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A CODE OF RULES  
FOR THE  
PREVENTION  
OF  
INFECTIOUS & CONTAGIOUS DISEASES IN SCHOOLS

ISSUED BY  
THE MEDICAL OFFICERS OF SCHOOLS ASSOCIATION

FIFTH AND ENLARGED EDITION



London

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**Founded 1884.**

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## PREFACE TO THE FIFTH EDITION.

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THIS, the Fifth Edition of the "Code of Rules," has been thoroughly revised: but, with one exception, no alterations or additions of importance have been made. The exception is in Appendix C, which has been made more complete and precise—both as regards disinfectants applicable to particular cases, and how to use them. The information given is derived from a paper read before the Association in the present Session by Mr. A. C. HOUSTON, D.Sc., which seemed to the Council to be well adapted for dissemination amongst all who have the health of schools in charge. The Council is confident that this, the latest addition to the Code, will add materially to its usefulness.

As heretofore, the Council is greatly indebted to Dr. Shelly, one of its Honorary Secretaries for many years, for the time and labour he has expended in preparing and passing the new edition through the press.

**JAMES F. GOODHART**, *President.*

II, CHANDOS STREET,  
CAVENDISH SQUARE,  
*London, W., 1902.*



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## PREFACE TO THE FOURTH EDITION.

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OBSERVATIONS accumulated during the eight years—fruitful in advancing knowledge—which have elapsed since the last edition of the Code was issued, have demonstrated the desirability of making certain alterations in some of its recommendations. The occasion has been seized for again revising the whole work: with the result that almost every paragraph has been practically recast, although this has been accomplished without any material alteration in its form as a whole.

Numerous modifications of detail have been made in order that the general and special sanitary measures recommended might be brought into line with the hygienic teaching of the day; and the Appendix on Disinfection has been materially altered and extended.

The “Quarantine Periods” allotted to Scarlatina and to Small-pox have been reduced: and attention is drawn to the fact that this “quarantine” of a person who has been exposed to infection is both uncertain and inadequate, unless care be taken—by insisting on disinfection of the person and of the clothing at the commencement of the quarantine—to ensure against his becoming infected by fomites during that period.

It is now recognised that patients suffering from German Measles may, with safety to others, resume their ordinary avocations within ten days from the appearance of the rash; and a similar limit applies to



the common infectious exanthem which frequently bears a close resemblance to *Rubella*, and for which the term *Epidemic Roseola* has been retained as a convenient synonym.

An important note has been added on Diphtheria and the paragraphs relating to "Ophthalmia" have been re-written, as the outcome of recent bacterioscopic investigations.

With regard to some changes in nomenclature, it should be mentioned that a representation from the Council of the Association—presented by its then President, Dr. Howship Dickinson, to the Nomenclature Committee of the Royal College of Physicians—resulted in the adoption of *Rubella* and *Morbilli* as the official synonyms of the diseases known as German Measles and Measles respectively. The three maladies—Measles, German Measles, and Epidemic Roseola—are now, therefore, distinguished by official titles which quite obviate the previously existent confusion.

In view of recent changes in legislation, the Association has felt it a duty to insist on the paramount importance of securing the efficient vaccination (and, at the proper age, the re-vaccination) of every child admitted to a school.

After careful consideration of the subject, it has not been thought expedient to adopt the suggestions which were received from various quarters, to the effect that Influenza should be included amongst the maladies for which the Code prescribes definite periods of isolation and quarantine. During the last decade a mass of important observations on the disease has been accumulated by the Medical Officers of Schools and others. But, beyond the assurance that—in its more virulent forms—the period of incubation often appears to be



extremely short, and that a person suffering from it may be most actively infectious, while the immunity conferred by an attack may vary greatly in duration in different cases, the ascertained facts are not yet such as to admit of their being usefully summarised for precise and universal application.

In relation to another matter now deservedly engaging public attention, it will be observed that the Code makes no specific mention of Tuberculosis. While, however, the various sanitary details therein recommended must be regarded as including an important part of the prophylaxis against this form of disease, it is obvious that special directions for the quarantine and isolation of tuberculous patients would be out of place amongst rules applicable to the management of British schools as these are at present constituted and administered. In this respect the malady in question falls into the same category as Enteric Fever—with which, again it has not been deemed advisable to deal specially in the Code, because any attempt to do so in such a work as this could only result in directions either inadequate or superfluous.

The Association has in the past received many proofs of the satisfaction with which its Code has been accepted by both the professional and the lay public: and some years since it was gratified by observing that the then Minister of Public Instruction in France had adopted all its more important recommendations with regard to infectious diseases, and had officially applied them to the management of the public educational establishments throughout that country.

The work of revising the previous edition of the Code, and of embodying in its present form the many alterations and additions which appeared called for,



was entrusted by the Council to a Committee consisting of Dr. Abercrombie, Dr. Louis Parkes, and the Honorary Secretaries. This Committee held several protracted meetings, and devoted a large amount of time to the work, including a full consideration of the various valuable suggestions submitted by many members of the Association and others specially interested in the subject. The Council takes this opportunity of expressing its cordial appreciation of the painstaking care with which this Committee has fulfilled a task involving no inconsiderable amount of labour, and calling for the exercise of much discriminating judgment.

The Council is most anxious to keep the teaching of its Code abreast with the improved medical and hygienic knowledge of the age; and it trusts that the time and labour which have been expended on the preparation of the present edition may serve to maintain its position as an authoritative and trustworthy manual of reference for all those interested in the admittedly important questions with which it attempts to deal.

**HOWARD MARSH**, *President*.

11, CHANDOS STREET,  
CAVENDISH SQUARE,  
*London, W., 1899.*



## PREFACE TO THE FIRST EDITION.

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IN bringing this Code of Rules before the general public, and the Medical and Scholastic professions in particular, the Medical Officers of Schools Association desire to say a few words as to its compilation.

On the formation of the Association in 1884, one of the most urgent matters which forced itself to the front, as claiming immediate attention, was the need for the general adoption of more definite rules for guarding our great educational establishments from the outbreak and spread of preventible infectious disease.

With this object an attempt was made to ascertain the rules and customs which are at present enforced in such cases, by circulating to every school of any importance in the country an elaborate series of questions covering the ground of this inquiry.

The replies thus obtained proved very interesting, and contained much valuable material; at the same time they revealed wide differences of procedure in different institutions when dealing with the same conditions of disease, and, in some instances, a considerable laxity of precaution. Nothing could more clearly demonstrate the necessity for some definite and generally recognised standard of School Hygiene than the curiously divergent character of many of the answers furnished in response to our paper of questions on the commoner epidemic diseases.

