times, with marked shock, and their danger to life depends more upon the extent of the body involved than the degree.



For convenience burns are divided into three degrees, as follows:

1. Reddening of the skin.
2. Reddening of the skin with formation of blisters.
3. Charring and destruction of the deeper tissues.

There is usually considerable pain with burns and, if burn is extensive, marked shock.

Treatment: Exclude air from the part. This may be done by making a paste with water and baking soda, starch, or flour. Smear the paste on a pad of sterile gauze, apply to burn, and hold in place by a light bandage. An excellent dressing is a solution of ordinary washing soda (2 tablespoonfuls in a pint of warm water). A salt-solution dressing is also good (a teaspoonful of common salt to pint of warm water). Do not use strong antiseptic on burns. Soaking the part in warm water is itself good and is very often useful to soak off clothing sticking to a burned surface. If blisters have formed and are painful they may be opened by passing a sterile needle through them and allowing the fluid to escape. Do not destroy the skin raised by a blister. The needle used may be sterilized by burning in a flame. Do not put cotton next to a burn; it sticks and causes trouble. In dressing burns take pad of sterile gauze, soak in the solution, apply to part and hold in place by bandage. In removing the dressings it is often necessary to soak them off, and warm water or one of the solutions mentioned above may be used for this purpose. An excellent dressing for burns, if at hand, is a saturated solution of picric acid. Be careful not to get it on clothing, because the stain is hard to remove. Antiseptic ointments, such as boric acid or aristol and opium, are soothing and good at times, but oils, greases, etc., as a rule are not advised, because they are liable to favor infection.

The burned part should be put at rest, and if there is much pain 20 drops of laudanum in a little water may be given, or 1 to 2 chlorodyne tablets, repeated in two hours if necessary. There is liable to be considerable shock, so don't forget to treat it. A person badly burned should be seen by a doctor as soon as possible. If a person is extensively burned, it may be impossible to cover him with bandages. A sheet soaked in any of the above-mentioned solutions and wrapped about the person is a convenient and sometimes only way to handle the case. The early treatment of burns caused by acids is to apply a dressing soaked in an alkaline solution, such as baking soda, washing soda, limewater, soapsuds, etc.

An excellent treatment is to melt almost any clean form of paraffin and while still hot pour it over the affected surface. Then cover with absorbent cotton and bandage loosely.

Burns caused by alkalis are treated by acid solutions, such as vinegar, lemon juice, etc. Burns caused by carbolic acid should be treated freely with pure grain alcohol and dressed.



## EFFECTS OF COLD.

*Freezing.*—If expecting to be exposed to the cold for a long time, endeavor to prevent any ill effects therefrom, but if freezing does occur there is marked depression and cautious treatment is necessary.

*Treatment:* The object is to restore gradually the body warmth. The patient should at first be in a moderately cold room, and with woolen cloths soaked in cold water or snow, the limbs should be gently and systematically rubbed toward the body. When the circulation becomes active, the cloths should be soaked in warmer and warmer water. When patient can swallow, give stimulants, such as hot coffee or tea, whisky, brandy, or aromatic spirits of ammonia. The patient should not be brought into a warm room, placed before an open fire, etc., until the circulation of the blood has been reestablished and is active, as evidenced by increased force of the pulse, increased warmth, and color to the skin.

*Frostbite.*—Parts most involved are those where circulation is sluggish, as ears, tip of nose, fingers and toes, etc.

*Treatment:* Gradually restore normal temperature. Soak part in cold or ice water. Rub gradually with woolen cloth soaked in cold water, ice water, or snow. Gradually increase warmth of water as circulation becomes reestablished and active in part, as evidenced by more warmth to skin and better color. If the frostbite is an old one and the skin has turned black or commenced to scale off, it is dangerous to attempt to restore the vitality by friction; just apply a little cotton and hold in place by a bandage; apply heat externally.

## RUPTURE (HERNIA).

As encountered by the layman this is a swelling in the groin. Rupture makes its appearance suddenly after exertion and is evidenced by pain and swelling.

*Treatment:* Let patient take a hot bath and go to bed, lying on his back with thighs bent. By so doing, the rupture will often reduce itself. Keep patient in bed for several days and do not let him move until he has seen a doctor.

If the rupture does not reduce itself it may be damaged by rough or unskilled handling. The patient should see a doctor as soon as possible; as the condition, if unrelieved, may cause gangrene of the bowel and death.

## STRAINS.

Condition caused by overstretching the muscles. The muscles of the back and shoulders are the ones most often involved.

*Symptoms:* Pain, stiffness, lameness, and sometimes swelling.

*Treatment:* Rest, hot applications, gentle massage with liniment.



## SPRAINS.

Condition caused by a tearing or stretching of the ligaments and capsule about a joint. It is at times hard to distinguish from a fracture and should be cautiously handled. It often takes a long time for complete recovery.

The joints most often involved are the ankle, knee, wrist, elbow, and shoulder.

Symptoms: Pain, redness, swelling, loss of function, and often shock.

Treatment: Soak the joint in water either as hot as patient can stand or cold as you can get it, not tepid water. If it is a joint of the lower extremity, put patient to bed; elevate the limb on a pillow or other support.

If joint is bandaged, do this loosely, because there is liable to be considerable swelling, which may cause damage. When pain and swelling have subsided, gently massage the joint. Let patient get about gradually on crutches. If sprain is in upper extremity, the treatment is the same, except the patient need not stay in bed. The joint is put at rest and supported either by a sling or splint.

If shock is present, it should be treated.

## HEMORRHAGE.

The heart may be considered as a pump, which by its beats forces the blood to all parts of the body through a series of tubes. The arteries carry the blood from the heart; the veins return the blood to the heart. The capillaries are a network of smaller vessels situated between the arteries and veins.

Remember that in the character of wounds that you will encounter, death from bleeding is very rare. Bleeding is dangerous when a large artery is injured. In the majority of cases of bleeding all that will be necessary to do is to put a gauze compress over the wound and hold it in place by a firm, snug bandage; put the injured part at rest; if arm or leg, elevate; keep the patient quiet and give plenty of fresh air. Very hot water applied will at times do good.

If, however, bleeding is profuse and life seems endangered, it may be necessary to apply some kind of tourniquet. Arterial bleeding is most dangerous and is recognized by the fact that the blood is bright red in color and is expelled in jets.

In venous bleeding the blood is dark blue and flows in a constant stream.

Capillary bleeding occurs as a general oozing and is of a brick color.

Tourniquets may be improvised, as a clean handkerchief bandage, soft-rubber tubing, or other similar material, encircling the limb, and tied sufficiently tightly to stop the flow of blood.



*Tourniquets in the hands of laymen are extremely dangerous and should not be used unless absolutely necessary, which is rare.* When used, the part should be carefully watched, and if signs of extreme swelling or bluish color appear, the tourniquet should be loosened. A tourniquet should not be left on at one time more than an hour. It should then be loosened and, if necessary, retightened. The arms and legs are the only parts to which tourniquets should be applied.

*Arterial hemorrhage.*—Apply the tourniquet between the heart and the wound; generally speaking, above the wound. Place a compress over the wound and hold by snug bandage. Put part and patient at rest.

*Venous hemorrhage.*—Apply tourniquet on far side of wound from heart; generally speaking, below the wound. Then treat as above.

*Capillary oozing.*—Pressure by compress and bandage applied over the wound is all that is usually necessary.

Bleeding can often be stopped by pressure from the thumb or anything else suitable over the injured artery or vein, as the case may be.

It is often difficult to determine whether the blood is from an artery or vein. In such a case, if a tourniquet is necessary, apply it above the wound; and if injury is in arm or leg, apply your compress over the wound, hold it with a snug bandage, and put part at rest, elevated. Remember that tourniquets, as a rule, are condemned and should not be used by the layman unless necessary, which will rarely be the case.

The main arteries in the body which play a part in external hemorrhage are four, namely, the *carotid*, which supplies the head; the *subclavian*, supplying the middle of the shoulder; the *brachial*, running along the inner side of the arm and supplying the arm, forearm, and hand; and the *femoral*, running along the inner side of the thigh and supplying the thigh, leg, and foot. The pulsations in these arteries should be studied, as pressure at the correct spot on them will often check external hemorrhage in the extremities, neck, or head.

*Internal hemorrhage.*—Caused by wounds usually of abdomen or chest. No external evidence of bleeding. Symptoms are those of shock. Treatment: Rest in bed; ice bag or cloth to chest or abdomen. Do not give stimulants unless patient becomes very weak.

*Nose bleeding.*—Place patient in chair with head thrown back. Apply cold cloths to back of neck. Place a small wad of paper well up between the upper lip and gum. Finely crushed ice on gauze or thin cloth applied to bridge of nose is often effective. May snuff salt water up nose. If it still persists, small strips of gauze with ends hanging out may be pushed up the nostrils. Keep patient quiet



and caution him not to pick off or blow out the clots as they form in the nostril. These clots are nature's stoppers. Have him breathe through the mouth and leave his nose alone.

#### BANDAGING.

These bandages most frequently used are the—

1. Roller bandage.
2. Triangular bandage.
3. Many-tailed bandage.

Bandages are used (1) to hold dressings in place, (2) to hold splints in place, (3) to check hemorrhage, (4) as slings.

Materials most commonly used for bandages are (1) gauze, (2) muslin, (3) flannel, (4) plaster. The gauze and muslin bandages are the two that the layman will be called upon to use, generally gauze. Good bandaging comes by practice, and all that will be expected of the layman is the application of the bandage so it will accomplish its object, be comfortable to the patient, and do no damage. Bandage uniformly, firmly, but not tightly. In bandaging arm or leg commence from below and bandage up. Leave the tips of fingers and toes unbandaged, so the effect of the bandage on the circulation can be watched. In bandaging a part that is liable to swell, bandage loosely, so if the part should swell the bandage will not be too tight and constrict. Do not apply a bandage when wet, because when it dries it will shrink. In bandaging apply the bandage to the part in the position in which the latter is to be carried during treatment. A bandage should not be put on under a splint, but always over it. The triangular bandage is probably the easiest for general application by the first aider. However, the roller bandage is supplied to auxiliary ships and is the one that probably will be most used by first aiders of these vessels. The triangular bandage is usually made from unbleached cotton cloth, though any strong cloth will do, as bed sheets, pillow covers, napkins, handkerchiefs, etc.

A triangular bandage is extremely useful because of its simplicity. It can be used as a tourniquet, as a sling for arm or forearm, and to retain a dressing. The black-silk neckerchief furnishes a good triangular bandage or one can be made by cutting in two, diagonally, a square of muslin or sheeting 34 inches on each side.

To use the triangular bandage as a sling or tourniquet, bring the apex or point of the triangle over to the base and then fold the whole again on itself. If the ends are now knotted at the back of the neck, the hand or forearm can be passed through and supported by the loop thus made. Or fold the triangular bandage with its base up and down (vertically) along the front of the body from collar bone to thigh, with the apex or point of the triangle pointing to the injured



side. Bring the forearm to be supported across the bandage. Next bring up the lower end of the base in front of the injured forearm and knot the two ends of the base behind the neck. The apex is now folded inward across the arm above the elbow and pinned to the front and back portions of the sling.

To hold a dressing in place on hand or foot, or to protect them, proceed as follows: Fold the base over on itself a couple of inches. Lay this folded base of the triangle under the wrist or under the sole of the foot a few inches back of the heel. Bring the point or apex up over the fingers to the wrist or over the toes to the instep and ankle. Now, wrap the long ends of the base round and round wrist or ankle and tie. The point or apex caught by the circular turns is folded back over the knot and pinned. The same principle can be used on almost any part of the body. For example, to cover over the scalp, lay the apex or point on the center of the forehead, extending down on the nose, while the base lies on the back of the head and neck. Bring the ends of the base forward and upward just above the ears and tie them low down over the center of the forehead. The apex or tip is now folded back over the knot and secured with a safety pin.

*Roller bandages.*—These are furnished already prepared, but in an emergency where none are at hand they can be improvised from sheets, pillow covers, muslin, flannel, etc. Those that are furnished come in different widths and lengths. The size to be used depends upon the part to be bandaged.

For the fingers and toes the one about three-fourths inch wide should be used.

For the arm and head use one about  $2\frac{1}{2}$  inches wide.

For leg and thigh use one about 3 inches wide.

For the chest and abdomen use one about 4 inches wide.

For general use the most serviceable bandage is about  $2\frac{1}{2}$  inches wide and about 4 yards long.

The roller bandage is applied by holding the roller in the right hand and the free loose end in the left, and the outer side of the bandage is applied on the place where it is desired to start the bandage. In securing the bandage the free end is turned back and pinned, preferably with a safety pin, or the end may be ripped up the middle a sufficient distance, then a knot tied to prevent further ripping, and the ends carried around the limb in opposite directions and tied.

#### BRUISES AND CONTUSIONS.

These are conditions where the soft tissues below the skin are injured and torn, the skin itself remaining intact. There is hemorrhage under the skin, but the blood does not escape.



Symptoms: Pain, loss of function, swelling, and discoloration (red, purple, black, green, and yellow).

Treatment: Put the part at rest. Apply cold applications, except in the feeble or aged, where hot applications are better.

#### WOUNDS.

These are usually divided into the following classes:

1. Incised.
2. Lacerated.
3. Punctured.
4. Poisoned.
5. Gunshot.

Incised wounds are those caused by sharp instruments, such as razor, sharp knives, glass, etc.

Lacerated wounds are those caused by a blunt instrument, by machinery, falling block, etc.

Punctured wounds are those caused by deep, pointed instruments, such as a nail, dagger, bayonet, etc.

Poisoned wounds are those caused by bites of animals, stings of insects, etc.

The term "gunshot wounds" is self-explanatory.

Symptoms of wounds: Local—(1) pain; (2) hemorrhage; (3) loss of function; (4) gaping of edges. General—shock.

The dangers from wounds are hemorrhage and infection. As we have seen, grave hemorrhage is usually rare, and a compress and bandage is usually all that is necessary to check it. Infection is the main danger. By this is meant the introduction into the wound of germs, which will cause pus and later trouble. Our main effort in treating wounds is to prevent infection.

*Treatment of wounds.*—Prevent infection. Do not touch the wound with your dirty fingers and do not let the patient do so with his. If wound is not extensive and there is very little bleeding or dirt or foreign particles in it, apply into and for about  $1\frac{1}{2}$  inches distance around the wound tincture of iodine, either in full strength or diluted one-half with water or alcohol. Then apply to the wound a sterile gauze compress and hold in place by a snug bandage.

If the part injured is a hairy part of the body, it should be shaved before treatment. If iodine is to be used, it would be better to shave the part dry, as iodine is less active on a moist surface.

Before dressing a wound the dresser should see that his hands are surgically clean. To render them so, scrub for five minutes with a nail brush, hot water, and soap. Rinse off soap with hot water, then soak hands in hot bichlorid of mercury solution (1-1000), carbolic acid solution (1-100), alcohol, or other antiseptic solution. If nothing



else is at hand, use whisky or brandy, or, better still, paint the hands thoroughly, front and back, with tincture of iodine. *If none of the above antiseptics are at hand, thoroughly scrub your hands with hot water and soap for at least 10 minutes, and do not put your fingers into the wound unless absolutely necessary.* These are the two essential features of aseptic work.

If foreign particles are in the wound they may be picked out with a pair of sterile forceps. If it becomes necessary to wash a wound to get the dirt out, use sterile hot water, soap, and a pad of sterile gauze as a sponge. A boiled common-salt solution (1 teaspoonful to a pint of water) is a very good one to wash and dress wounds with. Be sure your water is sterile before applying it to the wound. (Should boil at least 20 minutes.)

The dressing contained in the first-aid packet, although intended for a gunshot wound of small caliber, makes an excellent dressing for any wound it will cover and may be applied after the wound has first been treated with tincture of iodine, if on hand.

In case of a jagged and bruised wound, with its edges far separated, strips of gauze should be laid in the wound before being finally dressed.

It is better for the layman not to sew a wound, but at some time or other it may be necessary. Sometimes in wounds of the scalp the best way to check the hemorrhage is to bring the edges of the wounds together by suture. Usually, however, a bandage or tourniquet carried around the forehead just above the eyebrows, then just above the ears, and continued low down on the back of the head to the starting point and drawn tight will stop bleeding of the scalp. A stitch may prevent marked scarring. However, this should not be given much consideration by the aider, except for cosmetic purposes on exposed parts of the body. If you do suture a wound, remember that your hands, needles, all instruments, etc., that come in contact with the wound should be sterile.

The stitches should pierce the skin about one-eighth inch from the edge of the wound, and they should be placed about one-half inch apart, tied, and cut off. They should not be tied too tightly, only sufficient barely to bring the edges together. It is better not to close the wound entirely, but to leave a little opening at its lower end, where a little wick of sterile gauze may be inserted for drainage. If after stitching a wound it becomes red, swollen, and painful, or there is other evidence of pus forming, the stitches should be removed and the wound left open. Carry the needle through the entire thickness of the skin. Remember that occasions will be few where a layman will have to stitch a wound.

In all wounds put the part at rest and treat shock if present.



To treat gunshot wounds, see instructions in first-aid packet.

*Sterilizing dressings.*—An easy and convenient way is by boiling in plain water for about 20 minutes. If a dry dressing is desired, it can be sterilized by placing in a hot oven for about 20 minutes and removed just before scorching. Sterile dressings can be bought. The contents of a first-aid packet are sterile.

*Sterilizing instruments.*—The scissors, forceps, knives, needles, etc., used in dressing wounds should be sterilized by placing them in water that has been brought to boiling point and boiling them for 15 to 20 minutes. If on hand, a little soda added to the water will greatly assist the sterilization and protect the instruments. It is better to protect the blade of the knife by wrapping a little cotton around it before boiling.

Remember that in dressing wounds you apply your pad of sterile gauze, then your bandage. In large wounds, or those from which there is liable to be considerable oozing, it is probably better after the pad of sterile gauze has been applied to apply several layers of absorbent cotton, then bandage. Do not put the cotton next to the wound.

#### DISLOCATIONS.

These are injuries to joints; the head of a bone has slipped out of its socket.

Causes: (1) From a blow or fall; (2) muscular action.

Symptoms: Pain, swelling, loss of function, limited motion, and the head of the bone is noted as out of its usual place. The limb may seem lengthened or shortened, according to the way in which the dislocation has taken place.

Treatment: The proper treatment is reduction and retention by some means of immobilization.

It is better for a layman not to attempt reduction except, perhaps, in dislocations of the fingers and lower jaw. By unskilled attempts at reduction a layman may cause considerable damage to the nerves, vessels, and soft parts.

