The sanitary inspector's handbook / by Albert Taylor.

THE

SANITARY INSPECTOR'S HANDBOOK.

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BY

ALBERT TAYLOR

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CONSULTING SANITARY ADVISER TO HIS MAJESTY'S OFFICE OF WORKS

TO WHOSE SUGGESTIVE GENIUS
ENLIGHTENED ZEAL AND UNTIRING ENERGY THIS COUNTRY
IS GREATLY INDEBTED FOR THE INTEREST WHICH HE TOOK IN
EDUCATING THE PUBLIC AND ITS EXECUTIVE SANITARY
OFFICERS IN THE TRUE PRINCIPLES OF SANITARY SCIENCE,
THESE PAGES ARE MOST RESPECTFULLY INSCRIBED

BY THE

AUTHOR.

PREFACE TO THE FOURTH EDITION.

THE work has been thoroughly revised, additional illustrations supplied and the text and index amplified, but the arrangement of the subjects remains unchanged.

As a means of reference, and of comparison of the law of Public Health as applicable to England and Wales, and to the Metropolis, the second edition contained an alphabetical synopsis of the provisions of the two principal Acts; whilst two tables were added which showed the Acts affecting sanitary inspectors generally.

To this synopsis the provisions of the Public Health (Scotland) Act, 1897, have been added in a separate column; and the by-laws of the London County Council relating to the construction of drains, water closets, soil pipes, and to the depositing of drain plans have also been inserted.

A. T.

"EGREMONT,"
CHESTNUT GROVE,
BALHAM, S.W.
February, 1905.

PREFACE TO THE FIRST EDITION.

THE following pages have been compiled with the desire of furnishing to the Sanitary Inspector, and those seeking to qualify for such appointments, a useful *vade mecum* upon the subjects pertaining to the office.

The book aims at supplying practical information on the various matters which come daily under the notice of the Sanitary Inspector, and not at being an exhaustive work of scientific reference.

It is hoped that the book may also be found useful to others who take an interest in sanitary subjects.

The Extracts from the Acts of Parliament, and the quotations from the Regulations as to Sanitary Inspectors of the Local Government Board, are inserted by permission of the Controller of His Majesty's Stationery Office.

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53 & 54 Vic. c. 70	Housing of the Working Classes Act -	1890
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62 & 63 Vic. c. 51	Sale of Food and Drugs Act - - -	1899
1 Edwd. VII. c. 22	Factory and Workshop Act - - -	1901

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62 & 63 Vic. c. 51	Sale of Food and Drugs Act	1899
1 Edwd. VII. c. 22	Factory and Workshop Act	1901

THE

SANITARY INSPECTOR'S HANDBOOK.

INTRODUCTION.

THIS work is intended as a practical book of experience upon subjects relative to the duties to be performed by Sanitary Inspectors in England and Scotland, and as a textbook for students preparing for the examinations of the Sanitary Institute, the Sanitary Inspectors Examination Board, and the Sanitary Association of Scotland.

Since the incorporation of the Sanitary Inspectors Examination Board, the Sanitary Institute, the National Health Society and King's College have established a special course of lectures and demonstrations for candidates preparing for the Board's Examination.

The Sanitary Institute, and the Sanitary Inspectors Examination Board, together with the Sanitary Association of Scotland, are the only institutions, in the United Kingdom, holding Examinations and granting certificates to persons qualifying for Sanitary Inspectorships.

Similar examinations are now held under the auspices of the Sanitary Institute in Canada, New South Wales, Western Australia, Queensland, and British South Africa.

With the subjects selected, it matters perhaps little as to the order in which they are treated, but I have humbly endeavoured to compile such information for the guidance of the reader as may be of special interest, having proper regard to the duties which devolve upon Sanitary Inspectors.

ALPHABETICAL SYNOPSIS OF THE PROVISIONS WITH THE CORRESPONDING SECTIONS OF MENTS, AND OTHER ACTS INCORPORATED HEALTH (SCOTLAND) ACT, 1897.

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There is no corresponding provision in this Act.	There is no corresponding provision in this Act.
There is no corresponding provision in this Act.	See. Sect. 15.
There is no corresponding provision in this Act. (See Sect. 9, Contagious Diseases (Animals) Acts, 1886, and Sect. 4, Infectious Disease (Prevention) Act, 1890).	There is no corresponding provision in this Act. (See Sects. 60 & 61, also Sect. 9, Contagious Diseases (Animals) Act, 1886).
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See Sect. 132. (Also Sects. 16 & 19, Isolation Hospitals Act, 1893).	There is no corresponding provision in this Act.
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There is no corresponding provisions in this Act. (See Sect. 3, Infectious Disease (Notification) Act, 1889; this Act is now compulsory) (See Sect. 6, Infectious Disease (Notification) Act, 1889).	There is no corresponding provisions in this Act. (See Sects. 3, 6, 7, & 11 of the Infectious Disease (Notification) Act, 1889; this Act is now compulsory).
See Sect. 7, Infectious Disease (Notification) Act, 1889.	—
See Sect. 11, Infectious Disease (Notification) Act, 1889.	—
There is no corresponding provision in this Act. (See Sect. 2, Infectious Disease (Prevention) Act, 1890).	There is no corresponding provision in this Act.

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There is no corresponding provision in this Act. (See Sect. 6, Infectious Disease (Prevention) Act, 1890).	See Sect. 48.
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There is no corresponding provision in this Act. (See Sect. 7, Infectious Disease (Prevention) Act, 1890).	See Sect. 53.
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There is no corresponding provision in this Act, or any Act incorporated therewith.	See Sect. 58.
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ee Sect. 142. (Also Sect. 8, Infectious Disease (Prevention) Act, 1890).	See Sect. 62.
here is no corresponding provision in this Act. (See Sect. 9, Infectious Disease (Prevention) Act, 1890).	See Sect. 63.
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ee Sect. 90. (Also Housing of the Working Classes Act, 1890, Sects. 11, 53, 59, 61, 62, 64, 70, 71, 89 & 90).	See Sect. 72. (Also Housing of the Working Classes Act, 1890, Sects. 11, 53, 59, 61, 62, 64, 70, 71, 89 & 90).
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ee Sects. 112-115, 169 & 170. (Also Sects. 29-31, Public Health Act (Amendment) Act, 1890, and Sect. 9, Contagious Diseases (Animals) Act, 1886).	See Sects. 32-36.
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Public Health (London) Act, 1891.

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Public Health (London) Act, 1891.

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Public Health Act, 1875, &c.	*Public Health (Scotland) Act*, 1897.
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ee Sect. 157. (Also Sect. 23, Public Health Act (Amendment) Act, 1890).	There is no corresponding provision in this Act. (See Sect. 181).
ee Sect. 41. (Also Sect. 19, Public Health Act (Amendment) Act, 1890).	See Sect. 18.
ee Sect. 62.	See Sect. 125.
here is no corresponding provision in this Act, or Acts incorporated therewith.	There is no corresponding provision in this Act.
here is no corresponding provision in this Act, or Acts incorporated therewith.	There is no corresponding provision in this Act.
ee Sect. 64.	See Sect. 126, Sub-Sect. 3.
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here is no corresponding provision in this Act. (See Sect. 133, Factory and Workshop Act, 1901).	There is no corresponding provision in this Act. (See Sect. 133, Factory and Workshop Act, 1901).

THE SANITARY INSPECTOR OR INSPECTOR OF NUISANCES.

Appointment.

The office of Inspector of Nuisances was definitely legalised by Section 17 of the Public Health Act, 1848, although similar appointments had been made in many of the principal towns of England, prior to this date.

This Act may be regarded as the ground-work of sanitary legislation, but unfortunately it was permissive in character and only applied to England and Wales, exclusive of the Metropolis. It created Boards of Health and invested these bodies with power to appoint fit and proper persons to be Inspectors of Nuisances, and authorised them to make by-laws for regulating the duties and conduct of such officers.

Similar powers were given to the vestries and district boards in London by Section 133 of the Metropolis Local Management Act, 1855, and by Section 9 of the Nuisances Removal Act, passed the same year; the inspectors in the Metropolis were required, in addition to all other duties, to superintend and enforce the execution of duties performed by the scavengers.

By these statutes provision was practically made for the appointment of Inspectors of Nuisances throughout the country, but in consequence of the apathy of those in authority, combined with the permissive character of the Act of 1848, very little was done in this direction.

When the Public Health Act, 1872, became law, fresh energy was thrown into the public health service by the

division of England and Wales, exclusive of the Metropolis, into sanitary districts; these were of two kinds, urban and rural. In order to encourage and assist these bodies to appoint fit and proper persons to fill the office of Inspector of Nuisances, the Local Government Board was empowered to pay a moiety of that officer's salary.

The last mentioned Act was repealed by the Public Health Act, 1875, and this with the Public Health (London) Act, 1891, and the Public Health (Scotland) Act, 1897, are now the principal Acts governing matters relating to public health in England and Scotland. These Acts have made provision for the appointment of inspectors, the former adopting the title of Inspector of Nuisances, while the latter designates the officer, Sanitary Inspector.

The clauses relating to the appointment of such officers are as follows:—

> Every Urban Authority shall from time to time appoint fit and proper persons to be Medical Officer of Health, Surveyor, Inspector of Nuisances, Clerk, and Treasurer: provided that if any such authority is empowered by any other Act in force within their district to appoint any such officer, this enactment shall be deemed to be satisfied by the employment under this Act of the officer so appointed, with such additional remuneration as they think fit and no second appointment shall be made under this Act. Every Urban Authority shall also appoint or employ such assistants, collectors, and other officers and servants as may be necessary and proper for the efficient execution of this Act, and may make regulations with respect to the duties and conduct of the officers and servants so appointed or employed. (Public Health Act, 1875, S. 189).

It would appear from the above section that an urban authority has power only to appoint one inspector, while a rural authority in the following section is empowered to make as many such appointments as may be thought proper:—

Every Rural Authority shall from time to time appoint fit and proper persons to be Medical Officer or Officers of Health, and Inspector or Inspectors of Nuisances; they shall also appoint such assistants and other officers and servants as may be necessary and proper for the efficient execution of this Act. (Public Health Act, 1875, S. 190).

Sanitary authorities in the Metropolis are required to appoint a sufficient number of sanitary inspectors, otherwise they may be ordered by the Local Government Board to do so, as directed in the following clause:—

Every Sanitary Authority shall appoint an adequate number of fit and proper persons as "Sanitary Inspectors," and may distribute among them the duties to be performed by sanitary inspectors, and every such inspector shall be a person qualified and competent by his knowledge and experience to perform the duties of his office.

Where the Local Government Board on the representation from the County Council, and after local enquiry, are satisfied that any Sanitary Authority have "failed to appoint a sufficient number of Sanitary Inspectors," the Board may order the authority to appoint such number of additional Sanitary Inspectors and to allow them such remuneration as the order directs, and the Sanitary Authority shall comply with the order. (Public Health (London) Act, 1891, S. 107).

Local Authorities in Scotland, under Section 15 of the Public Health (Scotland) Act, 1897, must appoint a Sanitary Inspector or Inspectors who shall also be Inspectors of Common Lodging Houses.

Before any appointment requiring the sanction of the Local Government Board is confirmed, the Sanitary Authority must furnish a statement of particulars to the Board, as provided by the schedule of the order as follows:—

1. State the name of the Sanitary Authority by whom the appointment is to be made.

2. The names of the parishes, either wholly or in part, comprised in the district for which the officer is to be appointed.

The words "part of" should be affixed in those cases where only a part of a parish is included.

3. The area of the district (in acres).

If the exact area is not known, it should be estimated as nearly as practicable, and the word "estimated" should be added.

4. The population of the district according to the last census.

If the exact population is not known, it should be estimated as nearly as practicable, and the word "estimated" should be added.

5. The term for which it is proposed that the appointment should be made.

6. The amount of the salary proposed.

7. Whether it is intended that the officer should give his whole time to the performance of the duties of his office.

8. The date on which it is proposed that he should commence the duties of his office.

In the provinces, sanitary authorities are not compelled to appoint their inspectors under the terms and conditions specified in the order of the Local Government Board provided they themselves defray the whole expenses of the sanitary staff.

All sanitary inspectors in the Metropolis, appointed after January 1, 1892, are made subject to the Sanitary Officers (London) Order, 1891.

Assistant sanitary inspectors and assistant medical officers of health have no statutory position under the Public Health Acts. The statutory duties of a sanitary inspector or medical officer of health cannot be performed by an assistant.

Inspectors of Nuisances, outside the Metropolis, may, by virtue of Section 192 of the Public Health Act, 1875, be appointed also to the office of Surveyor to a local authority.

These dual appointments have their advantages and disadvantages—they may be satisfactory in districts having a small population and limited area—but are a decided disadvantage in large urban districts, where the surveyor is nominally acting as its Chief Sanitary Inspector, with assistants to carry out the duties.

The Local Government Board recently expressed its disapproval of these combined appointments, in the case of a Lancashire rural district council, and stated in the event of the offices being combined there would be no grant towards the salary.

Wherever this arrangement exists it is the cause of considerable friction between the inspector and surveyor, as the omissions of the surveyor become the commissions of the inspector.

Tenure of Office.

The term for which a sanitary inspector may hold his appointment, varies with different Sanitary Authorities, but, unless otherwise stated, the office is held during the pleasure of the Authority appointing him, except in Scotland, where sanitary inspectors can only be dismissed with the sanction of the Local Government Board for Scotland.

Where, however, the inspector is appointed subject to the order of the Local Government Board in England, including the Metropolis, the order provides that "every officer shall continue to hold office for such period as the Sanitary Authority may, subject to the Board's approval, determine at the time of his appointment, or until he die, or resign, or be removed by such authority, with the Board's assent, or be removed by the Board, or be proved insane by evidence which the Board shall deem sufficient. The Sanitary Authority may at their discretion suspend any officer from the discharge of his duties, and shall in every case of such suspension, forthwith report the same, together with the cause thereof, to the Board."

The principle adopted by some authorities of making the appointment of their officers for a specified term, say, of

one, two, or three years, is most unsatisfactory to all concerned, but especially is it so to the officials, as they are left without reasonable protection, and they cannot therefore, in the words of the Royal Commission, be either "active or effective" because they are too dependent on their immediate employers, which naturally deters many officers from a conscientious discharge of important duties.

Dr. Newsholme, M.O.H., Brighton, aptly described the position of the sanitary inspector on this all important question of tenure, when he said, "insecurity of tenure of office is a grievous difficulty in the path of some inspectors. The duties of an inspector are such as almost necessarily bring him occasionally into antagonism with those amongst his employers who are owners of house property; and especially does this occur in districts where insanitary conditions are rife. The fact also that the inspector is liable to the risks of periodic re-election, handicaps his work, and renders it extremely difficult for him to satisfactorily discharge his duties." Many Sanitary Authorities are now alive to the importance of giving their sanitary inspectors permanent tenure, believing that in so doing they are serving the best interests of the community; but it is to be regretted that there are yet some of these bodies who still prefer to keep their officers so that they may dismiss them at their will and pleasure, without the slightest regard to the character and efficiency of these public servants, much less to the health of the inhabitants of the districts they are sent to represent. Every sanitary inspector should be made to feel that he is expected to discharge the duties of his office with absolute impartiality, and the sanitary authority on their part should undertake that no inspector shall suffer in any way for fearlessly discharging his duty.

Fixity of tenure has been accorded to medical officers of health, appointed under the Public Health (London) Act,

1891, and every sanitary inspector is entitled to a like protection. As was recently stated by a prominent sanitary journal, "they do all the hard, unpleasant and practical work receiving the opprobrium of everybody and are much more liable to lose their appointment through the honest discharge of their duties."

Sanitary inspectors devoting their whole time to the duties of that office, have the assurance of the Local Government Board that they will appoint such officers to permanent tenure of office, providing it is the wish of the Sanitary Authority making the appointment.

Salary.

With regard to the salary paid to the sanitary inspector there is no rule, the sanitary authority is empowered to fix the amount of remuneration to be paid that officer; if, however, the appointment is made subject to the approval of the Local Government Board, the Board may withhold its consent to the appointment until a reasonable salary is offered for such services.

The Local Government Board has made the following regulation, in regard to salaries:—

> The Sanitary Authority shall pay to every Officer such salary as may be approved of by Us.
>
> Provided always that the Sanitary Authority may, with our approval, pay to any Officer a reasonable compensation on account of extraordinary services, or other unforeseen or special circumstances connected with his duties or the necessities of the District.

Duties.

The following are the duties prescribed by the Local Government Board for Sanitary inspectors in the Metro-

polis, in the Sanitary (Officers) Order dated December 8, 1891 :—

1. He shall perform, either under the special directions of the Sanitary Authority, or (so far as authorised by the Sanitary Authority) under the directions of the Medical Officer of Health, or, in cases where no such directions are required, without such directions, all the duties specially imposed upon a Sanitary Inspector by any statute or statutes, or by the orders issued by us, so far as the same apply to his office.

2. He shall attend all Meetings of the Sanitary Authority when so required.

3. He shall by inspection of his district, both systematically at certain periods, and at intervals as occasion may require, keep himself informed in respect of the nuisances existing therein that require abatement.