In the course of their deliberations on the information thus collected, the Association have embodied



opinions and suggestions from many special authorities on the several questions dealt with. It is hoped that the result of these labours may prove no less useful to parents and guardians, who deal with the home life of the children, than to the school authorities, since without the sympathy and intelligent co-operation of the former no real progress can be made in this great department of preventive medicine, which is fraught with so much benefit to the community at large.

The Medical Officers of Schools Association cannot allow this Code to go forth to the public without placing on record the great debt of gratitude which they owe to their indefatigable Secretary, Dr. ALDERSMITH, the Medical Officer of Christ's Hospital. This Code is to a very large extent based on the valuable paper on "*The Preventive Treatment of Infectious Diseases in Public and High Schools*," read by him at the *Conference on School Hygiene*, at the International Health Exhibition. The extensive correspondence involved in communicating with a very large number of schools and of individuals in all parts of the kingdom, has been entirely in his hands; upon him devolved the heavy labour of comparing and collating the replies received from the various authorities consulted; and upon him, too, has fallen the duty of preparing this work for the press.

C. J. H. EVATT, M.D.,

*Surgeon-Major Army Medical Staff,  
President, M.O.S.A.*

WOOLWICH,

January, 1885.



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A CODE OF RULES  
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PREVENTION  
OF  
INFECTIOUS AND CONTAGIOUS DISEASES IN SCHOOLS  
ADOPTED BY  
THE MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

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SECTION I.  
GENERAL HYGIENE.

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I. **GENERAL HYGIENE.**—All the **hygienic arrangements** of the school—if not certainly known to be in accord with modern sanitary science—should be thoroughly inspected by a competent person, and any defect remedied as soon as possible.

Amongst other essentials, the following points require special attention, viz. :—

2. That all **drains** are efficiently ventilated, and cut off Drainage from the sewer by a disconnecting man-hole chamber with fresh-air inlet.

3. That all **soil pipes** are efficiently ventilated by Soil pipes, carrying them (full bore) above the top of the buildings, and not near to any window or chimney.



- Joints. 4. That **the joints** of all soil pipes and soil pipe branches are air- and water-tight ; and that soil pipes are fixed outside the buildings.
- Closets. 5. That **pan-closets** are replaced by closets of improved construction, which do not allow of the accumulation of sediment or of sewer gas. It is desirable that closets should be placed in detached or semi-detached buildings efficiently ventilated from the outer air. and not in the *basement* of the school.
- Drains. 6. That no **drains** pass under the school buildings.
- Earth Closets. 7. That, in localities where there is no efficient drainage, **earth-closets** may be adopted, and should be placed in detached buildings (*vide* 5, *supra*).
- Cesspools. 8. In exceptional cases, where a **cesspool** must exist, this should be placed no nearer to a dwelling house than fifty yards ; its ventilation must be effected by pipes of sufficient height, not less than four inches in diameter, and opening in a safe situation ; it must be cemented inside, and clay puddled outside ; and must be so large as to allow of its being emptied during the vacations only.
- Overflow and waste pipes. 9. That all **overflow, rain-water, and waste pipes** discharge in the open near or over properly trapped gullies.
- Dust-bins. 10. That no fixed **dust-bins** be permitted, but that the daily dust and refuse be removed to a distance in properly covered pails or metallic boxes.
- Drains to be flushed. 11. That all **drain gullies** be flushed at regular intervals ; as otherwise the water in the traps may dry up, and drain air thus escape.
- Repairs. 12. That when any **sanitary repairs** or alterations become necessary, they should, unless immediately required, be done during vacation time, and under skilled supervision.

Separate establishments for younger and for older pupils.

II. **SENIOR AND JUNIOR SCHOOLS.**—In schools where there is a large number of pupils greatly varying in age, it is a good plan to have



two distinct establishments in separate localities, one for pupils under eleven or twelve, and another for pupils above that age. By this arrangement epidemics (especially of measles) may generally be restricted to the junior school; and thus the more important work of the senior school does not suffer.

III. **MEDICAL RESPONSIBILITY.**—A most important precaution towards the prevention of and the dealing with infectious disease in schools, is **undivided medical responsibility.**

Medical Officer should possess undivided medical responsibility.

2. Therefore one Medical Man, and one only, should have the entire school, including all masters and servants and their families, under his medical supervision. He should have full control regarding the entrance into the school of all boys who are known to have recently had any illness, or to have been exposed to infection, as also over the whole arrangements for quarantine and disinfection; being responsible only to the Governing Body.\* He should also have power to act immediately, if any sanitary measures are urgently needed.

His powers.

3. The Medical Officer of the school should **periodically inspect** the entire school premises; and in the case of Public Schools, should send in a report to the Governing Body, pointing out any alterations desirable from a sanitary point of view.

Medical inspection of premises.

4. An **annual return** of school illnesses from the Medical Officer to the Governing Body of the School is very desirable.

Annual return of sickness.

IV. **WATER SUPPLY.**—Whatever its source may be, the **water supply** must certainly be

Water.

\* Whatever its actual composition in different cases, the Governing Body is here taken to include the Head Master of the School.



above all suspicion. When any well-water is used, the surroundings, and possible contaminations by cesspools, drains, and deposits of foul matter in its vicinity, ought to be investigated. It is also advisable to have the well regularly inspected and the water periodically analysed (chemically and bacterioscopically)—and this not always at the same season of the year.\*

2. In all instances the **drinking water** should be obtained from pipes on a constant service, or (if the supply be intermittent) from cisterns distinct from those supplying water-closets, urinals, and slop sinks.

Cisterns.

3. All **cisterns** (which should be properly covered) must be frequently inspected and periodically cleansed.

4. If **filters** be used, they should be of the sterilising type.

Milk and Food.

V. **MILK AND FOOD SUPPLY.**—The **milk** should be obtained from a trustworthy source, preferably from a dairy under the control of the School Authorities.

2. The school **dairy**, the dairy farm, **the milk**, and the **food supplies** generally, should be inspected at intervals by the Medical Officer of the school, who should also from time to time visit the dining halls and kitchen so as to satisfy himself that the food is properly cooked and served.

Laundry.

VI. **LAUNDRY.**—Every large school should have its own **laundry**. If this be impossible, precautions should be taken to prevent linen from other sources being washed with the school linen.

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\* In cases in which the slightest suspicion of contamination exists, an analysis ought to be made at least every month.



## SECTION II.

## THE INFIRMARY &amp; THE SANATORIUM.

VII. **INFIRMARY.**—A large school should <sup>Infirmary.</sup> possess a good detached **Infirmary**, to which *all*\* cases of illness should be sent, and in which infectious cases can be isolated. It should be large enough to provide ample accommodation, with sufficient cubic space† and good ventilation. Whatever the construction and arrangements may be,‡ it is of the utmost importance that the *infectious wards* (with nurses' apartments, bath, lavatory, and small kitchen) be isolated as far as possible from the rest of the building.

