RULES AND INSTRUCTIONS

FOR THE GUIDANCE OF

LIGHTHOUSE-KEEPERS

AND OF

Engineers in Charge of Steam Fog Alarms

IN THE

DOMINION OF CANADA.

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ENGINEERS IN CHARGE OF STEAM FOG ALARMS

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DOMINION OF CANADA;

TOGETHER WITH SOME MEDICAL DIRECTIONS FOR THE USE OF LIGHTKEEPERS, ETC., AT REMOTE STATIONS.

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MEDICAL DIRECTIONS, ETC.

RULES AND INSTRUCTIONS

FOR THE GUIDANCE OF THE

KEEPERS OF LIGHT-HOUSES

IN THE

DOMINION OF CANADA.

The safety of life and security of property whilst employed in the navigation of the waters and in the fisheries of the Dominion of Canada depending so much upon the efficiency and perfection of the Light-houses and the faithful and skilful performance of the duties of the Light-house Keepers, the following Rules and Instructions are issued by the Department of Marine and Fisheries to impart such needed information as will allow Light-house Keepers no excuse for neglecting or improperly performing their important and responsible duties :—

1st. The lamps are to be kept lighted from sunset or dusk to sunrise or clear daylight. In case of fog, or darkness from other causes, the Light-house Keeper is to use his discretion as to lighting earlier or extinguishing at a later hour.

2nd. All the Lighthouses below Quebec on the River St. Lawrence, including those on Point des Monts, Cape Chatte, and Egg Island, will be extinguished on the 10th of December ; and those in the Gulf of St. Lawrence, Straits of Belle Isle, Northumberland Straits, Prince Edward Island and the Gut of Canso, will be extinguished on the twentieth day of December, (except in cases where special reasons exist, or directions are given, for deviating from these dates), and lighted on the first day of April of each year. The south-west light on St. Paul's Island is not included, as it will be kept lighted the whole year.

3rd. The River and Lake Light-houses are to be lighted up, during the season of navigation, from sundown to sunrise, but whenever the weather is foggy, or dark from any other cause, the Light Keepers will light the lamps earlier, or keep them lighted later, as may be necessary for the security of navigation. The

season of navigation is held to mean the time from which vessels begin to run until they cease running. A report is to be made to the Department of the dates when each Light-house is lit in the Spring and extinguished in the Fall.

4th. The lamps are to be kept burning at their full power from the time of lighting until they are put out, and in order that the greatest degree of light may be maintained, the wicks must be trimmed and the chimneys cleaned or changed every four hours, or more frequently if the state of the lamps, oil, or wicks, renders it necessary, especial care being taken to have the tops of the wicks exactly even and free from smoky points.

5th. The lanterns and the lantern glass are to be cleaned within and without every day and kept clear, particularly by night, from drift, snow, sleet, or any other obstruction to the light on the outside of the glass, and also from the moisture that may accumulate on the inside.

6th. After lighting up, the Keeper is to remain in the lantern for thirty minutes, and before leaving he is to be particular in seeing that all the reflectors, lamps, and chimneys are placed vertically and truly in position, that the lamps are all burning clearly at their full light, and that the glass chimneys are all clear and whole. The Keeper must always have spare clean chimneys ready to replace those that get smoky or broken, and must see that they fit firmly into the holders, and through the reflectors. The Keeper is expected to have a time-piece placed conveniently, so that he may make his visits at regular hours during the night; but in the large revolving and flash lights, either the Keeper or his assistant is to be on the watch at all hours, from the lighting up to the extinguishing of the lights, paying particular attention to the *ventilation* of the lanterns, as such may have a marked effect upon the burning of the lamps, and the consumption of oil. By opening or closing the ventilators or trap doors, the proper supply of air can be obtained to ensure the necessary burning of the lamps, and also to prevent condensation on the lanterns.

7th. In the morning, when the lights are put out, the following Rules are to be observed :—

First. The blinds are to be put upon the lantern windows, and the curtains hung over the lenses and prisms, and also over the reflectors; or the reflectors may be removed, and turned face down until cleaned. The clock works, if any, are to be wound up, and the weights supported, so that they may not rest upon their cords, or chains, when not needed.

Second. The lamps are to be cleaned and trimmed, and the wicks renewed when necessary. The wicks are more readily trimmed if done as soon as the lamps are put out, and while they are warm. The carbonized part of the wick should be scraped off, not cut with the scissors. Attention to this will save trouble in securing a truly even surface to the wicks. All parts of the lamps exposed to the action of the flame are to be kept bright and polished, other parts to be kept perfectly clean. The oil becomes dangerous when heated, therefore it must never be placed on the stove.

Third. The metallic reflectors are to be cleaned every day when in use; and twice each week, every reflector is to be taken from the frame or stand, and placed on the polishing bench. They are then to be first carefully dusted, to remove all such particles as would produce scratches in cleaning, and particular care must be taken that the chamois skins used in rubbing them are perfectly free from dust, or gritty particles. The great art of keeping the reflectors in perfect order consists in the daily, patient, and skilful application of manual labour in rubbing or polishing their surfaces, beginning at the centre and gradually working outwards, with a circular motion of the hand. No damp or wet substances should be applied to metallic reflectors. If their lustre becomes dim, a little of the polishing powder provided may be employed on the chamois skin. Use nothing but the rough powder, provided by the Department, for polishing the silvered surfaces of the reflectors. During the process of polishing, observe closely that the reflectors are not scratched, and, as this can only happen from imprudence, the Keeper, when such is found to be the case, will be called to account for it. After the reflectors are cleaned and polished, they are to be put in their places, and the curtains hung over them. In case any metallic reflectors, by being laid aside, or from any other cause, have become coated with oxide, use for its removal rouge mixed with sweet oil, and then dust on dry rouge and polish in the usual manner with dry and soft chamois skins.

Fourth. When dioptric apparatus are used, the glass prisms and lenses are to be cleaned every day when in use, being first freed from dust by using the linen dusters slightly damped, and then rubbed with soft chamois skins, free from anything that would injure the polish of the glass. All rubbers used for glass must be free from grease. If the glass becomes greasy it should first be washed with a linen cloth steeped in spirits of wine, and then carefully dried with a soft linen rubber, free from all dust, or gritty particles, and finally rubbed with a fine chamois skin. All the polished metal work about the apparatus is to be kept bright and in good order, but while being cleaned great

care is to be taken that the glass prisms and lenses receive no injury.

Fifth. The floor and interior of the lantern is to be cleaned. In doing this, all that can occasion dust must be avoided. The panes of glass are to be cleaned inside and outside every day with linen towels supplied for that purpose. All parts are to be carefully examined, particularly the putty, and if injured, are to be mended, or renewed at once. All implements, tools, towels, chamois skins, brushes, oil-tins, &c., &c., are to be removed from the lantern, after the lenses, reflectors, lamps, &c., have been put in order for lighting; they are to be kept in their proper places in a room under the lantern.

8th. In addition to the daily cleaning of the panes of the lantern, once every week they are to be cleaned with whiting and water, mixed to the consistency of cream. The mixture is to be laid on inside and out; and, when dry, the glass is to be polished until clean and clear.

9th. The lamps' reservoirs or fountains are to be emptied and thoroughly cleansed with hot water and soap, as often as necessary, and at least once in two months. The backs, or copper parts of the reflectors, as well as all parts of the stands, or frames on which they are placed, are also to have a thorough cleaning at the same time.

10th. The machinery employed to operate revolving lights must be kept scrupulously clean. All journals and working parts must be regularlyand carefully oiled once a week, when in use. The parts making quick motions to be oiled as frequently as necessary. The machinery must be regulated so as to have a uniform motion, and perform its revolutions correctly within the prescribed time. The cords [or chains must be frequently inspected, to see that there is no danger of their parting. Their times of revolution must be freqently tested, and in case of deviation, corrected by the regulators.

11th. The Keeper must take especial care at all times that neither matches nor anything that can be easily ignited, such as oily rags, &c., are left anywhere about the premises, so as to endanger them by fire. A barrel containing water and two pails, are to be kept in some convenient place in the room under the lantern, ready for use in case of fire, and on no account to be removed for household or other purposes. In addition to the water, a few bags of dry sand should be kept which can readily be cut open with a knife, and when thrown on burning oil will absorb and extinguish it more readily than water.