4. On receiving notice of the existence of any nuisance within his district, or of the breach of any by-laws or regulations made by the Sanitary Authority for the suppression of nuisances, or of any by-laws made by the London County Council which it is the duty of the Sanitary Authority to enforce, he shall, as early as practicable, visit the spot, and enquire into such alleged nuisance or breach of by-laws or regulations.

5. He shall report to the Sanitary Authority any noxious or offensive businesses, trades, or manufactories established within his district, and the breach or non-observance of any by-laws or regulations made in respect of the same.

6. He shall from time to time, and forthwith upon complaint, visit and inspect the shops and places in which is exposed for sale, or in which is deposited for the purpose of sale or of preparation for sale any animal, or any article, whether solid or liquid, intended for the food of man, and examine any such animal or article which may be therein. If any such animal or article appears to him to be diseased, or unsound, or unwholesome, or unfit for the food of man, he shall seize and carry away the same himself or by an assistant, in order to have the same dealt with by a justice according to the provisions of Section 47 of the Public Health (London) Act, 1891 : provided that in any case of doubt arising under this clause, he shall report the matter to the Medical Officer of Health, with the view of obtaining his advice thereon.

7. He shall, when and as directed by the Sanitary Authority, procure and submit samples of food, drink, or drugs suspected to be adulterated, to be analysed by the analyst appointed under "The Sale of Food and Drugs Act, 1875," and upon receiving a certificate stating that the

articles of food, drink, or drugs are adulterated, cause a complaint to be made, and take the other proceedings prescribed by that Act.

8. Whenever it appears to him that the intervention of the Medical Officer of Health is necessary in connection with any nuisance, he shall forthwith inform such officer thereof. He shall also, subject to the directions of the Sanitary Authority, attend to the instructions of the Medical Officer of Health with respect to any measures which can be lawfully taken by a Sanitary Inspector under the Public Health (London) Act, 1891, or under any other statute or statutes.

9. He shall enter from day to day, in a book to be provided by the Sanitary Authority, particulars of his inspections and of the action taken by him in the execution of his duties. He shall also keep a book or books, to be provided by the Sanitary Authority, so arranged as to form, as far as possible, a continuous record of the sanitary condition of each of the premises in respect of which any action has been taken under the Public Health (London) Act, 1891, or under any other statute or statutes, and shall keep any other systematic records that the Sanitary Authority may require.

10. He shall at all reasonable times, when applied to by the Medical Officer of Health, produce to him his books, or any of them, and render to him such information as he may be able to furnish with respect to any matter to which the duties of a Sanitary Inspector relate.

11. He shall, if directed by the Sanitary Authority to do so, superintend and see to the due execution of all works which may be undertaken under their direction for the suppression or removal of nuisances within his district.

12. In matters not specifically provided for in this order, he shall observe and execute any instructions issued by us, and the lawful orders and directions of the Sanitary Authority, applicable to his office.

The General Order of the Local Goverment Board, dated March 23, 1891, as regards the duties of rural and urban inspectors of nuisances, is as follows:—

1. He shall perform, either under the special directions of the Sanitary Authority, or (so far as authorised by the Sanitary Authority) under the directions of the Medical Officer of Health, or, in cases where no such directions are required, without such directions, all the duties specially imposed upon an Inspector of Nuisances by the Public Health Act, 1875, or by any other statute or statutes, or by the orders of the Local Government Board, so far as the same apply to his office.

2. He shall attend all meetings of the Sanitary Authority when so required.

3. He shall by inspection of the district, both systematically at certain periods, and at intervals as occasion may require, keep himself informed in respect of the nuisances existing therein that require abatement.

4. On receiving notice of the existence of any nuisance within the district, or of the breach of any by-laws or regulations made by the Sanitary Authority for the suppression of nuisances, he shall, as early as practicable, visit the spot, and enquire into such alleged nuisance or breach of by-laws or regulations.

5. He shall report to the Sanitary Authority any obnoxious or offensive businesses, trades, or manufactories established within the district, and the breach or non-observance of any by-laws or regulations made in respect of the same.

6. He shall report to the Sanitary Authority any damage done to any works of water supply, or other works belonging to them, and also any case of wilful or negligent waste of water supplied by them, or any fouling by gas, filth, or otherwise, of water used for domestic purposes.

7. He shall from time to time, and forthwith upon complaint, visit and inspect the shops and places kept or used for the preparation or sale of butcher's meat, poultry, fish, fruit, vegetables, corn, bread, flour, milk, or any other article to which the provisions of the Public Health Act, 1875, in this behalf shall apply, and examine any animal, carcase, meat, poultry, game, flesh, fish, fruit, vegetables, corn, bread, flour, milk, or other article as aforesaid, which may be therein; and in case any such article appear to him to be intended for the food of man, and to be unfit for such food, he shall cause the same to be seized, and take such other proceedings as may be necessary in order to have the same dealt with by a justice: provided that in any case of doubt arising under this clause, he shall report the matter to the Medical Officer of Health, with the view of obtaining his advice thereon.

8. He shall, when, and as directed by the Sanitary Authority, procure and submit samples of food, drink, or drugs suspected to be adulterated, to be analysed by the analyst appointed under "The Sale of Food and Drugs Act, 1875," and upon receiving a certificate stating that the articles of food, drink, or drugs are adulterated, cause a complaint to be made, and take the other proceedings prescribed by that Act.

9. He shall give immediate notice to the Medical Officer of Health of the occurrence within the district of any contagious, infectious, or epidemic disease; and whenever it appears to him that the intervention of such officer is necessary in consequence of the existence of any

nuisance injurious to health, or of any overcrowding in a house, he shall forthwith inform the Medical Officer of Health thereof.

10. He shall, subject to the directions of the Sanitary Authority, attend to the instructions of the Medical Officer of Health with respect to any measures which can be lawfully taken by an Inspector of Nuisances under the Public Health Act, 1875, or under any other statute or statutes, for preventing the spread of any contagious, infectious, or epidemic disease of a dangerous character.

11. He shall enter from day to day, in a book to be provided by the Sanitary Authority, particulars of his inspections and of the action taken by him in the execution of his duties. He shall also keep a book or books, to be provided by the Sanitary Authority, so arranged as to form, as far as possible, a continuous record of the sanitary condition of each of the premises in respect of which any action has been taken under the Public Health Act, 1875, or under any other statute or statutes, and shall keep any other systematic records that the Sanitary Authority may require.

12. He shall, at all reasonable times, when applied to by the Medical Officer of Health, produce to him his books, or any of them, and render to him such information as he may be able to furnish with respect to any matter to which the duties of Inspector of Nuisances relate.

13. He shall, if directed by the Sanitary Authority to do so, superintend and see to the due execution of all works which may be undertaken under their direction for the suppression or removal of nuisances within the district.

14. He shall, if directed by the Sanitary Authority to do so, act as officer of the said Authority as Local Authority under the Contagious Diseases (Animals) Act, 1886, and any orders or regulations made thereunder.

15. In matters not specifically provided for in this order, he shall observe and execute all the lawful orders and directions of the Sanitary Authority, and the orders of the Local Government Board which may be hereafter issued, applicable to his office.

These duties were formulated for sanitary inspectors more immediately under the control of the Local Government Board, though they are frequently adopted for the guidance of officers appointed and paid solely by the sanitary authority.

Every sanitary authority is empowered to add such

other duties as may be lawful and applicable to the office. It still occasionally happens that sanitary inspectors are delegated to perform one or more of the following offices, to the exclusion of more pressing and important duties, any one of which if properly discharged would occupy the officer's whole time:—Superintendent of the scavenging department, the inspection and registration of canal boats, collection of rates, hackney carriage inspector, inspector under the Petroleum and Explosive Acts, inspector under the Factory, Workshop and Shop Hours Acts, inspector of markets and collector of market tolls, &c.

One sanitary authority on advertising for an inspector, required the person appointed to provision the sanatorium, and another provided, that the inspector of nuisances should act as a police constable under the direction of the Watch Committee.

Mr. H. P. Boulnois, Engineering Inspector of the Local Government Board, has stated:—"That in order to carry out the multifarious duties of his office, an Inspector should be partially educated in the following trades and professions, viz., that of a Plumber, in order to detect bad work, and be able to fill in his notices how the bad work is to be rectified. That of a Builder, in order to detect improper sanitary construction, and state how it must be remedied. This is of a greater importance where, as in some towns, the sanitary inspector has also to carry out the duties of a 'Building Inspector,' and watch the erection of new houses which are being erected under the 'By-laws' regulating new buildings. That of a Butcher, in order to detect and intercept bad meat. That of a Veterinary Surgeon, in order to observe animals that may be suffering under the Contagious Diseases (Animals) Act, and also in connection with his visits to Slaughter-houses. That of a lawyer in order that he may be well cognisant with all the Acts and Regulations under which he carries

out his duties, and to enable him to form a judicial opinion upon all statements and facts. That of an Architect, in order that he may understand plans, and if necessary makes sketches of anything that comes under his notice in connection with his duties. That of a Clergyman, in order that he may preach the good tidings of sanitation, and may by his precept and example further the good work he is engaged upon, and also that he may be able to patiently bear the abuse which he may sometimes receive for what is called his 'Prying Interference.' Lastly, he must try and educate himself in Common Sense, that most valuable commodity, without which book learning availeth not much."

To carry out his duties efficiently, the sanitary inspector must exercise great forbearance, tact, and good temper; sometimes technical objections will be raised to his proceedings, vexatious delay and evasions will often occur in the fulfilment of his notices, nuisances which the officer is anxious to suppress may elude his authority; when he would force one person to refrain from tainting the atmosphere, with the result of an offensive trade,—where he would oblige another to see that his tenants were better housed than cattle, he will often be reminded of the rights of property and of an Englishman's inviolable claim to do as he will with his own. With private affairs, he should interfere only when they become of public import, and with private liberty only when it becomes a public encroachment.

Qualifications.

Sanitary authorities do not and have not always sought to appoint the person best fitted for the post of inspector. They have too frequently appointed the man who could

command the greatest influence with its members without the slightest regard to his qualifications. The important duties which sanitary inspectors are now called upon to discharge and the large discretionary power that must be vested in them, demands that only qualified persons should receive these appointments, and experience has undoubtedly rendered it necessary to establish some mode of testing the competency and qualifications of persons offering themselves as candidates to fill such appointments. Some assurance should be given to the public that the persons entrusted with these responsible duties are properly qualified.

Legislature has recognised the necessity of appointing men with some knowledge of the duties appertaining to the office in the Public Health (London) Act, 1891, as will be gathered by the following clause :—

> A sanitary inspector appointed after the first day of January, one thousand eight hundred and ninety-five, shall be holder of a certificate of such body as the Local Government Board may from time to time approve, that he has by examination shown himself competent for such office, or shall have been, during three consecutive years preceding the year one thousand eight hundred and ninety-five, a sanitary inspector or inspector of nuisances of a district in London, or of an urban sanitary district out of London containing according to the last published census a population of not less than twenty thousand inhabitants (Public Health (London) Act, 1891, Sect. 108).

A person to be fully competent to perform the duties of a sanitary inspector should have the following qualifications :—

He should be the owner of a good sound constitution and be able to follow the rules laid down to preserve it, including temperance.

He should be able to write legibly, spell correctly and have a fair knowledge of arithmetic.

He should have a thorough knowledge of building

construction, including plumbing, and the methods of water-supply and drainage, also the proper principles of ventilation of rooms, and should know the best and most suitable sanitary appliances to use under varied circumstances.

He should have an observant eye, a quick ear and a sensitive nose, and be able at once to detect any defective or faulty sanitary arrangements of dwellings and other buildings.

He should be thoroughly acquainted with the provisions of the various Public Health Acts and Model By-laws relating to the duties of sanitary inspectors.

He must make himself acquainted with the various kinds of infectious disease, and know the best means to adopt for preventing the spread of such diseases.

He should acquire a knowledge of the different kinds of disinfectants in use, and know those best fitted for safely and effectually disinfecting houses and fever localities.

He should have a thorough knowledge as to the different methods adopted for the collection and disposal of house and other refuse.

He should be of pleasing address and in his dealings with the public he should be calm and collected, learn to restrain his temper and to endure hard speeches.

He should bear himself with a sympathetic aspect to the many bereaved widows, mothers and orphan children he so frequently meets in the performance of his duties. Civility and kindness must characterise all his actions, and rude behaviour or supercilious officialism should find no place in his conduct.

The growing importance of the duties of sanitary inspectors and the need for a standard of proficiency in persons applying for such offices, led the Sanitary Institute to establish voluntary examinations for the purpose of granting certificates of competency to sanitary inspectors

and others. The Sanitary Inspectors Examination Board, established in 1899, is the outcome of Section 108 of the Public Health (London) Act, 1891, before referred to. This examination takes the place of the Sanitary Institute's examination, so far as sanitary inspectors in the metropolis are concerned, but persons holding the certificate of the Sanitary Institute prior to April 24, 1899, are still qualified for appointments in London.

With a view to affording information to those desirous of becoming qualified in this work, I append the following particulars respecting these examinations :—

The Sanitary Institute Examination.

Every candidate is required to furnish the Board of Examiners with satisfactory testimonials of recent date as to age and personal character ; these should, if possible, be from a clergyman, medical man, or someone holding an official position.

1. The candidate must be able to write legibly, and spell correctly.

2. Be able to make an outline sketch to scale.

3. Must possess a fair knowledge of arithmetic,

so that he may be able to prepare a report on any subject connected with his duties, creditable to himself and to the authority employing him.

Application for examination must be made on the proper form, and must be sent to the office of the Institute 14 days before the date of the examination at which the candidate wishes to present himself.

The fee payable for examination is £3 3*s*. It must be paid to the Secretary ; 10*s*. 6*d*. on making application, and the remainder at least one week before the day of examination.

The examination occupies a portion of two days. On the first day it consists of written papers only, three hours being allowed. On the second day the examination is *viva voce*, with one or more questions to be answered in writing, if required.

A Certificate of Competency, bearing the Seal of the Institute, is granted to each successful candidate.

A Certificate is not granted to any candidate under 21 years of age.

An unsuccessful candidate is allowed to present himself a second and third time for examination within two years of his first application on payment of half fees: but in every case the candidate must make application on the prescribed form previous to presenting himself for examination.

The following is the syllabus of the subjects dealt with at these Examinations:—

The Provisions of the Acts and Model By-laws relating to the duties of Inspector of Nuisances.

A knowledge of what constitutes a Nuisance.

Methods of Inspection of Dwellings, Cellar Dwellings, Dairies, Milk-shops, Markets, Slaughter Houses, Cowsheds, and Nuisances especially connected with Trades and Manufactories.

The Regulations affecting persons suffering or recovering from Infectious Diseases, and some knowledge of such diseases—the Principles of Ventilation, and simple methods of ventilating rooms—Measurement of Cubic Space.

Disinfectants and Methods of Disinfection.

A knowledge of the General Duties of the Office, and Methods of keeping the necessary Books and Records.

Writing and Spelling.

The proper conditions of good Drainage—the Advantages and Disadvantages of various Sanitary Appliances for Houses—Inspection of Builders' and Plumbers' work—Scavenging and the Disposal of Refuse.

The Physical Characteristics of good Drinking Water—the various ways in which it may be polluted, by Damage to Supply Works or in

Houses, and the means of preventing pollution—Methods of Water Supply.

The Characteristics of good and bad Food (such as Meat, Fish, Milk, Vegetables).

The Sale of Food and Drugs Act.

The following are specimen questions put to candidates at the examinations of the Sanitary Institute, and may be taken as a guide to questions submitted at similar examinations:—

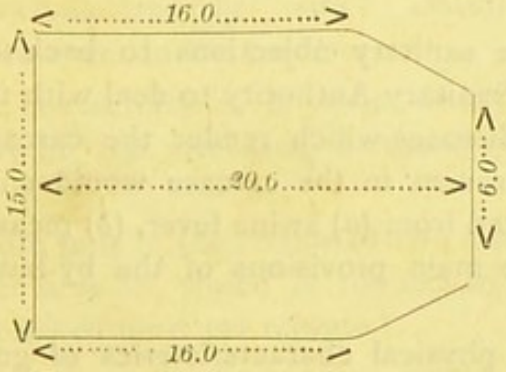
1. What are the nuisances likely to arise in the business of a fellmonger? What powers exist for dealing with these?

2. What means would you recommend for the disinfection of an ordinary cab or upholstered carriage in which a small-pox patient had been conveyed? How would you disinfect a privy midden which contained enteric infected stools?

3. What quantities of the following articles would you purchase for analysis:—milk, pepper, coffee, bread, oatmeal, tincture of rhubarb, mercury ointment, sweet spirits of nitre?

4. What appearances would you expect to find in the carcase of an animal which has suffered from advanced tuberculosis?

5. Show how you calculate the cubic contents of a room 10 feet in height, and of the form and dimensions shown in the accompanying sketch. How many adults should be allowed to sleep in it?



6. State fully how subsoils may be polluted in towns and villages.

7. Sketch to a large scale:—

Bath trap and waste,

Slop sink with trap,

Section of a 50-gallon automatic flushing tank,

and mark the dimensions on each.

8. Draft what in your opinion would constitute suitable and sufficient headings for a Register of Houses let in Lodgings.

9. What powers has a local authority and its officers for dealing with a tent, van, shed, or similar structure, used for human habitation, which is in such a state as to be a nuisance, or injurious to health, or which is so overcrowded as to be injurious to the health of its inmates?