VIII. **SANATORIUM.**—Whenever practicable, there should be a separate building (**Sanatorium**) for infectious diseases. <sup>Separate building for infectious diseases.</sup>

\* Unless a Sanatorium exists for the reception of cases of infectious illness.—*Vide* VIII., *infra*.

† Not less than 1,500 cubic feet for each infectious case, and not less than 1,000 cubic feet for each non-infectious case, with corresponding floor space.—*Vide* "The Construction and Maintenance of School Infirmaries and Sanatoria," p. 19 (*b*) for Infirmery, and p. 39 for Infectious Wards, and Sanatorium, with its footnote.

‡ *Vide* "The Construction and Maintenance of School Infirmaries and Sanatoria"; and "The Arrangement and Construction of School Sanatoria," issued by the Association.



Infectious  
wards.

2. If there be not two separate buildings, the **infectious wards** should be at the *top* of the Infirmary, and approached by a separate well-ventilated staircase, with doors at the top and the bottom.

3. One of the **infectious wards** should always be in readiness ; and during the cooler months, warmed. This can be managed by open fires ; but the best plan is to have in addition hot-water pipes, which can be so arranged as to keep the wards at a given temperature and the mattresses aired and ready for use.

Games and  
Books.

4. It is necessary to supply each class of infectious patients with a **separate set of books** and **games** for their exclusive use.

Sick Room.

**IX. SICK ROOM.**—In small schools there ought always to be one or more "**sick-rooms,**" sufficiently large and well ventilated, *situated at the top of the house*, and isolated as completely as possible.

Slight ailments to be reported.

2. Any pupil suffering from headache, sickness, or sore throat, should be sent to the Infirmary without delay. Pupils should be required to report the slightest ailment *at once* to the House Master, Matron, or Medical Officer.



## SECTION III.

# MEDICAL EXAMINATION OF SCHOLARS ON ADMISSION, &c.

X. **ENTRANCE CERTIFICATES.\***—A **Certificate** should be required on the entry of each pupil, signed by the parent or guardian, not earlier than the day before the admission, stating that “to the best of his or her knowledge and belief, the pupil has not, for at least three weeks, been exposed to any infectious disease, or entered any house where such disease existed” (and then should follow a list of these diseases, viz., scarlatina, measles, &c., as per Rule XIII., so that no mistake can be made). If this assurance cannot be given, notice must be at once forwarded to the school authorities. The pupil, his or her clothes, &c., having been disinfected,† should then be sent away to some house free from infection for quarantine, in accordance with the school regulations (*vide* Rule XIII. p. 24), and the disinfection of the pupil and of the clothes should be repeated at the end of the specified time of quarantine.

Certificates  
required on  
admission.

---

\* *Vide* Appendix A.

† This is of especial importance after exposure to scarlet fever, small-pox, or diphtheria.



2. It is also desirable to request immediate notice to be given to the School Authorities by the parents or guardians in the event of any case of infectious disease occurring in their house within three weeks of the entry, or the return, of a pupil to school. A request to this effect should be printed on the certificate form. (See pp. 36 and 37.)

Primary or  
Entrance  
certificate.

3. The infectious diseases which the pupil has already suffered from should be recorded on this **primary certificate**, and the paper kept for future reference.

Examination  
on admission

4. In all schools it is advisable for the Medical Officer to make a **physical examination** of each pupil on entrance. In all junior schools, a special examination of the scalp should be made for **ringworm**; an examination should also be made for vaccination marks, and if these be absent or unsatisfactory, immediate vaccination should be insisted upon. In every case, when the pupil has reached the period of puberty re-vaccination should be advised.

5. It may be advisable to examine the eyelids of every child on admission to a school, so as to exclude cases of **Trachoma**. In certain institutions—for example, those of the parochial class—such inspections should be repeated at intervals of a few months.

And at the  
beginning of  
each term.

XI. **TERM CERTIFICATES.**—When a pupil goes home for the holidays, a **Certificate Form** should be sent to the parents or guardians (see Form No. II., p. 37), accompanied by a notice stating that the certificate, duly signed, must be presented by the pupil on returning to school. If the pupil fall ill, or if he be exposed to any infection during the vacation, *immediate* notice of the facts must be sent to the School Authorities, and on no account is the pupil to return to school until after permission has been obtained from them.



Those pupils who return without their certificates should be at once sent to the Infirmary, and there examined by the Medical Officer; who should have the power to take whatever steps he considers desirable.

2. During term-time pupils are apt to take infectious diseases when on "**exeat.**" Parents should therefore be warned by the School Authorities not to have their children home when there is even a suspicion of infectious disease in their own homes, nor should the children be allowed to enter any house where such exists. When a pupil has been exposed to any infection, the necessary quarantine, with disinfection, should be rigidly insisted upon. (See pp. 21 and 24.)

**XII.—QUARANTINE PERIOD.**—The period of quarantine which should be insisted upon when a pupil has been exposed to an infectious disease, depends chiefly upon whether the clothes have been efficiently disinfected *at the beginning* of the quarantine. Quarantine after exposure to infection.

2. The quarantine should be at least two days longer than the recognised period of incubation of the disease in question.

**XIII. QUARANTINE.**—The following quarantine times, dating from exposure to infection, may be considered safe *if disinfection be carried out at the commencement of the quarantine*:— Length of quarantine.



<b>Chicken-pox</b> ( <i>Varicella</i> )	20 days' quarantine.		
<b>Diphtheria</b> *	... ..	12	„
<b>German Measles</b> † ( <i>Ru-</i> <i>bella</i> ) and <b>Epidemic</b> <b>Roseola</b>	... ..	20	„
<b>Measles</b> ( <i>Morbilli</i> )	... ..	16	„ „
<b>Mumps</b> ( <i>Parotitis</i> )	... ..	24	„ „
<b>Scarlet fever</b> ( <i>Scarla-</i> <i>tina</i> )	... ..	10	„ „
<b>Small-pox</b> ( <i>Variola</i> )	.. ..	16	„ „
<b>Whooping-cough</b> ( <i>Per-</i> <i>tussis</i> )	... ..	21	„ „

Home  
disinfection

2. Home disinfection should be supplemented by personal disinfection of the pupil, and of the clothes, books, and *everything* brought back by him immediately on his return to school. (See p. 21.)

\* It is desirable that a **bacterioscopice xamination** of the throat-mucus be made, not earlier than the eighth day of the quarantine period, and the result reported to the School Authorities. A similar rule of quarantine applies to, and a like procedure should be followed in the case of every nurse who has been attending on a case of diphtheria, before she is permitted to resume her ordinary duties.