12th. Where Steam Fog Alarms are provided, whenever the Light-house Keeper is satisfied that foggy weather, or a snow storm, shall have set in, he must cause the Steam Fog Alarm to be set going, and continue its intermittent sounds at the regular intervals appointed for each Station, until such time as the weather shall have cleared up.

13. The Light-house Keeper is to make himself acquainted with the proper working of the Steam Fog Alarm, so that he will be able to relieve the Engineer when required. In continual fog, snow storm, or thick weather, the Light-house Keeper is required to relieve the Engineer, during eight hours of the twenty-four. From four o'clock A. M. until noon are the hours appointed by the Department, but they can be changed by mutual agreement. It is also the daily duty of the Light Keeper to keep watch of the weather from midnight until noon, and in case the Steam Fog Alarm is needed, to notify the Engineer that he is to get up steam.

14th. When the alarm is given by firing a gun, the firing is to commence immediately after the fog or snow storm has set in, and the firing is to continue at the stipulated intervals for each Station, until the weather is again clear. During very strong winds the amount of the charge is to be increased, consistent with safety and the size of the gun. An exact account of the powder, tubes and flannel used each time the gun is required, is to be transmitted to the Department with the quarterly returns.

15th. The Keeper, and his assistant where there is one, must at all times be ready to perform any duties connected with the repairs of light-houses, apparatus, maintenance of light, preservation of stores, repairing and keeping in order dwelling-houses, landing places, roads, drains, fences, and everything belonging to the Department, as well as looking after any buoys or beacons in the neighbourhood, if so directed, as it is considered that the salary paid is remuneration for the whole time of the Keepers and their assistants.

16th. Once each year the lantern and its appendages are to be scraped clean of all rust and blistered paint, and then painted inside and out. The deck around the lantern is to be frequently examined, and the joining filled with thick paint wherever required, to prevent the water getting in. Lime for whitewashing, paint and oil will be furnished for the above purposes, which must be well cared for and used economically.

17th. In case any repairs are made, or other labour performed in the absence of the Superintendent, the Light-house Keeper is to keep a correct account of the men's time and material used, and render a full statement of the same to the De-

partment. No claims will be allowed for any buildings or repairs, except in cases of real emergency, unless permission shall have been obtained from the Department or Superintendent. No account for extra services will be allowed for painting, improvements, or repairs connected with the light-house and premises, such as the Light-house Keeper and his assistants may reasonably be called upon to perform.

18th. When stores of any kind are to be landed, the Light-house Keeper shall attend and give his assistance. He will also satisfy himself, as far as possible, relative to the quantity and condition of the stores received, which must be entered in the Quarterly Return Book. He is also to keep a correct account of all the fuel delivered for the Steam Fog Alarm, if there is one at his Station, or for other purposes, and also of the quantities used. Where coal is used, it is to be compactly stored in the building provided for it. The wood, as soon as practicable after delivery, is to be cut into proper lengths, and stacked up truly in rows, with spaces between them, so as to become seasoned and in good order.

19th. The Light Keeper is held responsible for the safety and good order of all stores, utensils, tools and apparatus of every kind whatsoever, for everything being put to its proper use, and put in its proper place. He is also to take care that none of the stores or materials are wasted, to observe the strictest economy, and the most careful management. Yet, at the same time, he is to maintain in every respect the best possible light. He is to keep a correct account of the quantity of oil and other stores consumed every week, which he will enter in the book provided for that purpose, and on the first day of January, of April, July and October (being the beginning of the several quarters), he is to make up, and transmit to the Department of Marine and Fisheries, a return, which must be an accurate copy of the one kept in the book above mentioned. He will state in his return the condition of the lamps, if any of them are out of order, and give notice of any repairs that are required. Should any immediate repairs be required, he will report them at once to the Agent of the Department, if in Quebec, New Brunswick or Nova Scotia; but if in Ontario, to the Department at Ottawa, and send, at the same time, an estimate of the cost. In the return for the 1st of January, for every year, he is to state what repairs may, in his opinion, be required during the season.

20th. If any accident occurs that may require immediate attention, the Light-house Keeper will send to the nearest telegraph station, if the distance does not exceed five miles, and communicate, in as few words as possible, the nature of the

accident; at the same time he will write to the Department, making it acquainted with the particulars.

21st. No Light Keeper is, or will be, exempt or excused from keeping his regular watch at night, or performing a full share of all the duties of the Light Station in his charge. In the event of sickness or incapacity, he is to notify the Department to that effect, so that means may be taken for temporarily supplying his place.

22nd. During stormy and thick weather Light Keepers are required to give their whole time and attention to the lights in their charge, to keep the flames burning brightly and at their greatest attainable height, and the lantern glass free, inside and outside from moisture. During heavy gales of wind, snow, rain, and hail storms, the lights must never be left unattended by the Keepers. Storm panes for replacing broken glass of the lantern must be kept at hand, ready for instant use, and, when required, put in place without any unnecessary delay.

23rd. No circumstances whatever can, or will excuse any Light Keeper from failing to exhibit at the prescribed time the lights in his charge, or for neglecting to keep them burning brightly, and with as great power as it is possible to make them. Any neglect in this regard will subject the delinquent Keeper, or assistant, to dismissal.

24th. At Stations having a Light Keeper and assistant or assistants, the one on duty will call his relief a few minutes before the expiration of his watch, and return immediately and remain on duty until the arrival of his relief, when he will turn over the lights to the relief, and inform him, before leaving, of everything that may be necessary in regard to the condition of the lights and ventilator, and the effect of the weather on the flames.

25th. The Light-house Keeper is not, on any account, to absent himself from duty, without leave, in writing from the Department, or its officer, in which case he is to provide an efficient substitute. Should he so absent himself without any justifiable cause, he will render himself liable to be dismissed. He has permission to go from home to draw his salary, and also to attend church, provided the time he is absent does not interfere with the actual discharge of his duties.

26th. As soon as an oil tank is empty it is to be cleansed out with hot water, and wiped dry, particular care being taken to handle it as not to injure the solder, and to see that no water remains inside.

27th. All worn out or unserviceable articles, or stores, are to be preserved by the Keeper until the arrival of the Superintendent on his annual visit, and must then be delivered up to him otherwise the Keeper will be charged with the value thereof. On no account is he to throw away, or otherwise dispose of anything belonging to the Department.

28th. Should the supply of any of the Light-house stores at any time appear to the Light-house Keeper to be getting short, so as thereby to endanger the regular appearance of the light, he must, immediately, by mail, telegraph, or on first convenient opportunity, send information to the Agent of the Department of Marine and Fisheries, if in Quebec, New Brunswick, or Nova Scotia; and if in Ontario, to the Department at Ottawa.

29th. The Light-house keeper must keep a daily journal of the quantity of oil expended, the routine of the duty of himself and assistant, or assistants; noting the course of the wind, temperature, and state of the weather—whether clear, hazy, or foggy when ice and snow are first seen, and when they disappear, and noting the number, and when possible, the class of vessels that pass the Light-house, in either direction, together with any other remarks that may occur. These are to be written in the Journal Book, at the period of the day when they take place; and on the first day of each quarter an accurate copy of the journal for the preceding quarter must be made and forwarded to the Department by the first opportunity.

30th. The Light-house Keeper and his assistants are enjoined to render every assistance in their power to vessels in distress. The Keeper is required to report at once to the Department of Marine and Fisheries any shipwreck, or accident, that may happen to vessels in the neighbourhood of his Station, and, as near as he can, to ascertain *the facts* and the causes thereof, and if the light was visible, or otherwise, to them at the time. The same is also to be entered in the Quarterly Returns. In case any Keeper should know of any buoy being carried away, or removed from its proper place, he must give immediate notice to the Agent of the Department, if in Quebec, New Brunswick, or Nova Scotia; and, if in Ontario, to the Department at Ottawa; and when in his power, he should have it replaced.