10. Large numbers of carcases of calves are imported into this country from abroad at a certain period of the year. Under what conditions would you consider such carcases unfit for human consumption?

11. What steps would you take to prevent the spread of infection from a case of typhoid fever in a small isolated village?

12. State how water may be polluted after it enters a building from the street main, and how such pollution can be prevented?

13. What are the cubic contents of a rectangular room which has a ceiling 12 feet above the floor, of which the long sides measure 30 feet, the short sides 20 feet, and which has in one of the short sides a semi-circular bay with a radius of 6 feet, going up to the full height of the room?

14. Given three drains of 3-inch, 4-inch, and 5-inch diameter, converging to a common point, what must be the diameter of a fourth pipe to carry off the delivery of these, all gradients being equal?

15. What form of Register would you employ for recording the notifications of infectious disease, and the action taken in regard to each case?

16. What are the requirements of the model by-laws of the Local Government Board as to the yards and curtilages of new dwelling-houses?

17. What are the sanitary objections to back-to-back houses, and what powers has a Sanitary Authority to deal with them?

18. Mention the diseases which render the carcase of a pig unfit for food. What appearances in the carcase would enable you to decide that a pig had suffered from (*a*) swine fever, (*b*) measles?

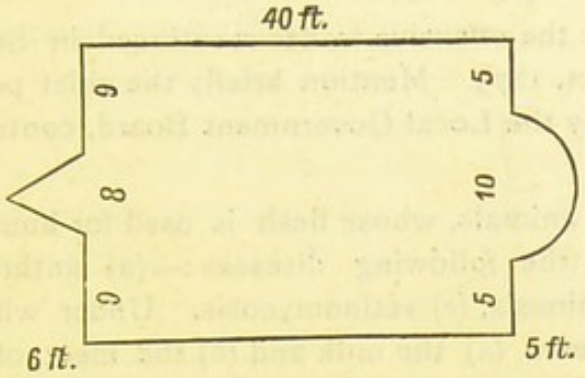
19. What are the main provisions of the by-laws relating to tripe-boiling?

20. What are the physical characteristerics of good drinking water? What are the objections to shallow wells?

21. Give a list of the materials used for cisterns for the storage of water in houses, and the advantages of each and the defects each is liable to.

22. What is the cubic content of a room 12 feet high and of the shape and dimensions shown on sketch and what is the maximum number of

adults you would allow to sleep in such a room, having regard to the floor space and also the cubic space.



23. What size and description of receptacle should be used for house refuse, and how often should it be emptied?

24. Mention the Statutory and other Registers which should be kept by a Sanitary Inspector. Suggest a form for the Register of Workshops which Sanitary Authorities are required to keep under Section 131 of the Factory and Workshop Act.

25. What are the essential points to observe in house drainage to prevent danger from sewer gas?

26. What is the difference in procedure in taking samples of butter under the Food and Drugs Acts and under the Margarine Act?

27. Explain the system of measurement laid down for "wide" and "narrow" canal boats. Give the minimum cubic space allowed per head in the cabin.

28. What is known as "measly" pork? Describe the cause of the disease and its appearances in the carcase.

29. What are the characteristics of water which has a solvent action on lead? How may the risk attending the use of such water be guarded against?

30. An inch of rain falls in the course of two hours uniformly upon a roof, the horizontal area of which is 100 feet by 50 feet; how many gallons would be received on it per minute?

31. Describe in detail the measures you would advocate for the disinfection of the rooms, &c., in an elementary school which has been closed on account of the prevalence of diphtheria among the scholars.

32. Draw up a list of the different Registers which would have to be kept by the following Sanitary Authorities respectively:—

(*a*) Urban. (*b*) Rural.

33. How should the overflow of a bath on the first floor be made to communicate with the house drains? Sketch the arrangement of the overflow and waste pipe from end to end.

34. Enumerate the offensive trades mentioned in Section 112 of the Public Health Act, 1875. Mention briefly the chief points in the model by-laws issued by the Local Government Board, controlling any one of them.

35. Name the animals, whose flesh is used for human food, that are most subject to the following diseases:—(*a*) anthrax, (*b*) glanders, (*c*) fluke, (*d*) trichinosis, (*e*) actinomycosis. Under what circumstances would you condemn (*a*) the milk and (*b*) the meat of a cow suffering from tuberculosis.

36. How does the law regulate the manufacture, exposure for sale, and sale of margarine and margarine cheese?

37. Enumerate the chief conditions which favour the spread of enteric fever. What do you consider the best method for the disposal of the excreta of a person suffering from this disease in a private house?

38. What are the impurities in air vitiated by respiration? State their relative importance. Calculate the cubic contents in feet of a room 20 feet square and 9 feet 6 in. high, with a semi-circular bay window from floor to ceiling, the radius of the semi-circle being 3 feet.

39. State what velocity in the sewage of a 4-inch house drain is desirable, and why less velocities in larger drains will suffice.

40. Give sketches and description of a self-cleansing gully and a flushing gully for waste water. The sketches to show how these gullies should be fitted in position.

41. In what ways may drinking-water in domestic storage cisterns get polluted? Indicate how the different forms of pollution could be best guarded against.

42. Explain the duty of a Sanitary Inspector with reference to sanitary accommodation in Factories and Workshops.

43. How would you inspect the concrete and brickwork in a house in course of erection?

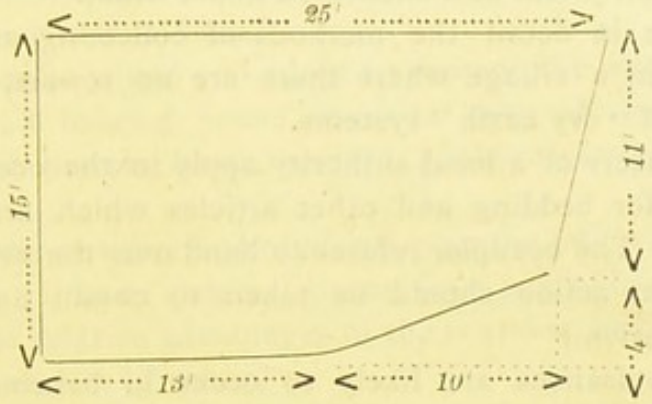
44. Describe briefly the appearances of:—

(*a*) Liver Fluke. (*b*) Trichina Spiralis.

What animals are most commonly affected by them? How would their presence affect the fitness of the flesh for food?

45. A room in a lodging house has the following dimensions on plan,

and is 12 feet high. Give the area, contents, and number of persons who may be allowed to occupy it.

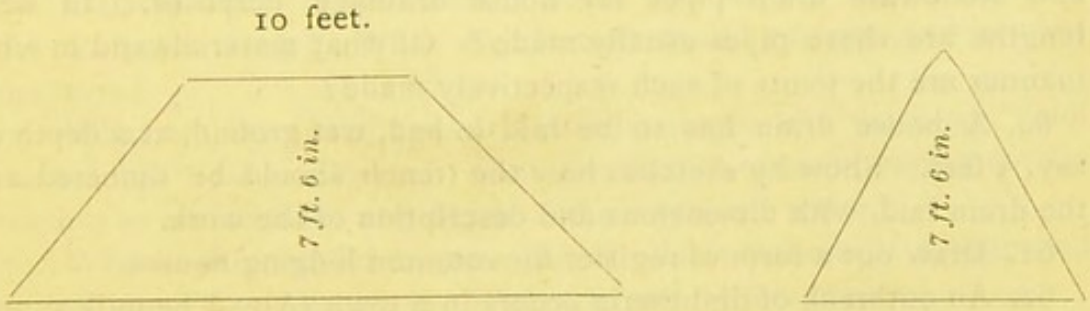


46. State the law providing for the abatement of smoke nuisance. What observations would you take in order to report upon a case?

47. What is a nuisance? Mention the nuisances specially defined by the Public Health Act, 1875. What circumstances would decide you as to whether a notice for the abatement of a nuisance should be served on the owner or on the occupier.

48. State the legislative requirements for broad and for narrow canal boats, giving minimum capacity of fore and aft cabins, regulations as to water supply, ventilation, cleanliness, marking and certificates. State generally the powers under Canal Boats Acts.

49. How is roof area measured for calculating rainfall? Give the surface area of a roof having the dimensions shown in the sketch.



50. Water from a polluted well is used for the preparation of aerated beverages. Detail the procedure which would be necessary in order to have the supply condemned and closed.

51. A case of small-pox has been notified, the patient residing in a private dwelling house. State in detail the actions which should be taken to prevent the spread of infection.

52. Explain the terms (*a*) invert level, (*b*) boning rod, (*c*) sight rail. Mention the points to which you would direct special attention in examining a newly-laid and uncovered house drain.

53. Describe in detail the methods of collecting and disposing of house refuse in a village where there are no sewers, by the "pail," "midden," and "dry earth" systems.

54. The officers of a local authority apply to the occupier of an infected house for bedding and other articles which are infected with scarlet fever. The occupier refuses to hand over the articles for disinfection. What action should be taken to obtain and disinfect the articles in question?

55. What nuisances are likely to occur in bakehouses, slaughter houses, fish manure works, and brickworks? How would you proceed to inquire into an alleged nuisance from brickworks?

56. Mention the most common diseases which render the flesh of a pig unfit for food. What appearances would lead you to determine their presence in the dressed carcase?

57. Calculate in cubic feet and in gallons the contents of a well 4 feet 6 in. inside diameter and 30 feet deep, the water level being 6 feet from the ground level.

58. What are the advantages and disadvantages of (*a*) iron service pipes (*b*) lead service pipes in connection with a public water supply; what other forms of service pipes are occasionally recommended and why?

59. Mention the respective advantages and disadvantages of cast-iron and stoneware drain pipes for house drainage purposes. In what lengths are these pipes usually made? Of what materials and in what manner are the joints of each respectively made?

60. A house drain has to be laid in bad, wet ground, at a depth of, say, 5 feet. Show by sketches how the trench should be timbered and the drain laid, with dimensions and description of the work.

61. Draw out a form of register for common lodging houses.

62. An outbreak of diphtheria occurs in a town (A). The milk supply obtained from a farm situated in a town twenty miles away is suspected. What powers have the authorities of A to make further investigations in regard to the milk.

63. What are the risks attending the use, for drinking water, of a stream flowing through cultivated land with isolated farmsteads on the gathering ground? How may water be sterilized?

64. What is the legal definition of an underground bakehouse? With what conditions must the occupiers of underground bakehouses comply

prior to January 1, 1904, in order to continue the use of such premises?

65. What particular items would you refer to in drawing up a report on the inspection of a canal boat?

66. What measures would you adopt to prevent the spread of small-pox in a common lodging house where a case of the disease had occurred? What powers have Sanitary Authorities to enforce these measures?

67. Describe the best method of disinfecting the following articles:—(*a*) hair mattress, (*b*) linen sheets, (*c*) coat, (*d*) a pair of boots.

68. Discuss the relative advantages of the *constant*, as compared with the *intermittent*, service of water?

69. You are sent to take an hour's observation of the smoke issuing from a certain factory chimney. In what form would you make your notes, as the observation proceeded, so that they could be referred to for evidence in a Court of Law?

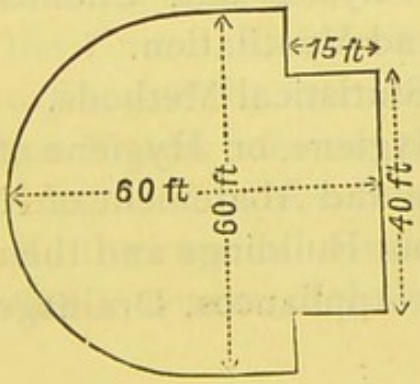
70. Describe the Sheringham Ventilator, the Hinckes-Bird Window Block, the Tobin's Tube Ventilator, and mention the conditions under which one or more of them would be of service in a tailor's workshop 17 feet long by 12 feet broad by 10 feet 6 in. high, with a fireplace at one end, two windows (each 6 feet by 3 feet) at one side, a door (7 feet by 3 feet) into a passage in the other.

71. Mention three disinfectants suitable for thoroughly disinfecting linen soiled with the excretions of a typhoid fever patient, and state the strength of each you would employ for that purpose.

72. What quantity of disinfectant would you require to fill a 4-inch drain 20 yards long? What disinfectant would you use, and in what proportion?

73. What are the advantages and disadvantages of "wash-out" and "wash-down" water closets? Sketch a section of each, paying special attention to surface area and depth of the contained water.

74. What is the content in cubic feet of a lecture room of a shape on plan and dimensions shown in the sketch, and 35 feet high?



75. Describe how you would prepare disinfecting solutions from (*a*) corrosive sublimate, (*b*) carbolic acid. What strength of each disinfectant would you employ to efficiently disinfect washable articles that have been in contact with a scarlet fever patient?

The Sanitary Inspector's Examination Board.

Regulations as to Examinations and Instruction.

The Examination consists of two parts, Preliminary and Technical.

The Preliminary Examination shall be written and oral, upon the following subjects:—

English, including writing, spelling, composition, and dictation.

Arithmetic, including fractions, vulgar and decimal, simple proportion, common weights and measures, mensuration of rectangles and rectangular solids as required by Schedule 1, Standard 6, of the Day School Code, 1898, of the Education Department, together with mensuration of circles, cylinders, and spheres.

No Candidate shall be approved who fails to show in each of these subjects such proficiency as shall satisfy the Examiners of his ability to prepare official reports.

The Technical Examination shall be written, oral, and practical, upon the following subjects so far as they bear upon the duties of a Sanitary Inspector:—

1. Elementary Physics and Chemistry in relation to Water, Soil, Air and Ventilation.

2. Elementary Statistical Methods.

3. Municipal Hygiene or Hygiene of Communities, including Prevention and Abatement of Nuisances, Sanitary Defects in and about Buildings and their Remedies, Water Supplies, Sanitary Appliances, Drainage, Refuse Removal

and Disposal, Offensive Trades, Disinfection, Food Inspection.

4. Statutes, and the Orders, Memoranda, and Model By-Laws of the Local Government Board, and the By-Laws in force in the Administrative County of London.

Every Candidate must forward to the Secretary of the Board, not later than fourteen days before the commencement of the Examination, notice of his intention to present himself for examination, and half the appointed fee. The remaining half of the fee must be paid not later than seven days before the date of the Examination.

Candidates for the Technical Examination must pass the Preliminary Examination, unless they shall have passed an Examination recognised by the Board in substitution for it (see p. 45); and must forward to the Secretary of the Board, not later than fourteen days before the commencement of the Examination;—

1. Evidence of having attained the age of twenty-one years.

2. A recent testimonial as to personal character; if possible, from a Clergyman, Medical Officer of Health, or other person holding an official position.

3. Evidence of having passed a recognised alternative Examination, in the case of Candidates who claim exemption from the Preliminary Examination.

4. Evidence of training, consisting of:—

(*a*). Evidence of having held for not less than three years previous to the First day of January, 1900, the office of a Sanitary Inspector or Inspector of Nuisances in a Sanitary District in the United Kingdom having a population of not less than 5,000 at the last census; or

(*b*). A Certificate of Instruction, as prescribed below, from an Institution recognised by the Board.

The Certificate of Instruction must show that the Candidate has attended a course of Instruction approved

by the Board, consisting of not less than 32 systematic lectures supplemented by demonstrations and comprising the subjects of the Technical Examination, including:—

(*a*). Elementary Physics and Chemistry in relation to Water, Soil, Air and Ventilation.

(*b*). Building Construction in its Sanitary relations. Measurement and drawing plans to scale.

(*c*). The practical duties of a Sanitary Inspector, *e.g.*, drawing up notices as to sanitary defects, taking samples of water, food, and drugs for analysis, food inspection, drain-testing, disinfection, methods of inspection, note-taking and reporting.

The fee for the Preliminary Examination shall be one guinea, and for the Technical Examination, three guineas. No fees will be returned except in the case of a Candidate who having entered for both Examinations fails to pass the Preliminary Examination, in which case the fee for the Technical Examination will be returned to him.

If a candidate be prevented from attending by illness, or by other cause deemed sufficient by the Board, he will be admitted to the next Examination without further fee.

An unsuccessful candidate will be admitted to one subsequent Examination on payment of one-half the above fees.

The Examinations will be held twice in each year.

Every Candidate who passes the Examination will receive a Certificate to that effect, qualifying him for appointment as Sanitary Inspector under Section 108 (2) (d) of the Public Health (London) Act, 1891, and under any subsequent Act of Parliament or Order of the Local Government Board which may require Sanitary Inspectors or Inspectors of Nuisances to hold Certificates.

Examinations recognized in Substitution for the Preliminary Examination.

1. The Local Examination of the Examinations Board of the National Union of Teachers (based on the work of the Sixth Standard, as set forth in the Code of the Education Department), Mensuration having been taken as one of the three optional subjects required by the Regulations.

2. The Junior Local Examination of the University of Oxford.

3. The Junior Local Examination of the University of Cambridge.

4. The Junior Certificate of the Central Welsh Board.

5. The Third Class Certificate Examination of the College of Preceptors; or, any equivalent or higher Examination comprising all the subjects stated in the Board's Regulations for the Preliminary Examination.

Sanitary Association of Scotland Examination.

Candidates must be at least twenty-one years of age. Entrance fee, £2 2s. Non-successful candidates are entitled to one re-examination within twelve months without further fee.