† The use of this term (German Measles) might be discontinued with advantage, so as to obviate its confusion with (true) Measles.



## SECTION IV.

# GENERAL PRECAUTIONS AGAINST THE INTRODUCTION AND SPREAD OF INFECTIOUS DISEASE.

XIV.—**INFECTIOUS DISEASE** existing in a Neighbouring towns. neighbouring town is apt to be introduced into a school by intercourse with the towns-people. It is advisable to place the town “out of bounds” if epidemic disease be prevalent there.

2. **Day pupils** may introduce infection into a boarding Day pupils. school. Parents should therefore be specially warned not to send their children to school if there be any suspicion of infectious disease existing in their homes. Infectious complaints are often communicated by the clothes of those who have been in contact with infected persons.

3. A case of infectious disease occurring in the **family** Infectious disease in masters' houses. of a master or of any **official** connected with the school should be immediately reported to the School Authorities, and the patient should be isolated. The master or officer should undergo personal disinfection before resuming work in the school, and—if deemed necessary—live away from his house so long as infection persists there (particularly if the case be one of scarlet fever, diphtheria, or small-pox).

4. All **servants, tradesmen,** or other persons having Notice of illness to be given at once to the Medical Officer. access to the school premises should be required to give immediate notice of the outbreak of infectious disease in their houses to the Medical Officer, and to abide by his instructions.



## SECTION V.

# MEASURES TO BE ADOPTED WHEN INFECTIOUS DISEASE APPEARS IN A SCHOOL.

Removal and  
isolation.

XV. **REMOVAL AND ISOLATION.**—Directly a case of infectious disease has been recognised\* it should be isolated in the **infectious ward** or in the **Sanatorium**. (*Vide* Rule VII.)

2. One of the ordinary nurses should take sole charge ; or a special nurse may be obtained for this purpose.

Isolation of  
nurses in  
infectious  
ward.

3. **The nurses** in the infectious ward or Sanatorium must be kept completely isolated from the nurses and servants in the Infirmary. **The food**, if not prepared in a separate kitchen, should be placed outside the door of the ward, and afterwards taken in by the nurse.

Scraps from  
ward.

4. Food, and **refuse** of all kinds, should not be sent away from these wards, but should be placed in a suitable closed receptacle and taken away to be **immediately burnt**. The **crockery** should be washed in disinfectants before leaving the ward. All possible precautions should be taken to prevent the spread of infection, which may occur through the neglect of apparently trivial details.

Letters, &c.

5. The nurses in charge of the infectious wards or Sanatorium should take care that patients do not throw **paper balls, letters** or anything out of the windows.

6. **Letters**, if *allowed at all*, coming out of the infectious wards should be disinfected† before they are posted.

\* For the *Notification* of cases of infectious disease, see Appendix B., p. 40.

† *Vide* Appendix C.



XVI. **REMOVAL OF BEDDING, &c.** — The next step is to **remove the bedding** (if not already sent with the patient to the infectious ward or Sanatorium), clothes, books, and everything that is likely to harbour infection, to be disinfected. This should be done as early as possible. Measures should also be taken for disinfecting the sleeping place occupied by the pupil in his dormitory. (*Vide* Appendix C.)

Removal of bedding and clothes for disinfection.

2. **Notice** should at once be given to the matrons or others in charge of the pupils to carefully watch for any symptoms of illness, and to send any child looking ill to the "sick room" or to the Infirmary.

Notice to Matrons.

XVII. **DISINFECTION OF ROOM.** — After the patient has been isolated, the "**sick-room**," or the room which the pupil occupied on first coming into the Infirmary, should be disinfected (*vide* Appendix C) before any other pupil is allowed to enter it. The bedding also should be disinfected, unless it has been removed with the patient; and, if any other case occurs, the same precautions should be adopted.

Disinfection of sick room.

XVIII. **DISINFECTION OF BEDDING.** — The **mattresses and bedding** used in the infectious ward should be disinfected before being again employed. All linen should be disinfected before it is sent to the laundry, and should be *boiled* apart from the other linen washed there.

Of bedding and linen in the infectious wards.



2. The **infectious ward** should be disinfected after each time of use.

Ambulance.

3. Schools having separate boarding houses ought to have an **ambulance**, which should be disinfected immediately after removing any infectious patient.

Isolation until free from infection.

**XIX. ISOLATION UNTIL FREE FROM INFECTION.**—All patients ought to be retained in the infectious ward of the Infirmary, or in the Sanatorium, until free from infection (*vide* Rule XXI.), and, before leaving, they and their clothes must be disinfected.

Doubtful cases of scarlet fever.

**XX. DOUBTFUL CASES OF SCARLET FEVER.**—One of the most anxious and difficult of the problems which confront the Medical Officer concerns the diagnosis and management of **doubtful cases of scarlet fever**. Only those who have had actual experience can adequately realize the frequency with which such cases occur, and the great difficulty of dealing with them. The ideal method would be to isolate each suspicious case in a separate room, and keep it under observation. But this is seldom possible. All such cases may be placed in a large, well-ventilated ward, careful observation being maintained with a view to the immediate isolation of any case developing characteristic symptoms.

2. No doubtful cases should be sent back to the dormitories; and the clothing and bedding of such should be disinfected.



**XXI. WHEN FREE FROM INFECTION.** — How soon a patient may return home or to school after having had an infectious disease  
 With regard to that most important question, “When may a pupil who has had an infectious disease go home, or rejoin the school?”—the following are safe rules to adopt, provided patient and clothes have been disinfected. (*Vide* Appendix C.)

A pupil may go home, or rejoin the school,\* after:—

**Chicken-pox** (*Varicella*).—When every scab Chicken-pox. has fallen off, particular attention being paid to the scalp.

**Diphtheria.**—In no case in less than four weeks, Diphtheria. provided that convalescence is completed, that there is no longer any sore throat, or any abnormal discharge from the throat, nose, ears or eyes, and no albuminuria†, and that bacterioscopic examination of the pharyngeal (or nasal) mucus for the specific bacillus has been attended with negative results; this examination having been made not less than three days after the discontinuance of local antiseptic applications.

\* The periods named in this connection refer to freedom from infection; and it is obvious that a patient, if free from infection, might be sent home from school, or leave home for change of air, before his health was so re-established as to justify his resuming work at school.

† With regard to persistent albuminuria, each case must be judged on its own merits.



German  
measles;  
Roseola.

**German Measles** (*Rubella*), and **Epidemic Roseola**.—In not less than ten days from the date of the appearance of the rash.

Measles.