31st. The Light-house Keeper and his assistants are required to be sober, industrious, attentive to their duties, and orderly in their families. They are prohibited from having any boarders or lodgers in their dwelling-houses, and from carrying on any trade or business whatever that would interfere in any way with the effective discharge of their duties, without the authority of the

Department. They must conduct themselves with civility to strangers, and may show the premises at such hours as do not interfere with the proper duties of their office; but no strangers visiting a Light-House shall be permitted to touch any part of the apparatus, and it is further directed, that not more than three strangers shall have access to any light-room at one and the same time.

32nd. The breach of any of the foregoing Rules and Instructions will subject the Light-house Keepers to dismissal, or to such other punishment as the nature of the offence may require.

33rd. The Light-house Keepers are to observe that the foregoing regulations are general, and without prejudice to any more special instructions in reference to any particular Light-House, or such orders as may from time to time be issued by the Department of Marine and Fisheries.

34th. The Light-house Keeper and his assistant will each be provided with a copy of these Rules and Instructions, and a copy of them is also to be kept in the tower. In case of an assistant not being able to read, it will be the duty of the Keeper to read them over to him monthly, or oftener, if required by the assistant.

35th. As explained in these Rules and Instructions, the Light-house Keeper is the person upon whom the full responsibility rests. It is, therefore, indispensable for his assistant or assistants to pay due attention and be obedient to all the instructions given to him, or them, by the Light-house Keeper, on any matter connected with the discharge of their duties.

By order,

WM. SMITH,
Deputy Minister of Marine and Fisheries.

Department of Marine and Fisheries,
Ottawa, 1st January, 1875.

RULES AND INSTRUCTIONS

FOR THE GUIDANCE OF

ENGINEERS IN CHARGE OF STEAM FOG ALARMS

IN THE

DOMINION OF CANADA.

As the duties which devolve upon the Engineer of a Steam Fog Alarm are of a most important and responsible kind, involving, to a very great extent, the safety of life and security of property, the following Rules and Instructions have have been framed for their guidance:

1st. The Engineer is not to leave his Station at any time, without permission from the Department of Marine and Fisheries, or its officer, except to draw his pay, and on Sundays to attend a place of worship; but in no case is he to be absent, even temporarily, on his own business or on the business of the Station, without leaving an efficient and careful person to attend to everything that may be required in his absence.

2nd. The Engineer's attention to the duties of the Steam Engine and Fog Alarm must take precedence of all other business.

3rd. Immediately on the appearance of fog, thick weather, or snow storms, the Engineer will get up steam, and keep the Alarm constantly sounding until the fog, thick weather, or snow storm disappears.

4th. The Engineer shall attend and work the Steam Fog Alarm in the event of continued thick weather for a period of sixteen hours consecutively, and then be relieved from duty for a period of eight hours by the Light-house Keeper.

5th. It shall be the duty of the Engineer to keep watch daily (constantly noticing the state of the weather), from noon until midnight, and also during the same period when not in attend-

ance on the Steam Fog Alarm, he shall attend to the Lights, and, when necessary, warn the Light Keeper if anything is wrong with them.

6th. When the Engineer is required to be in attendance during sixteen hours, he shall be on duty from noon until four o'clock A.M., but, by a mutual understanding between the Light-house Keeper and Engineer, they can arrange the time to suit their own convenience.

7th. The Light Keeper and Engineer are required to render assistance to each other in any exigency that may arise, particularly in case of sickness, and, also, in the performance of any work that may be required of them by the Department, for alterations, repairs, or improvements at the Station.

8th. The Engineer is to be particularly careful that the Steam Engine, and other apparatus, are cleaned and polished every morning, using for that purpose the materials provided by the Department. The Engine house, and the premises throughout, are to be constantly kept, both internally and externally, in the cleanest possible condition.

9th. Should the machinery, from any cause, cease to operate and to sound the Alarm during the continuance of fog or snow, the Alarm must be sounded by hand until the necessary repairs can be effected.

10th. Notice is to be immediately given to the Department of Marine and Fisheries or its Agent of any accident that may occur to the machinery, or any part of the apparatus.

11th. The Engineer is to take especial care that neither lamps, oil, wood, coals, or any other articles, be left burning anywhere during his temporary absence from the building, and he is to take especial precautions to prevent the building, or property, taking fire.

12th. The Engineer is to see that none of the oil, stores, fuel, or materials, be wasted, embezzled, or stolen, and that all due economy, consistent with the maintenance of a perfectly efficient condition of the Fog Alarm, be in every respect, and at all times, observed.

13th. The Engineer will have charge of all fuel, and stores of every description in connection with the Alarm; keep an account of the quantities received from time to time, and of the deliveries of the same, for the necessary purposes of the establishment; also, an accurate account of the consumption of oil, fuel, and so forth, on the forms provided for that purpose, and forward the

same, as soon as practicable, after the end of each quarter, to the Department of Marine and Fisheries.

14th. The Engineer will keep an exact record of the day and hour at which the sound of the Alarm is commenced and discontinued on every occasion of its being sounded, noticing under the head of "Remarks" any occurrence, such as accidents to the machinery, density of fog, wrecks in the neighbourhood, &c., &c., which may take place. Printed forms for this purpose will be furnished, and are to be filled in and returned to this Department at the end of each quarter.

15th. The Engineer is to attend and give his assistance when fuel and stores are to be landed, for the use of the Fog Alarm. He will see that they are all neatly stored in their proper places, so that they may be in good condition when needed. He is, also, to give all proper assistance to the Light Keeper in performing the same class of duties.

16th. The Engineer is to exercise a proper discretion in the admission of visitors to view the establishment, conducting himself with civility to strangers and other persons at all times, and observing that no person is, on any account, to be permitted to inspect the interior of the Engine house, unattended, and he will be held responsible that no damage is thereby occasioned to the apparatus, or disfigurement of any part of the premises.

17th. Should the supply of fuel or water at any time appear to be getting short, so as thereby to endanger the efficient working of the Alarm, the Engineer should immediately notify the Department of the same, and be guided by prudence in reducing the consumption of fuel, or make some other arrangements as may be necessary, until the want of fuel, or other deficiency, be remedied.

18th. The Engineer must get up steam, and put the engine in operation at least once in each week, and the machine should be moved by hand half a dozen revolutions every day. This rule applies to periods when there is no fog, and the machinery and apparatus are not being used as a danger signal.

19th. The Light-house Keeper being the senior officer of the Station, he will be required to exercise a general supervision over the engine and machinery under his charge, but, in order to promote the efficiency and harmony of the public service, it is desirable that the Light-house Keeper and Engineer should co-operate and assist one another, as occasion may require, in the performance of their respective duties.

20th. The Engineer must give the Light-house Keeper every instruction necessary to enable him to fulfil the duties of attending to the Steam Fog Alarm in his absence, or whenever it is necessary to be relieved, in long continued fog, or snow storms.

21st. It is the duty of the Engineer to familiarize himself with the duties of the Light-house Keeper, so that he can properly perform them in case of sickness or absence of the Keeper, and when there is clock work for revolving, or flash lights, it shall be the duty of the Engineer to assist the Light Keeper, when called on, to oil, clean, and keep the same in order.

22nd. The Engineer will send all his communications on public business, as well as all the Returns required from him, to the Agent of the Department, in the Provinces of Quebec, New Brunswick, Nova Scotia, Prince Edward Island or British Columbia.

23rd. Under no circumstances, except to save life, should the Light-house Keeper and Engineer both be absent, even temporarily, from the Station at the same time.

24th. The Engineer will be held responsible for the execu tion of the duties of the establishment in all particulars, and for the careful and exact observance of the foregoing regulation.

MEDICAL DIRECTIONS

FOR

THE USE OF LIGHT KEEPERS.

DIRECTIONS.

The following directions have been drawn up for the use of Light Keepers at more or less inaccessible stations where it may often be very difficult and sometimes impossible to obtain the services of a Doctor.

As it is impossible to explain the symptoms and treatment of a great many diseases to persons who have not had a medical education, the services of a Doctor should always be obtained when possible.

Where a Doctor cannot be obtained and where no clear idea of the nature of an illness can be formed, all that should be done is to follow out the directions given for the management of severe illnesses.