Put the part in the position most comfortable to the patient. The joint should be surrounded with cotton and a bandage applied, not too tight, and then supported. The patient should be kept as quiet as possible. If the joint involved is the shoulder, elbow, hip, knee, or ankle, the patient should be kept in bed. If the joint is painful and greatly swollen, hot or cold applications may be applied. A sling makes a good support to the shoulder, elbow, and wrist joints. If shock is present, treat it. Have patient see a doctor as soon as possible.



## SPLINTS.

Before considering fractures it becomes necessary to know something about splints, the correct application of which is so essential in the treatment of fractures.

We understand by a splint a more or less stiff support that will immobilize a fractured bone or a joint. It can be made from pieces of wood, broom handles, cardboard, wire netting, rolls made of blankets, pillows, rifles, swords, bayonets, etc. The material should be rigid enough to keep the parts in position. The splints should be long enough to prevent movements in the nearest joints and as wide or wider than the limb to which applied, so that the bandages which hold them in place will not press on the limb. They should be well padded with cotton or other soft material, as wool, oakum, flannel, etc., before being applied. The padding should extend well over the side of the splint. After splint has been well padded and applied to the limb it is held in place by a snug bandage. The bandage should not be applied too tightly, and if pain and swelling occur it should be loosened.

## FRACTURE (BROKEN BONE).

Causes: (1) Direct violence, (2) indirect violence, (3) muscular action.

Symptoms: (1) History of injury, (2) pain, (3) swelling, (4) loss of function of parts, (5) usually shortening, (6) excessive mobility (movement) where there should be none, (7) crepitus or grating of the ends of bone.

Varieties:

Simple fracture, where the skin is intact and there is no external wound.

Compound fracture, where the skin is broken and the external wound communicates with the fractured bone.

Complete fracture, where the break extends through the entire bone.

Incomplete fracture, where the break is not entirely through the bone.

Treatment: Along general lines. The thing to do is to set the bone and hold it in place by means of splints. A broken limb should be handled as gently as possible. It is usually best not to move patient, especially if break is in lower extremity, until splint has been applied. In handling a fracture the limb should be grasped above and below the seat of fracture.

To treat fracture, say of the arm or leg, grasp the limb above and below the seat of break, make gentle extension and counterextension (pulling in one direction on one fragment and pulling in the opposite



direction on the other) in line of body, and while held in that position by an assistant splints should be applied. Observe the precautions mentioned under the heading of splints. After application of splints the limb should be supported and elevated over pillows, clothes, sheets, etc. After application do not remove splint unless it becomes loose or shows evidence of being too tight, etc. Let patient see a doctor as soon as possible.

*Compound fracture.*—Dress the wound, then apply splint. Splint should be so arranged that wound can be dressed if necessary. In all fractures you may have to treat shock. Remember the one great thing in treating fractures is to keep the bone at rest, so do not move the limb or let the patient move it without reason.

#### SPECIAL FRACTURES.

*Fracture of skull.*—These are very serious injuries. Apply sterile dressing to wound. Place patient in lying position with head slightly elevated. May have to treat shock, but do not give stimulants unless patient is very weak.

Whenever a man is unconscious from overindulgence in alcohol, it is well to bear in mind the possibility of fractured skull and brain injury also. This is especially true where there is any mark of a blow or cut, however slight, on the head. With such a complication the gentlest treatment is necessary.

*Fracture of nose.*—Treatment: Put bones in natural position. Put small compress of gauze on each side of nose, then a piece of adhesive plaster across nose from cheek to cheek. If adhesive plaster is not at hand, put bandage across nose and around head. Do not tie too tightly.

*Fractured back.*—Keep patient still and quiet on his back. Treat shock.

*Fractured lower jaw.*—Treatment: Raise the broken bone and bring lower teeth against upper and hold there by a bandage carried under the chin, tied over the head and maintained in position by pinning to another bandage running horizontally around brow and back of head. The mouth should be kept clean by a little warm water, plain, or to which a little soda or salt is added if on hand. The patient will have to subsist for a while on liquid food through a tube.

*Fractured collar bone.*—Apply a pad of gauze in the armpit of the injured side. Support the arm in a sling with the forearm at right angles to the arm and across the chest.

*Fracture of rib.*—Keep patient quiet in bed. With arms over head and chest emptied of air, apply snugly a wide roller bandage or adhesive straps around chest, the straps as indicated for pleurisy.



*Fracture of upper arm.*—Straighten so as to put in natural position. Secure two splints (flat wood shingle, cardboard, etc.), one to extend from shoulder to elbow, the other from armpit to elbow. Pad well with cotton, apply one to inner and one to outer side of arm, secure by bandage, and support in sling.

*Fracture of forearm.*—Straighten as above; secure two splints as above to extend from a little below elbow to middle of hand. With forearm across chest and thumb up apply padded splints, one to outer and the other to inner side of forearm; then support in sling.

*Fractured wrist.*—Treat like fractured forearm.

*Fractured fingers.*—Draw gently into natural position. Apply narrow padded splint to palm surface of finger, hold in place by narrow bandage, and support forearm and hand in a sling.

*Fractured hand.*—Apply padded palm splint as wide as the hand and to extend from above the wrist to beyond tips of fingers; hold in place by a bandage and support forearm and hand in a sling.

*Fracture of thigh.*—By gentle extension and counterextension pull parts into natural position (p. 29). While limb is held by an assistant, apply a well-padded outer splint to extend from armpit to below foot. Then apply a well-padded inner splint to extend from crotch to below foot. Hold splints in place by a snug bandage.

If nothing else is at hand the injured leg may be splinted by bandaging it to the other leg.

*Fracture of lower leg.*—An excellent splint can be made by placing the leg on an ordinary pillow and trying the pillow around it; fastenings above and below should be well away from point of fracture. Wooden splints may be applied on the outside of the pillow, extending from above the knee to below the ankle. The wooden splints, well padded, may be applied without the pillow.

*Fractured kneecap.*—Straighten leg. Pad well a wooden splint as wide as the thigh and long enough to extend from middle of thigh to middle of lower leg. Apply splint to back of thigh and leg, with center opposite bend of the knee. Secure by strips of bandage. Do not bandage directly over break, but one strip above and one below knee.

*Fractured foot.*—Apply a well-padded splint as wide as foot from heel to toes. Elevate and support.

#### VENEREAL DISEASES.

*Gonorrhea (clap).*—Inflammation of the urethra due to micro-organisms called gonococci. Usually occurs in from three days to two weeks after exposure, oftenest during the first week. First there is noticed an itching sensation, with a slight puffiness and redness about the lips of the opening. This is soon followed by a creamy



discharge. There may be marked burning and difficulty in urinating. May have such complications as chordee, phimosis, paraphimosis, orchitis, or bubo.

The disease usually subsides in from one to three months. It is often difficult to tell absolutely when it is cured. The gonococci may invade the blood stream and attack numerous organs of the body.

Treatment: Rest is essential, and if any of the complications are present rest in bed is absolutely necessary. Should drink plenty of water, avoid stimulants (alcohol, tea, coffee), and be regular in eating and sleeping. Avoid eating greasy food. Keep bowels well open and bathe frequently in hot water, if practicable.

A 10 per cent colloidal silver solution is an excellent injection. Injections should be twice a day, or, if discharge is profuse, three times a day. Injection of warm sterile plain water or salt solution may be used.

Before injection urinate, then run the solution into the canal from a penis syringe and hold solution in canal from 5 to 10 minutes before allowing to escape.

The penis should be kept clean, thoroughly bathed in hot water or hot salt solution (1 teaspoonful of common salt to pint of water).

Do not put cotton over the head of penis, but take a small piece of gauze, slit it in the center, and slip back over the head of penis and pull foreskin down over it; this will catch the discharge. The ends of the gauze should be sufficiently long to extend out over the head of the penis.

If urination causes pain or burning immerse penis in a basin of hot water and allow urine to flow. Increase the amount of water drunk and add to each tumbler a pinch of soda.

Remember this is a contagious disease and you are liable to convey it to others. You should use your own towels and have your clothes washed separately. Your hands should be washed thoroughly after handling your penis. Be careful not to carry any of the pus into your eyes. By so doing you are liable to set up trouble there, which often causes complete blindness. Keep your fingers away from your eyes. Avoid all violent exercise. It may be well to wear some support for your testicles. This may prevent a swollen and painful testicle.

*Chordee (painful erection, especially at night).*—If this occurs, apply cold applications. Avoid too warm bed clothing. Keep bowels open. Keep mind clear of sexual thoughts. Empty bladder before turning in. Sleep on side.

*Phimosis.*—The foreskin is elongated and contracted down over the head of penis.

Treatment: Soak in hot water or salt solution, and inject same under the foreskin.



*Paraphimosis*.—A condition where the foreskin is swollen, rolled back, and tight.

Treatment: About the same as for phimosis. Patient should be put to bed in treating the above complications. Get a doctor.

*Bubo* ("blueballs").—Swollen glands in the groin.

Treatment: The most important thing is rest in bed. Tincture of iodine may be applied to gland. Cold applications are effectual at the outset, but later hot ones are better. If suppuration occurs (pus forms), an incision may be necessary. This should not be done by a layman. In time the abscess will break of itself. Wash out with sterile, warm, plain water or salt solution, apply wicks of gauze in the opening for drainage, and dress. Should be redressed as often as dressing becomes soiled. Burn all soiled dressings and wash your hands after dressing a bubo.

*Orchitis* (swollen testicle).—Not an infrequent complication.

Treatment: Rest in bed most important. Support and elevate the testicle. Apply cold or hot application; hot is probably more agreeable. Keep bowels open.

*Stricture of urethra*.—Usually a later complication and probably you will not have to treat. Sometimes, however, it does occur in early stages and patient is in great pain and unable to pass his urine. You may induce him to void his urine by applying hot applications over the bladder or placing him in a hot bath. If tincture of belladonna is at hand 20 drops may be administered.

If the condition is urgent, and a doctor can not be gotten, as the last resort you may attempt to pass a catheter, if one is at hand. It should be sterile (boiled) and well greased with oil, albolene, glycerin, etc. It should be manipulated gently and with as little force as possible.

*Chancroid*.—A soft chancre, venereal ulcer upon the penis. Usually occurs from 2 to 10 days after exposure. Is sometimes hard to differentiate from hard chancre—primary stage of syphilis. Sore may be mixed—both chancre and chancroid. Keep sores clean with soap and warm water, then wash with warm salt solution (1 teaspoonful of common salt to pint of water). This should be done several times daily. The same general rules about attention to the cleaning of hands of both patient and aider after handling penis apply here as in gonorrhea. Also attention to towels, etc., of patient, to prevent its spread to others.

The most frequent complications of chancroid are bubo, phimosis and paraphimosis; and the treatment of these is as given in gonorrhea.

*Syphilis*.—This is a very virulent and severe communicable disease, and is usually acquired during sexual intercourse.



may, however, be contracted otherwise. The primary lesion of syphilis is a sore called a chancre, and starts at the point of inoculation of the virus. If due to sexual contact, it is found upon the penis. It may start upon the lips, tongue, or tonsils. It usually appears from three to six weeks after exposure. However, the sore may not develop for 90 days after exposure. The average is about one month. It may appear as early as 10 days. It usually starts as a papule or pimple, which breaks in the center and forms an ulcer with hardened edges. This is soon followed by enlargement of the glands in groins and neck. In about one or two months the skin eruption appears. There may be sores on the lips, tongue, or cheeks, and a general sore throat. Hair may fall out. May complain of headache, general muscular and bone pains, fever, and the whole system may become involved.

**Treatment:** A man in the active stage of syphilis should not be allowed to start on a cruise. He is a menace to himself and others. If it breaks out on a voyage, he should be more or less isolated. Should use his own mess gear, drinking cups, towels, toilet articles, etc. The contagion is most liable to be carried from man to man by the saliva, and so the syphilitic should be forbidden to lend his pipe, to roll a cigarette for another person, etc. He should not be detailed for work as a messenger, cook, mess attendant, or for any work about the galley. The primary sore should be kept clean with warm water and soap and then washed with warm salt solution. The mouth and teeth should be kept clean. The mouth may be washed out with sodium bicarbonate solution, or if sores appear in mouth, by a mild antiseptic solution (potassium chlorate), if on hand.

The clothes of a man suffering from syphilis should be washed separately from the rest of the crew.

The patient should see a doctor for treatment and advice as soon as possible. The same precautions as given under gonorrhea and chancreoid should be observed in regard to chancre and syphilitic sores to prevent spread of the disease to others.

Under no circumstances should anything that has been used in the mouth of a person with active syphilis be used by others.

The person should use his own mess gear, etc., as stated above, and this should be thoroughly scalded out after each using with boiling water.



## CHAPTER III.

### SPECIAL DISEASES.

#### FEVERS.

By fever we mean a rise in the temperature of the body, accompanied by a general disturbance of health. Some fevers are infectious; that is, they may be conveyed from one person to another; but it is probable that all fevers are due to germs.<sup>1</sup>

#### TYPES OF FEVERS.

1. *Continued fever*.—Where there is variation of less than 2° between the morning and evening temperatures; these do not come down to normal.

2. *Remittent fever*.—Where there is a variation of more than 2° and the temperature does not come down to normal.

3. *Intermittent fever*.—Where there is a variation of more than 2° and the temperature *does* come down to normal at least in every 24 hours.

#### TERMINATIONS OF FEVER.

1. *By crisis*.—When the temperature comes down suddenly.

2. *By lysis*.—When the temperature comes down gradually.

#### INFECTIOUS FEVERS.

1. Those common in the United States:

(a) Those accompanied by rash—

Chicken-pox.

Scarlet fever.

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<sup>1</sup> In taking the bodily temperature the small clinical thermometer with a scale ranging from 92 to 110 F. is employed in this country.

To read the height of the mercury column some practice is necessary. The front aspect of the glass tube is conical, in order, by refraction of light, so to broaden the image of the mercury column as to make the latter more readable. Hold the apex or sharper edge of this cone toward you, and gently turn from side to side until the flash of the broad metallic column strikes the eye, then hold in that position and read the degree at the top of the column.

Familiarize yourself with the normal height, 98.6°, denoted by a special marking. Always see that the mercury is below this before taking a temperature.

To force the mercury down hold firmly in hand by upper end, and following repeated smart, snappy swings of the forearm, as if working a pump handle, the column will be found to have been carried down.

Temperature by mouth is taken as the normal standard; by rectum it is roughly one degree higher, in armpit one degree lower than by mouth. Leave the thermometer in position for three minutes before reading.

After using, clean in cold water, and immerse for 20 minutes in bichlorid, 1-1000, or carbolic acid, 1-20.

Smallpox.  
 Measles.  
 German measles.  
 Typhus fever.  
 Typhoid fever.

(b) Those *not* accompanied by rash—

Mumps.  
 Whooping cough.  
 Diphtheria.  
 Influenza.

2. Those met with abroad:

Malta (or Mediterranean) fever.  
 Malaria.  
 Cholera.  
 Dysentery.  
 Plague.  
 Yellow fever.  
 Dengue.

In dealing with infectious disease the following terms are employed:

*Incubation period*: This is the time which elapses between the date of infection and the appearance of the first symptoms. During this period the germs of the disease are growing and multiplying in the body.

*Quarantine period*: This is the time during which apparently healthy people are isolated after being in contact with a case of an infectious disease to see if the infection has occurred. This period is always two or three days longer than the incubation period.

*Isolation period*: This is the time during which the patient suffering from an infectious disease is kept by himself because he is infectious to others.

In describing the rash which accompanies infectious fevers the following terms are used:

A *papule* (or pimple) is a small, red, solid elevation of the skin.

A *macule* is a small spot of congested skin; it is larger and flatter than a papule.

A *vesicle* is a small collection of serum under the skin; i. e., a water blister.

A *bulla* or *bleb* is a large vesicle.

A *pustule* is a small collection of pus under the skin or infected papule.

A *scab* is an irregular mass of dried serum or pus.

A *scale* is a particle of dried skin that peels off.

In infectious fevers the rash appears after a certain definite interval from the commencement of the illness, and to remember the



day on which the rash appears the following is sometimes used: Learn this sentence, "*Very sick people must take no exercise,*" and apply it thus:

	Disease.	Day on which rash usually appears.
1. Very.....	Varicella (chicken pox).....	First day of illness.
2. Sick.....	Scarlet fever.....	Second day of illness.
3. People.....	Smallpox.....	Third day of illness.
4. Must.....	Measles.....	Fourth day of illness.
5. Take.....	Typhus fever.....	Fifth day of illness.
6. No.....	No disease.....	
7. Exercise.....	Enteric (typhoid fever).....	Seventh day of illness.

Infection is spread in various ways—by actual contact, by the air, food or drink, clothing, books, utensils, etc.

The most infectious part of a patient may be his breath, saliva, urine, or feces, or discharges from the throat, nose, or ears.

#### PREVENTION OF THE SPREAD OF INFECTION.

1. *Isolation*.—As soon as a case is suspected of being infectious the patient should be kept away from other persons. On board ship any suitable place may be employed, such as a spare cabin, chain locker, a boat roofed over with tarpaulin, any compartment which can be afterward thoroughly disinfected and where the individual will not come in contact with the rest of the crew. The patient should be sent to a hospital as soon as the proper authority has been obtained, from the quarantine officer of the port or other authorized person, to land him. The person detailed to attend an infectious case must not mingle with other people. The patient must have his own separate utensils, cup, plate, knife, fork, and spoon, etc., and use a commode and urinal instead of the general head. Isolation must be complete so that there is no possible way by which infection can be carried to others.

2. *Disinfection*.—By disinfection is meant the killing of the germs of the disease. This is carried out by heat, by chemicals, or by fresh air and sunlight.

Disinfection by heat: Boiling in water is the best and surest method of disinfection, but it can not, of course, be used for every infected article. For bedding and clothing a steam disinfector is used. This consists of two large metal cylinders, one inside the other, leaving a space between inclosed at the ends by hinged doors. The articles to be disinfected are put into the inner chamber through the door, which is then closed, and steam turned into both the inner and outer chambers, so that the steam in the inner chamber, being under pressure, attains a temperature of about 240 F. After about 30 minutes



the articles are removed through the door and hung in fresh air and sunlight to dry. (See also chapter on Quarantine.)

#### GENERAL TREATMENT OF INFECTIOUS DISEASES.

The fundamental principles of the treatment of infectious diseases are:

1. Rest.
2. Diet.
3. Fresh air.
4. Hydrotherapy (the use of water, hot or cold, as baths or for sponging).
5. Drugs.

*Rest.*—Should be actual rest, in a comfortable bed, placed in a quiet, well-ventilated compartment, and every means exercised to relieve the patient from anxiety and concern and to promote sleep.