**Measles** (*Morbilli*).—In not less than two weeks from the date of the appearance of the rash, convalescence being satisfactorily established.

Mumps.

**Mumps** (*Parotitis*).—In not less than three weeks from the commencement—provided that one clear week has elapsed since the subsidence of all swelling.

Ophthalmia.

**Ophthalmia**.—Every case of **acute conjunctivitis** should be isolated, pending precise diagnosis. The latter can in many instances be made with certainty only by a bacterioscopic examination of the discharge from the conjunctiva.

Trachoma.

In **chronic conjunctivitis** a distinction should be made between two conditions that somewhat resemble one another, namely, Follicular Conjunctivitis and Trachoma (Granular lids). The former is common among children of the poorer class, and is not a serious ailment. The latter is an infectious disease, always calling for prolonged isolation and special treatment. If neglected it is apt to affect the cornea, and thus damage sight.\*

Ringworm.

**Ringworm** (*of the head*).—When—the *whole* scalp having been examined in a good light and any suspicious spot scrutinised with a lens—not

\**Vide* "School Ophthalmia," published for the Association by Messrs. Churchill. Price 1s.



one broken-off hair showing the fungus of any of the forms of ringworm is to be detected by *careful* microscopic examination.

2. It is sometimes considered that ringworm is cured when the hair commences to grow on the affected areas, but this is not necessarily true, for it frequently happens that diseased broken-off hairs remain; and the malady may thus persist for months or years. It is often very difficult to detect the short diseased stumps which protrude only an eighth of an inch or less, and it is important not to mistake closely cut *healthy* hairs for diseased stumps.

**Scarlet Fever** (*Scarlatina*).—In not less than Scarlet fever. six weeks from the date of the appearance of the rash, provided convalescence is completed and desquamation has ceased, and there is no sore throat, discharge from the ear or nose, suppurating glands, or eczematous patches. (With regard to Albuminuria, *vide* footnote p. 29.)

**Small-pox** (*Variola*).—When every scab has Small-pox. fallen off, and the skin lesions have all healed.

**Whooping-cough** (*Pertussis*).—In not less Whooping-cough. than five weeks from the commencement of the whooping, and provided that the characteristic spasmodic cough and the whooping have ceased for at least two weeks.

XXII. **NOTICE TO PARENTS.** — In every Parents to be promptly informed of their children's illness. case of serious illness the **parents** or **guardians** of the pupil should be at once informed of it. It is most desirable, in replying to enquiries made



by parents with respect to any case of serious illness occurring in a school, that the precise terms used by the Medical Officer in describing the nature or the progress of the malady should be communicated, either directly by him, or through the House-master.

Breaking up a boarding school is only rarely advisable.

**XXIII. THE DISPERSION OF A SCHOOL** on account of an outbreak of infectious disease is always a serious step to take, and should very rarely be required. It may lead to a wide-spread distribution of the disease. If a serious outbreak of scarlet fever or of measles, especially if the cases be of a malignant type; or an outbreak of enteric fever, or of diphtheria occur, notice should be sent to the parents or guardians of all the pupils as yet unaffected, thus giving them the option of removing their children, should they see fit to do so.

2. In the opinion of the Association\* a serious outbreak of infectious disease in a school affords a sufficient justification for the temporary removal of healthy children by their parents or guardians, should they see fit to take this step; but the onus of removing the pupils should rest with the parents, and not with the School Authorities. The latter should rarely go beyond advising parents to take away their children.

3. To order a school to be dispersed is a very responsible proceeding, and should not be done unless the mischief is kept up by some local cause *which can be*

\* One of the "Special Resolutions" passed by the Council on July 22nd, 1886, and subsequently confirmed by the Association.



*remedied only when pupils are away.* Thus, if an outbreak of enteric fever or diphtheria occur, and it is certain that the cause is known and can at once be removed, it will not be necessary to break up the school ; but if, on the other hand, doubt exist as to the origin, or if the cause cannot be immediately remedied or removed, then the school should be dismissed as soon as possible.

4. Similar objections apply, with some reservations, Day schools. to the breaking up of Day Schools. If dispersion be carried out at all, it is probably best undertaken at the very earliest period of the outbreak of an epidemic—after consultation with the Medical Officer of Health, whose knowledge of local conditions will materially aid in arriving at a decision.\*

5. If pupils are to be sent home, it is necessary to give the parents sufficient time to make the needful arrangements for isolating them ; parents should also be informed by the School Authorities of the period of incubation of the illness ; and whenever possible, the clothes should be disinfected before the pupils leave the school. It is necessary to give time for isolating pupils.

**XXIV. DUTIES OF SCHOOL AUTHORITIES.**— Duty of school authorities.  
Just as it is incumbent on parents and guardians to do all in their power to prevent infectious diseases from entering schools, so it is the duty

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\* The power of a sanitary authority to enforce the closure of a school is contained in the Code of Regulations of the Education Department, Section 88, which prescribes as one of the general conditions requiring to be fulfilled by a public elementary school in order to obtain an annual Parliamentary grant, "that the managers must comply *at once* with any notice of the sanitary authority of the district in which the school is situated, requiring them for a specified time, with a view to preventing the spread of disease, either to close the school or to exclude *any scholars* from attendance, subject to an appeal to the [Education] Department, if the managers consider the notice to be unreasonable."



of School Authorities to take every possible precaution that infectious diseases are not carried by the pupils from the school to their homes. Therefore, if any infectious disease prevails in a school at the end of a term, notice to that effect should be sent to all the parents, stating the nature of the disease and its period of incubation, in order that they may isolate their children on their return home. (*Vide* Appendix A, p. 39, Form No. VI.)

2. Through the neglect of this simple precaution, children may be taken direct to the sea-side at the end of term, after having been exposed to infection at school, and the parents, being unaware of this exposure, are put to the trouble and expense incidental to the illness developing in their children whilst away from home.

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G. E. HALE,        } *Honorary*  
F. E. BATTEN,     } *Secretaries.*



## APPENDIX A.

The following Forms of Certificates are recommended with reference to the Prevention of Infectious Diseases in Schools.

### HEALTH CERTIFICATE. (FORM NO. I.)

*[To be presented before admission into a school.]*

*This certificate must be filled up and signed by the Parent or Guardian, not earlier than the day before the child is sent to the school. The suppression of important information, as to past or present health, or as to exposure to infection, is liable to be regarded as a breach of contract.*

Name..... Age.....

1. Has the pupil been successfully vaccinated? ..... If so, when?....

Has the pupil had—

Chicken-pox? .....	If so, when?....
Diphtheria? .....	If so, when?....
German Measles? .....	If so, when?....
Epidemic Roseola? .....	If so, when?....
Measles? .....	If so, when?....
Mumps? .....	If so, when?....
Ringworm? .....	If so, when was it certified to be cured?....
Scarlet Fever? .....	If so, when?....
Small-pox? .....	If so, when?....
Whooping-cough? .....	If so, when?....