Recipes for the preparation of a few simple articles of food, useful in sickness and convalescence, some hints for the preservation of health, remarks on diet, the prevention of scurvy and on the management of infants, have been appended in the hope that they may occasionally prove of service to the Light Keepers and their families.

I.—GENERAL MANAGEMENT OF SEVERE ILLNESSES.

It is of great importance to take rest at the very beginning of a severe illness. A few days in bed at the beginning of an attack will often cut it short, whilst if it be encouraged and aggravated by exposure to cold, damp and fatigue, it may be prolonged for months. Particular attention should be paid to this, as people are often unaware of the severity of their illness or are unwilling to give way to it.

The air of the sick room should be kept at a moderate summer heat, and while the room should be well ventilated, the patient should not be either overheated or exposed to draughts. With a view to increasing the quantity of air and preserving its purity, all unnecessary articles of furniture should be removed, and only the nurse or attendant should habitually remain in the room.

Cleanliness must be maintained, by occasionally changing the sheets, and even the blankets and mattress, but less often than the sheets. The patient's shirt, especially the inside one, should be changed more frequently than when in health, as it is worn night and day. But these changes must not be made rashly when the illness is severe. Airing and warming the clean things before putting them on, and quickness in changing are necessary precautions, as a sick person feels the cold much more than when in health ; still the bed should not be loaded with blankets. A fire in the sick room aids ventilation, but if possible it should not be used for cooking purposes.

In very severe illnesses washing the patient is generally inadvisable, but in very long and less acute attacks washing is often beneficial. But it must always be done, a little portion at a time, under the clothes, care being taken to keep the bed and the patient perfectly dry. The body should be gently rubbed with a sponge or flannel, moistened in tepid water. Soap may be used, and the addition of a little whiskey or other spirits renders the operation much safer.

All dirty water and slops should be removed from the room immediately, but more especially what passes from the patient, and everything should be kept perfectly clean.

Sweeping and dusting are also necessary, but care must be taken not to raise dust; tea leaves or a wet broom will prevent this. The dusting should be done with a wet cloth.

Quiet and freedom from excitement are very necessary; noises being always very annoying to feverish or very weak persons. The patient should be kept from all kinds of exertion, even from speaking. Reading, either by or to the patient, should not be allowed, and even when he is getting better, care should be taken not to fatigue him. Whispering in the room is always distressing, and despondent remarks have often a dangerous effect.

In attacks that come on suddenly and severely with feverishness a day or two of restricted diet may be necessary. After which food in small quantities and of the simplest kind, such as milk, beef tea, dry bread or toast, &c., should be given until the severity of the attack is over. The patient's feelings are often a good guide as to what should be given, but not always. The safest plan is to give small quantities at a time more or less frequently, according to the effect produced. Old and young people do not stand a reduced diet as long as those in middle age. In less severe attacks when there is some appetite it should be restrained a little at first, but the strength must not be allowed to run down. In long-continuing, slow diseases, the appetite should even be encouraged.

After a long-continued and severe illness, during which very little food has been taken, eating must be resumed with great caution. Nothing is so likely to cause a relapse after a severe illness, as taking too much food. Gently restrain the patient's desire for increased diet, and proceed from the lighter to the stronger kinds of food such as the following, in small quantities and in the following order:—Arrow-root, milk, beef tea, simple puddings, bread and milk, white fish, eggs, fowl, beef, mutton, &c. Vegetables should not be given for a long time and even then with caution. When the appetite does not return a tonic may be given, say the stomachic tincture of gentian as directed.

A variety of food or even the same food cooked in different ways will go far towards tempting the appetite. Care must be taken in satisfying odd cravings for food, although it may sometimes be advantageous to indulge them.

There is great danger in allowing the patient to sit up too soon or too long at a time, after a severe illness, and exercise should be cautiously increased as the strength is found to bear it.

In general when a person is in pain, but does not know the cause, he may take a dose of pain killer internally, but if the pain be external, he may apply the camphor liniment.

II.—COMPOUNDING AND ADMINISTERING MEDICINE.

The medicine chest should be kept in a cool dry place, and when not in use should be kept locked and the key removed.

Always read the label carefully before administering a medicine, as you may otherwise either give the wrong one, or too much of the right one.

When several medicines are given together, the dose of each should be less than if it were given alone. Children require less and less doses the younger they are. Thus if a grown person should take sixty drops of medicine, a child under 1 year will require only 5 drops,

"	2 years	"	8	"
"	3 "	"	10	"
"	4 "	"	15	"
"	7 "	"	20	"

and so on, and in the same proportion for powders. For measuring liquids a drop measure is given which is marked in plain figures from 5 to 60. Eight times the full of this measure, or eight times sixty drops make an ounce, or half a wine glassful. Powders are best taken in a little treacle or preserves, and washed down with a mouthful of water. They should be measured out in the following manner: Lay out on a table a number of square pieces of paper, corresponding to the number of doses required, and then divide out the whole powder, whatever the quantity directed may be, equally among them. Thus if the directions say: "the tenth of what will lie on a five cent piece is to be taken," lay out ten pieces of paper, and then divide as much as can be put on a five cent piece, equally among the ten. If it is to be the eighth part divide it among eight papers, and so on. One can judge pretty fairly with the eye.

III.—TREATMENT OF SOME DISEASES AND ACCIDENTS.

Constipation.

A great deal may be done to cure a tendency to costiveness by regular exercise, daily bathing, and by the use of certain articles of diet, such as oatmeal porridge, brown bread, and by regularity in going to the closet, which should be done at the same hour every morning. A little warm soap suds injected into the passage with the rubber syringe, will be useful when there has been no motion for three or four days, but if a person is otherwise healthy, a small dose of castor oil, senna and salts, or a purgative pill, will tend to make the bowels regular. But if the bowels are opened naturally every second day there is no need to interfere with medicine.

During pregnancy, castor oil is the safest laxative, and the bowels should not be allowed to get costive as the time for delivery approaches.

As children do not readily swallow pills, it is better to give them a tablespoonful of castor oil in a tablespoonful of warm milk and water. Or else as much rhubarb powder as will go on a five cent piece with twice as much cooking soda and half as much powdered ginger.

When the bowels are very obstinate three or four purgative pills may be taken at night by a grown person, and senna and salts in the morning. But this should only be done when brisk purging is wanted.

Piles.

Piles may be much relieved by washing and gently pushing them up every time after the bowels have been moved. Smearing them gently with olive oil will facilitate the operation. If they accompany constipation the bowels should be kept open with castor oil. Half a teaspoonful of cream of tartar mixed with as much sulphur may be taken in some treacle or preserves every night.

Diarrhœa or looseness of the bowels.

When diarrhœa comes on suddenly in a healthy person, something injurious has likely been swallowed by the patient. Let it go on for an hour or two and put him on slop diet. But when there is much pain, the efforts of nature may be aided with a dose of castor oil. If it still continues give the diarrhœa mixture as directed on the bottle. The diarrhœa of infants at the breast may often be cured by diminishing the supply of milk for a time. But if it continues the mixture may be given in proportion to the age of the child. The strength must be kept up with milk and water, barley water, thin arrow-root or beef tea. When the breath or evacuations are sour, a pinch of cooking soda will be useful and when the diarrhœa accompanies the teething or other fever, 3 or 4 drops of ipecacuanha wine may be added to it.

Dysentery.

This is a more serious disease, being accompanied with pain and straining. The diarrhœa mixture should be given, in addition to which hot linseed poultices applied to the belly will stop the pain and straining. The bowels should be opened every second or third day with castor oil.

Cholera.

In this disease the stools at the second stage resemble rice water. But it begins with simple diarrhœa. Give the diarrhœa mixture after every loose motion until the looseness ceases. In these three diseases, fresh fruit or vegetables are particularly to be avoided at first as well as large quantities of water.

Dropsy and Diseases of the Kidneys.