Application forms (to be filled up by candidates at least eight days before the examination, and returned along with the fee) may be had from the Secretary.

Candidates are examined orally as well as by writing, and may be required to illustrate their answers by sketches. In the written examination, any deficiency in

writing, arithmetic, spelling, or English composition will diminish the value of the paper.

Syllabus of requirements for the examination, as arranged by the Board of Examiners :—

(1) An accurate knowledge of the following Acts, viz.:—Public Health (Scotland) Act, 1897; Local Government (Scotland) Act, 1889 and 1894; Health Sections of the Burgh Police (Scotland) Act, 1892; Infectious Disease (Notification) Act, 1889; Sale of Food and Drugs Act, 1875-1899; Margarine Act, 1887; Sale of Horse Flesh Act, 1889; Dairies, Cowsheds, and Milkshops Orders, 1885 and 1886, under Contagious Diseases (Animals) Acts, 1878 and 1886; Rivers Pollution Acts, 1876 and 1893.

(2) A thorough knowledge of the following subjects, viz.:—

The principles of ventilation and the simple methods of ventilating rooms. Measurement of cubic space.

The various sanitary appliances for houses. Building regulations. Inspection of builders' and plumbers' work.

Sewerage and sewage disposal.

Scavenging and the disposal of refuse.

The physical characteristics of good water. Methods of water supply. Means of preventing pollution.

The characteristics of good and bad food and meat.

Methods of inspecting dwellings, dairies, cowsheds, milkshops, markets, and slaughter houses.

The nuisances arising from trades, businesses, and manufactures.

The regulations affecting persons suffering from infectious diseases, and the best methods of disinfection.

THE ABATEMENT OF NUISANCES, PROCEDURE, &c.

The Sanitary Inspector being the executive officer of the Sanitary Authority for the abatement of nuisances, he becomes the eyes, ears and nose of that body, and the medical officer of health is nominally its head. It is most essential that these officers should discharge their respective duties with due and proper consideration for each other, and by thus working together much misunderstanding, confusion, and duplication of labour will be avoided.

It is most desirable that the Inspector should attend the meetings of his Committee, as he will be better able to afford its members any needful explanation with regard to his reports and other matters of inquiry, and thus expedite the business of the meetings; besides which, he will become acquainted with the wishes of the members upon any particular subject relative to his duties.

His reports should be of an intelligent and trustworthy kind; they should fully describe the premises and the nuisances or other matters complained of, avoiding as far as possible any unnecessary remarks, for the more brief the reports are in their completeness, the more they will be appreciated by the sanitary authority to whom they are addressed.

A sanitary officer must be punctual in his attendance at the office, *should one be provided*, in keeping appointments, and last, but not the least, in attending any meetings of his authority to which he is summoned.

All inspections and enquiries made by the sanitary inspector should be thorough—a call made at a house for a

few minutes and returned as an inspection, is misleading. Inspection is a definite thing and means a thorough sanitary survey of the premises and its surroundings. Slipshod enquiries and inspections are positively dangerous, and should not be made, as a thing worth doing is worth doing well.

The *officer* must be accurate and methodical in everything he does, in the discharge of his duties.

Dr. Sykes, M.O.H., St. Pancras, in a lecture which he delivered to the students at the Sanitary Institute, gave them the following advice:—"always take notes in writing, and record exactly what you find. Avoid all prejudice and personal equation as much as possible.

"Distinguish what you find from what is told you and note by whom you are told. Be exact in names, places, hours, and dates, and details generally. Cultivate the art of observation and enquiry—know your subject that you may know what to observe and what to enquire into."

It is a good plan to record the visits the inspector makes in a register kept for that purpose, see specimen on p. 49.

In this register all premises where work is in hand or to which visits, &c., have been made during each week, as well as houses that remain on the books, should be entered from week to week endorsing each entry, work ordered, work in hand, nuisance abated or notice complied with, as might be the case.

On returning to the office he must add to the list any premises visited, not already on the register, and post up the columns to show what places he has visited, making the following or other distinguishing marks:—X would represent a visit—the letter I an inspection, a T for testing of drains, and C for concrete inspected, as the case may be. Any other notes could be recorded in his pocket book.

An inspector cannot be too particular in recording his work, as he never knows how soon information of this

FORM OF REGISTER.

BOROUGH OF

Week ending *190*

No.	Premises Visited or Inspected.	Folio in Report Book.	ABATEMENT OF NUISANCES. Visits or Inspections.						NEW DRAINAGE. Visits or Inspections.						INFECTIOUS DISEASES. Visits or Inspections.						MISCELLANEOUS. Visits or Inspections.						REMARKS.
			Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	

nature may be asked for, and a register of this kind will show in what way the officer has been employed.

Information or complaint of nuisances are directed to be given, as follows :—

> Information of any nuisance under this Act in the district of any local authority may be given to such local authority by any person aggrieved thereby, or by any two inhabitant householders of such district, or by any officer of such authority, or by the relieving officer, or by any constable or officer of the police force of such district (Public Health Act, 1875, Section 93, also Section 19, Public Health (Scotland) Act, 1897).

or, as provided by *Public Health (London) Act*, 1891, Section 3, *by any person, every officer of sanitary authority, and relieving officers.* This simplifies the law by allowing any person to give information whether aggrieved or not.

He should at all times attend promptly to any special complaints, and frequent inspections at uncertain periods are necessary as regards slaughter houses and other similar businesses.

Sanitary authorities are sometimes disposed to disregard anonymous complaints, but it is the duty of the authority to investigate every *specific* complaint made to them without regard to the means by which it comes to their knowledge, and if satisfied, upon enquiry, that such complaints are justified, they should direct that measures be taken to remove the ground of complaint. It is essential, however, to exercise the greatest care when enquiring into such complaints, otherwise the authority and its inspector may be made the victim of ill-will or spite.

Complaints will often be sent to the inspector of nuisances arising from the barking of dogs, cock-crowing and pianoforte playing, &c., but these are not nuisances over which the inspector has any control; the parties complaining should be referred to the police.

A record should be kept of all complaints of nuisances,

FORM OF COMPLAINT BOOK.

BOROUGH OF

No. of complaint.	Date of complaint.	Name and address of complainant.	Situation of premises to be inspected.	Nature of complaint.	Date of Inspection.	Folio in Inspector's report book.	Inspector.	Remarks.

and these should be entered in the complaint book, of which a specimen is given on page 51.

Whether upon receipt of information as to nuisances, or when in search of nuisances without complaint, it must not be forgotten that the law does not give the inspector the power to enter premises without permission, nor is it competent for a local authority, except in certain cases, to enter premises to execute works until after disobedience of an order of the justices; but if admission is refused to premises, a justice, if satisfied by information on oath that a nuisance exists thereon, will authorise the inspector to enter the premises complained of, in order to make an inspection or to execute works ordered.

Sections 10 and 40 of the Public Health (London) Act, 1891, gives the Sanitary Authority a right to enter premises for the purpose set out in those sections. In the event of entry being refused, a magistrate's order may be obtained under Section 115, if the justice is satisfied that there is *reasonable* ground for such entry.

A lady sanitary inspector, in the service of the Vestry of St. Pancras, applied at a school to be admitted and was refused; she then applied to a police magistrate for an order to enter, but in her information did not state that she had reason to believe that there was anything wrong in the sanitary arrangements at the school. The magistrate refused the application, holding that no reasonable ground had been shown for entering.

The Vestry appealed, and judgment was given for the respondents in accord with the magistrate's decision.

It was held that the right of entry did in fact exist under Sections 10 and 40. That it was only where such right existed and entry had been refused that application could be made for a magistrate's order. That when a magistrate's order was applied for, reasonable grounds for entry must be shown. That the statement that the inspec-

tor wished to enter for the purpose of examining as to the existence of any nuisance therein, is not a reasonable ground. (Vines *v.* The North London Collegiate School. Q. B., Jan. 18, 1899).

The following section gives the local authority or their officers power of entry :—

> The sanitary authority shall have a right to enter from time to time any premises—
>
> For the purpose of examining as to the existence thereon of any nuisance liable to be dealt with summarily under this Act, at any hour by day, or in the case of a nuisance arising in respect of any business, then at any hour when that business is in progress or is usually carried on, and
>
> Where under this Act a nuisance has been ascertained to exist, or a nuisance order has been made, then at any such hour as aforesaid, until the nuisance is abated, or the works ordered to be done are completed, or the closing order is cancelled, as the case may be, and
>
> Where a nuisance order has not been complied with, or has been infringed, at all reasonable hours, including all hours during which business therein is in progress or is usually carried on, for the purpose of executing the order. (Public Health (London) Act, 1891, Sects. 10, 40 and 115; Public Health Act, 1875, Sect. 102; also Sect. 18, Public Health (Scotland) Act, 1897).

Every sanitary inspector should receive from the Sanitary Authority, and under their seal, a certificate of his appointment, duly signed by the clerk to that Authority, intimating that he is authorised to perform the duties of a sanitary inspector. The certificate must be presented ON DEMAND to any ratepayer on whose premises he may desire to enter in the discharge of his duties.

Section 115, Sub-section 2, Clause (*a*) of the Public Health (London) Act, 1891, provides that "the person so claiming the right to enter shall, if required, produce some written document, properly authenticated on the part of the Sanitary Authority, showing the right of the person producing the same to enter."

The following is a copy of a form of certificate in use in a Metropolitan Borough :—

The Mayor, Aldermen and Councillors of called the Council, being the Sanitary Authority for the execution of the Public Health (London) Act, 1891, within the said Borough, hereby certify under their Common Seal, that the holder hereof is appointed by the Council a Sanitary Inspector for the said Borough, and is authorised and required to perform all the duties imposed upon a Sanitary Inspector by any Statute or Statutes, or any Orders or By-laws issued and made thereunder, and on behalf of the Council, to examine and enter any premises within the said Borough, which the Council have power to examine and enter, under or pursuant to any such Statute or Statutes, Orders and By-laws or otherwise.

Sealed this day of 190
in the presence of

SEAL.

Town Clerk.

The word nuisance has a very extended meaning. It does not, however, include every common law nuisance; it is not necessary that a nuisance, to be within the Act, should also be injurious to health, inasmuch as the terms are disjunctive, *nuisance* or *injurious*, or *dangerous* to health. It is sufficient if the nuisance is one which interferes with personal comfort, though actual or threatened impaired health is conclusive proof of the character of the nuisance.

Sir Henry Littlejohn, Medical Officer of Health for the City of Edinburgh, has expressed the following opinion on the term "injurious to health." He says, "it is construed by various medical men in different senses. If actual injury to health has to be proved, it will be found almost impossible to reach this description of nuisance. I venture to express the opinion that when smells from whatever cause are declared to be very offensive, and produce feelings of nausea or sickness in those exposed to

them, and when these smells in certain directions of the wind so invest houses as to prevent proper ventilation, medical men should have no hesitation in describing them as injurious to health."

For the purposes of the inspector it will be sufficient for him to remember the following definitions of nuisances given in Section 2, of the Public Health (London) Act, 1891, and these may be dealt with summarily:—

1. Any premises in such a state as to be a nuisance or injurious, or *dangerous* to health.

2. Any pool, ditch, gutter, watercourse, *cistern*, *water-closet*, *earth-closet*, privy, urinal, cesspool, drain, *dung-pit*, or ashpit so foul or in such a state as to be a nuisance or injurious or *dangerous* to health.

3. Any animal kept in *such place or manner* as to be a nuisance or injurious or *dangerous* to health.

4. Any accumulation or deposit which is a nuisance or injurious or *dangerous* to health.

5. Any house or part of a house so overcrowded as to be injurious or *dangerous* to the health of the inmates, whether or not members of the same family.

6. Any such *absence from premises of water-fittings* as is a nuisance by virtue of Section 33 of the Metropolis Water Act, 1871.

7. Any factory, workshop, or workplace which is not a factory, subject to the provisions of the Factory and Workshop Act, 1901, relating to cleanliness, ventilation, and overcrowding, and

(i) Is not kept in a cleanly state and free from effluvia arising from any drain, privy, earth-closet, water-closet, urinal or other nuisance, or

(ii) Is not ventilated in such a manner as to render harmless as far as practicable, any gases, vapours, dust, or other impurities generated in the course of the work carried on therein that are a nuisance or injurious or dangerous to health, or

(iii) Is so overcrowded while work is carried on as to be injurious or dangerous to the health of those employed therein.

The words in *italics* do not appear in the definition of nuisances given in Section 91, of the Public Health Act, 1875.

The following are the definitions of nuisances given in Sect. 16 of the Public Health (Scotland) Act, 1897:—

1. Any premises or part thereof of such construction or in such a state as to be a nuisance or injurious or dangerous to health.

2. Any street, pool, ditch, gutter, watercourse, sink, cistern, water closet, earth closet, privy, urinal, cesspool, drain, dung-pit, or ashpit so foul or in such a state or so situated as to be a nuisance or injurious or dangerous to health.

3. Any well or water-supply injurious or dangerous to health.

4. Any stable, byre or other building in which any animal or animals are kept in such a manner or in such numbers as to be a nuisance or njurious or dangerous to health.

5. Any accumulation or deposit, including any deposit of mineral refuse, which is a nuisance or injurious or dangerous to health, or any deposit of offensive matter, refuse or offal, or manure (other than farm-yard manure or manure from byres or stables, or spent hops from breweries), within fifty yards of any public road wherever situated, or any offensive matter, refuse or offal, or manure other than aforesaid contained in uncovered trucks or waggons standing or being at any station or siding or elsewhere on a railway or in canal boats so as to be a nuisance or injurious or dangerous to health.

6. Any work, manufactory, trade or business, injurious to the health of the neighbourhood, or so conducted as to be injurious or dangerous to health, or any collection of rags or bones injurious or dangerous to health.

7. Any house or part of a house so overcrowded as to be injurious or dangerous to the health of the inmates.

8. Any school house or any factory which is not a factory subject to the provisions of the Factory and Workshop Acts, 1878 to 1895, or any Act amending the same, with respect to cleanliness, ventilation or over-crowding, and

(i) is not kept in a cleanly state and free from effluvia arising from any drain, privy, water closet, earth closet urinal or other nuisance, or

(ii) is not ventilated in such a manner as to render harmless so far as practicable any gases, vapours or dust, or other impurities generated in the course of the work carried on therein that are a nuisance, or injurious or dangerous to health, or

(iii) is so overcrowded while work is carried on as to be injurious or dangerous to the health of those therein employed.

9. Any fireplace or furnace situate within the limits of any burgh or special scavenging district which does not so far as is practicable consume the smoke arising from the combustible matter used therein, for working engines by steam, or in any mill, factory, or dye-house, brewery, bakehouse, or gas work, or in any manufacturing or trade process whatsoever.

10. Any chimney (not being the chimney of a private dwelling house) sending forth smoke in such quantity as to be a nuisance, or injurious or dangerous to health; and

11. Any church yard, cemetery, or place of sepulture so situated or so crowded or otherwise so conducted as to be offensive or injurious or dangerous to health, shall be deemed to be nuisances liable to be dealt with summarily in a manner provided by this Act.

In the case of Reg. *v.* Parlby it was held that the expression "premises in such a state," referred to those which are decayed, dilapidated, dirty, or out of order; as where the habits and ways of the tenants rendered them filthy or impregnated with disease, or where foul matter has been allowed to soak in walls and floors, or where so dilapidated as to be a source of danger to life or limb. (Wills, J., 22 Q. B. D., 520; 53 J. P., 327).

Sanitary Authorities have responsibilities in the matter of cleansing sewers as shewn in the following case:—

At the side of a road which was vested in a local authority was an open channel made for the purpose of carrying off the surface water from the road. In the channel were gullies by which the water passed through pipes into an underground drain. Rain water from the roofs and the cartilages of many of the houses in the road (including the plaintiff's) also passed through pipes into the channel.

Sewage from one of the houses (not the plaintiff's) had escaped into the channel and had caused an illness of the plaintiff's child, and the plaintiff had thereby incurred expense.

In an action by the plaintiff against the local authority

claiming an injunction and damages, it was held that the channel was a sewer, within the definition contained in Section 4, of the Public Health Act, 1875, and that under Section 19 it was the duty of the defendants to cleanse the channel so that it should not be a nuisance or injurious to health.

An injunction was accordingly granted to restrain the defendants from permitting any foul or noxious matter to remain in the channel so as to cause a nuisance to the plaintiff and awarded him £30 damages. (Wilkinson *v.* Llandaff and Dinas Powis R.D. Council, C.A. (1903) 695).

By far the greater number of nuisances discovered and complained of will be reported by the sanitary inspector, as the result of (1) house to house inspection; (2) enquiries into cases of infectious disease; (3) the inspection of offensive trades, including slaughter houses and cowsheds; (4) smoke nuisances; (5) inspection of factories and workshops, including bakehouses and laundries; (6) visits made to houses let in lodgings and common lodging houses.

The following is a description of some of the common causes from which nuisances frequently arise:—

Drains.

1. Defective, foul, untrapped or unventilated.
2. Choked or stopped.
3. Surface traps in yard, area or stable defective.
4. Manhole foul or defective.
5. ,, without suitable cover.
6. ,, cover defective.
7. No fresh air inlet, or inlet defective.

Water closets.