3. Has the pupil—  
     had fits? ..... If so, when?....  
     been ruptured? ..... If so, when?....  
     had any discharge from the  
     ear? ..... If so, when?....
4. Is the pupil subject to any special form of illness, *e.g.*,  
     incontinence of urine? .....  
     .....
5. Does the pupil suffer from any ailment, or constitu-  
     tional peculiarity, affecting the general health,  
     sight, hearing, &c., &c.? .....  
     .....
6. Are the teeth in good order?.....

I hereby certify that, to the best of my knowledge and belief, the above-named.....has not, during the past three weeks, been exposed to any infectious disease (including *Chicken-pox*, *Diphtheria*, *German Measles*, *Epidemic Roseola*, *Measles*, *Mumps*, *Ringworm*, *Scarlet Fever*, *Small-pox*, *Whooping-cough*), or entered any house where such disease existed.

.....  
     *Parent (or Guardian).*

*Date*.....

N.B.—If the child, at any time within three weeks before the date appointed for joining the school, has been exposed to any infection, *immediate* notice of the facts is to be sent to the School Authorities; and such child is on no account to be sent to the school without permission having first been obtained from them.

If, within three weeks of the pupil joining the school, infectious illness breaks out in his home, *immediate* notice of the facts must be forwarded to the School Authorities.



## HEALTH CERTIFICATE. (FORM NO. II.)

[To be presented by the pupil on returning to the school after the holidays.]

*This Certificate must be filled in and signed by the Parent or Guardian, not earlier than the day before that on which the pupil returns to school. Any suppression or wilful misstatement of important facts will be regarded as a violation of the terms on which the pupil remains at the school, and will render the pupil liable to immediate removal.*

I hereby certify that, to the best of my knowledge and belief, ..... has not, for at least three weeks [or,\* during the holidays now ending], been exposed to any infectious disease (such as *Chicken-pox, Diphtheria, German Measles, Epidemic Roseola, Measles, Mumps, Ringworm, Scarlet Fever, Small-pox, or Whooping-cough*), or entered any house where such disease existed.

Date.....

.....  
Parent (or Guardian).

N.B.—If the pupil be exposed to any infection during the vacation, *immediate* notice of the facts is to be sent to the School Authorities ; and the pupil is on no account to return to school without permission having first been obtained from them.

If, within three weeks of the pupil returning to school, infectious illness breaks out in his home, *immediate* notice of the facts must be forwarded to the School Authorities.

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\* If the holidays have been of less than three weeks' duration.



**Certificates for use in case of Illness and after  
Exposure to Infection.**

**(FORM No. III.)**

*[To be filled in and signed by the Parent or Guardian after the pupil has recovered from infectious illness during the holidays, and when the rules required by the school to be observed in such cases have been complied with.]*

I hereby certify that....., who was taken ill with.....on....., is now considered convalescent by h.. Medical Attendant, and that the period, after which you stated (in your letter dated....) that ..he might return to the School, will expire on..... To the best of my knowledge and belief ..he has not, since the beginning of h.. illness, been exposed to any other infection.

Date.....

.....  
Parent (or Guardian).

**(FORM No. IV.)**

*[To be filled in and signed by the Parent or Guardian after a pupil has been exposed to infection, and when the rules applied by the school to such cases have been complied with.]*

I hereby certify that....., who was exposed to the infection of.....on or about ..... (as I informed you on.....) will have completed the quarantine period of .. days (in accordance with the terms of your letter of.....) on..... and that during this period ..he has not, to the best of my knowledge and belief, been exposed to the infection of that or of any other disease.

All h.. clothes were disinfected at the beginning of the quarantine period.

Date.....

.....  
Parent (or Guardian).



## (FORM No. V.)

[To be sent to the Parent or Guardian by the School Authorities when a pupil has recovered from an infectious illness at school, and is about to be sent home.]

....., who was taken ill with ..... on ..... is now convalescent, and is believed to be free from infection. H.. clothes have been disinfected.

.....

Date.....

To.....

## (FORM No. VI.)

[To be sent to the Parent or Guardian when a child returns home after having been exposed to infection at school. —Vide Rule XXIV.

..... { may have been  
was } exposed to the infection of..... on or about..... The incubation period of the disease is about ..... days ; he should therefore be isolated, or kept under observation, for at least .... days, dating from ..... If in good health at the end of that time, .... may then be considered to have escaped the disease ; provided the clothes were disinfected at the commencement of the period.

.....

Date.....

To.....

N.B.—The clothes { have been  
ought at once to be } disinfected.



## APPENDIX B.

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### NOTIFICATION OF INFECTIOUS DISEASE.

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INFECTIOUS DISEASES ACT, 1889.—Section 3 provides that, within every district to which this Act has been made to apply (by a Resolution to that effect passed by the local Sanitary Authority), every medical practitioner “attending on or called in to visit” any patient suffering from

Small-pox,  
Cholera,  
Diphtheria,  
Membranous croup,  
Erysipelas,  
Scarlatina,  
Typhus fever,  
Typhoid (enteric) fever,  
Relapsing fever,  
Continued fever  
Puerperal fever,

or other disease to which the Local Authority may have extended the Act,

shall, immediately on becoming aware that such patient is suffering from an infectious disease to which the Act applies, send a certificate giving all particulars to the Medical Officer of Health, under a penalty of 40 shillings.



The requisite Certificate Forms are supplied gratis by the Local Authorities, who pay a fee of 2s. 6d. for each certificate thus sent in to them—unless the case occurs in a public institution, when the fee is 1s.

A public school, a college, or a university is *not* "a public body or institution" within the meaning of the Act; and the fee of 2s. 6d. is therefore due in respect of each case of infectious disease notified as occurring amongst the members of such establishments.

It will be observed that every medical man who, in the exercise of his professional duties (as a consultant or otherwise), sees and recognises any case of the scheduled infectious diseases is, technically, bound to notify, and can claim a fee for doing so. Practically such multiple notification is not insisted on, and a single notification of any case is regarded as a sufficient compliance with the requirements of the Act.

N.B.—The sending in of this Certificate has been held by the Local Government Board as constituting a legal claim for payment.

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## APPENDIX C.

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### DISINFECTION.