This disease may be known by the swelling, without pain or redness of the skin which it causes, and by the indentation or hollow which will be left by the pressure of the finger on front of the shin bone. Care must be taken to avoid cold, exposure or fatigue. When it occurs suddenly with feverishness, the bowels should be well purged with castor oil, and if there is scanty urine with pain in the loins, hot fomentations

will be of service. When there has been no fever or when it has diminished, a teaspoonful of cream of tartar should be given in some sugar and water three times a day. If the urine does not increase, as much as two teaspoonfuls may be given three times a day. In acute attacks the diet should be rather low, but in old cases it should be as nourishing as possible. 10 to 20 drops of tincture of iron in a little water or wine before meals, and weak gin during meals may be taken with advantage.

Indigestion and acidity of the stomach.

A great deal may be done to mitigate these complaints, or they may even be cured by attention to diet, and exercise in the open air. Imperfectly boiled vegetables, and greasy or too rich food are all causes of indigestion. 30 drops of tincture of gentian in a wine glassful of water before meals and oat meal porridge for breakfast will often cure it.

If the food sours on the stomach, as much rhubarb powder as will lie on a five cent piece, mixed with three times as much cooking soda, should be taken twice a day a quarter of an hour before meals, or else a teaspoonful of magnesia in water may be taken. If pain after meals is the chief symptom, half a teaspoonful of ginger, in some hot water and sugar, will often cure it. When the pain is obstinate a mustard plaster may be applied to the pit of the stomach.

Loss of Appetite, Paleness, Debility and Weakness.

A variety of food may tempt the appetite, and a teaspoonful of tincture of gentian, half an hour before meals, three times a day is a good tonic. It may be given in a little wine, whiskey, or water and sugar. A glass of wine two or three times a day will keep up the strength, and the paleness, which is generally due to want of iron in the blood, will be cured with 10 to 20 drops of tincture of iron in a little water three times a day continued for several weeks.

Fainting.

The person must be laid down with *his head as low as the rest of the body.* Give him plenty of air and sprinkle cold water over his face and chest.

Fits.

Give the patient plenty of air, and loosen all clothes about the neck and body. Do not attempt to make him swallow anything until you are sure he is sensible, and do not use unnecessary violence in restraining struggling movements. Do nothing more until the fit is over, when you will get the bowels open. Keep the patient quiet and put him on slop diet.

Common Cold and Influenza.

A common cold, which, when left alone sometimes leads to fatal results, may often or almost always be stopped if taken in time. The first thing to do is to try to break it in the following manner: Put the feet and legs in a pail of hot water, containing a tablespoonful of mustard, during twenty minutes, and at the same time give a dose of Dover powder, which must be repeated during the night, if the first one does not bring on perspiration. Then put the patient into a warm bed, put bottles of hot water or hot bricks to the feet and cover him well with blankets, and do anything else that will bring on a heavy perspiration. Of course care must be taken not to allow the patient to become chilled. He will probably be well in the morning.

When there is much coughing or wheezing, confinement to bed for some time may be necessary, especially if there is also feverishness. A mustard plaster to the chest and the cough mixture as directed will be of service.

Inflammatory Sore Throat.

When slight, confinement to the house, wearing a piece of flannel round the throat, and rubbing the neck and chest with camphor liniment, will be sufficient. When it sets in violently with feverishness, and if in a grown person, as much Dover powder as will lie on a five cent piece should be given three times a night (for one night only) to produce perspiration, and a mustard plaster may be applied externally. For children follow the same treatment, but in proportion to their age.

Hooping Cough.

In mild cases and in fine weather, confinement to the house is unnecessary, but flannels must be worn, and cold and damp avoided. In severe cases the room should be kept warm and well ventilated, 20 drops of ipecacuanha wine, and half as much rhubarb as will lie on a five cent piece should be given every second night, but if it produces vomiting it may be left off for a day or two. The cough mixture must be taken three times a day. Camphor liniment and olive oil rubbed on the chest, or a mustard plaster will remove difficult breathing. When the tendency to cough remains after the patient has regained strength, 3 or 4 drops of tincture of iron may be given two or three times a day.

Bronchitis and Inflammation of the Lungs.

When a healthy person after exposure to cold is seized with feverishness, difficult breathing, cough or pain in the side, begin by giving a teaspoonful of ipecacuanha wine two or three times until vomiting is produced. Then put on the chest a cloth soaked in hot water and sprinkled with turpentine. If this does not bring sufficient relief, replace the hot cloth with a hot linseed meal poultice on the part of the chest where the pain is felt and replace it every four hours. If the pain occupies only a small part of the side, a mustard plaster will be better. As soon as vomiting has been effected, adopt the use of cough mixture as directed. An excellent cure for all kinds of coughs may be made by boiling a handful of flax seed in a quart of water for an hour or two. Then strain off the liquid and sweeten it to taste. The patient to swallow a mouthful every time he coughs.

Fever.

Hot skin with full and rapid pulse are generally felt with fever. This forerunner of a great many diseases may be recognised by weakness, loss of appetite, headache, pain in the limbs, and shivering coming on gradually. If after three or four days there is no eruption on the skin it is likely a case of simple fever. If there are spots it is either small pox, measles, or scarlet fever. The general management of all these fevers is pretty much the same. First of all carry out all the directions given at the beginning of this pamphlet as given in the article

"General management of severe illnesses." Besides these precautions the person who nurses the sick should not inhale the patient's breath nor remain too long without eating and taking exercise. All dirty clothes should be immediately put into a tub of boiling water. The patient should be kept cool and water may be given as often as asked for, but in *very* small quantities.

Often a fever may be prevented if at the very commencement a teaspoonful of ipecacuanha wine be taken and repeated every ten minutes until vomiting is produced. A drink of warm camomile water will assist the vomiting. Then follow the same directions as given for the beginning of a cold, namely:—Dover powder to produce perspiration. But if these means produce no effect by the next day, medicine will generally be of no further use; the fever must take its course, and all that can be done is to carry out the following directions.

Medicine should not be used to produce a motion. Every third or fourth day this may be obtained by injecting into the passage a tumbler full of warm soap water, which must be held in as long as possible. If on the contrary there is diarrhœa, the "Diarrhœa Mixture" may be given as directed.

If the belly is hard and sore, a cloth wrung out in hot water and sprinkled with turpentine must be applied. If it is very much swollen hot linseed meal poultices should replace the hot cloths.

In severe cases the head should be shaved and kept cool with cold wet cloths.

A little lemonade made with tartaric acid and sugar or cream of tartar and sugar given occasionally, will somewhat soothe the burning heat.

After a motion or after passing water, the parts should be washed in a little warm water, but it must be done under the clothes.

Very little food must be given and never more nor oftener than a teaspoonful an hour. This should consist of milk, barley water, and beef tea at the commencement of the fever.

During the middle or crisis a teaspoonful of wine or half that quantity of brandy may be given every hour, and during the end or convalescence, after the worst is over, a small quantity of toast and tea, arrow-root or sago may be given three times a day. No vegetables should be given for weeks after, and feeding up must be done with great caution.

Measles, Scarlet Fever and Small-Pox.

In these diseases the same precautions are to be taken as are indicated in the articles on "General Management" and "Fever" with the addition of this: When the nurse is changing the bedding or other clothing the breath should be held in as much as possible as the dust which arises is infectious. Medicine should be used but little. As there is a tendency to bronchitis in measles, the patient must not be allowed to catch cold. If there is coughing, the chest might be poulticed with linseed meal. Vaccination prevents small-pox. Scarlet fever should be treated the same as other fevers. If the skin is very hot it may occasionally be bathed with warm water. When the throat is very sore it may be poulticed externally with hot linseed meal which should always boil before being applied.

During recovery from all these diseases great care is necessary to guard against cold and overheating.

Asthma.

A fit of asthma may often be prevented by taking a teaspoonful of paregoric.

Erysipelas of the head and face.

If the attack is attended with much fever, treat the patient at first as in fever with a small dose of ipecacuanha wine. If the patient be weak 20 drops of tincture of iron may be given three times a day in a little water. A piece of cotton soaked in the following mixture will relieve the stinging pain in the parts affected :—As much sulphate of zinc as will lie on a twenty-five cent piece dissolved in a tumbler full of water.

Worms.