*Diet.*—Should be liquid or semisolid, such as milk, raw or soft-boiled eggs, tapioca, cornstarch, chicken, beef or mutton broths, seasoned and thickened with rice. Food should not be urged in the early hours or days of a disease against the patient's disinclination to take food. However, when the patient has lost his aversion for food it should be appreciated, and the appetite catered to as far as may be consistently done, keeping in mind the general diet of liquids or semisolids, as given above. Water, or such drinks as lemonade, limeade, orangeade, or carbonated water should be given frequently and offered to the patient, not waiting for his request, because frequently there is a mild delirium, and the patient's state of mind will not cause him to ask for water though he needs it in abundance to keep kidneys and skin active.

*Fresh air.*—Means of supplying abundant fresh air, preferably cold air, should be provided. If practicable all cases of fever should be treated in the open air on deck, but if the weather is particularly cold the patient should be kept warm, covering the bed clothing with a rubber blanket and all tucked well in under the mattress to prevent the cold air getting under the bed clothing; a hot-water bottle placed at the feet gives great comfort in treating the patient in the open.

*Hydrotherapy.*—The effects of cold water are the same as the effects of cold air. Water is a conveyor of heat, and cold stimulates vital centers reflexly through nerves from the skin. The essentials to success in using water as a means of treatment are, the water must be cold and friction must be applied, rubbing the skin vigorously until the patient reacts. Cold baths should never be carried to the extent where patient collapses.



*Drugs.*—At the beginning of a fever a drug to open the bowels freely should be given. Usually castor oil in two-tablespoon doses, or Epsom salts, two-tablespoon doses in water, or divided doses of calomel, giving one-tenth of a grain every 20 minutes for 10 doses, followed in 12 hours by an ounce of Epsom salts. This movement of the bowels relieves stagnation and absorption of products of putrefaction. Seiler's solution, 4 tablets dissolved in a pint of water, should be used frequently to clean the nose and mouth during fever; stimulants when the heart begins to fail; phenacetin or aspirin in 5-grain doses for the relief of headache and muscular pains.

Careful nursing is an essential in the treatment of all disease, and while it is not to be expected that the nursing available on board auxiliary ships will be as efficient as that which may be had from persons trained in the art of nursing, much may be done to aid the sick if attention is given to providing for their wants and promoting their comfort. A sick man should have a man detailed to wait on him and watch him. This makes rest possible for the patient. Fever patients often get delirious and if not watched may injure themselves, jump overboard, etc.

Keeping the patient's face, hands, and body clean, and the nose and mouth clear and moistened (a little glycerine and water, to which may be added a small pinch of soda, is useful to wet lips, tongue, and inside of cheeks with), reflexly makes him feel fresher and better able to combat the germs and toxins of disease.

#### INSTRUCTIONS TO BE GIVEN TO THE PERSON DETAILED TO CARE FOR AN INFECTIOUS DISEASE.

1. Wash your hands as soon as possible after touching the patient, his clothing, or bedding, also after handling the bedpan, urinal, thermometer, etc.

2. *Wash your hands carefully before eating your meals.*

3. Never use cups, plates, spoons, knives, forks, etc., which have been used by the patient. Keep your own utensils in a separate place so that you will know that you are always using the same articles.

4. See that your patient does not mix with the other people of the ship.

5. On no account are you yourself allowed to mingle with others of the crew, etc.

6. Never eat your meals with the patient.

7. Wear white clothes (because these can be washed and boiled more easily).

#### CHICKEN POX.

Incubation period, 10 to 16 days.

Quarantine period, 18 days.



Isolation period, until all scabs have fallen off, usually 21 days.

Symptoms: Rash appears on the first day of the illness and consists of blisters, which dry and form scabs. The blisters come out in crops mostly on the trunk, face, and scalp, and only a few on the limbs. There is usually very slight fever, and the patient does not feel very ill. The blisters which form on the scalp may be painful and prevent sleep.

Treatment: Put to bed if there is fever, otherwise not necessary. Diet, no change unless there is fever, then exclude solids. Give water freely. For itching, wash parts gently with a solution of sodium bicarbonate, 1 tablespoonful to a pint of water. Keep mouth clean with Seiler's solution. Keep bowels open with salts (Epsom), 1 tablespoonful in water.

#### SCARLET FEVER.

Incubation period, 1 to 8 days, usually 3 to 5.

Quarantine period, 10 days.

Isolation period, until scaling and sore throat disappear; never less than six weeks.

Symptoms: These come on suddenly, the most marked being fever and sore throat.

The rash appears on the second day and consists of bright-red papules set very close together, which give the skin its scarlet hue. It is seen first on the neck and then spreads to the chest, arms, abdomen, and legs. It is usually most marked on the neck, the flanks, the buttocks, the bend of the elbows, and on the inner side of the thighs and knees, but never appears on the face. It usually lasts about five days.

The throat remains sore for some days, the tonsils are red and swollen and often covered with yellow patches. The tongue is at first covered with white fur through which the red papillæ show, giving it the appearance of a strawberry. Later when the fur disappears the tongue becomes very red. The fever is usually high and lasts about a week. It may cause some flushing of the face, which must not be mistaken for the rash.

Desquamation, or peeling of the skin, commences as the rash disappears, and is first noticed on those parts of the body where the rash was most marked. It commences as a small white spot, in the center of which a hole appears. From this center a circular scale separates. This pinhole peeling is characteristic of scarlet fever. The scales may be small or may come away in large flakes. The last parts to peel are the palms of the hands and the soles of the feet.

Treatment: The patient should be kept in bed even in the mildest cases, on account of possible inflammation of the kidneys, which is



the most serious complication of this disease. The body should be sponged daily during the fever with warm water in a warm room, under a blanket, exposing one part of the body after another.

The diet should be restricted to milk, giving two quarts a day during the fever. If milk is not available, gruels made from cereals, arrowroot, cornstarch, barley flour, or tapioca may be substituted. Feed at two-hour intervals, but do not interrupt sleep at night. Water, lemonade, orangeade, limeade, etc., sweetened, should be given freely. No *meat* broths should be given, or solid food.

Particular care should be given to the nose and mouth, and they should be frequently cleansed with salt solution; one teaspoonful of common salt dissolved in a pint of tepid water.

The patient should be under treatment for six or seven weeks, or until peeling is completed.

The case should, of course, come to the attention of a medical officer as soon as possible.

To relieve the pain of the sore throat apply the ice bag or cloths wrung out in cold water to the neck and have the patient gargle with Seiler's solution, dissolving four of the tablets in a pint of warm water or dissolve a half teaspoonful of soda bicarbonate in a tumbler of hot water and use as gargle. When the skin commences to peel, the patient may be rubbed with olive oil or a simple ointment to prevent the scales floating about, or a daily hot bath may be given.

The infection is most potent in the secretions of the nose and throat during the first five days of the disease.

#### SMALLPOX

Incubation period, about 12 days.

Quarantine period, 14 days (see p. 66).

Isolation period, until every scab has disappeared—about 10 weeks.

Symptoms: The beginning is sudden, with a chill, headache, and pain in the back. The headache and backache are very severe and quite characteristic. The temperature rises rapidly to 103° or 104 F., and the patient may be delirious.

The eruption appears on the third day, on the forehead, scalp, forearms, trunk, and legs. At first the eruption consists of papules, which are small and red and feel like shot under the skin. On the sixth day the papules become vesicles; on the eighth, pustules; and on the tenth scabs form, which in time fall off, leaving, finally, deep, white pitted scars. When the papules appear the temperature falls, but rises again when the pustules are forming. The patient's skin has usually a very foul odor.

There are four varieties of smallpox:



1. Modified smallpox, where the symptoms are less severe and the amount of rash smaller, owing to the patient having been vaccinated.

2. Discrete smallpox, where the pustules are scattered and do not run together.

3. Confluent smallpox, where the pustules run together and the symptoms are very severe.

4. Malignant smallpox, where, in addition to the ordinary symptoms, hemorrhages occur under the skin, or from the bowels, lungs, kidneys, or bladder. This variety is fatal in a day or two.

Treatment: The body must be sponged over twice daily, or warm baths given when the patient is strong enough. The mouth must be kept clean and the eyes washed with boric-acid solution. The eruption is usually covered with some oily dressing, such as vaseline or carbolized oil, or with cold-water compresses covered with oiled silk or muslin. A mask is made to cover the face and the eyes protected from the light. An arrangement to relieve the patient of the weight of bedclothes will become necessary. Feeding may become difficult, owing to the condition of the mouth. Delirium is common, and the patient must be carefully watched. Treat the patient along the general lines under that heading. Report the suspected case by wireless if possible.

#### MEASLES.

Incubation period, 7 to 14 days or longer.

Quarantine period, 16 days.

Isolation period, 21 days from appearance of the rash.

Symptoms: The disease commences like a common cold, with sneezing, running at the eyes and nose, headache, cough, and slight fever. On the fourth day the rash appears on the face, and thence spreads downward to the neck, chest, abdomen, and limbs. It consists of dull, red macules, which run together, forming various patterns, and lasts about three days. The lining of the mouth and throat appears of the same bright red color, dotted by minute white spots, which condition is diagnostic of measles. The temperature falls at the end of the fifth day and the symptoms disappear, but the cough may remain for some time.

Treatment: On general lines. Guard against chilling, as the complications, bronchitis and pneumonia, may prove fatal.

#### GERMAN MEASLES.

Incubation period, 7 to 18 days.

Quarantine period, 20 days.

Isolation period, 10 days from the appearance of the rash.



Symptoms: These are usually very mild, consisting of sore throat, headache, very mild fever, lasting only a day or two, and enlargement of the glands of the neck. The rash appears on the third or fourth day on the face and chest, spreading to the trunk and limbs. It consists of red papules larger and duller than in scarlet fever, smaller and brighter than in measles, and lasts about two days.

Beyond keeping the patient isolated for a few days and avoiding a chill, no treatment is usually necessary.

#### TYPHUS FEVER.

Incubation period, 5 to 12 days.

Quarantine period, 12 days.

Isolation period, 4 weeks.

This disease is transmitted from a person infected with the disease to the well by the body louse; therefore the presence of lice on board a ship is a great menace to the health of the crew; no lice, no typhus.

Symptoms: These come on suddenly with headache, shivering, vomiting, and a rapid rise of temperature to 104° or 105° F.

The rash appears on the fifth day on the trunk and limbs, but not on the face. It consists of dull-red mottling of the skin with small hemorrhages like flea bites, and has been called the "mulberry" rash.

It lasts about two weeks.

Great prostration is a marked symptom and delirium is common.

The fever ends by crisis usually on the thirteenth day.

Treatment: On general lines. An abundance of fresh air is essential. Thoroughly examine the rest of the crew to ascertain the presence of lice. If found, immediately burn all clothing infested. Hair of the head and body should be shaved, the hair thus collected burned immediately. The body should be thoroughly washed, and the water thus used immediately thrown overboard. In short, use every means to get rid of lice.

#### TYPHOID FEVER.

Incubation period, 1 to 3 weeks.

Quarantine period is not observed.

This important disease is now very rare in the naval service because of antityphoid inoculation used throughout the Navy.

The germ of the disease enters the body through the mouth in infected foods or drinks, of which water and milk are the commonest, and after that, food contaminated by flies, thus showing the importance of protecting all foods, both cooked and uncooked, from flies.

Symptoms: These come on very gradually with loss of appetite, general indisposition and headache; there may be also some cough, diarrhea, and bleeding from the nose.



It is a disease in which the fever lasts about four weeks. During the first week the temperature gradually rises until the beginning of the second week, when it reaches its height, and then continues until about the end of the third week, when it gradually begins to fall, ending by lysis at the end of the fourth week.

The rash appears on the seventh day on the abdomen, back, and lower part of the chest. It consists of fairly large, raised rose-spots, which fade on pressure. They are usually few in number and come out in crops. Each spot lasts about four days and the rash lasts about 14 days. As the fever progresses the patient becomes very weak; he loses flesh; his cheeks are slightly flushed; he is drowsy; and he is not capable of any exertion. He suffers from thirst; unless carefully attended, his lips and teeth become covered with scabs and crusts. Delirium is common.

Treatment along general lines: The patient needs careful nursing and should be removed to a hospital at the very first opportunity. When the fever is high, sponge baths should be given both night and morning, or oftener if necessary. Careful feeding is quite necessary in the treatment of typhoid fever, and the diet should consist principally of milk, although soft-boiled eggs, well-baked potato with a little butter and salt, broths and puddings, and a few crackers may be added. Food should be given a little at a time and at frequent intervals—2 or 3 hours.

Drugs are of little use. The patient must be carefully watched and all his wants given attention. Diarrhea is rather common at first. Later on if there is constipation move bowels by enemata, not by cathartics.

#### MUMPS.

This is an infectious disease characterized by swelling of one or more of the salivary glands, usually the parotid—the one at the side of the jaw.

Incubation, 10 to 22 days.

Quarantine period, 24 days.

Isolation period, three weeks, but one week must have elapsed since all swelling has subsided.

Symptoms: The patient complains of pain and stiffness on moving the lower jaw, and there will be swelling of one or more of the salivary glands. His temperature is raised often to 104 F. The fever lasts about a week and the swelling about 10 days.

Treatment: On general lines. Isolate; keep the bowels well open, and for the pain hot-water bags may be used, applied to the swelling.

Complications: Orchitis, or inflammation of the testicles, is very liable to occur at the end of the first week. The temperature rises rapidly, and the testicle is found to be painful, tender, and swollen.



This condition does not usually last more than a week. The testicles should be supported by a suspensory bandage or a broad strip of adhesive plaster, with gauze or cotton between testicles and support, applied across the upper part of the thighs in such a manner that the testicles will be thoroughly supported. The ice bag should be applied to relieve the pain and the bowels freely opened with Epsom salts—2 tablespoonfuls dissolved in water.

#### DIPHTHERIA.

This is an infectious disease characterized by the formation of a membrane in the throat and on the tonsils and soft palate. It is caused by the diphtheria bacillus; all secretions from the nose and mouth are infectious.

Incubation period, 2 to 10 days. Quarantine period, 12 days. Isolation period, until seen by medical officer and discharged.

Symptoms: These come on gradually, with general indisposition, sore throat, headache, enlarged glands in neck, and moderate fever. There is a creamy-white deposit formed on the tonsils, which spreads to the uvula and soft palate. This membrane may form on other adjacent parts and block the breathing tubes, in which case there is great danger of asphyxia. In addition to the symptoms caused by blocking of the air passages by the formation of the membrane, the patient suffers greatly from an overwhelming intoxication due to the formation of the poison by the diphtheria bacillus located in the membrane.

Treatment: Along general lines until the case can be seen by a medical officer. Keep the patient closely isolated and the throat clean by frequent gargling with warm Seiler's solution—four tablets dissolved in 1 pint of water, or with the soda bicarbonate solution described under scarlet fever. All secretions from the nose and mouth are very infectious, and these should be particularly taken care of. The attendant may become infected by the patient coughing in his face. To prevent this kind of infection, the attendant should at once wash his mouth out with Seiler's solution and bathe his eyes with boric-acid solution.

#### INFLUENZA (GRIP).

This disease is due to a definite germ and is highly contagious.

Incubation period, 1 to 6 days.

The onset is fairly sudden with fever and signs of a bad cold, but the patient feels much more ill than with ordinary colds, and has severe pains in the back, limbs, and head. In some forms the lungs are mostly affected and pneumonia or bronchitis may complicate the disease. In others the heart may suffer, causing palpitation and



difficult breathing; while in others, again, diarrhea and vomiting may be the chief symptoms. The acute illness lasts about a week, but convalescence may be very prolonged and complicated.

**Treatment:** On general lines. In the beginning of the disease open the bowels well with a dose of castor oil—2 tablespoonfuls. After this has acted give 10 grains of Dover's powder at night. If the headache and pains in the limbs and back continue and are severe give phenacetin, 5 grains every three hours. Do not continue this treatment more than two days, as phenacetin depresses the heart.

#### MALARIAL FEVER (CHILLS AND FEVER).

This is a recurrent fever caused by the malarial parasite which is carried by a mosquito, and which enters the body when the insect bites. The disease is not infectious except through the bite of a mosquito which has bitten fever cases at some time during its life.

**Symptoms:** The disease consists in attacks of fever which recur at regular intervals. Each attack may be divided into three stages:

1. The cold stage: The patient shivers and feels cold when his temperature is rapidly rising. He goes to bed and covers himself with extra blankets. This stage lasts about half an hour.

2. The hot stage: He begins to feel warm and removes most of the bedclothes. The skin feels hot and dry, and he suffers from severe headache. The temperature will now be 105 F. or higher. This stage lasts three or four hours.

3. The sweating stage: During this stage the patient perspires freely, the headache and flush disappear, and the temperature returns to normal. This stage lasts about two hours.

These attacks occur every day, every other day, or every third day, according to the form of malarial parasite, and each lasts about six hours. There are other types of malaria in which the fever is continuous, and somewhat resembles the fever of typhoid. Frequently this type of malaria can be diagnosed only by the aid of a microscope, and therefore requires the attention of a medical officer.

**Treatment:** During the attack, treat along general lines. The only drug which has any effect is quinin, which can be given by mouth, in capsules of 5 grains every two hours, or as 3-grain tablets, taking two, three times a day.

**Prevention:** The malarial mosquito bites preferably at dusk or at night, therefore when in malarial countries everyone should sleep under mosquito nets. A dose of quinin, 5 grains every third day, tends to prevent the disease and should be given when in ports where malaria is prevalent.



## YELLOW FEVER.

An important epidemic disease of the West Coast of Africa, of South America, Central America, and the West Indies. The virus is contained in the blood of infected patients only during the first three days of the disease, and the disease is transmitted by the bite of a mosquito, the *Stegomyia calopus*. As it is important to be able to recognize the mosquito, a brief description of it follows: The insect is almost black and has white bands on its back resembling a lyre or jew's-harp, and the legs also have white bands. If deprived of water, the adult insect only lives about five days. It is essentially a house mosquito and rarely travels more than 75 feet from the house where it has been feeding, and it is probable that it is brought aboard ships in connection with coaling or provisioning rather than blown aboard by prevailing winds.

When a susceptible individual is bitten by an infected mosquito there develops, after a period of incubation of from two to five days, a rapid rise of fever, with marked congestion of the face and severe pains of the back and head. Vomiting first of mucus and bile comes on very early. The temperature remains fairly high for three or four days, but notwithstanding the high temperature the pulse rate becomes less, and by the third or fourth day will have decreased by 20 to 40 beats from its initial rate. This is a very important symptom. On the fourth day the temperature falls and the face loses its congested appearance, and it is now that the most characteristic feature of yellow fever appears—namely, jaundice. Vomiting of material resembling coffee grounds is common.

Prevention: By screening a patient during the first three days of the disease to prevent infection. Any receptacle, tank, double bottom, or other place where fresh water may be collected should be thoroughly screened and frequently inspected in order to prevent the breeding of mosquitoes (see p. 70).