1. Apparatus foul or defective.
2. No light or ventilation.
3. Light or ventilation insufficient.
4. Traps unventilated.
5. Insufficient flush of water.
6. Flushing apparatus defective.

7. No flushing apparatus.
8. No water supply for flushing purposes.
9. Walls, ceiling, floor or seat dirty.
10. Water supply drawn from drinking water cistern.

Sink, bath, &c., wastepipes.

1. Connected to the drain or soil pipe.
2. Untrapped or unventilated.
3. Defective or choked.
4. No wastepipe or pipe too short.

Water supply.

1. No supply for drinking or domestic purposes.
2. Connected with w.c. supply.
3. Cistern without cover or cover defective.
4. Cistern dirty.
5. Insufficient supply.
6. Cistern in unsuitable position or not accessible for cleansing purposes.

Soil pipes.

1. Defective.
2. Unventilated or insufficiently ventilated.
3. Ventilating pipe too low or near windows.

Dust bins.

1. No receptacle for house or trade refuse.
2. Defective or foul.
3. Without cover or cover defective.
4. Insufficient number of receptacles.

Miscellaneous.

1. Bedroom or workroom overcrowded.
2. Underground room or cellar used as a dwelling contrary to the Act.
3. House roofs defective.
4. Rain water pipes or eaves gutters defective.
5. Insufficient light or ventilation to rooms.
6. Floors or staircases defective.
7. Walls and ceilings of rooms, staircases or passage dirty.
8. Yard, area or passage surfaces defective, uneven or unpaved.
9. Accumulation of offensive refuse.
10. Keeping animals so as to be a nuisance or in unsuitable places.

11. No receptacle for stable refuse.
12. Foul sunken dung-pit.
13. Emission of black smoke.
14. Insufficient w.c. accommodation.

All reports made, of premises inspected, should be entered in the sanitary inspector's report book, a specimen of which is given on page 61, and such report book should be placed before the members of the Sanitary Authority as provided in Section 107, Sub-Section 3, of the Public Health (London) Act, 1891, for the purpose of receiving the Authorities' instructions as to any action which they may deem necessary in respect of these reports.

The section referred to above provides that the sanitary inspector shall report to the Sanitary Authority the existence of any nuisances, and the Sanitary Authority shall cause a book to be kept in which shall be entered all complaints made of any infringement of the provisions of this Act or of any by-laws made thereunder or of nuisances.

Copies of these reports should also be supplied on printed forms (see page 62) for the information of the chairman and the clerk to the authority.

House to house inspection furnishes the basis for almost every sanitary improvement which is required in any community, and it is, therefore, of the greatest importance that a clear and trustworthy record should be made of the conditions observed, or the inspections are valueless.

The purpose of these inspections is to inform the Sanitary Authority concerning all conditions on premises which may affect the health of the occupants, and to furnish facts pertaining to those conditions in such form that they may be used in securing improvement.

As early as possible after his appointment the sanitary inspector should institute a house to house inspection with the object of searching for nuisances, but in this work he

FORM OF SANITARY INSPECTOR'S REPORT BOOK.

BOROUGH OF

No.								
Date of Complaint.								
Name and Address of Complainant.								
Description and Situation of the Premises inspected.								
Name and Address of Owner, Agent, or Occupier.								
Date of Visit.								
Date of Notices and number of Days allowed.								
Date reported to Sanitary Authority.								
Inspector's Report								
Remarks. (Order of the Sanitary Authority or Committee).								

FORM FOR REPORTING NUISANCES TO THE PUBLIC HEALTH COMMITTEE.

BOROUGH OF *Date* *190*

Name of Inspector reporting.	Description and Situation of Premises where Nuisance exists.	Nature of Nuisance.	Order asked for.	Order of the Sanitary Authority or Committee.

FORM FOR REPORTING INFRINGEMENTS OF BY-LAWS TO THE PUBLIC HEALTH COMMITTEE.

BOROUGH OF *Date* *190*

Name of Inspector reporting.	Description and Situation of Premises or Place where Infringement occurs.	Nature of Infringement.	Order asked for.	Order of the Sanitary Authority or Committee.

will be called upon to use discretion and diplomacy, care being taken to inspect those houses first, that are situated in crowded localities, and which have the appearance of dilapidation; by this I do not mean that the houses of the upper and middle classes will not require their share of attention, but it will be apparent that the former class of property will demand more frequent inspection, though the many adjuncts to the sanitary system of larger houses often render the occupation of such houses more dangerous. Having regard to the decision in the case of Vines *v.* North London Collegiate, to which reference has been made, it is a moot point whether a house to house inspection can be persisted in, except under special circumstances, as for instance, during an epidemic; but as the sanitary authority is required to cause an inspection to be made of the district to see what nuisances do exist and require abatement, it is difficult to see how this duty can be effectually carried out unless house to house inspections are resorted to, as the undermentioned clause appears to direct :—

It shall be the duty of every sanitary authority to cause to be made, from time to time, inspection of their district, with a view to ascertain what nuisances exist calling for abatement under the powers of this Act, and to enforce the provisions of this Act for the purposes of abating the same, and otherwise to put in force the powers vested in them relating to public health and local government, so as to secure the proper sanitary condition of all premises within their district. Public Health (London) Act, 1891, Section 1; and Section 92, Public Health Act, 1875; also Section 17, Public Health (Scotland) Act, 1897).

Similar powers are given local authorities in Section 32, Housing of the Working Classes Act, 1890; with a view to ascertaining whether any dwelling house is in a state so dangerous or injurious to health as to be unfit for human habitation, and if the authority fail in their duty, the County Council can do what is necessary and recover the expenses thus incurred from the defaulting Sanitary

Authority; or the County Council may make a complaint to the Local Government Board, who will enforce the performance of the duty as provided.

The inspector when making house to house inspections should be furnished with a book having printed headings, this will facilitate the enquiries, besides keeping the particulars of each house entirely uniform and distinct. For all general purposes the following headings will be found sufficient:—

Form of House to House Inspection Book.

Date of Inspection

Description and Situation of Premises inspected

Name of Occupier

Name and Address of "Owner" or Agent

No. of rooms. Living

" Sleeping

" Underground, and for what used

No. of inmates. Adults Males Females

" Children (under 10 years of age)

W.C. accommodation

Drainage

Water Supply

Roof, rain water pipes and eaves gutters

Memorandum of Nuisance from any other cause or general remarks.

In considering the question of nuisances from offensive trades it might be an infraction of personal liberty to

interfere with a proprietor's right to make offensive smells within the limits of his own tenement, and for his own separate inhalation, but surely it is a greater infraction of personal liberty when the proprietor assumes what is equivalent to a sole possession of the atmosphere, and claims the right of diffusing through it some nauseous effluvium which others equally with himself are thus obliged to inhale.

Nuisances arising from offensive trades affect some inspectors more than others, but no offensive business can be established without the sanction of the London County Council in the Metropolis, or an urban sanitary authority in the provinces. In London, the County Council is required to give at least 14 days' notice to the sanitary authority of the district where the premises requiring the license are situate, to enable the latter, if necessary, to oppose the application.

In Scotland offensive businesses cannot be established without the sanction of the Local Authority, whatever be the situation of the business; and as regards slaughter houses and knackers' yards, a license must be obtained from such Authority before they can be carried on, and this license is subject to annual renewal.

The Local Government Board and the London County Council have made by-laws for regulating these businesses, and these must be enforced by the sanitary authority in the Provinces, and the County Council within the Metropolis. The Act provides that:—

> If any person—
>
> Establishes anew the following businesses, or any of them; that is to say, the business of blood boiler, bone boiler, manure manufacturer, soap boiler, tallow melter, or knacker, or
>
> Establishes anew, without the sanction of the county council, the following businesses or any of them; that is to say, the business of fellmonger, tripe boiler, slaughterer of cattle or horses, or any other

business which the county council may declare by order confirmed by the Local Government Board, and published in the London Gazette to be an offensive business,

he shall be liable to a fine not exceeding fifty pounds in respect of the establishment thereof, and any person carrying on the same when established, shall be liable to a fine not exceeding fifty pounds for every day during which he so carries on the same. Public Health (London) Act, 1891, Section 19; and Section 112, Public Health Act, 1875; also Section 32, Public Health (Scotland) Act, 1897.

Trades mentioned in the first part of this clause cannot now be established in the Metropolis. There is no prohibitive section in the Public Health Act, 1875, and the penalties incurred are not so severe.

The late Dr. Ballard classified effluvian nuisances as follows:—

1. Keeping of animals.
2. Slaughtering of animals.
3. Other branches of industry in which animal matters or substances of animal origin are principally dealt with.
4. Branches of industry in which vegetable matters are principally dealt with.
5. Branches of industry in which mineral substances are principally dealt with.
6. Branches of mixed origin in which mineral, vegetable, and animal substances are dealt with.

In order to prevent or counteract any nuisance likely to arise from these causes, it is necessary (1) to enforce thorough cleanliness of premises and utensils; (2) there must be efficient drainage; (3) ample water supply; (4) proper, but simple, means of ventilation; (5) careful storage of materials of an offensive character in air-tight metal receptacles; and (6) the destruction by fire, if possible, of any noxious effluvia arising from the trade or business carried on.

In the action by the Attorney-General at the relation of the Board of Works for the Wandsworth District, to

restrain an alleged nuisance to the inhabitants of the neighbourhood arising from noxious gases emanating from the defendant's works, Justice Kekewich, in granting an injunction against the defendants who carried on the business of fat melters at Southfields, said that his judgment in Reinhardt *v.* Metasti (1889), 42 Ch. D. 685, had been much misunderstood. He thought there that when once the Court was satisfied that the defendant was creating a nuisance, the fact that he was doing what was reasonable from his own point of view was no defence. The question might be put in this way: Could a man reasonably commit a nuisance? He thought the answer to be gathered from the case of Bamford *v.* Turnley (1860), 3 B. & S. 62, was that he could not. If he committed a nuisance he could not be said to be acting reasonably. The defendants in this case had taken precautions to prevent their trade from being a nuisance to their neighbours and from their own point of view they were acting reasonably, but from the point of view above stated they were not acting reasonably, since upon the evidence they were committing a nuisance. (Attorney-General *v.* Cole, C. D., 1900).

The following is a schedule of the principal chemical manufactures, with a statement of the source from which danger or inconvenience may arise, as tabulated by A. E. Fletcher, Esq., (late) H.M. Chief Inspector under the Alkali Act, &c.

Manufacture or Occupation.	Source of Danger.
Sulphuric acid	Acid vapour.
Nitric acid	,, ,,
Hydrochloric acid	,, ,,
Chemical manures	,, ,,
Venetian red	,, ,,
Nitrate and chloride of iron	,, ,,
Sulphate of soda	,, ,,

Manufacture or Occupation.	Source of Danger.
Caustic soda	Caustic soda.
Tar distilling	Sulphuretted hydrogen.
Bleaching powder	Chlorine.
Sulphate of ammonia	Sulphuretted hydrogen.
Barium compounds	,, ,,
Strontium compounds	,, ,,
Antimony sulphide	,, ,,
Sulphur recovery from alkali waste	,, ,,
Bisulphide of carbon	,, ,,
Felt	Dust.
Flax	,,
Hemp	,,
Flour or grinding	,,
Metal grinding	,,
Cork grinding	,,
Mining	,,
Chromate of soda or potash	,,
Fibre separation	,,
White lead	Contact and dust.
Lead smelting	,, ,,
Lead rolling	,, ,,
Plumbing	,, ,,
Type founding	,, ,,
Type setting	,, ,,
Pottery glazing	,, ,,
Enamelling	,, ,,
Phosphorus matches	Phosphorus.
Arsenic refining	Arsenic dust.
Arsenic colours	,, ,,
Explosives	Explosion.

Chemical industries are under the supervision of inspectors specially appointed by the Home Office under the Alkali Works Regulation Act, 1881, but if the Sanitary Authority of any district is satisfied that a nuisance proceeds from such works, they have power to suppress the nuisance.

It is imperative for Sanitary Authorities, in the Metropolis, to institute legal proceedings for the abatement of

a nuisance caused by effluvia from any trade, business, process, or manufacture, if certified to be a nuisance, injurious or dangerous to the health of any inhabitant of the district, by their medical officer, of health or two legally qualified medical practitioners or by ten inhabitants of the district of such authority. There is a like responsibility on *Urban* Sanitary Authorities under Section 114 of the Public Health Act, 1875.

Nuisances due to the keeping of animals, whether in a dirty condition or in unsuitable places, is one very prevalent in manufacturing towns and at the rear of small suburban houses. Great assistance is afforded to local authorities, in dealing with such offences, by property owners or their agents insisting that it shall be a condition of the tenancy not to keep animals on the premises, but especially is this so as regards the keeping of poultry and pigeons.

Animals kept in the proximity of dwellings are a source of frequent annoyance and complaint, unless very special care is exercised by the owners in providing properly constructed stables, piggeries, &c., furnished with efficient drains, the surfaces of which are paved with impervious material, and what is equally essential, a daily removal of offensive matter, and a thorough and frequent cleansing of the premises.

Clause (*c*) of Section 2, Public Health (London) Act, 1891, provides that any animal kept in such place or manner as to be a nuisance or injurious or dangerous to health "shall be a nuisance liable to be dealt with summarily."

Provision is also made in Section 17 of the same Act that a person shall not "feed any swine in any locality, premises, or place which is unfit for the keeping of swine, or in which the feeding or keeping of swine may create a nuisance or be injurious to health or permit any swine to stray or go about in any street or public place."

It is further provided, under this Act, that "any swine found straying or going about in any street or public place, may be seized and removed by a constable," and "premises within 40 yards of any street or public place shall be deemed, for the purposes of this section, to be a place unfit for keeping of swine."

The corresponding section of the Public Health Act, 1875, Sect. 47, forbids the keeping of swine in a dwelling house, and the Public Health (Scotland) Act, 1897, Sect. 16, provides that "any stable, byre or other building in which any animal or animals are kept in such a manner or in such *numbers* as to be a nuisance or injurious or dangerous to health," shall be nuisances under the Act.

Power is given to Sanitary Authorities to make by-laws regulating the keeping of animals. It was held in the case of Everett *v.* Grapes that a by-law aimed against keeping pigs in a borough generally, instead of keeping them so as not to be a nuisance, was bad (25 J.P., 644).

A by-law preventing any occupier of a house keeping pigs within 100 feet of a dwelling house was held to be valid on the ground that the doing so was likely to be a nuisance, so that it might be prohibited altogether (Wanstead L. B. *v.* Wooster, 55 L. T., 81).

The Public Health (London) Act forbids the keeping of swine in improper places and the keeping of swine in proper places, but in an improper manner (see Digby *v.* West Ham L. B., 22 J. P., 304).

If the keeping of swine is a nuisance, it need not also be injurious to health (Banbury Sanitary Authority *v.* Page, 8, Q. B. D., 97). While the keeping of swine in a City is a nuisance at Common Law. (Reg. *v.* Wigg, Salk, 460).

The pollution of the atmosphere by the emission of black smoke from the chimneys of manufactories is a matter which will often give rise to complaints and is one upon

which the inspector must proceed with caution. The reason for this course of action is not far to seek, as the manufacturer, the smoke producer, may be found represented on most town or district councils, and his influence, to prevent any steps being taken which will suppress such nuisances, is often felt.

Dr. E. Sargeant, M.O.H. for Lancashire County Council suggests a way out of this difficulty, he says, "in my opinion the nuisance from black smoke will never be appreciably reduced until large bodies like the county councils are given the responsibility of enforcing the due observance of the Public Health Act." "The emission of noxious gases from alkali works is kept under control by special Government Inspectors, and I see no reason why County Inspectors should not be created for keeping within reasonable bounds the discharge into the air of black smoke from coal combustion.

"By the formation of powerful committees, unaffected by local conditions, river pollution is being prevented, and a strong authority might, without difficulty, exert a similar influence on the purification of the air we breathe.

"The time has now gone by for persons to say, that coals cannot be combusted in the various furnaces without the production of black smoke." "Abundant evidence can be produced that appliances that are in the market, not only prevent a nuisance from smoke, but effect a saving in coal consumption." "Under such circumstances it is not too much for the public to demand that the atmosphere be freed from the contamination arising from black smoke."

The emission of smoke of such a density as to cause a nuisance, from fireplaces or furnaces, may be, and often is, entirely prevented by the adoption of suitable apparatus and proper attention as to firing.

The production of black smoke is no economy to the

manufacturer, but really a great waste of money in the shape of unconsumed fuel.

It is frequently asserted, generally by the manufacturer, that the consumption of smoke causes the emission of something more injurious, though less visible. The fact is, that the lightest smoke consists of the same substances as the darkest, but the proportion of the mixture differs. The bulk of all furnace smoke, whether light or dark, is colourless carbonic acid gas, the same gas that man and animals exhale and no more injurious, and in this float the particles of soot or unconsumed carbon which alone constitutes the visible part of the ordinary smoke.

It is the number of these particles, in a given volume of smoke, that determines its density and shade.

The rapidity of the consumption of all materials depends upon the quantity of air that can be mixed with them, as they change under the influence of heat from the solid to the gaseous form.