There are generally two kinds of worms infesting children ; the thread worm found only in the passage and resembling little white threads, and another kind resembling the common earth worm inhabiting the intestines. In the latter case the child's nose is generally itchy. For the worm in the passage, which causes great itching of that part, use the following injection :—A wine glassful of castor oil well mixed with as much turpentine. The large round worms will be expelled by the following treatment : —Take as much santonine worm powder as will lie on a five cent piece, and divide it into five powders ; give one of these (to a child of six, and less in proportion to age) at night, and a dose of castor oil in the morning for three or four days in succession. When the worms are gone give 5 drops of tincture of iron three times a day for a week, to prevent their return.

Toothache, Face-ache and Neuralgia.

The bowels should be opened and regulated, if necessary, to cure the indigestion or acidity of the stomach which are generally the cause of these diseases. If the pain is caused by a hollow tooth, clean out the cavity well and fill it with a piece of lint soaked in pain killer. When the pain is not caused by a decayed tooth, a bag of hot salt may be applied externally. If the pain still continues, tincture of iron may be given.

Rheumatism.

Give as much Dover powder as will lie on a five cent piece every night when the attack is severe. Hot flannels on the joints will ease the pain.

Fever and Ague.

Quinine or tincture of iron may be given.

Accidents—Wounds.

Cleanse the wound, bring the sides together and bind it up after having placed upon it a piece of lint soaked in Friar's Balsam. If the wound be deep and gaping bring the

sides together with a few stitches of a fine needle and thread, and some narrow strips of sticking plaster. If it be much inflamed, lint, soaked in cold water, should be kept on, but if it shows signs of gathering, a hot poultice should be applied.

Dislocations.

When the arm is out of joint at the shoulder put the patient on his back; the person about to set it should take off his boot, press his heel into the arm-pit and pull the arm steadily, when the bone will slip into the socket with a snap.

When it is out of joint at the elbow, one person should pull the lower half of the arm down, and another the upper half up, while a third should with his thumbs press the protuberance at the elbow downwards and forwards.

Fingers are put in joint in the same manner.

For broken bones, all that can be done is to put the broken ends together, and keep them so with the aid of bandages and splints or pieces of wood.

Bleeding.

Bleeding can generally be stopped by pressure. If the blood be of a bright red and jerky or in jets, the pressure should be made on the side of the wound nearest the heart, but if it be dark or from a vein, the pressure should be made on the side of the wound furthest from the heart. The pressure can be made with a bandage drawn very tight. If the wound be in the arm or leg, the limb should be raised so as to aid the return of the blood to the heart.

Should the part be much inflamed, warm poultices should be applied, but not for more than two days at a time.

In order to keep the limb from swelling, the bandage should begin at the extremity and continue up to the part requiring pressure.

Bleeding at the nose, unless very severe, should be allowed to continue. If it threaten life, the nostrils should be gently plugged with wadding or lint.

Frost Bites.

Rub the part *gently* with a piece of *smooth* ice or snow until thawed, and do not let the person approach the fire on any account. Cold water cloths should be kept on for some time.

Burns and Scalds.

The injured parts should be immediately soaked in olive oil, then covered with flour and a moderately tight bandage over all. The part should not be allowed to hang down. If it mortifies and discharges matter, poultices should be kept on until dead-looking parts have come away, and then water dressing should be applied and continually renewed.

Inflamed Eyes.

They will be greatly relieved by the application of the following eye-wash :—Half as much sulphate of zinc as will lie on a five cent piece dissolved in three wineglassfuls of rain water.

Sprains and Bruises.

Pain killer gently rubbed into the joint, after which, cold water applications are best for bruises, but warm water applications are best for sprains.

Treatment of Poisoning.

The poisonous substance should be got rid of by vomiting which should be brought on *immediately*. This may be done with two or three teaspoonfuls of mustard in a cupful of warm water. The surest emetic is sulphate of zinc, of which give two or three times as much as will lie on a five cent piece, in a cupful of warm water. Among the antidotes the principal are :—White of eggs in large quantities, magnesia, vinegar, and salt water.

IV.—DIRECTIONS FOR PREPARING A FEW SIMPLE ARTICLES OF DIET FOR THE SICK AND CONVALESCENT.

Beef-Tea.

Beef-tea is one of the most useful articles of diet in sickness and early convalesence; beef, however, connot be obtained at many of the stations; moreover, as commonly made, beef-tea is scarcely nutritious at all.

When beef can be got, a good essence may be made by putting the lean—cut into small pieces—in a jelly pot, adding enough cold water just to cover the meat, and heating it gently at the fireside for five or six hours, keeping the vessel covered. The essence should then be squeezed out through a cloth and allowed to cool, to remove fat and grease. Diluted with several parts of hot water, this makes a strong beef-tea.

Arrowroot.

To make a breakfast-cupful of arrowroot and milk, rub down into a smooth paste a dessert-spoonful of arrowroot with a dessert-spoonful of cold milk, then add the rest of the milk boiling, stirring all the time. Arrowroot may be prepared in the same way with water, but it is of little nutritive value in in this form. Sugar and wine, brandy, or preserves may be added to give flavor or strength, as may be desired.

Brandy and Egg.

In cases of great weakness, a table-spoonful of brandy, beat up with the yolk of an egg, and a little water, will be found very sustaining. It may be repeated several times in the twenty-four hours.

Rice Pudding.

Put two table-spoonfuls of whole rice, and a pint and a half of milk into a pudding dish, and bake in a slow oven for two or more hours. It should be made without sugar, and, by attention to the heat and time that answer best, a more palatable rice pudding may be made in this simple way than by any other, and one of which children in particular are often very fond. It should be eaten with sugar, and either hot or cold, but most prefer it perfectly cold.

Custard Pudding.

Beat an egg, mix it with a pint and a half of milk, and bake in a pudding-dish for half an hour. Two eggs will make it better. The remarks made about the rice pudding apply to this also.

V.—ON THE PRESERVATION OF HEALTH.

Cleanliness in the Dwellings, Courts, etc.

The Light-House dwellings are generally remarkable for the clean condition in which they are kept, and there is seldom much to find fault with in the condition of the courts, offices, etc.; but it may be well to impress upon the Light Keepers the importance of keeping drains in good order, and allowing no dung-heaps, accumulations of filth, or decaying animal and vegetable matter, pools of stagnant water, etc., to remain near near the dwellings. It may be thought that these precautions are unnecessary, because neglect of them is not always followed by any obvious or immediate bad effects; but it is generally believed that to such neglect is due, not only a depressed condition of the health, but the occasional outbreak of fever and other diseases.

Cleanliness of the person.

Partly from ignorance of the importance of cleansing the skin, partly from the belief that it takes too much time, or is an unpleasant, troublesome operation, the body is often less frequently washed than it ought to be; but if the pores of the skin are choked up by dirt, and prevented from discharging their duty of giving off moisture and animal matter, it is obvious that the health must suffer. Frequent washing is therefore necessary, and fortunately the time required is very short.

For mere purposes of cleanliness, a thorough washing of the whole body with soap and water once a week will probably suffice. But many find great benefit from frequent sponging with cold water, a practice that not only ensures cleanliness, but often singularly hardens the body against cold. A tub is very convenient for the purpose, but an ordinary basin will serve well enough. The body should be well rubbed with a wet sponge or piece of flannel, dried, and finally briskly rubbed with a dry roughish towel for a few minutes, till it is all in a glow of heat. Some, however, cannot stand cold bathing; and when it produces chilliness or languor, it is better to use water more or less warmed. The best time for bathing of this kind is in the morning, immediately on rising from the warm bed, and it should never be practised when the body is chill or

depressed, as after coming off night duty. It should not be lingered over, but done briskly, and a very short time suffices, so that an active man may easily wash and dress in twenty minutes.

It is safe and beneficial for children as well as adults ; but young infants must be bathed in warm water, as described further on, under the head of "General Management of Infancy."

Sea Bathing.

The necessary precautions in sea bathing are,—not to stay in the water too long, nor to go in when cold, fatigued, much overheated, or soon after a full meal. There is no risk, but rather an advantage, in the body being well warmed by a brisk walk before entering the water. All kinds of cold bathing should be given up during illness, even during a common cold, if it be at all severe.