Treatment: During the first three days of the disease no nourishment whatever should be given. The patient should be allowed an abundance of fluid, of which the best is vichy or soda water, unflavored, giving a couple of ounces every 10 minutes, iced or just cool, as the patient prefers. If vichy is not available, water, to which has been added a teaspoonful of sodium bicarbonate (baking soda) to the quart, is a good substitute. It is of vital importance to put the patient to bed and keep him quiet. When vomiting is severe cracked ice may be of value.

A mustard foot bath should be given, the feet and legs of the recumbent patient being immersed in a foot tub half full of warm water in which a pound of ground mustard has been stirred. Every few minutes a quart of very hot water should be added, keeping the



bath very hot, just short of burning the feet. The blankets are kept over the patient and foot tub, so that a vapor bath is also given, which produces sweating. This treatment relieves the head and backache and can be repeated two or three times in 24 hours. During the treatment, to make the patient sweat, apply cold to the head—wet cloths, ice bag, etc. After the bath the sweating patient should be thoroughly dried. Stimulants every three hours should be given if the patient shows signs of collapse.

#### DISEASES OF THE STOMACH AND INTESTINES.

*Colic.*—This is a term applied to abdominal pain occurring in paroxysms of varying degrees of severity. The pain is usually located in the region of the navel—that is, in the middle of the belly. Colic is often preceded by constipation and accompanied by vomiting.

The causes are various and the pain often may be a symptom of serious trouble. For example, abdominal pain is almost always the first and most pronounced symptom of appendicitis, gallstone, stone in the kidney, and the well-known cramps of lead poisoning (painters' colic).

Besides being a symptom of these conditions, colic is most frequently due to overeating, and when such is the case emptying the overloaded stomach generally gives prompt relief.

The very best treatment which can be used to relieve abdominal pain, no matter what may be the cause, is gastric lavage or washing out the stomach. This is usually accomplished by means of a soft-rubber stomach tube, but as this method requires considerable skill to be effective it is not advised except when done by a medical officer or a well-trained member of the Hospital Corps. However, the stomach may be safely, thoroughly, and effectively washed by the following simple means:

Make the patient drink as rapidly as possible five or six glasses of lukewarm water and then cause him to vomit by tickling the back of his throat with the finger or a feather. After this has been done the patient should be placed in bed and a hot-water bag applied to the abdomen, a cloth to be interposed between the bag and skin to protect the latter from being burned or blistered. No food or drink should be allowed until the colic has subsided, and if it returns the stomach should again be washed out, following the procedure described above. An individual suffering with colic is vastly better off with nothing in the stomach, and such a person can easily go without food for five or six days, but must have water, which should be given in small amounts after the first 24 hours. If the patient's bowels have not moved during the past 24 hours, an enema (injection into the rectum), consisting of a pint of warm water and soapsuds, should be



given, and repeated in half an hour if there has been no result from the other.

A mustard plaster, or cloths wrung out in very hot water, may be applied to the belly. The patient is apt to be most comfortable lying on his side with the knees drawn up. In using hot applications the utmost care must be used not to burn the patient. In using mustard plasters it is to be remembered that some persons have very sensitive skin. Wet the mustard leaf in cold water and lay a piece of gauze or layer of a pocket handkerchief between mustard and skin; otherwise the application should be very brief, a few moments at the most.

After all pain has subsided the patient may be given liquid or semi-solid foods, such as clear soups, custards, milk, milk toast, or soft-boiled eggs, and this diet may be cautiously and gradually increased to the use of solid foods as the pain and vomiting subside and do not return.

As the patient gradually gets over the acute symptoms and the pain, which at first was general, becomes localized, particularly as a tender spot in the right side of the abdomen, an ice bag should replace the hot-water bag and the patient be placed in an inclined position in bed, the incline being toward the feet.

It should be particularly noted and remembered that abdominal colic is only a *symptom*, and may indicate some very serious condition—appendicitis, for example—which can be relieved only by a surgical operation or other means which could only be applied by a skilled physician. However, if the treatment as given above is used, the unskilled person will be doing as much as any trained physician could do until the sufferer can be admitted to a hospital and come under the care of a surgeon. *Do not give cathartics.*

*Diarrhea.*—Diarrhea is understood as an abnormal frequency of the stools with a change in their character and consistency. Commonly it is an acute condition caused by some inflammation or irritation of the intestines. It is one of the main symptoms of typhoid fever, cholera, and dysentery.

It is simple diarrhea when it occurs independently of any appreciable disease. It may be caused by exposure to cold or by eating unripe and indigestible vegetables and fruits, or decomposed or improperly cooked meat, fish, and shellfish. Drinking large quantities of cold water when the body is overheated is a frequent cause.

The symptoms are frequent watery and straining stools accompanied by loss of appetite, nausea, and sometimes vomiting and abdominal cramps.

*Treatment:* In simple diarrhea first clear the intestines with a quick-acting purgative in order to get rid of its irritating contents;



give castor oil—two tablespoonfuls—or two or three compound cathartic pills. After one or two actions of the bowels from the cathartic, favorable cases are usually checked; but if not, put the patient on a liquid or semisolid diet, keep him at rest, apply the hot-water bag to the abdomen, and give lead and opium pill (or Dover's powder, 5 grains) every four hours for three or four doses. While the diarrhea is acute, the less food taken the better.

*Dysentery.*—Dysentery, or bloody flux, as it is sometimes called, is an inflammation and ulceration of the large bowel caused by an infection.

It occurs in different degrees of severity and may be either acute or chronic. Its severest form is met with in tropical countries, where it frequently occurs in widespread endemics and may attack a whole ship's company.

It is caused by specific microorganisms which enter the system with contaminated food or drink.

*Symptoms:* The disease may begin suddenly or gradually. The first stools may be like those of ordinary diarrhea, and after a day or two, or maybe a few hours, the stools contain slime and blood. Later they may become shreddy and brownish or greenish in color. The patient complains of cramps and "colicky" pains in the belly, with a burning sensation in the rectum, accompanied by a feeling as if something must be expelled, and a constant desire to go to stool. The number of bowel movements may be from 10 to 50 a day, or even 100, depending upon the severity of the case, but the quantity expelled with each movement may not exceed a teaspoonful.

*Treatment:* The patient should rest in bed, and if possible use the bedpan, so as to insure the greatest amount of rest, which is of greatest importance. Keep the patient warm, apply hot-water bag or cloths wrung out in very hot water to abdomen, and stop all solid food. In the tropical form of the disease ipecac, or its active principle emetin, acts as a specific, but it is required that it should be administered by skilled hands and is only mentioned here to impress the fact that a person suffering from dysentery should come under the care of a medical officer as soon as possible.

In countries where dysentery is prevalent no fruit or uncooked vegetables should be allowed, and all foods, both cooked and uncooked, should be protected from flies, which carry the contagion. Nothing but distilled or boiled water should be used for drinking or cooking purposes.

#### DISEASES OF THE RESPIRATORY SYSTEM.

*Tonsillitis (sore throat).*—All cases of tonsillitis and sore throat should be promptly isolated because of the possibility of their being



diphtheria, and the consequent probability of an epidemic of that disease should such be the case. Sore throat often accompanies a bad cold and is common where ventilation is imperfect. Patient complains of rawness and difficulty in swallowing and the tonsils are swollen and red. There are headaches, general muscular and joint pains, and the fever is often high. Small beads of yellow pus are seen on the red, swollen tonsils, and in some cases abscesses may form.

If there is a grayish-white tenacious membrane formed in the throat, which bleeds readily when touched, the case should be regarded as diphtheria and the individual promptly and completely isolated, and a medical officer consulted as soon as possible.

Treatment: Isolate all cases of sore throat. Rest in bed, open bowels freely with castor oil (2 tablespoonfuls) or cathartic pills, make patient gargle every half hour with Seiler's solution (made by dissolving four of Seiler's tablets in a pint of warm water) or by gargling with one-half teaspoonful soda bicarbonate dissolved in tumbler of hot water. Apply ice bag to the neck, or cold cloths if an ice bag is not available. Give liquid and soft diet; avoid hot and highly seasoned food which will burn and irritate an already inflamed throat.

As rheumatism of the joints is a frequent sequel of tonsilitis it is well to give antirheumatic medication during and for about a week after the attack. Sodium salicylate (gr. 10), three times a day after food, should be administered, or if this is not available a pinch of soda bicarbonate in one-half teacupful of water four times a day.

*Coughs and colds.*—When a person has a cough that lasts more than two weeks, even though the symptoms are mild, the case is serious enough to require an examination by medical officer, which should be done at the first opportunity. A cold often marks the beginning of an acute infectious disease, such as measles, scarlet fever, etc.

A case of bronchitis or bad cold usually begins with a cough, sometimes starting with an irritation in the throat, which gradually travels down into the lungs. The cough is at first usually dry, but later there is a free discharge from the nose and the cough becomes loose and considerable mucus is raised from the lungs. This sputum may at first be white and later yellowish. With this there will be soreness over the upper and front part of the chest, and if the cough is violent there will be considerable soreness of the muscles between the ribs.

Treatment: Colds may often be headed off, certainly benefited, if at the beginning the patient's bowels are freely opened with castor oil, Epsom salts, or cathartic pills, and after either of these has acted



he is given a hot bath, put to bed, receives a drink of hot lemonade, and is covered with blankets until a good perspiration is induced. While in this condition care should be taken not to get the body chilled, and make the cold worse. Dover's powder, 10 grains, should be taken on going to bed.

#### DELIRIUM TREMENS.

Delirium tremens occurs as an incident in the life of persons addicted to the excessive use of intoxicating liquors.

Loss of appetite, sleeplessness, or a marked mental depression are the chief symptoms of the first stage of the affliction known among drunkards as "the horrors."

As the disease advances the patient talks incoherently, has a wild expression, his mind wanders from one thing to another. He answers questions in a rambling manner and fancies he is being pursued by wild animals, or that he sees rats, snakes, and other animals crawling on the walls around his bed. The delirium is always worse at night, but *the patient requires watching at all times*, for he may try to jump overboard or commit suicide in some other way.

Delirium tremens may be confounded with delirium of acute fevers. Pneumonia is a frequent complication of delirium tremens and in fatal cases may be the direct cause of death. It may, in drunkards, follow a fracture or other injury.

Treatment: The patient requires constant attendance. In all cases the symptoms are aggravated by the lack of food, which the patient has been either unable or unwilling to take. Careful feeding is of the utmost importance. Thick, nourishing soup constitutes the best food in this condition and should be given every two hours, and the patient encouraged in every way to take food. Until a medical officer can assume charge of the case whisky should not be withheld, but should be given in gradually diminishing quantities—1 or 2 ounces every two hours, especially if the pulse is weak. Give beef extract hot. This and the soups are rendered more effective and palatable by addition of pepper as seasoning.

The serious symptoms are largely due to sleeplessness, and if several hours of sound sleep can be produced improvement is almost sure to follow. To this end potassium bromid in 30-grain doses should be given in water every three hours. Sometimes by wrapping the patient in a sheet and blankets wrung out in very hot water and at the same time applying cold to the head a sedative or quieting effect is produced and the patient gets rest even if no sleep.

#### SUNSTROKE.

Sunstroke is an attack of illness caused by exposure to the rays of the sun; but the same condition may be produced in hot weather by



exposure to high temperatures not in the direct rays of the sun, particularly if the person is engaged at hard work in close quarters. Coal passers and firemen are sometimes affected by the heat of the furnace. *Men debilitated from or addicted to the excessive use of stimulants are more apt to suffer than those of temperate habits.*

Sunstroke occurs in two forms—heat stroke (heat fever), in which the temperature of the body is very high, and heat prostration or heat exhaustion, in which the surface of the body is cool. The difference is very important because of the different treatment required.

In severe cases of heat stroke the person may be stricken down and die in a few hours. In other cases there may be intense headache, dizziness, marked restlessness, nausea and vomiting, and hot, burning skin. The clinical thermometer may register 105 F. Pulse is strong and may be slow or fast and breathing difficult. The patient soon becomes unconscious, and if left untreated the unconsciousness deepens and death may follow within 24 hours.

In heat prostration the surface of the body is cool, the pulse weak and rapid, and the patient feels exhausted. There may be only slight nausea and vomiting, and under treatment the patient may rapidly recover; or, on the other hand, there may be complete loss of consciousness and a rapid and fatal termination from exhaustion. This prostration is often accompanied by muscular cramps, particularly in persons who have been doing hard work while exposed to high temperatures. These cramps are extremely painful, and the attacks may last from 12 to 24 hours. The muscles may remain sore and the patient weak and listless for several days after the seizure, although the attacks vary from a slight cramp in the abdomen or limbs to general cramps in all the muscles.

Treatment: In heat stroke (heat fever) the temperature of the body should be reduced as rapidly as possible. Place the patient in a tub of cold water, add ice, and rub the body briskly with the hands, keep an icebag to the head, and continue the treatment until the temperature is reduced to 100 F., as shown by the thermometer inserted in the rectum.

In heat prostration, with cool skin, stimulate the patient and rub his body and limbs. Hot rich soup given with the patient at rest in bed has proven very useful in this condition. It is necessary that the soup should be hot; and even when there has been vomiting administering hot soup has both stimulated the patient and stopped the vomiting. This should be repeated as soon as the patient feels at all hungry, and in the meantime hot tea should be given. In the more severe cases hot food and drink will not suffice, and then the patient should be given stimulants (aromatic spirits of ammonia), kept warm by blankets and hot-water bags, and a mustard plaster



placed on the abdomen; and if the cramps are severe the muscles should be vigorously rubbed.

#### HEADACHE.

Headache is a symptom of disease of some part of the body. It generally accompanies the acute fevers, is associated with constipation, disorders of the stomach, liver, kidneys, and genital organs. Eye strain is a frequent cause.

Treatment: Remove the cause if possible. Open the bowels with a dose of castor oil or salts, and give 15 or 20 grains of potassium bromid and repeat in three hours if necessary. A little hot tea and toast should be given with this medicine to prevent nausea. A medical officer should be consulted if this does not benefit the patient.

#### DISEASES OF THE EYE.

*Stye.*—A stye is a pustule which forms on the margin of the eyelid around an eyelash. The lid is inflamed, painful, and has the general appearance of a small boil.

Treatment: Pain may be relieved by applying squares of gauze wrung out of hot boric-acid solution. When the stye ruptures, keep the lid clean with frequent washings with boric-acid solution in order to prevent recurrence of more styes.

*Inflammation of the eye.*—In all inflammations of the eye ascertain at once if the individual has the clap. If he has, the chances are that you are dealing with a very severe condition, which should be brought to the attention of a medical officer immediately.

*Simple inflammation of the eye.*—This is caused by irritation, such as exposure to the wind or dust, by foreign bodies in the eye, and frequently by the fumes of turpentine contained in paint used in confined places, as when painting double bottoms, etc.

Symptoms: The eye is bloodshot and watery, the patient complains of pain, the sensation of sand in the eye, and heat. A thin watery discharge appears, which tends to stick the lids together.

Treatment: Turn back the upper lid, pull down lower lid, remove all small particles of dust and dirt by gently wiping the lid with cotton loosely wound about a match stem. To turn back the upper lid lay a match stem lengthwise along the middle of the lid, press down gently and at the same time pull up on the lashes. Have the patient look in all directions, for by this means particles of irritating matter which do not at first appear may be brought to view. After having removed all the irritating particles, wash the eye with warm solution of boric acid, using a small piece of cotton saturated with this solution held very close to the inner angle of the eye. Do not drop solution on the eye.



*Gonorrheal inflammation of the eye.*—This is usually found in patients who have the clap and is caused by the individual rubbing or touching his eye after handling the penis and not having washed his hands. The inflammation is very rapid and very severe. The lids are swollen as are the inner parts of the eye, and thick pus soon begins to discharge.

**Treatment:** The sound eye should at once be protected by a shield consisting of a watch-glass crystal fixed over the eye with adhesive plaster. The infected eye should then be washed frequently with boric-acid solution, and a little vaseline applied to the edges of the lids so they will not stick together and retain the pus. Cold applications should then be applied to the infected eye, and this may be done by placing small pieces of cloth on a cake of ice and transferring them to the eye, making the changes frequently.

In all cases of inflammation in the eye the patient should be kept in a dark place, or the eye protected from the light by a shield.

#### EARACHE.

Earache is due to so many different causes that a medical officer should be consulted as soon as possible. To relieve pain apply hot-water bag, move bowels freely with 2 tablespoonfuls of castor oil, and, if pain continues and is very severe, give Dover's powder (5 grains) two or three times at intervals of 4 hours.

#### TOOTHACHE.

Usually due to a decayed and hollow tooth. Remove particles of food from the cavity and plug with a small piece of cotton saturated with oil of cloves, and over this place a small piece of dry cotton so as to protect the tongue and mouth from the irritant effect of the oil of cloves. Apply the hot-water bag, and if necessary give Dover's powder (5 grains) two or three times at intervals of 4 hours.

#### THE ITCH (SCABIES).

This is an itching disease (known as the seven-years' itch, etc.) found among people living in uncleanly surroundings and habits.

The cause of scabies is the itch mite. It is therefore a contagious disease and may be passed from one to the other by close contact. The itch mite travels from one patient to another through the medium of the clothing, the towels, the bed clothing, personal articles, etc. The most common way of passing the disease from one to another is in having two or more persons using the same bed and same clothing.



**Treatment:** The treatment should be carried out in the following way until the disease is eradicated: Upon going to bed at night the patient takes a hot bath with plenty of soap. The surface of the skin is thoroughly scrubbed, particularly in the vicinity of the eruption. Following this bath an ointment, consisting of sulphur and lard, commonly known as the official sulphur ointment, in the proportions of about 1 teaspoonful of sulphur to the ounce of lard, is now rubbed thoroughly into the skin from the collar bone entirely over the body to the soles of the feet, particularly in the vicinity of the eruption between the fingers, between the toes, and in the folds. There is no occasion to apply the ointment above the collar bone, as the disease seldom attacks that portion of the body. The patient should now put on clean night clothing, and the bed linen on his bunk should also be changed to clean linen and blankets. The next morning the patient takes another soap and water bath and puts on fresh, clean underclothing which has not been worn since laundered. The next night the patient goes through the same performance. He takes a hot bath with soap and water, applies the ointment, and wears the same clothing and sleeps in the same bed as on the previous night. The next morning he takes another hot water and soap bath and puts on either clean clothing or the clothing he has worn the day before. This application of hot water and soap baths and sulphur ointment is carried out for three or four nights, and then freshly laundered clothing is put on, following a most thorough soap and water bath. The bed clothing is again changed, so that upon retiring at night he sleeps in a fresh bed. The patient should continue to take a hot soap and water bath daily for several days in order to remove the ointment and sulphur from the skin, and also the effects of the disease. After a few days have elapsed, if there is no return of the eruption and the itching is subsiding, the patient has probably been cured of the condition. Should, however, the eruption continue and the itching remain unabated, a second series of treatments as described above should be gone through with. Too long an application, however, of these treatments is not advisable, as the sulphur tends to cause an irritation of the skin which may cover up the scabies. If the skin gets very rough and generally red from irritation, limit treatment to anointing the body with vaseline or zinc ointment.