The finer the coal the more it has to be spread, the thinner the fires have to be kept upon the grate bars and the more frequently it has to be broken up. But the more coal is spread, the greater are the number of particles of coal suddenly converted into gas, and the more irregular are both the production of the flame and the consequent call for air to supply the oxygen for combination with the gaseous carbon of the coal. The same thing takes place with each breaking up of the fire, it is therefore obvious that an uniform draught cannot meet these variable conditions. The opening of a furnace door will do something, but this tends to cool the furnace by lessening the draught through the bars, and in a furnace where increased length is required in order to obtain the extended surface for spreading the fuel required by thin firing, the difficulty of equal distribution of this volume of air to every particle of carbon at the instant of its incandescence is obviously greater than in a short furnace.

The apparatus in general use for preventing black smoke is one of two kinds, the *Sprinkling* or the *Coking* machine.

The *Sprinkling* machines are supposed to give greater rate of combustion by throwing the fuel in a continuous or nearly continuous shower, on to the bars, and thus obtaining quick ignition.

The *Coking* machines introduce the coal into the furnace slowly, and in an unbroken stream, and an arch of fire-brick is sometimes used to ignite the upper surface of stream by radiation and by contact with its sides, and in other cases using a step grate or other means by which to retain some incandescent fuel at the front of the furnace over or past which the stream of fresh fuel is caused to pass, thus extending the igniting surface.

The latter machines are considered best for preventing black smoke.

The smoke inspector for Sheffield (Mr. W. Nicholson) summarises the chief causes of smoke nuisance as follows :—

1. *Shortness of boiler power*, which necessitates the unduly forcing of the fires.

2. *Defective draught*, the result of small flues and a low chimney.

3. *Common dirty coal*, which makes smoke instead of steam.

4. *Senseless stoking*, putting on the fire three times as much coal as they ought. Some do it because they know no better, others through laziness to make it last, and others because they are compelled, having other work to do.

To remedy these causes he suggests :—

1. *Plenty of boiler power.* I know of no better practical economical smoke preventer than this, and manufacturers are well advised when they put in boilers well over the work they will be called upon to do.

2. *High chimneys and big flues.* These produce a good natural draught, and it is unquestionably the best from a public pleasure and health point of view. "Forced or induced draught" may be considered the best from a manufacturer's point of view, with a low chimney, cheap

coal, or an apology for it, more work out of the boilers, and a saving of sixty or more per cent.

3. *Fair class of fuel*, which makes less smoke and more steam.

4. *Admission of air to the furnace is absolutely essential.* The quantity can only be decided by the conditions of working, the amount of coal put on the fire, and the nature of the coal.

5. *Sensible stoking.* A little common sense even in stoking, as in other matters, is very valuable. The most sensible, scientific, and profitable system of firing is "side firing," feeding one side of the furnace, allowing time for the incandescent fire on the other side to consume the gases before it is fired. The firings must also be light, and frequent, then there will be no preventable smoke emitted, less coal burnt, and more work got out of the boilers.

6. *Skilled stokers.* Good stoking, without question, requires dexterity in practice and expertness in execution, and the sooner the universal idea is exploded that any man is suitable for stoking who can use a shovel, the better, and the nearer we shall be to the solution of the smoke problem.

A code of rules for the guidance of inspectors whose duties include the taking of smoke observations are often required, and I append a copy which will meet the requirements of most sanitary authorities:—

1. Whenever the inspector sees a chimney sending forth black smoke in such a quantity as to be a nuisance he is to make a note thereof.

2. As early as possible thereafter the inspector is to take a thirty minutes' observation of the said chimney and record in the Report Book particulars of his observation.

3. If black smoke is emitted from the chimney for a period of two and a half minutes in the half hour, the inspector, at the close of his observation, shall enter the premises to which the chimney belongs and ascertain, if possible, the cause of the nuisance, and he must make a note of what he sees or is stated to him there.

4. Returning to the office he shall prepare and serve an intimation notice and enter his report in the Report Book.

5. If the nuisance is not abated when the time allowed in the "Intimation" shall have expired, he must make a report, not later than the morning next before the Committee meeting, and should the Committee direct the service of a statutory notice, the inspector shall forthwith proceed to issue such notice.

6. The inspector must continue his observations on the chimney until

FORM FOR OBTAINING AND RECORDING INFORMATION RELATIVE TO STEAM BOILERS, FURNACES, &c.

Occupiers.	Situation of Premises.	Trade for which used.	Number and Dimensions of Boilers in daily use.					Tons of Coal used per week of 60 hours.		What Smoke Consuming Apparatus (if any).
			Number.	Length.	Diameter at Water Level.	Depth of Water evaporated in half an hour.	Diameter at Water Level.	Burgy.	Slack.	

the time allowed in the statutory notice shall have expired, and should the nuisance continue, he must report in order that authority may be obtained from the Committee to institute legal proceedings, if not already sanctioned, to enforce a compliance with the requisitions of such notice, and if so authorised, he shall proceed accordingiy.

In many large provincial towns, notably Glasgow, Liverpool, Manchester, Sheffield, and Bradford, special inspectors, with a knowledge of mechanical engineering, are employed to carry out the provisions of public and local Acts, relating to the consumption of black smoke.

Glasgow Corporation has appointed two, Liverpool three, Manchester four, Sheffield and Bradford, one smoke inspector.

The smoke observations in Nottingham are undertaken by the police authorities.

To enable the inspector to record his observations properly he should be supplied with a pocket book arranged with printed headings, of which the following is a specimen :—

Form of Pocket Book.

Name of Firm
Description of Works
Where Situate
No. of Boilers
Place of Observation
Date of ,,

Folio in Report Book
Smoke Prevention Appliances (if any)
Nom. Horse Power
Fuel used

Time.	Black.	Moderate.	None.	Total.		Longest Contin. Bl. Smoke.	Remarks.
	M.	M.	M.	H.	M.	M.	

Any observations taken by the smoke inspector should afterwards be entered in the Smoke Report Book.

In London, the County Council state "that such time is given to the watching of a chimney as will be sufficient to establish the fact of a nuisance, but in cases of persistent nuisance the observation may be continued for some time.

"The Council is of opinion that a period of five minutes from the lighting of the furnace might be permitted, but that afterwards a discharge of one minute or more should be the subject of proceedings."

Smoke observations in Sheffield are taken for one hour at a time, and the limits of black smoke allowed are as follows:—

1 Boiler	2 Minutes
2 Boilers	3 ,,
3 ,,	4 ,,
4 ,, or more	6 ,,

Photography is used by many sanitary authorities as a means to gauge the density of the smoke emitted from chimneys, the smoke inspector being supplied with a camera with which to photograph the emissions; the photographs are subsequently submitted to the Sanitary Committee who act accordingly. Absolute reliance cannot, however, be placed upon photography as a means of registering the actual condition of the smoke emitted, as regards its density; neither are the charts of colour shades, so strongly recommended by the Coal Smoke Abatement Society, established in the Metropolis, of the slightest practical use, as there are degrees of density of smoke and the inspector must be satisfied that the smoke emitted is black and in such a quantity as to be a nuisance, before reporting to his Authority.

In Liverpool, the smoke inspectors are instructed to report all cases of excessive emission of smoke from the

FORM OF SMOKE REPORT BOOK.

BOROUGH OF

No.	Date of Observation.	Name of Occupier.	Description and Situation of Premises.	Trade or Business carried on.	No. of Boilers, Fire-places, or Furnaces.	Fuel used.	Smoke Prevention Appliances in use (if any).	Place of Observation.	Time of Observation.	Particulars of the Smoke Observation.			Total.		Date of Notices and Time allowed.	Remarks.
										Black. M.	Mod. M.	None. M.	H.	M.		

FORM FOR REPORTING SMOKE NUISANCES TO THE PUBLIC HEALTH COMMITTEE.

BOROUGH OF *Date* *190*

Name of Inspector Reporting.	Description and Situation of Premises where Nuisance exists.	Nature of Nuisance.	Duration of Nuisance.			Density.	Order asked for.	Order of Committee.
			From	To	Minutes.			

chimneys of premises used for the purpose of trade or manufacture, and from the funnels of steamers in the river or docks, and the officers are furnished with powerful marine glasses to assist them in taking their observations.

When an observation has been taken of the smoke emitted from a chimney, the inspector should forward an intimation or preliminary notice thereof to the owner or occupier of the premises, as directed in clause 4 of the rules on page 74.

Any reports of smoke nuisances (see p. 79) should be submitted to the Sanitary Authority or its Committee as soon as possible after the observation has been taken.

In a case reported, 22 Q. B. D. 736, the defendant, who was the owner and occupier of certain premises in the Metropolis used for the purpose of manufacture, was summoned under Metropolis (Thames) Smoke Act, Section 1, for negligently using a furnace in such premises so that the smoke arising therefrom was not effectually consumed. The furnace in question was constructed so as to consume its own smoke, if carefully used; and the emission of smoke complained of was caused by the carelessness of the stoker employed by the defendant to attend to the furnace. The defendant was not personally guilty of any negligence in connection with the matter. It was held that defendant was not criminally responsible for the negligence of his servant and could not be convicted of the offence.

Upon similar words in a local act, it was held that where the owner used a furnace properly constructed, and employed a competent person to use it, but without his knowledge his servant negligently used it, so that smoke was not consumed, the servant only, and not the master, could be convicted. (Wilcock *v.* Sands, 32 J. P. 563).

A furnace which is properly constructed may be so improperly used as to render the person using it liable

to a fine under this section. (Dumfries Commissioners *v.* Murphy, 11 Ct. of Sess. Cas., 4th series, p. 694).

Table showing the practice followed by different Sanitary Authorities as regards Smoke Consumption.

District.	Length of Time the Chimney is under Observation.	Maximum Allowance of Black Smoke.	Remarks.
Bath	2 to 3 hours	5 minutes	
Blackburn	1 hour	7 ,,	
Brighton	Time varies	2 ,,	
Bolton	½ hour	2½ ,,	
Birmingham	1 ,,	15 ,,	
Birkenhead	Time varies	4 ,,	
Bury	1 hour	10 ,,	
Croydon	Time varies	10 ,,	
Glasgow	1 hour	Not fixed	Proceedings frequently taken for 2 or 3 minutes black smoke.
Huddersfield	1 hour	7 minutes	
Halifax	1 ,,	5 ,,	
Hull	1 ,,	Not fixed	The smoke inspector is supplied with ½-plate snap-shot camera for photographing emissions of black smoke.
Leeds	1 hour	5 minutes	
Liverpool	Time varies	4 ,,	This applies also to the funnels of steamers in the River or Dock.
London County Council	,,	1 to 5 ,,	5 minutes allowed from lighting of furnace and 1 minute afterwards.
Manchester	½ hour	2 to 3 ,,	Four smoke inspectors employed.
Nottingham	10 minutes	3 to 5 ,,	Smoke observations are taken by the police.
Norwich	1 hour	10 ,,	
Oldham	½ ,,	4 ,,	
City of Westminster	½ ,,	2½ to 5 ,,	5 minutes allowed from lighting of furnace and 2½ minutes afterwards.
St. Helens	1 ,,	5 ,,	
Salford	1 ,,	5 ,,	
Sheffield	1 ,,	2 to 6 ,,	Maximum allowance of black smoke depends on the number of boilers in use.

By Sect. 24, Sub-sect. (*b*), of the Public Health (London) Act, 1891, "any chimney (not being the chimney of a private dwelling house) sending forth black smoke in such

quantity as to be a nuisance" is a nuisance liable to be dealt with summarily under the Act.

Upon the hearing of complaints under this Section, it was proved that black smoke issued from a chimney several times a day during a series of days for periods varying from a few minutes to upwards of an hour.

It was held, that upon these facts the magistrate was justified in finding that the smoke issued in such quantity "as to be a nuisance" although there was no evidence that any particular person or property was injuriously affected thereby. (South London Electric Supply Corporation *v.* Perrin, 2 K. B. 186 [1901]).

Form of Statutory Notice for Smoke Nuisances.

Borough of

To
Of
being the owner or occupier of certain premises situate at

within the Borough of
Take notice that the Council, being the Sanitary Authority for the said Borough, being satisfied of the existence of a nuisance on such premises arising from a chimney (not being the chimney of a private dwelling house) sending forth black smoke in such quantity as to be a nuisance, do hereby require you within days from the service of this Notice, to abate such nuisance, and to execute such works and do such things as may be necessary for that purpose, and also within the said period to do what is necessary for preventing the recurrence thereof.

And further take notice that if you make default in complying with any of the requisitions of this Notice, or if the said nuisance, though abated, is in the opinion of the said Council likely to recur, a summons will be issued requiring your attendance before a Petty Sessional Court, to answer a complaint which will be made for the purpose of enforcing the abatement of the nuisance, or prohibiting the recurrence thereof, or both, and for recovering the costs and fines that may be incurred thereby.

Dated this day of 190

Sanitary Inspector.

Whether or not a West End Club is a "private dwelling house" within the meaning of Section 24 of the London Public Heath Act of 1891, was argued on appeal from the magistrate (Mr. Kennedy) sitting at Marlborough Street Police Court.

His worship had decided that it was, and accordingly had dismissed a summons taken out in consequence of the emission from the club chimney of black smoke in such quantity as to be a nuisance. The words under consideration were: "Any chimney, not being the chimney of a private dwelling house, sending forth black smoke in such quantity as to be a nuisance shall be a nuisance liable to be dealt with summarily under this Act."

Mr. Macmorran, K.C., in supporting the appeal, read the case as stated by the learned magistrate. From this it appeared that the club is managed by a committee, and has occupied the present premises for thirty or forty years. Previously the house was used as the French Embassy. The club consists of 750 members, and its premises comprise the ordinary accommodation of a West End club. There are ordinary and also private dining rooms, five bedrooms for the use of members, one of which may (at the discretion of the committee) be hired for three, six, nine, or twelve months at one time. There are eight other bedrooms for the use of the staff. In the basement are several covered cooking ranges, a large roasting grate, and a vertical boiler, with furnace attached, the smoke from all these discharging into one flue, which is the chimney complained of. Counsel observed that a very similar case was before their lordships a short time ago, that of the Queen Anne's Mansions, and it was held that they were not private dwelling houses within the meaning of the Act. A place might be a dwelling house if any person lived or slept in it—it was his dwelling. But to come within the section a place must be a "private" dwelling

house, by which one understood something different from what he might call a public institution, or an institution provided for the convenience of a large number of members. He asked their lordships to say that a club of this character was not in any sense a private dwelling house, and that the magistrate ought to have convicted.

Mr. Boydell Houghton, for the respondent, contended that the ruling of the learned magistrate was right. This was just in the same condition as when the premises were occupied by the French Embassy. If the construction which his friend was contending for were allowed to prevail, the effect would be to bring within the scope of the Act every dwelling house any part of which was used for business premises—such as that of a dressmaker, who used her ground floor as a shop and lived in the upper part. In the days when the building was used as the French Embassy there would be at times quite as much cooking going on as now, though, of course, not habitually. The case of the Queen Anne's Mansions was entirely different from this. There they had a chimney 168 feet high, to which a number of other chimneys were brought, and which had to do with some 300 dwellings. Here, however, the members did not carry on any trade. The club did not exist for profit at all, but for the convenience of the members, and if there did happen to be any profit it was immediately disposed of by lowering the price of what was sold to the members.

The Lord Chief Justice thought it impossible to come to the conclusion that as a matter of law a chimney such as this could be described as that of a "private dwelling house." He was of opinion that the magistrate ought to have convicted.

The other judges concurred, and the appeal was accordingly allowed, the case being sent back. (St. James' Club *v.* McNair, K. B. D., Dec., 1903).

In a case stated by the Lord Mayor on an information preferred by the respondent under Section 24 of the Public Health (London) Act, 1891, against the appellant for that on August 24 of 1903, between Custom House and Southwark Bridge on the steamship "Richmond" a nuisance existed—namely, a chimney sending forth black smoke—and that the appellant had failed to comply with a notice to abate the nuisance. The short point was whether a funnel was a chimney within the section. The appellant was the owner of a steam tug known as the "Richmond." On April 26 a notice to abate the nuisance was served upon him. On August 24, whilst the tug was proceeding between the Custom House and Southwark Bridge there was being sent forth from the funnel dense black smoke for five minutes in such quantity as to be a nuisance. The tug was then being navigated by a master-engineer and crew employed by the appellant, who had no knowledge of such emission of black smoke. The tug did not stop on the voyage but was proceeding to Kingston-on-Thames, being employed in plying for hire between Woolwich and Kingston, where it lay every night. The engines and boiler were constructed so as to consume as far as possible all the smoke. The appellant had given instructions to prevent all black smoke, good welsh steam coal was burnt and the furnaces had been freshly stoked opposite the Custom House. For three to four minutes is not an unreasonable time to allow the fresh fuel to cease emitting black smoke. The emission of the smoke could have been prevented by the fire being kept bright by frequent and careful stoking. It was contended by the appellant that Section 24 was inapplicable to a steam tug while plying to and fro, and that proceedings in respect of smoke from vessels plying on the Thames could only be taken under Section 23.

On behalf of the respondent, it was contended that the

funnel of the tug was a chimney within Section 24 (*b*). The magistrate found as a fact that the funnel was a chimney within Section 24 (*b*) that the black smoke amounted to a nuisance, that no works could be ordered which would cure the nuisance, but that it was a question of an order upon him prohibiting the recurrence of the nuisance. The appellant then required him to specify the works to be executed to prevent the recurrence, but the magistrate refused to specify, as it was only a question of stoking. The questions for the court were whether the conviction was right in law and whether the prohibition order was valid. "Weeks *v.* King" (15 Cox, 773) was cited.