Cleaning the Head and Teeth.

The head should be washed with water pretty frequently, but with soap only occasionally, as it may irritate the scalp. Nothing so effectually preserves the heads of children from troublesome skin diseases, as strict attention to cleanliness. But hard scraping with combs and brushes is mischievous. The hair is torn out, the skin irritated, and a continual fresh formation of scurf produced. Tooth-brushes should not be too hard, and the teeth should be brushed up and down, not across. From ignorance to this, teeth are often worn away close to the gum, and destroyed.

Flannel, and other clothing worn next to the skin, should be frequently changed. It is evident that without this it is of comparatively little use to cleanse the skin.

Warmth.

Probably at no season of the year can Light Keepers safely dispense with wearing flannel, at least on the chest. Wet clothing should always be changed as speedily as possible. Sitting in damp clothes, even in wet stockings, is one of the most common causes of severe colds and dangerous inflammations. Before or after every unusual exposure or exertion,

the gardens is scanty and uncertain, as must often be the case, or when cows cannot be kept, every effort to obtain supplies of fresh vegetables and milk from other sources should be made. The most important vegetable is the potato, but the other vegetables named above are excellent antiscorbutics, and onions, from the ease with which they can be stored, would be found of great service in the event of unexpected deficiencies of the other kinds.

The importance of securing a good supply of milk is so great that it cannot be too much enforced. No single article of food can compare with milk in usefulness Not only is it an excellent preventive of scurvy, and therefore of great value in the ordinary diet of the adult, particularly when fresh vegetables are deficient, but as a resource in sickness and convalescence, and above all for the healthy rearing of children, it is almost indispensable. Children seldom thrive well upon a diet which does not consist largely of milk; and although no marked immediate bad effects may appear to result to them from a deficiency of milk, it is probable that delicacy of constitution, or even consumption and other diseases in after life, may be often mainly due to this cause.

Subjects connected with Diet.

Proper mastication, or chewing of the food, is necessary to good digestion. Hence hasty bolting of food, and washing down solids with liquids, are most injudicious. Liquids also should not be swallowed too hot. It is a good rule at breakfast to eat the solids first, and drink the tea or coffee slowly at the end of the meal. Thorough mastication is ensured, and the liquid has time to cool. Pickles in moderation are probably beneficial when fresh vegetables are scarce. Meals should be taken at proper intervals. Generally speaking, for adults, about five hours should elapse between large meals; but young children can seldom go without eating for more than four hours during the daytime, and sometimes even long after weaning, they are the better for a few mouthfuls of simple food during the night. There is great variety among children in these respects, and it is only by observing their peculiarities that they can be reared in a healthy manner.

Exercise.

The occupation of Lighthouse Keepers is in a great measure indoors and sedentary, and they may often be the better for taking more active exercise in the open air. Not only is a higher general standard of health maintained by an out-of-doors life, but some of the lesser maladies, such as indigestion and costiveness, may be entirely removed by it. For this purpose, working at gardening, or taking regular brisk walking exercise, will be found of great service. All exercise should stop short of producing excessive fatigue. The clothing of children should be loose and easy, to admit free use of their muscles; but it is a mistake to suppose that they need not be so warmly clad as adults. Their strength should not be overtaxed by regular work or carrying heavy weights. Not unfrequently injury is done to their tender frames, by allowing them to carry infants nearly as heavy as themselves.

Diet.

For the maintenance of health it is essential to have not only a sufficient quantity, but a proper kind of food. It is not likely that the Light Keepers will suffer from a deficiency in the amount of their supplies, if they exercise ordinary forethought in obtaining them: but at the more remote Stations they may possibly be exposed to risk from the difficulty in procuring a sufficient variety of food.

It is necessary, therefore, to make a few remarks on this subject, more especially as the evil effects of an erroneous diet are often long in showing themselves, and hence are apt to be overlooked or misunderstood.

Scurvy.

One of the results most to be dreaded from a want of variety in food is the breaking out of scurvy. Various faulty diets will produce it sooner or later, but particularly one consisting of salt meat and dry vegetable food, such as biscuit; and its occurrence is greatly favoured by neglect of exercise and ventilation, with exposure to damp. All risk of scurvy, however, is prevented by the use of milk and potatoes, or turnips, carrots, cabbages, and onions. Hence the importance of cultivating and improving the gardens, and of keeping cows in all cases where it is possible; and when the yield of

A deficiency of cow's milk would be an additional reason for delay. Weaning should be accomplished gradually, by substituting cow's milk, and, later, boiled milk and bread, rice, gruel, or beef-tea, more and more frequently for the breast milk.

Precautions to be taken by the Mother after Confinement and during Nursing.

There is probably no error that mothers require to be warned against more earnestly than that of rising and working too soon after their confinement. The desire to be up and to go about their household duties is very natural; but let them reflect that, unless they take the necessary rest after confinement, recovery will be incomplete for months, and the health may be injured for the remainder of life.

As a general rule, the mother should not leave bed, or even sit up in it, for four or five days after delivery. The bowels need not be moved for the first two or three days, after which a gentle dose of castor oil may be taken if required. The bladder should be emptied by going on the hands and knees. Cleanliness must be attended to, and the parts may be washed daily with warm water, taking care not to wet the bed, or expose the body to cold. Good ventilation is important. If all goes well, after four or five days the mother may dress, but she should still lie down all day, and only after a few days more should she begin to go about, doing very little at first, and gradually increasing her work as strength returns

The diet for the first few days should be spare, consisting of arrowroot and milk, bread or biscuit, and light pudding; afterwards it should be gradually increased. When quite recovered, her diet should be abundant, and not too stimulating, including a fair allowance of meat, and plenty of milk. Stimulating drinks are not at all necessary in the great majority of cases, and are often injurious. When the strength does require support, malt liquors are the best.

Exercise in the open air is of great importance, and is the more easily managed, as nothing is so good for the infant as to be carried about in the open air in tolerable weather. Sometimes, when strength is failing it may be restored, so that nursing can be continued, by taking cod-liver oil; or iron may be tried when the weakness is accompanied by paleness of the

Cooking.

There is little doubt that disorders of the digestive system are often aggravated, or even caused, by bad cookery. A very little skill suffices for the cooking of simple articles of food; yet, from ignorance of its importance, or from carelessness, this skill is seldom acquired. The consequences are serious to the healthy, but much more so to the sick and convalescent.

VI.—GENERAL MANAGEMENT OF INFANCY AND CHILDHOOD.

Feeding of Infants.

A great part of the disorders of infancy depend upon erroneous feeding, and are to be cured, not so much by medicine, as by attention to diet and general management.

The natural food of an infant is, of course, its mother's milk, and if the supply is sufficient and of good quality, no other food of any kind should be given during the first few months of life. An infant may generally be put to the breast eight or ten hours after birth; and for the first few days its demands may be taken as the guide for the times of suckling, but it should soon be accustomed to be fed at regular intervals of from three to four hours. The health of infants is sure to suffer, unless the stomach is allowed to digest one supply of milk before receiving another. Therefore the breast should not be continually offered as a means of soothing restlessness and irritability. The milk may be taken readily, and crying may cease for a time, but it will be at the expense of health.

Very often infants may be trained from an early period to go on a longer time than four hours without milk during the night, and this may be of great service both to mother and child. Infants, after the first few weeks of life, should be a great deal in the open air in fine weather. Even in winter, whenever the weather is tolerably good, they should be taken out for short periods, with due precautions against cold.

Weaning.

The proper time for weaning is generally between the ninth and twelfth month; but it may be delayed with advantage when the child is ill-grown, and the teeth are backward, provided the mother is strong, and not suffering from nursing.

certainly disorder the bowels. After every meal, therefore, any milk that may be over should be thrown away, and the bottle thoroughly washed with warm water. The nipple must be also perfectly clean ; indeed fresh leather or linen should be used daily. The position of the infant in feeding should be as nearly as possible that of taking the breast ; above all the head should not be allowed to hang down, and after meals the child should be kept quiet and warm. Sometimes milk disagrees, because the animals are not properly fed ; they should get hay and grass by preference. When milk disagrees, cream diluted with three or four parts of water often answers very well.