#### LICE (VERMIN).

There are three forms of lice, which vary in size and somewhat in appearance.

The condition is contagious, as these parasites can be conveyed from one person to another through the medium of comb and brush,



using the same bed and sleeping clothes, the use of the same outer garments, the presence of the vermin within the quarters inhabited by all the crew, and in other ways.

The general appearance of the skin is caused largely by scratch marks induced by the parasites. The main symptom is that of itching.

*The scalp.*—Little lumps are seen along the shafts and at the ends of the hairs. These are the nits or eggs of the parasite. The most effective way of curing the condition is to shave the scalp closely. If this is not practicable, the hair should be cut short. Then tie up the head in a towel after rubbing equal parts of vinegar and crude petroleum (coal oil) thoroughly into the scalp and wetting the hair therewith. Be sure to caution the patient about the danger of fire when the hair is saturated with petroleum. The petroleum should remain on for about half an hour. Then scrub the scalp with soap and water, and comb with a fine tooth comb wet with vinegar.

*The genitals.*—The louse which lives in the hair around the genitals is a small, round parasite commonly known as the crab louse. It deposits nits upon the hair, as does the louse of the scalp. The entire area, including the inner side of the thighs, should be shaved in order to remove all nits. This treatment may be combined with the use of mercurial ointment commonly known as "blue butter." The use of this ointment does little good unless the nits are removed.

*The body.*—The body louse is the largest of the three varieties. It inhabits the clothing of the patient and usually seeks the seams of garments. The treatment consists of changing the entire outer and under clothing after taking a bath and scrubbing the person thoroughly with a liquid soap. Infected clothing should be boiled or, if this is not practicable, immersed in bichlorid solution for several hours. The patient's mattress cover and blankets should likewise be disinfected.



## CHAPTER IV.

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### HOSPITAL FACILITIES.

Officers appointed to and men shipped in the Naval Auxiliary Service are entitled by the terms of their contracts with the United States to treatment in naval hospitals and on naval hospital ships. By arrangements between the Navy and Treasury Departments they will also receive treatment in hospitals of the United States Public Health Service, and under conditions stated in "Regulations for the Naval Auxiliary Service," will be allowed treatment in civil hospitals, when naval and public health hospitals are not accessible.

The accounts of sick persons transferred to a hospital or hospital ship should be kept on a separate roll, and the rations of such persons should be commuted for adjustment by the Auditor for the Navy Department.

Naval hospitals to which patients from the Naval Auxiliary Service may be admitted are located as follows: Portsmouth, N. H.; Chelsea, Mass.; Narragansett Bay, R. I. (Newport); New York, N. Y. (Brooklyn); Philadelphia, Pa.; League Island, Pa. (Navy Yard, Philadelphia); Washington, D. C.; Annapolis, Md.; Naval Operating Base, Hampton Roads, Va. (Jamestown, Va.); Norfolk (Portsmouth, Va.); Charleston, S. C.; Paris Island, S. C.; Pensacola, Fla.; Key West, Fla.; Gulfport, Miss.; New Orleans, La.; Great Lakes, Ill.; Fort Lyon, Colo.; Mare Island, Cal.; Puget Sound, Wash.; Pearl Harbor, Hawaii; Canacao, P. I.; Olongapo, P. I.; Guam; Yokohama, Japan; St. Thomas, Virgin Islands; Cape May, N. J.

Members of the Naval Auxiliary Service in need of hospital treatment should always be transferred to a naval hospital if convenient to the ship. If there is no naval hospital convenient transfer should be made to a Public Health Service hospital or one of its contract stations. The public health officer of the port, if present, should be consulted regarding hospital facilities, and admission of the patient should be made with his approval and under his directions. A list of the Public Health Service hospitals as well as its contract stations will be found in the annual circular "Contracts for the Care of Seamen, etc.," issued by the Public Health Service. The following is an extract from the Regulations of the Public Health Service bear-



ing on its care and treatment as patients of civilian officers and crews of naval auxiliary vessels:

Officers and enlisted men of the United States Army and Navy, and civilian officers and crews of naval auxiliary vessels, may be admitted for care and treatment as patients of the service only upon the written request of their respective commanding officers. Every such admission shall be immediately reported to the Surgeon General by the officer in charge of the station, on a daily report (Form 1957) or relief certificate (Form 1916), accompanied by a copy of the request upon which such officer or man was admitted. They will be furnished treatment at stations of the first, second, and third class only. The rate of charge to be made for the care and treatment of the said officers and men will be fixed by the department at the beginning of each fiscal year, and will be announced to officers and others in the annual circular entitled "Contracts for Care of Seamen." Patients of the above-named classes are not subject to the provision requiring transportation to marine hospitals.

United States Public Health Service hospitals to which patients for the Naval Auxiliary Service may be admitted are located as follows: Baltimore, Md.; Boston, Mass.; Buffalo, N. Y.; Cape Fear Quarantine Station; Chicago, Ill.; Cleveland, Ohio; Delaware Breakwater, Del.; Detroit, Mich.; Evansville, Ind.; Fort Stanton, N. Mex.; Gulfport, Miss.; Key West, Fla.; Louisville, Ky.; Memphis, Tenn.; Mobile, Ala.; New Orleans, La.; New York, N. Y.; Portland, Me.; Port Townsend, Wash.; St. Louis, Mo.; San Francisco, Cal.; Savannah, Ga.; Vineyard Haven, Mass. In addition to the foregoing there are a large number of contract hospitals under the Public Health Service referred to in paragraph 4 the location of which may be ascertained from the annual circular "Contracts for the Care of Seamen," and which are not listed herein because of changes made in the contracts from year to year.

Expenses occurring in connection with the treatment of men as patients of the Public Health Service are adjusted by transfer of appropriations between the Bureau of Medicine and Surgery and the Public Health Service, and no payment by the officer of the ship is therefore required. This proviso also applies to contract stations and for the price contracted, but the possible exception of certain diseases, medicines, and treatments at the contract price should be noted. When, therefore, special treatment not included in the contract is required, direct payment will be necessary. In emergency, and when none of the hospitals mentioned above are available, a patient may be transferred to a civil hospital ashore as provided for in Navy Regulations (R. 4532).

Ration notices relating to patients admitted to naval hospitals from the Naval Auxiliary Service are forwarded to the master of the vessel on which the accounts are held. Notations are made by masters of auxiliary vessels of all men who are subsisted in hospitals,



and the Auditor for the Navy Department adjusts the accounts upon receipt of the pay rolls.

It is intended and desired that masters of auxiliary vessels consult freely with medical officers of the Navy, whenever opportunity offers, both ashore and afloat, regarding the care and treatment of the sick, as well as the general health of the crew and the sanitation of the ship. If urgent the medicine box of the ship may be replenished from medical stores of a yard, station, or ship. The medical officer of a yard or station will be found at the dispensary, where, with the approval of the commandant, assistance and advice in the treatment and care of the sick may be received.

An officer or man actually employed in the Naval Auxiliary Service who is absent from his duty for treatment in a hospital, or on board a hospital ship or other naval vessel, shall, while so absent from duty, receive half pay, excluding the day of admission, and including the day of discharge; except where such absence is due to venereal disease of the officer or man, in which case he shall receive no pay while so absent. (Changes in Reg. for N. A. S., 1914, No. 13, par. 95.)

Should an officer or man discharged from treatment in a naval hospital be retained in the hospital for subsistence awaiting further disposition he will receive full pay from, but not including, the day of his discharge from treatment. The pay officer who was authorized to pay the officer or man while in the hospital will be informed by the medical officer in command of the hospital of the date of discharge of the officer or man from treatment and also the date of his final discharge from the hospital. Upon discharge of the officer or man from the hospital the commandant will direct that the pay officer who paid him while in the hospital send to the master of the vessel on which his accounts are carried a statement of the officer's or man's accounts with the request that the account be closed on that vessel from a specified date, such date to be the day of final discharge from the hospital.

The half pay of a member of the crew of a vessel of the Naval Auxiliary Service when at a hospital in the United States terminates when his term of shipment expires, and he shall be given his discharge at the expiration of the term for which he shipped. He may be retained for treatment. When at a hospital on a foreign station his half pay continues while at the hospital and until regularly discharged from the Naval Auxiliary Service, even after his term of shipment has expired.

Officers and men, when appointed to or shipped in the Naval Auxiliary Service, shall contract to have checked against their accounts the sum of 20 cents a month on account of the naval hospital



fund, and shall, when sick and actually employed in the Naval Auxiliary Service, be admitted to treatment in hospitals or on board hospital ships on request of the master of the vessel on which they are serving, approved by the senior officer present. When not in the presence of a naval officer and in foreign waters, officers and men may be sent to hospitals by order of the master, and the expense of such treatment charged against the naval hospital fund. The master will note in the log when officers or men are sent to or received from a hospital.

Officers and men of the Naval Auxiliary Service are entitled to admission to St. Elizabeths (the Government Hospital for the Insane). In case of an insane officer or man admitted to a hospital other than a naval hospital, or one who may become insane while a patient at a hospital other than a naval hospital, the same arrangements for his transfer to St. Elizabeths, near Washington, D. C., will be made as in the case of officers and enlisted men of the Navy.

The master will check the pay account of each officer and man at the rate of 20 cents per month, in the column provided for that purpose.

Expenses of medical treatment not in hospital will be charged against "Contingent, Bureau of Medicine and Surgery."

In preparing vouchers covering subsistence of officers and crew the master will claim credit therein only for the time during which such persons were subsisted by him. He shall furnish with pay rolls tickets of admission to and discharge from hospitals, and attach to his monthly returns a statement giving the names of officers and crew who were subsisted in hospitals or on board naval hospital ships during the month, and the number of days that they were so subsisted. In computing the number of days subsisted in hospitals the day of admission will be excluded and the day of discharge included.

The following form of contract is to be signed by persons appointed to or shipped in the Naval Auxiliary Service:

I, \_\_\_\_\_, if appointed to or shipped in the Naval Auxiliary Service, hereby contract and agree to have the sum of 20 cents currency of the United States checked against my pay each month, to provide for my admission and treatment in naval hospitals or on board naval hospital ships when sick and actually employed in the Naval Auxiliary Service.

When an officer or man of the Naval Auxiliary Service is sent to a hospital the master of the vessel to which he is attached will inform the supervisor of naval auxiliaries of the fact, and in the case of a man will send an extract from the shipping articles covering all information thereon recorded in his case. The master will also inform the supervisor when officers or men who have been patients in hospitals return on board.



Due to the uncertainty of the movements of vessels of the auxiliary service, whenever an officer or man of the service is transferred to a hospital for treatment, his personal effects shall be sent with him.

When after a sufficient period it appears in the case of an officer or man in the hospital that the disorder is not susceptible to cure, or that the period of treatment will be much prolonged before the officer or man can be restored to duty, a medical survey shall, when practicable, be held.

The board may make one of the following recommendations:

(a) Discharge from the Naval Auxiliary Service (provided the patient is in a naval hospital).

(b) Furlough without pay or with one-half pay.

(c) Continuance in hospital for further treatment.

In making recommendations due consideration will be given to the length and character of service of the patient, the causes leading to his disability, and whether upon discharge from the service his disability will prevent him from earning his support. In all cases where discharge is recommended the board shall state whether or not in its opinion the physical disability of the patient is such as will prevent him from engaging in work for his support. This information is necessary for the guidance of the approving authority.

Paragraphs 4 and 5 of Article 3669, Navy Regulations, are held to apply to the Naval Auxiliary Service:

4. No payment of money shall be made to any enlisted person of the Navy or Marine Corps at a hospital without the approval of the medical officer in command thereof.

5. No payment of money shall be made to any enlisted person of the Navy or Marine Corps under treatment at a hospital without the approval of the medical officer in command thereof.

#### DENTAL TREATMENT.

The professional services of dental officers of the Navy shall be available for officers and men of the Naval Auxiliary Service, and such services are restricted to those measures which will most effectually and economically preserve the teeth of the personnel and insure physical fitness. (Department's fifth indorsement, 1569-355, Nov. 23, 1914, at M. & S. No. 126472.)



## CHAPTER V.

### DEATHS.

The master shall cause to be entered in the log book the name and rank or rating of any person who may die on board, and a statement of the cause and of the exact time of his death.

He shall report to the Bureaus of Navigation and Medicine and Surgery, by separate telegrams, any deaths that may occur on board. In addition, information of the same shall be forwarded to the nearest relative or legal representative of the deceased, if the address of such person can be obtained. He is authorized to use the telegraph for this if deemed expedient.

In the case of officers and men of the Naval Auxiliary Service, who die and are buried elsewhere than within the United States, the amounts paid for funeral expenses, including preparation, incasement, and interment of remains, shall not exceed \$50 each, unless due regard for decent burial renders greater expense necessary, which fact must be certified on all copies of the public bills by the officer ordering payment of the bill; such bills will be chargeable to the appropriation "Contingent, Medicine and Surgery."

Annual contracts which provide for funeral expenses for the personnel of the Navy and Marine Corps will be availed of for the necessary and proper funeral expenses of officers and men of the Naval Auxiliary Service who die at or near naval stations in the United States, and when so availed of the public bills will be made by the hospital or the medical officer of the station, according to the terms of the contract; and elsewhere within the United States such expenses will be allowed upon public bills duly prepared by the master as a charge against the appropriation "Contingent, Medicine and Surgery," when approved by the Bureau of Medicine and Surgery. Full information relating to the above-mentioned annual contracts, and as to prompt transfer of bodies to hospital for preparation, incasement, etc., and other proper methods of procedure will be obtained by the master from the commanding officer of the naval hospital or the medical officer of the station, as the case may be.

The effects of the deceased, other than jewels, trinkets, keepsakes, etc., may be sold and the proceeds of the sale credited to the accounts of the deceased; the express charges for transportation of such



effects as it may be found expedient to send to the next of kin will be a charge against "Contingent, Bureau of Navigation." When the next of kin can not be found, the effects of any value shall be sent to the supervisor of naval auxiliaries.

The master shall cause the accounts of all deceased persons to be closed as soon as possible and forwarded to the Auditor for the Navy Department.

The remains of officers and enlisted men may be forwarded to their homes on request of next of kin at Government expense when authorized by the Bureau of Medicine and Surgery.<sup>1</sup> Transportation of bodies will be effected on two first-class tickets or by Government bill of lading clearly and conspicuously marked "Transportation charges to be paid by Navy Department." The preparation, embalming, encasement, and clothing of the body will be, whenever practicable, under the annual contracts referred to in paragraph 4 of this chapter and in accordance with article 4551, Navy Regulations. (See "Circular Letter" M. & S. No. 129504, Feb. 15, 1918.) The cost of preparation and transportation will be a charge against the appropriation "Bringing home remains of officers, etc., Navy Department." While remains may be brought home from foreign countries to the United States, transportation of bodies may not be effected at Government expense from the United States to a foreign country.

Funeral expenses of those who die on board, or at a naval hospital or station, and when burial is made by naval authority, are defrayed by Government, but when the funeral arrangements are assumed by relatives or friends the expenses are not chargeable to the United States. (Dec. Comp. Mar. 19, 1901.)

The expenses for the service of a chaplain may be allowed when the services of a navy chaplain are not available, and will be a charge against the appropriation "Contingent, Medicine and Surgery." (Manual for Medical Department, par. 3454.)

<sup>1</sup> Whenever it is possible to embalm the body and preserve it in a hermetically sealed coffin this should be done, but, unless there is on board some person having reasonable skill in embalming, the measure should not be undertaken, but the body buried at sea, if more than 24 hours must elapse from time of death until the vessel can reach port. It is suggested that a note be made in the ship's log stating: "It was not possible to preserve the body for burial ashore, there being no one on board capable of embalming it in a satisfactory manner."



## CHAPTER VI.

### QUARANTINE AND DISINFECTION.

#### QUARANTINE.

The term quarantine has its origin from the Italian "quaranta," meaning 40, this figure representing the number of days for which vessels, beginning early in the fifteenth century, were held under observation on account of the frequent invasions of plague. It is now applied to what should be more properly known as maritime sanitation. In addition to this it is also applied to restrictions against the advance of epidemic diseases on land.

The fundamental principle of quarantine is that of detention for a sufficient length of time to render the vessel, cargo, passengers, or crew no longer able or liable to carry with them contagion or infection originating in one of their previous ports of call.

The first quarantine station established—that at Venice in 1403, on a small island adjoining the city—differed in its basic idea from those stations now protecting the ports of New York, Hamburg, or London, in the blind application of the theory of isolation, as compared with the scientific and accurate periods of detention now in use to prevent the ingress of certain threatened diseases. From the earliest days until the determination of the exact modes of transmission and periods of incubation of the quarantinable diseases, quarantine consisted in more or less rigorous periods of detention, even up to 100 days, with the expectation that in this time the disease, if present, would "wear itself out," or that the "effluvium" would be removed by the influence of sun, rain, frosts, or snows. This haphazard quarantine was extremely expensive, proceeding at times even to burning the entire ship and cargo.

Modern methods of quarantine both on land and sea are based, as stated above, upon known modes of transmission and periods of incubation of certain diseases which are classed as quarantinable, because they are the only ones that sufficiently menace in an epidemic form the health of a community which they might attack. The studies of the last 30 years have established that many diseases, including all of those known as quarantinable, are due to certain microorganisms with definite habits of life and capable of growth and multiplication. These so-called pathogenic organisms may be



carried from individual to individual by direct contact with a person sick of the disease or with a carrier, a "carrier" being a person who harbors a pathogenic organism without showing evidence of the disease; they also may exist a relatively short time in or on other than living material as in water, milk, or other food, or they may be transmitted from one human being to another by what is called an "intermediate host," as the body louse in typhus or the mosquito in yellow fever.

It is also known that after the germs have invaded or attacked a healthy individual they either die or survive. If the latter a certain number of days must elapse before they have multiplied to sufficient numbers to produce symptoms of disease. This interval of time is known as the period of incubation. The period of incubation varies in length for the different diseases, as well as for the same disease within certain well-defined limits. The period of detention or observation in quarantine is based upon the maximum number of days within which experience has shown the suspected disease will manifest itself if present.

It must not be forgotten, however, that the absence of sickness in the personnel of a vessel does not necessarily mean an absence of infection aboard the vessel. This can be readily understood when it is remembered that a healthy person may carry or harbor the germs of disease in his body, as for instance, a cholera carrier, or that the intermediate host may be present without actually coming in contact with the crew, as for instance, plague rats in cargo under battened hatches. In either event possible contact with a susceptible individual on ship or ashore might mean the beginning of an epidemic.