The Lord Chief Justice, in giving judgment, said that the magistrate's decision was right though the point had admitted of argument. On the first reading of the section one might think that it was intended to apply to chimneys on land; but when one looked at the object of the legislation and at certain expressions in Section 24 of the Act, he thought that any such construction would be too narrow. So far as the first part of the section was concerned, it was essentially a "black smoke" section. Section 23 (3) dealt specifically with steam engines and furnaces on steamers and provided that they should be constructed so as to consume the smoke. These sections showed that there were special provisions with regard to the construction of furnaces and engines on steamers and the non-negligent user of them. But it was to be observed that there was a corresponding provision in regard to furnaces on land—namely Section 23 (1), and there was a corresponding provision in regard to non-negligent user. Section 24 was a "nuisance" section, and it was not without importance that it immediately followed Section 23. If the words could be fairly applied to a chimney on board a steamship, there was no reason why they should not be so applied;

for unless the words "any chimney (not being the chimney of a private dwelling house)" showed that a steamship could be included, the object of the legislation would be avoided by not so applying them. There might be cases where the black smoke would come from a chimney which would in ordinary language be called a funnel. But he did not think that any argument could be based on the fact that the word "chimney" was used, for "funnel" was only a technical name for a particular kind of chimney. He did not see why the emission of black smoke from the funnels of vessels on the Thames should not be prevented as well as from chimneys on land. Section 24 was not sufficient to enable the Court to hold that the funnel of a steamship was not a chimney. As to the other point, the order was not bad because it did not specify any works to be executed (although the defendant asked that they should be specified), for there were no works that could be executed.

Mr. Justice Kennedy, in agreeing, said that the question was whether Section 24 (*b*) included the funnel of a tug. Usually "chimney" was a word applicable to the passage through which smoke passed from a fire in a building and technically it was not a proper term to describe those passages on a steamboat which were used to convey the smoke from the furnaces to the outer air, but he saw nothing to prevent "chimney" being used in what he might call its natural sense—namely, a passage by which smoke from a fire was carried away upwards. Otherwise there would be no "black smoke" section with regard to a description of thing they might send out smoke in quantities enough to create a nuisance.

Mr. Justice Channel delivered judgment to the same effect.

The appeal was accordingly dismissed. (Tough *v.* Hopkins, K. B. D., April, 1904).

The following specification will assist the officer in preparing his notices for the abatement of smoke nuisances :—

Specification to Abate Smoke Nuisance.

Complaint ;—

The chimney known as (not being the chimney of a private dwelling house) sending forth black smoke in such a quantity as to be a nuisance.

Specification :—

Provide and maintain smoke consuming apparatus to each fireplace or furnace for which the said chimney is used, and cause the same apparatus and fireplace or furnace and the fires in each fireplace or furnace to be carefully and regularly attended so as to prevent the said chimney from sending forth black smoke in such a quantity as to be a nuisance.

Signed

Sanitary Inspector.

The Public Health (London) Act, 1891, Sections 23 and 24, provides that :—

Every furnace employed in the working of engines by steam, and every furnace employed in any public bath or washhouse, or in any mill, factory, printing house, dyehouse, iron foundry, glasshouse, distillery, brewhouse, sugar refinery, bakehouse, gas-works, water-works, or other buildings used for the purpose of trade or manufacture (although a steam engine be not used or employed therein), shall be constructed so as to consume or burn the smoke arising from such furnace.

If any person being the owner or occupier of the premises, or being a foreman or other person employed by such owner or occupier—

(*a*) Uses any such furnace which is not constructed so as to consume or burn the smoke arising therefrom ; or

(*b*) So negligently uses any such furnace as that the smoke arising therefrom is not effectually consumed or burnt ; or

(*c*) Carries on any trade or business which occasions any noxious or offensive effluvia, or otherwise annoys the neighbourhood or inhabitants, without using the best practicable means for preventing or counteracting such effluvia or other annoyance; such person shall be liable to a fine not exceeding five pounds, and on a second conviction to a fine of ten pounds, and on each subsequent conviction to a fine double the amount of the fine imposed on the last preceding conviction,

and—

(*a*) Any fireplace or furnace which does not, as far as practicable, consume the smoke arising from the combustible used therein, and which is used for working engines by steam, or in any mill factory, dyehouse, brewery, bakehouse, or gas-works or in any manufacturing or trade process whatsoever; and

(*b*) Any chimney (not being the chimney of a private dwelling house) sending forth black smoke in such a quantity as to be a nuisance:

shall be nuisances liable to be dealt with summarily under this Act, and the provisions of this Act relating to those nuisances shall apply accordingly;

Provided that the court, hearing a complaint against a person in respect of a nuisance arising from a fireplace or furnace which does not consume the smoke arising from the combustible used in such fireplace or furnace, shall hold that no nuisance is created, and dismiss the complaint, if satisfied that such fireplace or furnace is constructed in such manner as to consume as far as practicable, having regard to the nature of the manufacture or trade, all smoke arising therefrom, and that such fireplace or furnace has been carefully attended to by the person having the charge thereof.

In the provinces the law relating to the emission of black smoke is much the same as in London (see Section 91, Public Health Act, 1875). The Public Health (Scotland) Act, 1897, Sub-sections 9 and 10 of Section 16, omits the word "black," which indicates that the *quantity* of smoke emitted is to be regarded as the basis for proceedings.

Sanitary inspectors have a somewhat difficult task in dealing with nuisances arising from offensive accumulations, and this is particularly experienced in the summer

time, as farmers and market gardeners will not call regularly for the refuse, being otherwise engaged. In the West End of London, where stabling accommodation is provided at the rear of most houses, and where large quantities of manure necessarily accumulate daily, the nuisance is a most serious one. Sanitary authorities and their officers have ample powers, however, to suppress nuisances of this nature, as by Section 35, of the Public Health (London) Act, 1891, and Section 49, of the Public Health Act, 1875, also Section 42, Public Health (Scotland) Act, 1897, provision is made for the service of a notice (see specimen below) by the sanitary inspector, upon the owner of the refuse, or upon the occupier on whose premises the accumulation is found, requiring the removal of the deposit within 24 hours in the provinces, and 48 hours in London and Scotland. Should the accumulation not be removed within the time specified, the Sanitary Authority may themselves remove the refuse, and sell or otherwise dispose of such matter.

Form of Notice.

Borough of 19

I, the undersigned, being the Sanitary Inspector to the
of do hereby give you notice that it appears to me
that an accumulation of now deposited on your
premises ought to be removed.

I have to request you to remove the same within forty-eight hours from the service of this notice, otherwise the matter referred to will be the property of the Sanitary Authority, and be removed and disposed of by them at your expense.

I am, your obedient servant,

To
Of

PERIODICAL REMOVAL OF MANURE IN MEWS, &c.

The Sanitary Committee appointed by the of hereby give notice that they will henceforth require the manure and other refuse from the mews, stables, &c., in this Parish, to be removed at least three times a week (*i.e.*, every Tuesday, Thursday, and Saturday), but that where any large accumulation of manure or other refuse is made, they will require the same to be removed every day.

By Order,

Town Clerk.

Sanitary authorities in the Metropolis and urban sanitary authorities in the Provinces, may give notice to the public by advertisement or otherwise, in the above terms, that they require the periodical removal of manure from their district, and any person who fails to remove the same or permits a further accumulation and does not continue such periodical removal at such intervals as the sanitary authority direct, is liable to a penalty for each day during which the refuse matter is allowed to accumulate.

It is undoubtedly in the interests of public health, especially in London and other large towns, that it should be made a statutory duty of the Sanitary Authority to remove such refuse from the mews within their district daily, while they should be authorised to charge the owner of the refuse a reasonable sum for such service. By Section 33, Public Health (London) Act, 1891, the owner or occupier of any premises in London, may require the Sanitary Authority to remove any trade refuse on payment, but the Sanitary Authority need only, if they think fit, collect and remove manure and other refuse matter from any stables and cow-houses, the occupiers of which signify their consent in writing to such removal—a consent which may be withdrawn or revoked with one month's

previous notice to the Sanitary Authority. The owner of such refuse cannot require the Sanitary Authority to remove it; nor is he under any obligation to pay for the removal, although doubtless many occupiers of stables would be pleased to do so, and so rid themselves of a troublesome responsibility, and, on the other hand, be freed from liability to fine for neglect of the Sanitary Authority's regulations, which require the occupier to remove the refuse on certain appointed days in each week.

It is a question, however, whether the refuse of a cow-house, or an omnibus or cab-yard, may not be classed as trade refuse, which the occupier of the premises may require the Sanitary Authority to remove on payment; certainly fish offal, and the offal from slaughter-houses, comes under the definition of trade refuse, and it is surprising that fishmongers and butchers do not more frequently require the Sanitary Authority to remove it.

Sunken dung-pits are now prohibited in the Metropolis, and by-law No. 25 of the London County Council requires existing dung-pits to be filled up or abolished, and metal cage receptacles substituted.

The following is a copy of the by-law referred to:—

Every owner of any existing receptacle for dung shall, before the expiration of six months from the date of the confirmation of these by-laws, and every person who shall construct a receptacle for dung, shall cause such receptacle to be so constructed that its capacity shall not be greater than two cubic yards, and so that the bottom or floor thereof shall not, in any case, be lower than the surface of the ground adjoining such receptacle.

He shall so construct such receptacle that a sufficient part of one of its sides shall be readily removed for the purpose of facilitating cleansing.

He shall also cause such receptacle to be so constructed in such a manner and of such materials, and to be maintained at all times in such a condition as to prevent any escape of the contents thereof, or any soakage therefrom into the ground or into the wall of any building.

He shall cause such receptacle to be so constructed that no rain or water can enter therein, and so that it shall be freely ventilated into the external air.

Provided that a person who shall construct a receptacle for dung, the whole of the contents of which are removed not less frequently than every forty-eight hours, shall not be required to construct such receptacle so that its capacity shall not be greater than two cubic yards.

And provided that a person who shall construct a receptacle for dung, which shall contain only dung of horses, asses, or mules with stable litter, and the whole of the contents of which are removed not less frequently than every forty-eight hours, may, instead of all other requirements of this by-law, construct a metal cage, and shall beneath such metal cage adequately pave the ground at a level not lower than the surrounding ground, and in such a manner and to such an extent as will prevent any soakage into the ground; and if such cage be placed near to or against any building he shall adequately cement the wall of such building in such a manner and to such an extent as will prevent any soakage from the dung within or upon such receptacle into the walls of such building.

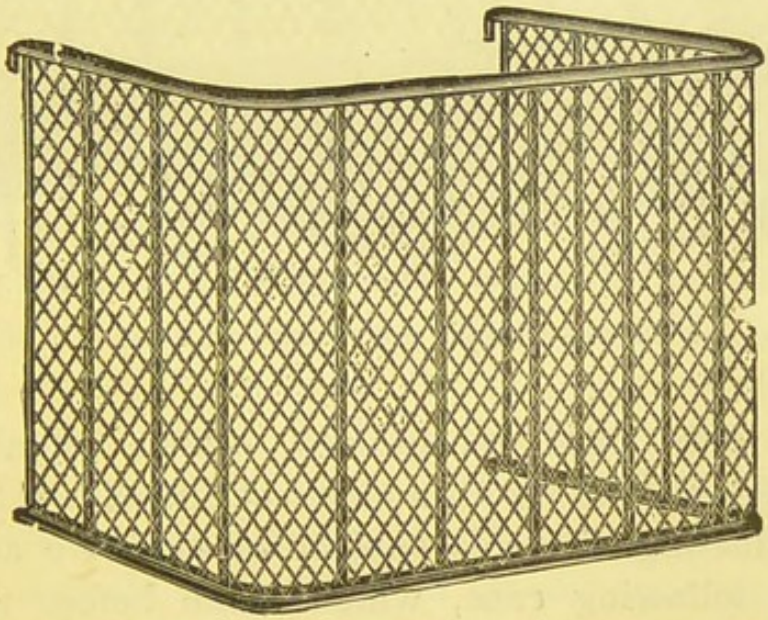


FIG. 1.—Braby's metal cage manure receptacle.

Metal cage manure receptacles (fig. 1) as specified in the last paragraph of this by-law, are a very convenient and wholesome form of receptacle, and far preferable to the sunken dung-pit, at one time so common in the Metropolis.

Sunken dung-pits are a serious nuisance, being seldom, if ever, thoroughly emptied of the refuse.

When for want of a suitable position the cage illustrated in fig. 1 cannot be used, a metal cage on wheels (fig. 2) will be found useful, as it is capable of being wheeled about to suit the convenience of the stableman.

Receptacles of this description may be placed in the coach-house or stable during the temporary absence from home of the stableman, thereby preventing a nuisance, so

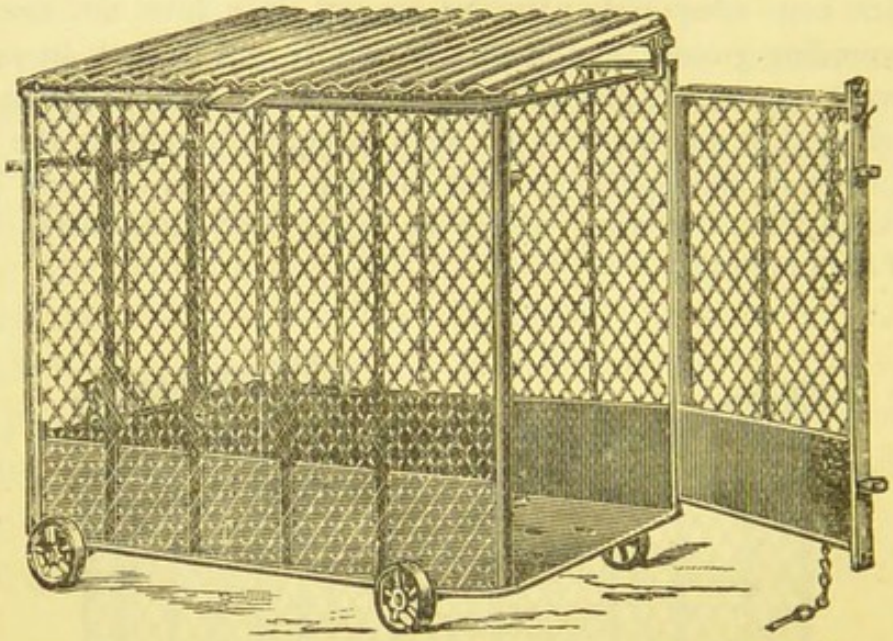


FIG. 2.—Braby's metal cage on wheels.

common with fixed receptacles, which often become general depositories for all manner of offensive refuse.

While dealing with this subject of offensive accumulations the following case, which came before the High Court in July, 1902, will be of special interest to sanitary inspectors whose districts are annoyed by the dumping of house refuse brought from outside districts.

This was an action by the Attorney-General at the relation of the Beckenham Urban District Council and by the Council for an injunction to restrain the defendants

(the South Eastern and Chatham Railway) from committing a nuisance. The plaintiff's case was that the defendants brought into Beckenham open trucks loaded with house refuse and allowed them to stand for some hours at Beckenham Junction, whence they were eventually forwarded to various places on the defendants' line; that these trucks were sometimes drawn at considerable speed, and that the effect of the motion of the trucks through the air, and that of the wind when blowing strongly, was to cause paper and other light matter in the trucks to be scattered over that part of the plaintiff's district which was adjacent to the railway. The plaintiffs complained both of the smell and of the litter caused by the above acts of the defendants. The defendants denied the nuisance, and pleaded that the acts complained of were done in the exercise of the powers and duties vested in them by Parliament, and without negligence, and that they were not liable to be sued in respect thereof. At the trial the defendants offered to give an undertaking, which the plaintiffs accepted, with respect to the litter, but they declined to give any undertaking with respect to the smell.

Mr. Justice Kekewich said that the question was one of public nuisance. After making every allowance for exaggeration, he came to the conclusion upon the evidence that there was that which in the eye of the law was a nuisance to the public, but he did not think that the nuisance was a very serious one. The nuisance consisted in the defendants bringing to Beckenham, and retaining there until it could be sent on to its ultimate destination, house refuse. He did not think that there was any remissness on the part of the defendants in the forwarding of these trucks. The breaking up of trains was a matter of some time and some trouble, and it would be far too strong a thing to say that the defendants ought to block their main line for passenger traffic because they had two

or three trucks of house refuse which they desired to send on to their destination. The trucks were detained some hours, arriving generally at nine o'clock in the morning and not leaving till the middle of the day; but there was no evidence to justify the Court in coming to the conclusion that as regards the detention of the trucks the defendants had been in any way remiss. They were bound to carry this house refuse, and it was immaterial whether their obligation was created by the common law or by their special Acts. Then it was said that these trucks came down to Beckenham with decomposing matter, having an offensive smell; but in order to convict the defendants it was necessary to show some negligence on their part at the source, and there was no evidence of any remissness in the loading of the trucks. The defendants were, therefore, acting reasonably in carrying this matter to Beckenham and in detaining it there. They were bound to do this, and, not having been guilty of any impropriety, upon principle no complaint could be made against them because, without any fault of the defendants, some persons suffered from the necessities of the case. He therefore thought that defendants were not responsible for the nuisance arising from smell. In the circumstances there would be no costs.