White of egg, raw, or slightly warmed or diluted, beef tea, cod-liver oil, may all be useful in partially supplying a deficiency of milk.

Vegetable food for Infants.

Farinaceous food, such as bread, flour, rice, etc., is not nutritious to very young infants. In small amount it may be useful after the first few months of life, but as a general rule it should not form a considerable part of the diet till after the first year, and fresh vegetables should not be given till somewhat later. Boiled milk and bread, or powdered biscuit, wheat flour made into pap, oatmeal gruel, pease meal, are much more nourishing than arrowroot, tapioca, and sago, which are good vehicles for giving milk, but contain little nutriment themselves.

General Remarks.

Contrary to a common belief, children should be clothed even more warmly than adults, but at the same time they must not be rendered delicate by being overheated. Bed curtains should not be drawn closely around them when sleeping. Infants a few months old should not be kept in the upright posture. They should be allowed to learn all the stages from crawling to walking for themselves, as much mischief may arise from trying to force on the power of walking.

Washing.

They should be washed every morning, but not for an hour after feeding. The best plan is to place them in a bath in

lips and complexion. Nursing must be given up all together when weakness is excessive, particularly if there is also headache and impaired sight. Sometimes the milk may not agree with the child when the mother's health is out of sorts; but after a few days' interval, particularly if the health has been restored by simple treatment, it may be found to agree very well. To preserve the power of yielding milk, however, the breast must be emptied regularly in the meantime.

Bringing up by Hand.

When a child has to be weaned at a very early period, or brought up by hand from its birth, the natural food, and the way of giving it, should be imitated as closely as possible. Yet the attempt is often made to rear infants on bread, arrow-root, and similar articles, generally with most lamentable results.

The best substitute for human milk is the milk of some of the lower animals. Cow's milk is the kind most generally to be had. It requires dilution with an equal quantity of water, or with more if it be very rich, for very young infants, the proportion of water being gradually diminished as they grow older. A tea-spoonful of sugar should also be added to the pint of milk and water.

Milk should always be given, if possible, warm from the cow, and if it has got cold, should be heated to a temperature of 98° Fahr., which it is better to do by adding hot water, than by heating the milk itself. The quantity to be given must vary with age and strength of appetite, but there is probably more danger of over than under feeding. Generally speaking, about two wine-glassfuls at a time will suffice for an infant two or three weeks old. Intervals of from three to four hours must be observed, just as in suckling. Until after the sixth month, when the spoon may be used, the infant should suck the milk from the bottle by means of an artificial nipple, which may be either a cow's teat, or made of washed chamois leather or folds of linen, pierced with a small hole. It must not project too far from the neck of the bottle, or the child's lips will squeeze the sides together and prevent the passage of the milk. A piece of sponge may be inserted in the nipple, to prevent a too rapid passage of the milk. Perfect cleanliness is absolutely essential, as the least sourness of the milk will

a cup of strong coffee is probably the best and safest stimulant. The dwelling-houses should be kept at a moderate temperature—60° Fahr. is sufficient. A greater heat than this causes liability to catch cold. A tendency to catch colds and sore throats may be much lessened, or altogether overcome, by allowing the beard to grow.

Ventilation.

From the unsheltered and stormy situations of many of the Lighthouses, it must often be difficult to carry out ventilation efficiently, with a due regard to warmth and economy of fuel. Much may no doubt be accomplished by exercising ingenuity, and observing the peculiarities of each room and house, but it is impossible to lay down any precise rules for all. In warm weather, by opening doors and windows, ventilation is easily and safely managed. A good fire always ensures ventilation; and when a fire is not on, the chimney should not be stuffed up, as when open it acts to a considerable extent as a ventilator, Care must be taken that the air admitted to the room, whether directly from without, or from a passage, is perfectly pure, and has not been contaminated by passing over decomposing matters of any kind. When a bedroom is small, or contains many sleepers, it is well to leave the door partially open, to prevent excessive vitiation of the air.

In the morning, after the inmates are dressed, fresh air should be freely admitted to the sleeping-rooms, and the blankets and sheets should be thoroughly aired. Too often they are allowed to lie upon the bed for a little, which is then made up, even before it is cool. The animal matter continually given off by the skin thus accumulates in the bedding, which becomes in time quite foul. But by daily exposure to the air, blankets and sheets are in a great measure purified, and, with occasional washing, may be kept in a perfectly cleanly condition. It is also useful to air the mattresses frequently, and occasionally to open them, and expose the interior freely to the atmosphere. Bed curtains are only required when it is necessary to protect the sleeper from a draught. To surround the bed entirely with them must be injurious, and very many people dispense with them altogether.

which they can lie comfortably with the whole body up to the neck covered with water, and to rub them while there for a few minutes with a sponge or soft flannel, but without soap. After being thoroughly dried, particularly where folds of skin rest on each other, gentle friction with a dry soft towel may be used. At first the water must have a temperature of 96° to 98° Fahr., but this heat may be gradually reduced as the infant grows older, so that after a few months the bath may be taken nearly cold.

Teething.

The troubles of teething are best managed by attending carefully to diet and regularity of feeding. The food should be rather diminished, and should be unstimulating, chiefly consisting of milk, when there is much irritation ; and if the mother is still nursing, she should not take stimulating liquors. The child should have plenty of fresh air, and it will be much soothed at night by remaining in a tepid bath five or six minutes Should opening medicine be required, a tea-spoonful of castor oil or a few grains of rhubarb may be given.

Diet after Infancy.

When children have passed the period of infancy, fresh vegetables in small quantities, gradually increased, become a wholesome addition to their diet. Bread, biscuit, oatmeal porridge, rice, etc., are also now safe and nutritious ; but it should ever be borne in mind that without milk children seldom thrive as they ought to do. Fresh meat and fish, fowl, etc., may be given occasionally when the back teeth come in, or between the eighteenth and twenty-fourth month. Young children sometimes show a great preference for or aversion to, some kinds of food. In these cases they may generally be allowed to follow their tastes, as they probably choose the kind best suited to them, and might not thrive if forced to take what they dislike. These aversions, however, are sometimes mere fancies, and are easily got over. Oatmeal porridge and brown bread or biscuit are generally very nourishing for children, and often correct a tendency to costiveness both in them and adults. No kind of diet is more nutritious for young and old than porridge and milk when it agrees ; but it must always be remembered that there are nmerous constitutional peculiarities with regard to food, and experience is the only certain teacher as to what will agree. Wine and

spirits should not be given to children unless by medical advice, and when given should be well diluted with water. Tea and coffee should also be given well diluted, and withheld altogether in the early years of childhood.

Vaccination.

Infants should be vaccinated as soon as possible after they are five or six weeks old, provided they are in good health. When they cannot have the services of a skilled vaccinator, the Light-keepers should perform the operation themselves, and it is so easily done that there can be no excuse for neglecting it.

The outer part of the arm, a little below the shoulder where there is least liability to rubbing when the infant is carried about, is the best place to choose. The vaccine matter is sometimes contained in tubes nearly as fine as hairs, each tube containing enough matter for one vaccination. Having prepared the arm by tying up the infant's sleeve, or slitting it open, the two ends of the tube should be broken off, and the contained matter carefully blown out upon the end of the blade of a pen-knife. Five or six scratches should then be made on the arm with a needle, over a space about the size of a threepenny piece, and again at the distance of an inch, the skin being stretched tight. There should be no bleeding; but if bleeding should happen, wait till it stops, and wipe the blood away. Then rub the vaccine matter over the two scratched surfaces with the pen-knife and allow it to dry. Vaccine matter obtained from other sources, if in the dry form must be moistened before use, with a very small drop of water. The part should be protected from injury, until it is quite healed, by preventing the dress from rubbing it.

The effect of vaccination sometimes gradually wears out, and at intervals of seven years or so, it is a wise precaution to revaccinate, particularly if there is no distinct mark on the arm. For this purpose, advantage may be taken of the vaccination of an infant to obtain matter from the vesicles which form on its arm, by opening them with a sharp knife or lancet eight days after the operation. Matter enough to vaccinate several adults or children may thus be obtained.