It is therefore clear why a vessel may be detained in quarantine even though there be no sickness among crew or passengers. It may be necessary to detain the personnel during the incubation period, to examine the personnel for "carriers," or to destroy disease-carrying insects or vermin.

The periods of incubation, or quarantine periods, as applied to those diseases at present recognized as quarantinable by the maritime quarantine regulations of the United States Public Health Service, are as follows:

	Days.	
Plague.....	7	Leprosy: If an alien, not allowed to land. If a citizen, the case is dealt with according to the laws of the State of the port of entry.
Yellow fever.....	6	
Smallpox.....	14	
Cholera.....	5	
Typhus.....	12	

Emphasis is laid upon the necessity for a clear understanding of the relation between quarantine period and period of incubation and a thorough understanding of what the latter means, as well as the meaning of the terms "carrier" and "intermediate host." Intelli-



gent cooperation is not possible without intelligent understanding, and cooperation between master and quarantine officials is not only a safeguard to the State, but a saving to both State and master. A comprehension also of the modes of transmission of diseases and a knowledge of the significance of local health conditions in ports visited, with a view to preventing or minimizing exposure to infection of crew or cargo, will amply repay the trouble expended in familiarizing oneself with a few unfamiliar technical points.

*Bubonic plague* (cause *Bacillus pestis*).—Communicated by the bite of a flea, the insect having previously gotten its infection from biting an infected rat. Bubonic plague can not flourish among men without the intervention of the rat and its flea, but it can cause wholesale deaths among a colony of rats before some infected migratory flea finds an unfortunate human being to feed upon.<sup>1</sup> It has been found that the rat is of far more menace to a community than is a human being dead or suffering from this disease. The freedom of the rat in circulating through all parts of the ship, the ready access to the dock over unguarded lines or gangway, the ease with which it may be harbored and landed in cargoes, makes the control of its actions or the suppression of its infection difficult short of exterminating all of the species aboard ship.

After a rat has died of plague and as soon as the body cools the rat fleas begin to leave and seek another warm body, either rat or man. It may be depended upon that if there is a plague rat in a vessel it will soon give the disease to a few other rats, who in turn will give it either to the crew, or else, by escaping from the vessel at the next port, give it to the rats in that port, who in turn will give it to the inhabitants.

Prevention or prophylaxis will be considered here and may be expressed briefly as—no rats, no plague. While it is the duty of the quarantine station to perform such disinfection as may be called for upon arrival of an infected vessel, or a vessel from an infected port, yet it is the duty of the ship's master by all means within his power to endeavor to keep the vessel under his command sanitary, so as to be a menace neither to its personnel nor to the port visited.

The economic damage to the vessel itself or its stores is considerable where no measures are taken to inhibit the growth of the vermin.

Efficient rat killing in naval auxiliaries is not an easy task, in view of the many compartments and openings which are the natural

<sup>1</sup> A very fatal form of the plague, due to the same germ that causes bubonic plague, is known as pneumonic plague. It is transmitted direct from the sick to the well by infected material expelled from the mouth in coughing, sneezing, and spitting, and does not require the presence of the rat and its flea in order to spread.



result of the peculiar construction and arrangements of storage spaces, etc. These compartments and openings afford comfortable places for rats to build their nests in. On the other hand, masters are familiar with the construction of their vessels, and by going to a little trouble can build against the rats and force them to live in places in which they can be killed either by fumigation or by poison.

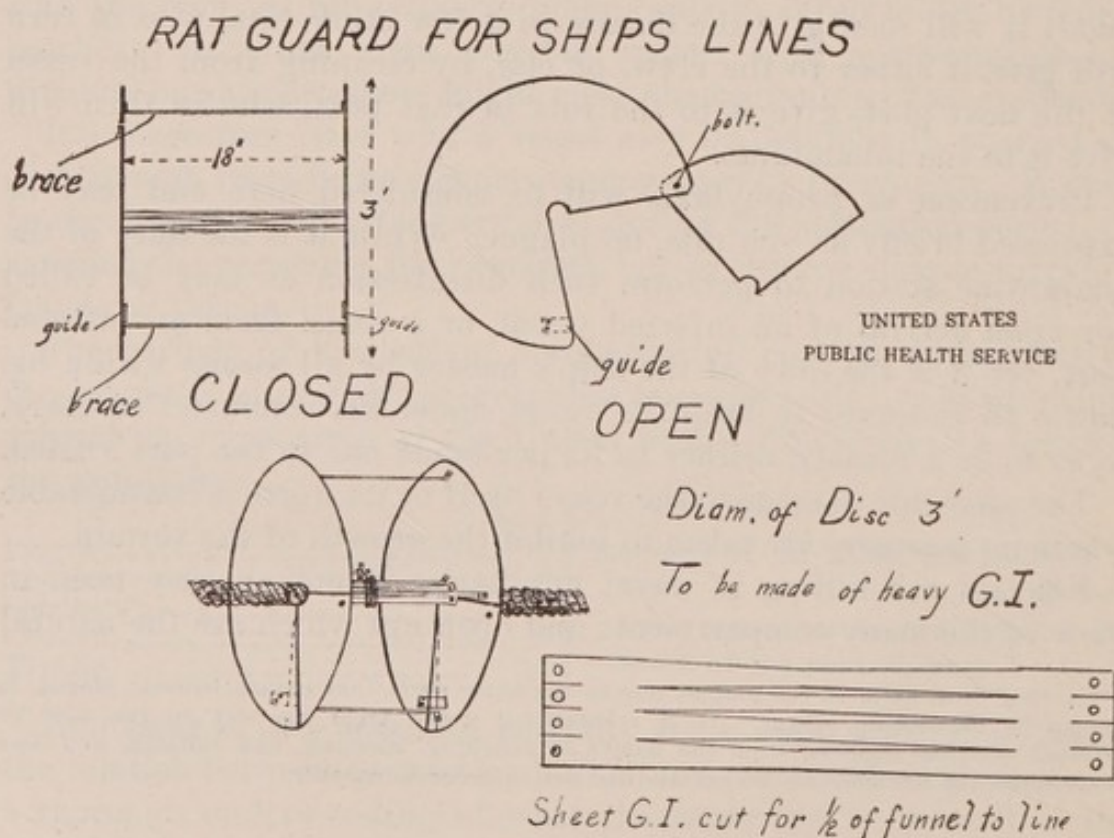
Antirrat measures that should be observed are:

- (a) Destruction of rats on vessels.
- (b) Prevention of rats boarding vessels.

To effect the destruction of rats on vessels, the latter should be fumigated three or four times a year by sulphur burned in pots. This will be described later in this chapter under "Disinfection," page 74.

To accomplish the second proviso of preventing the boarding of the vessel by a fresh crop, (a) rat guards must be constantly maintained on all lines and shores leading to the dock, (b) a watch must be kept for rats attempting to run up the gangplank or bow. In addition, further efficiency is secured by keeping a sharp lookout for rats concealed in loosely crated stores, by keeping the ship's food and stores carefully protected, by distributing rat poison (phosphorus or arsenic paste), and by constant use of traps.

The accompanying illustration shows an efficient rat guard:



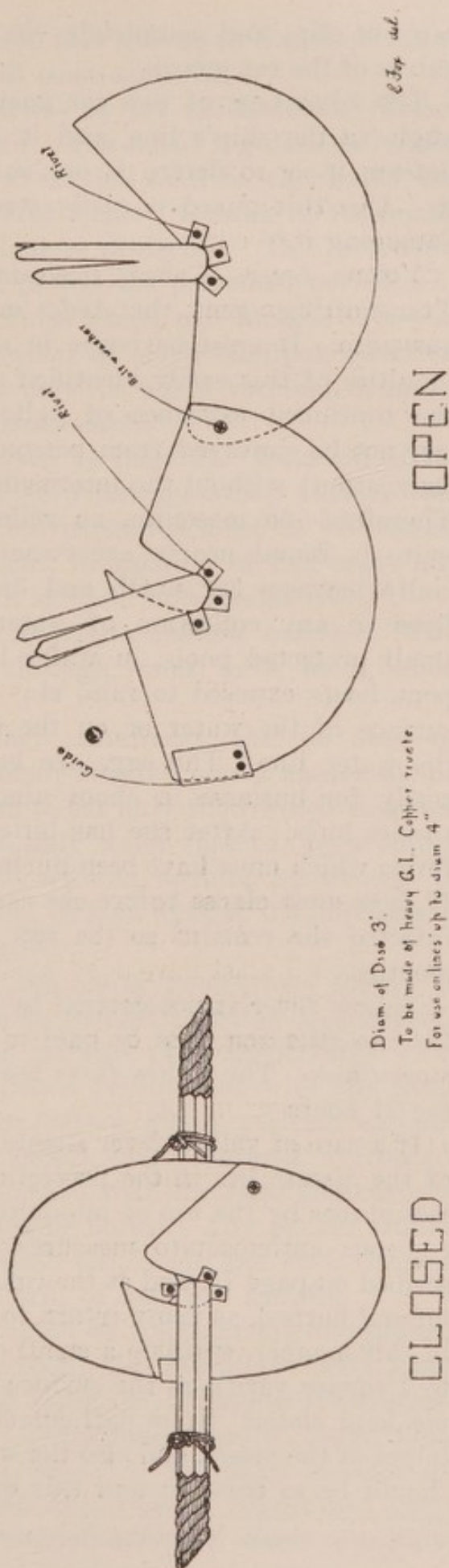


This rat guard is made of two disks of galvanized iron 3 feet or more in diameter, joined by four rods or braces of galvanized iron and a funnel made of sheet galvanized iron.

Each disk is made up of two segments, as shown in the diagram, or the disks can be cut, as in the Fox rat guard,<sup>1</sup> and joined on one side by a bolt that acts as a hinge, a socket being provided to lock the two segments on the other side. The two disks are joined at the center by a funnel made of sheet iron. The funnel is made up of two halves, one of which joins on the one side the two large segments of the disks and on the other the smaller segments. The central part of the funnel has long segments cut out as shown in the diagram.

After closing the guard over a ship's line, the central part of the funnel is tied to the line by a small piece of rope. This fastens the rat guard to the ship's line, so that it

### A RAT GUARD FOR SHIPS LINES



<sup>1</sup> Reprint No. 86, from the Public Health Reports, vol. 27, No. 23, June 7, 1912, pp. 907-908. (See also Naval Medical Bulletin, October, 1912.)



can not slip, and completely closes the funnel and locks the two halves of the rat guard.

The advantage of this rat guard is that it is always at a right angle to the ship's line, and it would take considerable force to deform it or to flatten it out so that a rat could easily get over it. Also this guard is easily stored away without any danger of damaging it.<sup>1</sup>

*Yellow fever.*—Cause, bacterial; variety as yet unidentified. Transmitting agent, the *Aedes* or *Stegomyia calopus*, a species of mosquito. It must be borne in mind that the presence in communities of this easily identified species is absolutely necessary for the continued existence of yellow fever, and that yellow fever can not be conveyed from person to person (even with the closest association) without the intermediate aid of the *Stegomyia calopus*. Therefore—no mosquito, no yellow fever. The yellow-fever mosquito is found nearly everywhere in warmer climates, but especially between 38° north and 38° south latitude. It breeds and lives in any collection of water, large or small, preferably in small protected pools, in water left in old cans, in gutters, scuppers, boats exposed to rain, etc. The female lays its eggs on the surface of the water or on the sides of the container just above the water line. The eggs are hatched and the adult mosquito is ready for business in about nine days. Only the female of this species bites. After she has bitten a patient suffering with yellow fever, which must have been during the first three days of the fever, 12 days must elapse before she can give it to another person. Once infected she remains so the rest of her life, which may be many months.

Yellow fever is not carried by such things as clothes, and therefore no attention need be paid to such articles, *save to rid them of mosquitoes*. The yellow-fever mosquito will bite at any time during the 24 hours.

If a case of yellow fever should develop, prevention of the spread of the disease lies in the protection of the patient from the bite of mosquitoes by the use of mosquito netting or wire screening and in rigorous antimosquito measures. Sulphur should be used as described on page 75, and at the conclusion the insects should be swept up and burned, as many return to life. After fumigating the vessel in this manner, sprinkle a small quantity of kerosene oil (an ounce to 1 square yard) on the surface of all water containers which are not kept closed. It is particularly necessary that the water in the bilges of the vessel, and also the water in the bottom of the lifeboats, should be so treated; and this oiling must be frequently repeated

<sup>1</sup> Public Health Reports, vol. 31, No. 14, Apr. 7, 1916, p. 880.



(at least twice a week) for the reason that as soon as the vessel enters port a new crop of mosquitoes will come aboard.

*Smallpox*.—Cause bacterial; variety as yet unidentified. Transmission is direct from man to man. The naval regulations require that all persons entering the naval service shall be vaccinated and revaccinated until either a successful "take" follows or reasonable assurance is felt that the individual is protected. This procedure should be conscientiously adhered to and the personnel periodically inspected. Before starting on a cruise which will include as a port of call some place known to be a center of much smallpox infection, it is recommended that the entire crew be again vaccinated, unless evidence of a recent "take" is unquestionable.

Symptoms and treatment are given on page 41. Isolation of the patient must be rigidly practiced to avoid spreading further contagion on the ship. All unprotected personnel must be vaccinated. After transfer or death of a patient, fumigation of sick room and contents should be carried out with sulphur or formaldehyd.

*Cholera*.—Cause bacterial; the *Spirillum cholerae asiaticæ*. This is transmitted from man to man through water, milk, food, hands, flies, uncooked vegetables, etc.

Pure food, pure water, personal cleanliness, and no flies—no cholera; which means that in a cholera-infected port a master should keep his crew on board, allow them to eat only food which is served steaming hot, allow them to drink only water that has been boiled, and not allow anyone to sit at table without washing his hands. In addition to this a strict guard should be kept against the purchase of food or bottled waters from bumboats.

Should a case develop aboard, the above precautions should be rigorously carried out in addition to careful isolation and nursing of the patient. Here, as in other diseases (but particularly when the infection is carried through germs passing out with the feces, as in cholera) all dejecta should be treated with 5 per cent carbolic acid solution for one-half hour before being thrown overboard. Heads which are used should be flushed with fire hose and carbolic solution. Clothes and bedding must be boiled. Any person attending the patient should carefully wash the hands and soak them in disinfecting solution, such as bichlorid of mercury 1:2,000.

*Typhus fever*.—This disease is caused by a specific microorganism, and is transmitted from man to man by the bite of the body louse. The head louse may also convey the infection. (*Typhus* fever, sometimes called ship fever, jail fever, camp fever, spotted fever, must not be confounded with *typhoid* fever.) As its many names indicate, it is a disease associated with overcrowded conditions where men are forced to live in close personal contact. Such conditions favor very easy access of the insects from person to person.



Prevention consists in thorough regard to cleanliness of person and surroundings, and on the part of the master such examination of the personnel as will assure him of their freedom from lice. Treatment, if lice are found, consists in free and repeated applications of kerosene to entire hairy parts of the body, frequent washings with soap and water, and boiling or destruction of garments that are worn next to the skin (p. 56).

Lice are especially liable to lurk in seams of the clothing. Equal parts of vinegar and kerosene may be used for treating the hair of the head, allowing it to act for one-half hour, and then washing with soap and water, or the head may be shaved (see p. 56). Such treatments should be persisted in until all nits or developing lice, which exist as small enlargements on the hairs of the head, if head lice, or attached to the fibers of the clothing, if body lice, have disappeared. One application of kerosene can not be counted on in effecting this. Sulphur disinfection of infested compartments is also advisable, assisted by thorough scrubblings and painting if menace of typhus infection is present.

#### SUMMARY OF THE MODES OF TRANSMISSION OF THE QUARANTINABLE DISEASES.

*Bubonic plague.*—Primarily a disease of rats, carried from rat to rat and from rat to man through the agency of the rat flea.

Rarely the bedbug has been known to carry plague from man to man.

*Yellow fever.*—Transmitted through the agency of the yellow-fever mosquito which has previously bitten a case of yellow fever. In the absence of this particular mosquito the disease can not spread.

*Smallpox.*—Transmitted by direct contact of a person suffering from smallpox with a nonprotected person. Vaccination protects against smallpox.

*Cholera.*—The microorganism causing the disease is found in the intestines of a case or "carrier" and is thrown off in the discharges from the intestines. The disease is therefore spread through contact of a healthy person with discharges from the intestines of a case of cholera or a carrier; as when drinking water is contaminated with human filth or when dirty hands or flies carry human filth to mouth or food.

The above statement is equally true of all diseases where the causative organism is present in the intestines, as, for instance, typhoid fever and dysentery.

*Typhus fever.*—Transmitted through the agency of the body louse which has previously bitten a case of typhus fever. Head lice may also transmit the infection.



At this point it might not be out of place to say a word explaining the methods of spread of the more familiar communicable diseases, in which the causative microorganism is located in the lungs, bronchial tubes, throat, nose or mouth, as in the case of diphtheria, scarlet fever, measles, mumps, whooping cough, pulmonary consumption, tonsilitis, common colds, etc. Here the infection is thrown off in the *droplets of material expelled during the act of coughing, sneezing, and spitting*. These droplets are of little danger when dry, but if while in the moist state they find lodgment on the mucous membrane of a healthy person, the contained organism will multiply and, after the period of incubation has elapsed, will produce the disease. Thus it is spread from person to person.

Cerebro-spinal meningitis, a very fatal malady, is a disease of the nervous system, and yet the causative organism is harbored in the throats of persons sick of the disease or in the throats of carriers, and is therefore spread from person to person as described above.

#### GENERAL SANITARY PRECAUTIONS TO BE TAKEN DURING A CRUISE.

Toilets, bilges, and similar portions of the vessel liable to harbor infection should be disinfected (5 per cent carbolic) and frequently cleansed.

Free ventilation and rigorous cleanliness should be maintained in all portions of the vessel and measures taken to destroy rats, mice, fleas, flies, mosquitoes, and all vermin.

A patient sick of a communicable disease, such as plague, yellow fever, smallpox, cholera, typhus, measles, scarlet fever, diphtheria, etc., should be isolated and one member of the crew detailed for his care and comfort, who, if practicable, should be immune to the disease.

The importance of washing the hands after visiting the head and of covering the mouth when coughing or sneezing should be emphasized.

Communication between the patient or his nurse and other persons on board should be reduced to a minimum.

All discharges from the patient must be disinfected. For this purpose a 5 per cent solution of carbolic acid may be used, mixing it thoroughly with the discharges and allowing to act for 30 minutes, and used clothing, body linen, and bedding of the patient and nurse should be immersed in boiling water or in a disinfecting solution (bichlorid of mercury, 1-500).