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*Abstracted from a paper by A. C. HOUSTON, D.Sc., F.R.S.E.,  
read before and published by the Association.*

#### DISINFECTION OF ROOMS.

##### GASEOUS DISINFECTION.

*Formalin, formic aldehyde vapours.*—This is the best gaseous disinfectant at present known. The room must be securely sealed up, and the duration of exposure should be at least four hours. For small rooms the convenient Alformant lamp may be employed, 20 to 40 Paraform tabloids being used for every 1,000 cubic feet of space. For large rooms, Lingner's glycoformal apparatus is much to be preferred. For a room of 2,800 cubic feet, one apparatus is sufficient, 2 litres of glycoformal being used and the duration of exposure four hours.

*Sulphurous acid gas.*—A fair amount of reliance may be placed on this method provided the air of the room is kept moist, 3 to 6 lbs. of sulphur dioxide burned to every 1,000 cubic feet of space, the room securely sealed up and left undisturbed for twenty-four hours. The injurious action of sulphurous acid gas on many articles must be borne in mind. In this respect, and also as regards germicidal power and probably also penetrative ability, sulphur dioxide compares unfavourably with formalin.

After gaseous disinfection, ventilate the room as thoroughly and for as long a time as is practicable.



The floor and all surfaces capable of being washed should be thoroughly cleansed, and the water used for this purpose should contain some disinfecting substance. In view of its permanent and relatively non-poisonous characters, Izal, 1 to 100, is useful for this purpose.

#### SPRAYING AND WASHING THE WALLS, CEILINGS, FLOORS, ETC., WITH DISINFECTANT SOLUTIONS.

For example, chloride of lime, 1 per cent. ; corrosive sublimate, 1 to 1,000 ; formalin, 2 per cent. ; Izal, 1 per cent. The poisonous characters of corrosive sublimate and of carbolic acid, especially the former, must not be forgotten. For this reason, and where the surface to be disinfected is very extensive, preference should, perhaps, be given to chloride of lime, formalin and Izal.

In special cases, there is an advantage in combining a spraying operation with gaseous disinfection. For example, antecedent to gaseous disinfection with formic aldehyde vapour, the walls, &c., may be sprayed with a 2 per cent. solution of formalin.

The floor, &c., should be treated in the manner already described.

In conclusion, it may be pointed out that in connection with the disinfection of rooms the opportunity should be taken to renew the wall papers and lime-wash ceilings.

### DISINFECTION OF THE CONTENTS OF THE ROOM (Apart from the Bedding and Clothes).

#### FURNITURE, BOOKS, BOOTS, SHOES, ETC.

All surfaces which can be washed should be thoroughly cleansed with a disinfectant solution. The furniture, books, boots, and any articles liable to be damaged



or incapable of being dealt with by steam disinfection may be sterilised with formalin at the same time as the room is being disinfected. Books which have been exposed to infection should be burnt.\* (*See footnote.*)

Some of the articles above referred to may be sterilised by means of dry heat, but it is difficult to secure certain and rapid sterilisation without risk of injuring them.

MATTRESSES, BLANKETS, CARPETS, HANGINGS, CLOTHES,  
UNDER-GARMENTS (*other than linen*), etc.

Implicit reliance may be placed on exposure to saturated steam at  $115^{\circ}\text{C}$ . for thirty minutes.

Although the above may be taken as the standard, it may be added that good results have been obtained with current steam at  $104^{\circ}\text{C}$ .

The Washington Lyon, Reck, Thresh, and Equifex are all well-known steam disinfectors.

The question naturally arises, is it not possible to combine the disinfection of rooms with the sterilisation of the bedding, &c. ; in short, to dispense with a double process? As to this, it may be said, that while nothing can supersede steam in the sterilisation of bulky objects, the results obtained by the various authorities who have practically tested Lingner's glycoformal apparatus, go to show that the *superficies* of clothes, bedding and under-garments may be effectively dealt with at the same time that the room is disinfected.

### DISINFECTION OF THE FÆCES, URINE, AND MORBID DISCHARGES OF THE SICK.

No method is so effective as heating to  $100^{\circ}\text{C}$ . for ten minutes. But the evil odours evolved in the case of stools is a serious objection. In connection with the

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\* It has been claimed that disinfection of books by formalin renders them safe.



use of disinfectant solutions it must be remembered that no disinfectant can penetrate the solid lumps of faeces. The more solid a stool is, and the less thoroughly it is mixed with the disinfectant, the less satisfactory is the result as regards sterilisation.

Taking the disinfection of stools as an example, the following alternative measures may be recommended :—

*In ordinary cases.*

1. Add about two teaspoonfuls of the crystals of potassium permanganate to 2 pints of water, bring to the boil, and pour the mixture over the stool. Allow to stand for half an hour. Mixing is to be recommended, but is not nearly so necessary as in plan 2.

2. Add to the stool 1 to 2 pints, according to its bulk, of one of the following solutions :—

Corrosive sublimate.....	1 to 500
(L.G.B. formula, 2 soloids, B.W.& Co., in 1 pint.)	
Izal, ordinary .....	1 to 100
Carbolic acid .....	1 to 40
Copper sulphate .....	1 to 20
Formalin, 40 p.c. solution of formic aldehyde gas .....	1 to 20
Lysol .....	1 to 40
Cresol .....	1 to 40
Creolin .....	1 to 40
Bleaching powder .....	1 to 50
1 pint, followed after half an hour by 1 pint of dilute	
Sulphuric acid .....	1 to 50

Mix as thoroughly as possible, and allow to stand for one hour. Some of the above disinfectants in the strengths named would not, with certainty, destroy the highly resistant spores of bacteria, but as regards the pathogenic microbes of the ordinary infectious diseases a sufficiently wide margin for safety has been allowed.



*In special cases.*

1. Corrosive sublimate, 1 to 500, duration of contact twenty-four hours.
2. Boiling for ten minutes.

**DISINFECTION OF LINEN.**

Solutions of corrosive sublimate, 1 to 10,000; Izal, 1 to 250; carbolic acid, 1 to 100; and chloros, 1 to 1,000, acting for one hour, are all capable of disinfecting linen artificially inoculated with *B. coli*. Even pouring boiling water on the linen in amount sufficient to raise the temperature to such a height that at the end of five minutes the thermometer registers about 70°C. kills *B. coli*. But as linen soiled with the mucous and other discharges of the sick may, from a variety of causes, be much more difficult to sterilise as regards pathogenic microbes than the above figures would seem to indicate, stronger measures must be employed to ensure safety.

*Alternative measures.*

1. The linen should be steeped in cold water contained in a large vessel capable of being heated. This preliminary soaking is necessary to avoid fixing the stains during the subsequent heating operations. Next, apply heat until the water begins to boil, 100°C. After ten minutes, or when sufficiently cool to handle, wring out the linen and send it to the wash in the moist condition. A much lower temperature, about 70°C., would suffice in ordinary cases of infectious disease, but it is well to err largely on the safe side in matters of this kind. An emergency method is to pour boiling water over the linen in the proportion of about half a pint to each piece of linen the size of a handkerchief. No "washing" should be done on the infected premises.