The compartment from which the patient was removed should be disinfected and thoroughly cleansed. Articles liable to convey infection should remain in the compartments during the disinfection when gaseous (formaldehyd, sulphur, or steam) disinfection is used.



A sanitary inspection of the entire vessel should be made daily.

The dead should be enveloped in a sheet saturated with 1-500 bichlorid of mercury without previous washing of the body and at once buried at sea or placed in a coffin hermetically sealed.<sup>1</sup>

A complete clinical record should be kept of all cases of sickness on board and the record delivered to the quarantine officer at the port of arrival. An accurate record of temperature taken twice daily or oftener will greatly assist the quarantine officer in diagnosing a disease.

#### DISINFECTION.

Disinfecting agents are roughly of three classes—(a) physical, by which we mean exposure to sunlight, fresh air, burning, boiling, and use of steam; (b) chemical gases, of which we will only consider sulphur dioxid and formaldehyd; and (c) chemical solutions, as bichlorid of mercury, carbolic acid, and formalin.

*Physical disinfection.*—Sunlight and fresh air are of the greatest value as an aid in maintaining general hygienic conditions and purifying bedding and clothing, etc. Burning is of absolute efficiency, but is seldom practicable on account of expense. Boiling or the use of live steam are both highly efficacious if continued for 20 minutes.

*Chemical gases—Sulphur dioxid.*—This is a good insecticide, but a poor germicide. Use this in exterminating rats, mosquitoes, flies, lice, and other vermin; also for disinfection after bacterial infection, as smallpox, diphtheria, etc., provided the formaldehyd is not available.

Almost any kind or size of iron pot will serve in which to generate the fumes. The ordinary sugar pan, 2½ feet in diameter, is useful in disinfecting the hold of a vessel or a large compartment, the number of pans to be determined by the number of thousand cubic feet of area to be fumigated. Not more than 30 pounds of sulphur should be placed in each pot. For the fumigation of staterooms and the like small iron cooking vessels are suitable. Each pot should always be standing in a tub of water.

The tubs should be made of wood or compressed paper, as tubs made of galvanized iron or composition metal go to pieces rapidly through rust or breaks in the seams. The pots should never be placed on the floor of a compartment or bottom of the hold of a vessel. In compartments or storerooms they should be placed upon tables or chairs, and in the holds of vessels either upon piles of ballast or cargo

<sup>1</sup> Whenever it is possible to embalm the body and preserve it in a hermetically sealed coffin this should be done, but, unless there is on board some person having reasonable skill in embalming, the measure should not be undertaken, but the body buried at sea. It is suggested that a note be made in the ship's log stating: "It was not possible to preserve the body for burial ashore, as death was from contagious disease and there was no one on board capable of embalming the body."



or upon boxes. The sulphur should always be ground or mashed into a powder before being placed in the pots and should be piled around the sides of the pot with a central depression or crater. Alcohol should always be used for lighting sulphur, poured into the above crater and ignited, although a hot coal or red-hot bolt will answer the purpose.

Two and one-half pounds of sulphur burned in a space containing 1,000 cubic feet will produce  $2\frac{1}{2}$  per cent of the gas. This is sufficient to kill rats or other vermin, and the time of exposure should be six hours. As a germicide 5 per cent or 5 pounds of sulphur to the 1,000 cubic feet should be used and the time of exposure should be 24 hours. As a germicide formaldehyd is preferable to sulphur.

In computing the capacity of the hold of a vessel for the purpose of determining the number of thousand cubic feet of space therein, and therefore the number of pounds of sulphur which will be required to produce a  $2\frac{1}{2}$  per cent volume of gas, the net tonnage of the vessel shows in a general way the cubic capacity of her cargo-carrying space. Ten net tons will represent 1,000 cubic feet of space; therefore, for every 10 net tons  $2\frac{1}{2}$  pounds of sulphur must be used to get the average  $2\frac{1}{2}$  per cent volume strength of sulphur gas. The capacity of the living apartments, storerooms, and the like had best be figured on separately.

In fumigating with sulphur gas all spaces must be made air-tight. In fumigating the holds of vessels the hatches should be covered over with their regular waterproof tarpaulins and tightly battened down, leaving a small vent for the escape of the sulphur. All air slits, scuttles, and chain ports should be closed. The doors should be sealed by means of strips of paper pasted over the cracks left between the frame and the door. All machinery and bright metal should be wiped over with vaseline in advance.

*Formaldehyd gas.*—This is efficient against bacteria, but fails to kill vermin. Four commonly used methods of generating this gas will be mentioned, but only the last described in detail as being commonly available as well as efficient:

(a) Autoclave under pressure, forcing gas into a compartment, 3 to 12 hours exposure.

(b) Lamp generator, 6 to 18 hours exposure.

(c) Spraying liquid formalin (solution of the gas in water, which is commonly available) over sheets hung in a compartment; exposure 12 to 24 hours; and is not strongly efficient.

(d) Chemical generation of the gas:

(1) Formalin-permanganate method: When formalin is poured over crystals of permanganate of potash a vigorous reaction takes place, and a large quantity of formaldehyd gas is liberated. Reaction is over in a short time (five minutes), and if a proper propor-



tion of substances is used the residue is almost dry. The proportion is 2 pints of formalin to 1 pound of permanganate of potash. One pint of formalin for 1,000 cubic feet of space should be used if the temperature is 60 F. or less; a less amount may be used for higher temperatures, but not less than 10 ounces per 1,000 cubic feet. This method is extremely efficient on account of the rapidity with which the gas is liberated, but the danger of fire should be guarded against, as the formaldehyd gas, being in a comparatively dry state, is inflammable in the presence of a light, such as lighted matches, lamp, etc.

(2) Formalin-aluminum sulphate-lime method: Add 1 part sulphate of aluminum to 2 parts of hot water. One part of this solution is added to 2 parts of formalin (both by volume). One part of this second solution is poured on 2 parts of unslaked lime (quicklime), broken into small particles. The process of liberation of formaldehyd gas is completed in about 20 minutes. This method is not as efficient as the previous one, as less than half the amount of formaldehyd gas is yielded from the same amount of formalin.

Two pints of formalin per 1,000 cubic feet of space should be used if the temperature is 60 F. or less.

Fire should be guarded against, but this danger is decidedly less than in the permanganate process on account of the large amount of water vapor coming off with the gas.

Cyanide gas is often used at quarantine stations for the destruction of rats, etc., in vessels.

This gas is very efficacious, but is extremely dangerous if concentrated, causing almost instant death. If it is to be used, the master should personally see that all hands are off the vessel, and no one should be allowed on board until the quarantine officer has given definite instructions to that effect.

*The gas should never be used for partial disinfection while persons are on board, nor except under supervision of some one experienced in its use.*

*Chemical solutions—Bichlorid of mercury.*—Bichlorid of mercury is a disinfectant of undoubted potency and wide range of applicability. It can not be depended upon to penetrate substances in the presence of albuminous matter. It should be used in solutions of 1-500 to 1-2,000. The solubility of bichlorid of mercury may be increased by using sea water for the solution, or by adding 2 parts per 1,000 of sodium or ammonium chlorid to the water employed.

*Carbolic acid.*—Carbolic acid in the strength of 5 per cent may be substituted for the bichlorid of mercury, and should be employed in the disinfection of the cabins and living apartments of ships to obviate injurious action on polished metals, bright work, etc.



*Formalin.*—Formalin, a solution containing 40 per cent of formaldehyd gas, may be used in a 5 per cent solution as a substitute for bichlorid of mercury or carbolic acid, and is useful for the disinfection of surfaces, dejecta, fabrics, and a great variety of objects, owing to its noninjurious character.

#### APPLICATION OF DISINFECTANTS IN QUARANTINE WORK.

Holds of iron vessels, empty, shall be disinfected by either—

(a) Sulphur dioxid generated by burning sulphur  $2\frac{1}{2}$  pounds per 1,000 cubic feet of air space, sufficient moisture being present; time of exposure, not less than six hours.

(b) Washing with a solution of bichlorid of mercury, 1-1,000.

The use of fumigants in holds containing cargo is not efficacious and is not recommended.

Living compartments of vessels shall be disinfected by one or more of the following methods:

(a) Sulphur dioxid, the destructive action of the gas on property being borne in mind.

(b) Formaldehyd gas.

(c) Washing with solution of bichlorid of mercury 1-1,000, or 5 per cent solution of formalin, or 5 per cent solution of carbolic acid, preference being given to carbolic acid for application to polished woods, bright metals, and other objects injured by metallic salts.

Living compartments in bad sanitary condition must be disinfected by method (a) followed by method (c).

Mattresses, pillows, and heavy fabrics are to be disinfected by—

(a) Boiling.

(b) Flowing steam—i. e., steam not under pressure.

(c) Steam under pressure.

(d) Steam in a special apparatus, with vacuum attachment.

Clothing, fabrics, textiles, curtains, hangings, etc., may be treated by either of the above methods from (a) to (d), inclusive, as circumstances may demand, or by formaldehyd gas or sulphur dioxid where the article is of a character which will not be damaged by sulphur dioxid.

Articles injured by steam, such as leather, furs, skins, rubber, trunks, valises, hats and caps, bound books, silks, and fine woollens, should not be disinfected by steam. Such articles should be disinfected by formaldehyd gas or by any of the agents which may be applicable thereto. Those which will be injured by wetting should be disinfected by a gaseous agent.

Clothing, textiles, and baggage, clean and in good condition, but suspected of infection, can be efficiently and least injuriously disinfected by formaldehyd gas, generated by one of the methods prescribed.



Textiles which are soiled with the discharges of the sick, or presumably are deeply infected, must be disinfected by—

(a) Boiling.

(b) Steam.

(c) Immersion in one of the germicidal solutions.

Cooking and eating utensils are always to be disinfected by immersion in boiling water or by steam.

The expenses for the disinfection, fumigation, etc., of vessels, and for ridding of vermin are not chargeable to the Bureau of Medicine and Surgery.

#### QUARANTINE PROCEDURE.

For practical purposes and with a few minor exceptions the maritime quarantine service of our seaboard is under the Public Health Service of the Treasury Department. At some ports the local authorities have additional regulations and requirements, such as those making partially quarantinable various other contagious diseases, and the master must be prepared to give full consideration to and cooperation with such regulations and authorities.

The following is quoted from the Quarantine Laws and Regulations, Treasury Department, 1910:

146. Vessels of the Navy may be granted the hereinafter-stated exemptions from quarantine regulations, but are subject to quarantine inspection upon arrival at a port of the United States.

147. The certificates of the medical officers of the Navy as to the sanitary history and condition of a vessel and its personnel may be accepted for naval vessels by the quarantine officer boarding the vessel in lieu of an actual inspection.

148. Vessels of the Navy having entered the harbors of infected ports, but having held no communication which is liable to convey infection, may be exempted from the disinfection and detention imposed on merchant vessels from such ports.

On entering port, in addition to the bills of health, the master of the ship should be prepared to furnish the quarantine officer, if required, with a statement relative to the health conditions prevailing on board ship. Certain diseases of a contagious or infectious character not included among the quarantinable diseases under the quarantine laws and regulations of the Treasury Department, such as measles, diphtheria, cerebro-spinal meningitis, etc., will ordinarily be viewed by local or State authorities as constituting quarantinable diseases, and their presence on board should be considered as rendering the vessel subject to quarantine restrictions. All such diseases should be fully reported to the inspecting health officer.

If, in the opinion of the quarantine officer, a pilot has been exposed to infection upon boarding a vessel with quarantinable disease on board, he may be detained in quarantine a sufficient length



of time to cover the period of incubation of the disease in question. (Quarantine Laws and Regulations, 1910.)

Jurisdiction in matters of sanitation and quarantine in the waters of Colon and Panama is exercised by the United States authorities of the Canal Zone, and in the case of vessels entering the ports of Colon and Panama. In other ports in the Canal Zone original bills of health in duplicate are required to be obtained by masters of vessels clearing from any foreign port or any port in the possessions or other dependencies of the United States. (Executive order No. 1761 of Apr. 15, 1913.)

#### BILLS OF HEALTH.

Naval vessels clearing from one United States port for another United States port do not ordinarily procure a bill of health for presentation at the port of arrival. Local or State authorities at the port of arrival may, however, require the exhibition of a bill of health under special circumstances, such as when some epidemic disease exists at the port of departure, and under such circumstances it is advisable for the medical officer to procure a bill of health.

In certain ports of the United States both National and State quarantine regulations are enforced, so that pratique may have to be claimed and obtained from both. Quarantine expenses (bills of health and pratique) are a charge against "Pay, Miscellaneous." However, bills of health for naval vessels and indorsements by consular officers are usually extended gratis. (For decision as to the liability of a naval vessel for payment of quarantine charges growing out of a State law, see Official Opinions of the Attorney General, 1906, vol. 25, p. 234.)

A naval vessel from a United States port to a port in the Canal Zone or the possessions or other dependencies of the United States should secure a bill of health from the customhouse or the port authorities or other official. (In some ports a medical officer of the Public Health Service is authorized to issue bills of health.)

Naval vessels sailing from a United States port to a foreign port should always procure a bill of health from the proper authorities and have it viséed by the consular or other representative of the country or countries of ports of call, if such ports can be determined upon prior to sailing. It is sometimes advisable to secure bills of health for several ports to which the vessel might go when definite information of the exact destination is not procurable. A naval vessel sailing from a foreign port to another foreign port should likewise procure and have viséed a bill of health.

A vessel leaving a foreign port for a home port should obtain a bill of health from the port official, and also a United States con-



sular bill of health at a port where the issue of consular bills of health is customary.

The following data are usually required when applying for a bill of health: Name of vessel; tonnage; number of guns; name of captain; the number of souls on board.

Supplemental bills of health (if call is made at some intermediate port or ports) should be obtained and be properly viséed.

Vessels clearing from a foreign port or from any port in the possessions or other dependencies of the United States for any port in the United States, its possessions or other dependencies, and entering or calling at intermediate ports must procure at all said ports a supplemental bill of health in duplicate signed by the proper officer or officers of the United States, as provided in the law. If a quarantinable disease has appeared on board the vessel after leaving the original port of departure, or other circumstances presumably render the vessel infected, the supplemental bill of health should be withheld until such sanitary measures have been taken as are necessary. (Quarantine Laws and Regulations, 1910.)

Bills of health for naval vessels in the fleet may be procured for the fleet as a whole by the fleet surgeon, if no diversion of individual ships is contemplated. Bills of health for individual ships should always be procured, however, *in the absence of orders to the contrary*.



## DISINFECTING PLANTS.

The following-named quarantine stations of the United States Public Health Service are prepared to perform disinfection and fumigation when called upon. At some of the smaller stations a reasonable length of notice would be necessary in order that the fumigating materials might be procured, as these stations are not prepared to handle large vessels as a routine matter. The fact that some of the stations are not provided with wharfage facilities is not an index to the capacity of the station for performing disinfection (May, 1917).

	Depth of water in front of wharf (feet).	Detention facilities (barracks), persons.	Hospital beds.
Portland, Me.....	7	46	10
Reedy Island, Del.....	30	865	10
Cape Charles, Va.....	( <sup>1</sup> )	.....	8
Charleston, S. C.....	22	8	5
Tampa Bay, Fla.....	19	36	8
Mobile, Ala.....	( <sup>2</sup> )	65	.....
Galveston, Tex.....	25	69	15
San Francisco, Cal.....	19	623	8
Columbia River, Oreg.....	24	.....	20
San Juan, P. R.....	( <sup>3</sup> )	75	8
Boston, Mass.....	( <sup>3</sup> )	600	65
Providence, R. I.....	( <sup>1</sup> )	100	5
Cape Fear, N. C.....	15	46	12
Savannah, Ga.....	20	.....	7
Pensacola, Fla.....	22	6	7
New Orleans, La.....	25	1,062	30
San Diego, Cal.....	22	80	18
Port Townsend, Wash.....	30	661	26
Honolulu, Hawaii.....	( <sup>2</sup> )	1,000	31
Mariveles, Manila Bay, P. I.....	26	1,200	40

<sup>1</sup> Hulk in stream.

<sup>2</sup> Launch in stream.

<sup>3</sup> Ample.

Appropriation has been made for erection of quarantine station at Craney Island, opposite Lambert Point, Va.



## GLOSSARY.

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- ABDOMEN.—That part of the body which lies below the chest as far as the pelvis and contains stomach, liver, intestines, etc.; the belly.
- ALBUMINOUS.—Containing albumin or proteid, i. e., meat, egg, milk, etc., and certain material in bodies of plants and animals.
- ANTIDOTE.—A medicine given to counteract some action in another or to neutralize the effect of a poison.
- ANTISEPTIC.—A substance which prevents or retards the growth of organisms, especially of the septic variety, thus hindering putrefaction.
- ASPHYXIA.—Suspension of respiration and animation; suffocation, as in drowning or from breathing poisonous gases.
- AUTOCLAVE.—An apparatus for sterilization by steam under pressure.
- BUBONIC.—Relating in any way to a bubo. B. plague, the most common form of the plague, characterized by the occurrence of buboes in the groin or armpit.
- CAPILLARIES.—The smallest blood vessels of the body; those which connect veins and arteries.
- CATHARTIC.—An agent causing active movements of the bowels.
- CATHETER.—A slender tubular instrument, generally of soft rubber or of silver, used chiefly for passing through urethra into bladder to draw off the urine.
- CAUTERIZE.—To burn or sear with caustics or a hot iron.
- CLINICAL.—Relating to the course of the disease. C. thermometer, a self-registering thermometer for taking the bodily temperature.
- CONTAGION.—The communication of disease from person to person by contact, direct or indirect.
- CORYZA.—Acute rhinitis; cold in the head.
- DEJECTA.—The matter passed from the bowel; feces.
- DELIRIUM.—A temporary mental derangement, occurring in fevers, etc., characterized by incoherent and wandering talk, illusions, etc.
- DISINFECTANT.—A substance used to destroy the germs of infectious and contagious diseases.
- DISINFECTION.—The act or process of disinfecting; purification from infecting matter.
- DISLOCATION.—Where the bones forming a joint do not occupy their usual relation to each other.
- EMETIC.—An agent which causes vomiting.
- ENDEMIC.—A disease constantly present in a community, as distinguished from an epidemic.
- ENEMA.—A fluid injected into the rectum for the purpose of clearing out the bowel or of administering drugs or food.
- EPIDEMIC.—The extensive prevalence in a community of a disease brought from without or a temporary increase in number of cases of an endemic disease.
- ERUPTION.—A breaking out, especially the appearance of changes in the skin; a rash.



- FECES.**—The matter discharged from the bowels during defecation.
- FOUNTAIN SYRINGE.**—One which has no pistons, but is hung up and acts by gravity.
- FRACTURE.**—A break, usually in bone.
- FUMIGATION.**—The destruction of germs by means of some disinfecting vapor, as that of sulphur or formaldehyd.
- FUNGUS.**—A cellular vegetable organism feeding on organic matter; such are mushrooms, yeasts, molds, and bacteria.
- GERM.**—A microbe or pathogenic cell.
- GERMICIDE.**—An agent which is destructive to germs or microbes.
- IMMOBILIZATION.**—The act of rendering a part immovable or of preventing all possibility of movement in a part; especially applied to fractured bones.
- INFECTION.**—Communication of disease, as by entrance of pathogenic germs into an organism in any manner.
- INSECTICIDE.**—An agent which kills insects.
- LAXATIVE.**—A remedy which assists the movement of the bowels which move but sluggishly. A laxative is useless where the bowels have been clogged for several days. (Use cathartic.)
- MACERATION.**—Softening by the action of a liquid.
- MICROBE.**—A microscopic organism, especially a bacterium.
- MICROORGANISM.**—Bacillus, bacterium, microbe, germ.
- PALPITATION.**—Rapid and perceptible beating of the heart, which may be regular or irregular.
- PATHOGENIC.**—Productive of disease.
- PLEURA.**—A thin membrane which covers the inside of the chest wall on both sides, and also covers either lung.
- PNEUMONIC.**—Relating to pneumonia. P. plague, a particularly fatal form, with marked lung involvement.
- PRATIQUE.**—A license or permission granted by the authorities of a port to the master of a vessel, especially after sanitary inspection or quarantine, to hold communication with the shore.
- PROPHYLAXIS.**—The prevention of disease.
- PURGATIVE, PURGE.**—A remedy that moves the bowels actively.
- PURULENT.**—Consisting of pus or matter.
- PUS.**—The matter from a sore.
- PUSTULE.**—A small circumscribed elevation on the skin, containing pus.
- RABIES.**—A disease affecting certain animals, especially dogs, from which hydrophobia is communicated to man.
- RASH.**—An eruption on the skin.
- RECTUM.**—The lowest part of the large intestine opening at the anus.
- SANITATION.**—The employment of measures designed to promote health and prevent disease.
- SEDATIVE.**—A medicine which allays irritation and quiets the nerves.
- SHOCK.**—A condition of collapse or profound prostration sometimes following hemorrhage, injury, anesthetic, and operation.
- SPATULA.**—A broad instrument like a knife with blunt edges for spreading ointments.
- STERILE.**—Free from pathogenic bacteria or other microorganisms; aseptic.
- STIMULANT.**—A medicine having power to excite organic action or to increase the vital activity of an organ, as heart stimulant, respiratory stimulant.
- STRICTURE.**—A narrowing of a passage or canal in the body due to disease or injury.
- SUTURE.**—A stitch used to draw together the lips of a wound.



**TOURNIQUET.**—An instrument for stopping the flow of blood through an artery by means of strong compression.

**TOXIN.**—A poisonous substance of undetermined chemical nature, elaborated during the growth of pathogenic microorganisms.

**URETHRA.**—The canal by which the urine is conducted from the bladder and discharged.

**URINATION.**—The act of discharging the contents of the bladder.

**UVULA.**—The small, fleshy body which hangs from the soft palate over the root of the tongue.

**VARICOSE.**—Having an unnatural enlargement or dilation, knotty and irregular in shape, as often seen in the veins of the lower extremities.

**VENEREAL.**—Pertaining to sexual intercourse or caused by it.

**VIRUS.**—Contagious poisonous matter, as of smallpox or hydrophobia.



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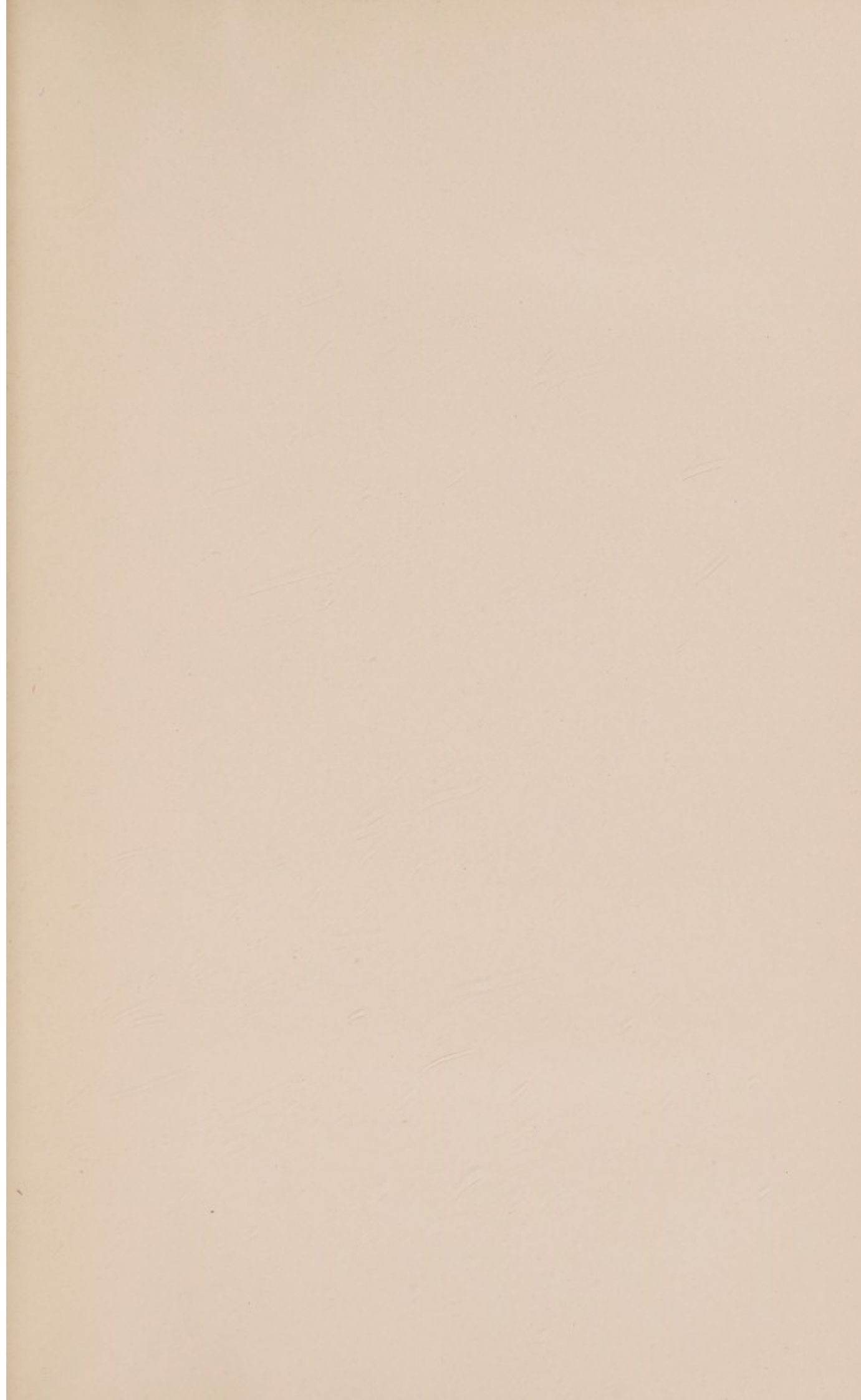


The following is a list of the names of the persons who have been  
admitted to the office of the Secretary of the Institute since the  
last meeting of the Council. The names are arranged in alphabetical  
order of their surnames. The names of the persons who have been  
admitted to the office of the Secretary of the Institute since the  
last meeting of the Council are as follows:—

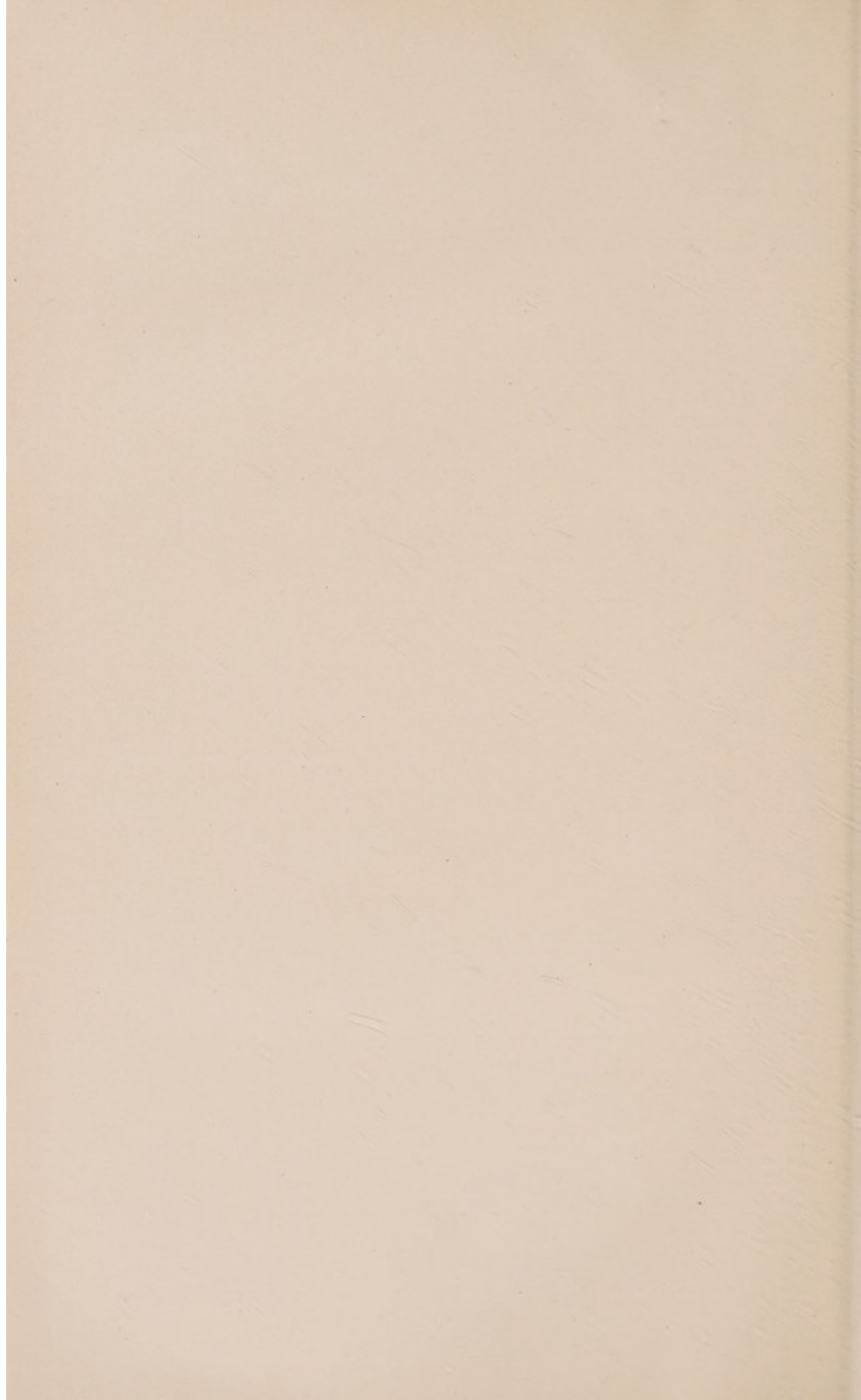
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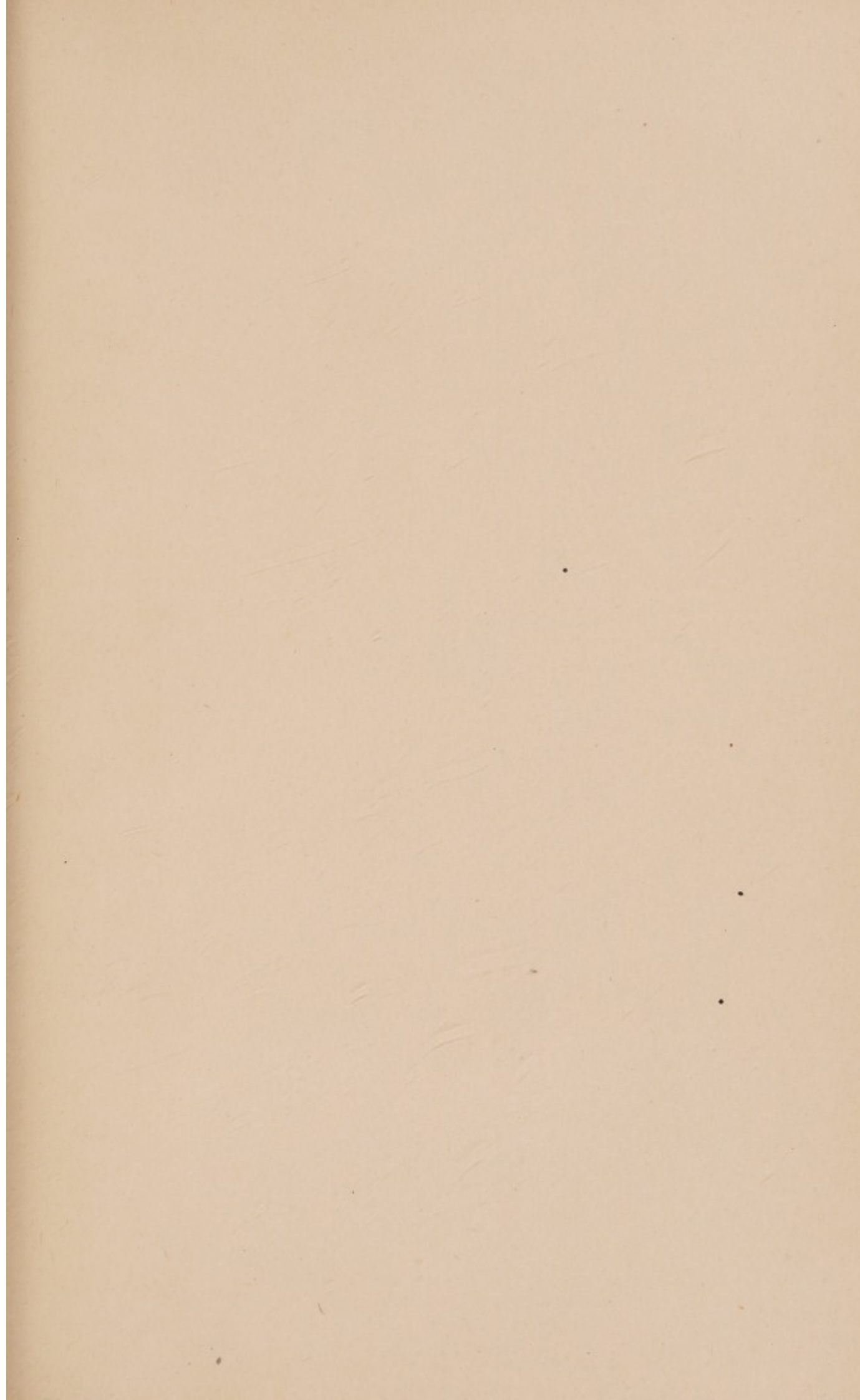


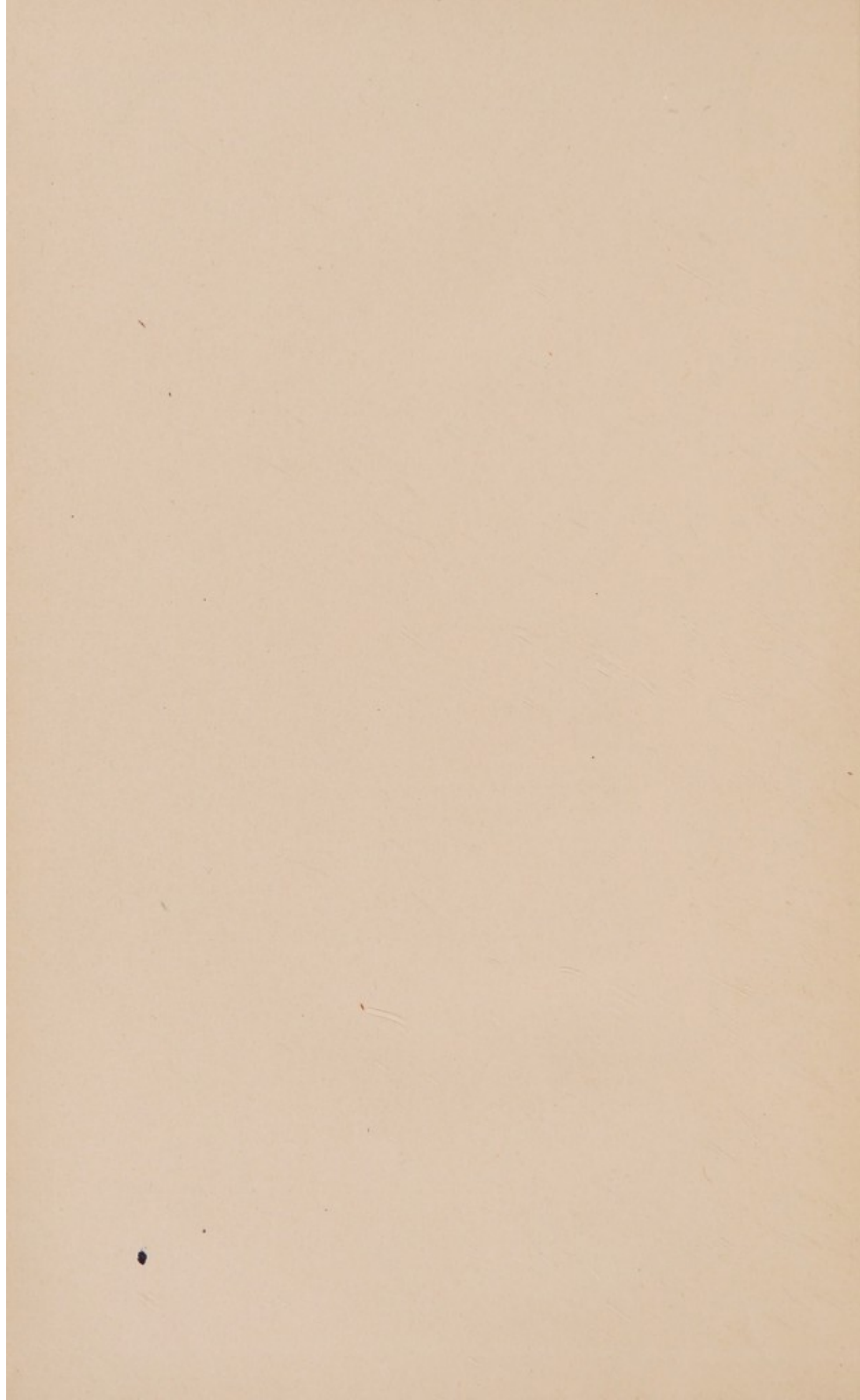














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