2. Soak the linen for one hour in one or other of the following disinfectant solutions :—

<i>In ordinary cases.</i>	<i>In exceptional cases.</i>
Corrosive sublimate 1 to 1,000.....	1 to 500
Izal, ordinary .....1 to 200.....	1 to 100
Carbolic acid .....1 to 50.....	1 to 25
Chloros, sodium hypochlorite* ....1 to 250.....	1 to 100

After one hour, wring out the linen and send to the wash in the moist condition.

Do not " wash " on the infected premises.

### **DISINFECTION OF CUPS, SAUCERS, PLATES, SPOONS, KNIVES, &c.**

Place all the infected crockery, &c., in water, contained in a vessel specially set aside for this purpose and capable of being heated. Boil the water, and, when sufficiently cool, wash in the ordinary manner.

A much lower temperature, about 70°C., would suffice in ordinary cases, but it is well to leave a wide margin for safety.

### **DISINFECTION OF CONVALESCENTS AND OF THE ATTENDANTS ON THE SICK.**

During the acute stage of an illness, it may be impossible or inadvisable to attempt much in the way of disinfection of the person, and the measures to be adopted must depend very largely on the nature of the illness.

After each motion in the case of those actually sick, the soiled parts should be wiped with absorbent cotton

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\* The injurious action of chlorine compounds on linen must be borne in mind. The limit of their harmful action does not seem to be accurately known.



wool soaked in a weak disinfectant solution and afterwards with dry cotton wool, the precaution being taken to burn the wool. This procedure may not always be called for, but in some cases, notably enteric fever, its importance is obvious.

As regards disinfection of the mouth and throat, no substance has so far been found which, in the strength in which it is capable of being used, can effectively bring about the desired result. But gargling, painting and spraying the throat, and washing the mouth with weak disinfectants, may prove of service. Brushes used for painting the throat should be kept in a disinfectant solution.

The surface of the body may be sponged with corrosive sublimate, 1 to 1,000; Izal, 1 to 200; or carbolic acid, 1 to 50. As regards baths, there is probably nothing better than soap and hot water followed by sponging with corrosive sublimate, 1 to 1,000; or Izal 1 to 200.

The relatively innocuous character of Izal renders it useful in connection with disinfection of the person.

As regards convalescents about to mix with other people, at present we know of no drug for internal administration capable of rendering the faeces non-infectious as Urotropin is stated to render the urine innocuous in cases of typhoid bacilluria.

As regards the attendants on the sick but little need be added. Scrupulous cleanliness is the chief consideration, the hands should be frequently washed in disinfectant solutions, and, after bathing, the exposed surfaces of the body sponged with corrosive sublimate, 1 to 1,000; or Izal, 1 to 200. The occasional use of antiseptic mouth washes and gargles may be recommended.

Sponges, brushes, combs, and tooth brushes should be considered as infected articles and treated accordingly. When the hair is cut the clippings should be burnt.



## DISINFECTANT SOLUTIONS.

The following list of disinfectant solutions may prove of service. The poisonous qualities of corrosive sublimate and carbolic acid must again be emphasised :—

- 1 a. *Corrosive sublimate*.—1 to 500. L.G.B. formula, 2 soloids, B. W. & Co., in one pint of water. *Strong solution*, for special purposes.
- 1 b. *Corrosive sublimate*.—1 to 1,000. One soloid in one pint of water. *Weak solution*, for general purposes.
- 2 a. *Carbolic acid*.—1 to 20, *strong solution*, for special purposes.
- 2 b. *Carbolic acid*.—1 to 40, *medium strength solution*, for general purposes.
- 2 c. *Carbolic acid*.—1 to 100, *weak solution*, for cases where a strong disinfectant is not required.
- 3 a. *Bleaching powder*.—1 to 20, *strong solution*, for special purposes.
- 3 b. *Bleaching powder*.—1 to 100, *weak solution*, for general purposes.
- 4 a. *Izal, ordinary*.—1 to 40, *strong solution*, for special purposes.
- 4 b. *Izal, ordinary*.—1 to 100, *medium strength solution*, for general purposes.
- 4 c. *Izal, ordinary*.—1 to 200, *weak solution*, for cases where the stronger solutions are not required.
- 5 a. *Formalin, 40 p.c. solution of formic aldehyde gas*.—1 to 10, *strong solution*, for special purposes.
- 5 b. *Formalin, 40 p.c. solution of formic aldehyde gas*.—1 to 20, *medium strength solution*, for general purposes.
- 5 c. *Formalin, 40 p.c. solution of formic aldehyde gas*.—1 to 50, *weak solution*, for spraying and washing operations.



6 a. *Copper sulphate*.—1 to 20, *strong solution*, for special purposes, *e.g.*, the disinfection of the excreta.

7 a. *Chloros, sodium hypochlorite*.—1 to 20, *strong solution*, for special purposes.

7 b. *Chloros, sodium hypochlorite*.—1 to 100, *medium strength solution*, for general purposes.

7 c. *Chloros, sodium hypochlorite*.—1 to 250, *weak solution*, for cases where the stronger solutions are not required.

N.B.—In the absence of much oxidisable matter, still weaker solutions may conveniently be employed. Lysol, Cresol, and Creolin, in 1,  $2\frac{1}{2}$ , and 5 per cent. solutions, according to the purpose for which they are intended, are also disinfectants of real value.

In conclusion, the following points are worthy of note :—

1. In all cases of infectious disease, the breath, perspiration, skin, hair, urine, fæces, throat, mouth, and the secretions of the nose, ears and eyes, should be considered as possible means of spreading contagion.

2. Although all disinfectants should be treated as poisons, the dangerous properties of some (*e.g.*, corrosive sublimate and carbolic acid) and the relatively harmless natures of others (*e.g.*, Izal) should be borne in mind in relation to their proposed use.

3. The beneficial effect of bright sunshine in conjunction with fresh air in diluting and even in destroying the poison is a factor always worth remembering.

4. The best artificial disinfectant known is moist heat, and whenever this can be applied either by boiling or exposure to saturated steam under pressure, it should be adopted.



5. The best gaseous disinfectant at present known is formalin, and the best way of disinfecting rooms would seem to be by using Lingner's glycoformal apparatus.

6. A useful emergency rule to remember is that the addition of *boiling* water to infective material, in the proportion of four parts of the former to one part of the latter, raises the temperature of the mixture so materially that at the end of five minutes it is still above  $70^{\circ}\text{C}$ ., and this temperature, in all probability, suffices to destroy the microbes of ordinary infectious disease.

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