Sanitary inspectors have a disagreeable and somewhat delicate duty to perform in dealing with nuisances caused by overcrowding. Nuisances of this class are mostly committed for want of the means necessary to secure suitable accommodation, from ignorance, or from greed, the latter cause being the least excusable.

By Section 2 of the Public Health (London) Act, 1891, and Section 91 of the Public Health Act, 1875, also Section 16, Sub-sections 7 & 8, of the Public Health (Scotland) Act, 1897, it is unlawful for any house or part of a house to be so overcrowded as to be dangerous or

injurious to the health of the inmates, whether or not members of the same family.

The injury to the health and morals of persons exposed to the influence of such conditions is most serious, whether the overcrowding occurs in the dwelling or workshop. In districts where there is a scarcity of suitable houses, any attempt to abate overcrowding generally results in the conditions of other houses, already overcrowded, being aggravated.

All forms of overcrowding influence the health of those exposed to the poisonous products of respiration, facilitate the spread of infectious diseases, and help to transfer, from one body to another, germs and parasites unfavourable to the health of man and of animals.

According to Dr. Wynter Blyth "the diseases produced from overcrowding are consumption, continued fever, generally impaired health, and augmented liability to the reception and spread of infectious disease, *e.g.*, typhus and ophthalmia, as well as of skin and parasitic affections."

The difficulties attending the discovery of nuisances caused by overcrowding are often considerable, as the evidence obtained is so conflicting; this difficulty is in some measured minimised, as regards the Metropolis, by the powers which the sanitary authorities possess of gaining admission to premises for the purpose of inspection as to overcrowding, by day or night, on a justice's warrant.

The procedure for the abatement of nuisances for overcrowding is exactly the same as in other nuisances, but a notice to abate must be served upon the occupier or on the person by whose act, default, or sufferance the overcrowding is permitted, and such offences should be dealt with as recurring nuisances, so that proceedings may be instituted without having to resort to the service of fresh notices, if the offence be repeated.

It must be noticed, however, that in order to succeed in

any prosecution for overcrowding of dwellings, it is necessary to prove injury or danger to health.

Where two convictions for overcrowding of the same house have occurred within three months, the magistrate has power to direct the house to be closed.

There is no definition of what is meant by overcrowding in houses used for human habitation, but the Local Government Board in the memorandum of their model by-laws relating to common lodging houses, state that, "about 300 cubic feet will be a proper standard of space to secure for each person." Section 3 of the Factory and Workshop Act, 1901, provides a minimum of 250 cubic feet for each person employed during the day, and 400 cubic feet of free air space for such person during any period of overtime, but in the case of a workshop, not being a domestic workshop, which is occupied by night as a sleeping apartment, the Home Secretary, by his order of January 17, 1902, has fixed the amount of air space at 400 cubic feet for each person.

Generally the term overtime means employment between the hours of 8 and 10 p.m.

In the case of cabins used as dwellings on canal boats the minimum amount of cubic space allowed for each occupant, according to age, is specified in the Regulations of the Local Government Board, relating to canal boats (see chapter on Canal Boats).

A room is said to be overcrowded, when the proportion of air space is less than the amount required by the Act or by the by-law, respectively, for each person occupying such room.

Two children under the age of 10 years, are counted as one adult person.

Offences committed against the provisions of the Public Health Acts relating to the use and occupation of underground rooms or cellar dwellings, are constantly occurring

in most large towns, where the rents of houses are high and accommodation for poor people limited.

Underground rooms or cellar dwellings in London cannot be occupied as dwellings unless they comply with the following conditions, that is to say:—

Unless the room is in every part thereof at least seven feet high, measured from the floor to the ceiling, and has at least three feet of its height above the surface of the street or ground adjoining or nearest to the room; provided that, if the width of the area hereinafter mentioned is not less than the height of the room from the floor to the said surface of the street or ground, the height of the room above such surface may be less than three feet, but it shall not in any case be less than one foot, and the width of the area need not in any case be more than six feet;

Unless every wall of the room is constructed with a proper damp course, and, if in contact with the soil, is effectually secured against dampness from that soil;

Unless there is outside of, and adjoining the room, and extending along the entire frontage thereof, and upwards from six inches below the level of the floor thereof, an open area properly paved at least four feet wide in every part thereof: provided than in the area there may be placed steps necessary for access to the room, and over and across such area there may be steps necessary for access to any building above the underground room, if the steps in each case be so placed as not to be over or across any external window;

Unless the said area and the soil immediately below the room are effectually drained;

Unless, if the room has a hollow floor, the space beneath it is sufficiently ventilated to the outer air;

Unless any drain passing under the room is properly constructed of a gas-tight pipe;

Unless the room is effectually secured against the rising of any effluvia or exhalation;

Unless there is appurtenant to the room the use of a water-closet and a proper and sufficient ash-pit;

Unless the room is effectually ventilated;

Unless the room has a fireplace with a proper chimney or flue;

Unless the room has one or more windows opening directly into the external air, with a total area clear of the sash frames equal to at least

one-tenth of the floor area of the room, and so constructed that one-half at least of each window of the room can be opened, and the opening in each case extends to the top of the window. (Public Health (London) Act, 1891, Section 96; and Section 72, Public Health Act, 1875, also Sections 74-76 Public Health (Scotland) Act, 1897).

Every underground room or cellar dwelling in which a person passes the night must conform to the aforementioned conditions, unless such room or rooms are let in conjunction with another room on a higher floor, in which case the underground room may be occupied for use as a sleeping apartment regardless of such conditions.

It has been held that, where at the back of the house, there is no street or footway adjoining, only front basement rooms can be considered as coming within the meaning of the Act.

In the Metropolis, the expression "underground room" includes any room of a house the surface of the floor of which is more than three feet below the surface of the footway of the adjoining street, or of the ground adjoining or nearest to the room.

Considerable trouble is often experienced in enforcing the abatement of nuisances caused by the acts or default of two or more persons, unless it can be proved that the separate contributions of the person proceeded against causes a substantial nuisance; proof of this is often, from the nature of the case, almost impossible, hence the power to proceed against any one or more of such persons, as follows:—

Where any nuisance under this Act appears to be wholly or partially caused by the acts or defaults of two or more persons, it shall be lawful for the local authority or other complainant to institute proceedings against any one of such persons, or to include all or any two or more of such persons in one proceeding; and any one or more of such persons may be ordered to abate such nuisance, so far as the same appears to the court having cognizance of the case to be caused by his or their acts

or defaults, or may be prohibited from continuing any acts or defaults which, in the opinion of such court, contribute to such nuisance, or may be fined or otherwise punished, notwithstanding that the acts or defaults of any one of such persons would not separately have caused a nuisance; and the costs may be distributed as to such court may appear fair and reasonable.

Proceedings against several persons included in one complaint shall not abate by reason of the death of any among the persons so included, but all such proceedings may be carried on as if the deceased person had not been originally so included.

Whenever in any proceeding under the provisions of this Act relating to nuisances, whether written or otherwise, it becomes necessary to mention or refer to the owner or occupier of any premises, it shall be sufficient to designate him as the "owner" or "occupier" of such premises, without name or further description.

Nothing in this section shall prevent persons proceeded against from recovering contribution in any case in which they would now be entitled to contribution by law (Public Health Act, 1875, Section 255; and Public Health (London) Act, 1891, Section 120; also Section 161, Public Health (Scotland) Act, 1897).

It not unfrequently happens that complaints are made of nuisances arising outside the district, such nuisances as the pollution of streams, the emission of smoke or fumes from chimneys of works situated without the district. In these cases legal proceedings must be taken in the district in which the works or premises causing the pollution of the atmosphere or stream are situated, as provided for in this clause:—

Where a nuisance under this Act within the district of a local authority appears to be wholly or partially caused by some act of default committed or taking place without their district, the local authority may take or cause to be taken against any person in respect of such act or default any proceedings in relation to nuisances by this Act authorised, with the same incidents and consequences, as if such act or default were committed or took place wholly within their district; so, however, that summary proceedings shall in no case be taken otherwise than before a court having jurisdiction in the district where the act or default is alleged to be committed or take place (Public Health Act, 1875, Section 108, and Public Health (London) Act, 1891, Section 14, also Section 149, Public Health (Scotland) Act, 1897).

SERVICE OF NOTICES, AND LEGAL PROCEEDINGS.

It is by no means necessary or desirable that in every case of a nuisance brought under the cognizance of the inspector, the law should be threatened or invoked.

If an INTIMATION of the nuisance is sent to the person responsible for its abatement by the sanitary inspector as required by Section 3, Public Health (London) Act, 1891, and Section 19, Public Health (Scotland) Act, 1897, the works specified in the notice are generally carried out without the necessity of serving a statutory notice, thus avoiding unpleasantness with owners of property and saving much valuable time of the Sanitary Authority.

I have appended two specimen forms of Intimation or Preliminary Notices in the hope that they may be of service to inspectors in the provinces and others who have not yet adopted such a course of procedure.

FORM OF INTIMATION OR PRELIMINARY NOTICE.

Borough of

19

I, the undersigned, being the Sanitary Inspector to the
do hereby give you Notice of the existence of a nuisance at

arising from

And to request you to abate the same within days, and for that purpose to

To
Of

NOTE.—Any further information respecting the work required by this notice may be obtained upon application to the Sanitary Inspector. Notice must be given to the Inspector before commencing this work. No drains are to be covered before inspection. All work specified in this notice must be carried out in accordance with any Public or Local Act or By-law in force within this district.

FORM OF INTIMATION OR PRELIMINARY NOTICE.

Borough of

To
Of

I, the undersigned, Inspector of Nuisances to the
do hereby give you notice of the existence of a nuisance at

arising from

And I am instructed by the to call upon you to abate the same within days from the service of this Notice, and for that purpose

I am also directed to inform you that if you make default in complying with the requisitions of this Notice, or if the Nuisance, though abated, is likely to recur, the will put in force all the powers which they possess to compel you at once to abate it and restrain you from again permitting it.

Dated this day of 19

Great care must be taken by the inspector to avoid too much toleration in the carrying out of notices, as there are a certain class of persons who will not move unless absolutely compelled. With such persons it is essential that he should deal promptly and decisively, reporting any outstanding cases to the Sanitary Authority upon the expiration of the time allowed in the intimation notice.

The procedure for dealing with the abatement of nuis-

ances under ordinary circumstances may thus be briefly summarised:—

Having received information of the existence of a nuisance, by complaint or otherwise, the premises in question should be inspected by the sanitary inspector, who if satisfied that a nuisance does exist as alleged, must forthwith serve an *intimation* notice, see specimen forms on pages 102 and 103, upon the person by whose act, default, or sufferance the nuisance arises or continues, or if the nuisance arises from want or defect of a structural character, the notice must be served upon the owner, giving a reasonable time, according to the nature of the nuisance, not exceeding fourteen days, in which to abate such nuisance. If the nuisance is not abated within the time specified in the *intimation*, the inspector *must report the matter to the Sanitary Authority or its committee*, at the next meeting, asking for their instructions to serve a statutory notice (see form, page 62), with power to institute legal proceedings, if the notice is not complied with, or if abated is likely to recur, the Sanitary Authority, through its authorised officer, shall lay an information and apply to the magistrate at the police court having jurisdiction in the district for a summons.

The description of the offence must be accurate and precise, the safest principle is to follow the wording of the Act or by-law, though this is not absolutely necessary. The setting forth of the facts constituting the offence has been held to be sufficient.

The service of the summons is carried out by a constable or other officer of the court, the service must be personal or by delivery to someone at the last or most usual place of abode of the person to be served. When the summons is not personally served, but left at the last or most usual place of abode, the nature of the contents should be explained to the recipient.

The appearance of the defendant at the court will waive any irregularity in the mere procedure, but when the defendant appears under protest that is not so ; if he fails to appear, it is a question for the justices whether or not he has been sufficiently served.

If a conviction is obtained, this must be drawn up by the justices on a form also prescribed by the summary jurisdiction rules, and costs may be ordered to be paid to the prosecutor by the defendant or where the summons is dismissed the prosecutor may be ordered to pay costs to the defendant.

The justices have absolute discretion over costs in all cases.

The following is the section under which the statutory notice for the abatement of a nuisance is issued :—

On the receipt of any information respecting the existence of a nuisance, the local authority shall, if satisfied of the existence of a nuisance, serve a notice on the person by whose act, default, or sufferance the nuisance arises or continues, or, if such person cannot be found, on the owner or occupier of the premises on which the nuisance arises, requiring him to abate the same within a time to be specified in the notice, and to execute such works and do such things as may be necessary for that purpose : provided :—

1st. That where the nuisance arises from the want or defective construction of any structural convenience, or where there is no occupier of the premises, notice under this section shall be served on the owner.

2nd. That where the person causing the nuisance cannot be found and it is clear that the nuisance does not arise or continue by the act, default, or sufferance of the owner or occupier of the premises, the local authority may themselves abate the same without further order (Public Health Act, 1875, Section 94 ; and Public Health (London) Act, 1891, Section 4 ; also Section 20, Public Health (Scotland) Act, 1897).

The words *structural convenience* appear to be such things as a landlord would provide in a house for the purpose of letting it to a tenant. Thus an owner was held liable for

the defective construction of a privy (Cook *v.* Montagu, 37 J.P. 53), and for water-closets and sink drains (Parker *v.* Inge, 51 J.P. 20).

The owner is liable when the nuisance is due to any structural defect. If a tenant is bound under his lease to maintain the structure of the premises, the Sanitary Authority need not consider the terms of such lease, but should proceed to serve the notice, as aforesaid, on the owner, leaving him to establish his claim against the tenant.

A lease for years contained a covenant by the lessee to "pay and discharge all taxes, rates, including sewers, main drainage assessments and impositions whatsoever which now are or at any time hereafter during the continuance of the said term hereby granted, be taxed, rated, assessed, charged, or imposed upon or in respect of the said premises or any part thereof or on the landlord, tenant, or occupier of the said premises by authority of Parliament or otherwise howsoever (landlord property tax and tithe only excepted)." There was no repairing covenant in the lease. Notice was given to the lessor by the Sanitary Authority of the district, under the Public Health (London) Act, 1891, to abate a nuisance caused by a foul and offensive privy on the premises by removing the privy and constructing a water-closet in accordance with the by-laws of the London County Council. The lessor thereupon did the work required in the notice and subsequently sued the lessee to recover the expenses in so doing.

It was held that this expense was not covered by the words "impositions charged or imposed upon or in respect of the premises" in the covenant, and therefore that the lessee was not liable. (Foulger *v.* Arding, Div. C., 2 K. B. 151).

Section 32, Sub-section 1, of the Housing of the Work-

ing Classes Act, 1890, provides that it is the duty of the local authority to institute proceedings against the owner or occupier for the closing of a dwelling house which is unfit for human habitation, while proceedings may be taken under Sub-section 2, for the express purpose of causing the dwelling house to be closed whether the same be occupied or not. By Section 29, in this part of the Act, unless the context otherwise requires, the expression "dwelling house" means any inhabited building.

A local authority applied for a closing order in respect of three dwelling houses which were admittedly unfit for human habitation. The houses had been closed by the owner for five and a half years for all purposes of human habitation, and they had not been used for such purposes during that period nor had the owner any intention of allowing them to be so used in their present condition. A magistrate having refused to make a closing order, the Court held that the definition of "dwelling house" in Section 29 did not operate to curtail the powers of the local authority under Section 32; that the mere fact of non-occupancy was not in itself an objection to the making of a closing order, and that the magistrate was wrong. (Robertson *v.* King, Div. C. (1901) 2, K. B. 265).

Form of Statutory Notice.

Borough of

To
Of

Take notice that under the provisions of the
the being satisfied of the existence
of a nuisance at arising
from
do hereby require you within from the
service of this notice to abate the same, and for that purpose to

If you make default in complying with the requisitions of this notice, or if the said nuisance, though abated is likely to recur, a summons will be issued requiring your attendance to answer a complaint which will be made to a court of summary jurisdiction for enforcing the abatement of the nuisance and prohibiting a recurrence thereof, and for recovering the costs and penalties that may be incurred thereby.

Dated this day of 19

Signature of officer of Sanitary Authority.

In London and Scotland the works required to be done to abate a nuisance need not be stated in the notice, but outside the Metropolis the necessary works MUST be specified.

In the Queen's Bench Division on May 31, 1900, this point was decided in the case of the Queen *v.* Horrocks and others.

An order under Section 96 of the Public Health Act, 1875, whether it be made at the instance of the local Authority or of a private individual, and whether it be for the abatement of a nuisance or for the prohibition of the recurrence of a nuisance, must specify the works necessary to abate the nuisance, or prevent its recurrence, as the case may be, if any works are necessary for that purpose. But where the recurrence of a nuisance can be prevented by merely refraining from doing the acts which caused it, and no works are necessary to prevent its recurrence, an order simply prohibiting the doing of any acts which may lead to a recurrence of the nuisance is good.

The following is a brief specification of works, &c., required to abate certain nuisances:—

Drains.

1. Construct a new drain of glazed and socketed stoneware or heavy cast-iron drain pipes laid upon or surrounded by Portland cement concrete at least six inches thick, the stoneware pipes to be jointed with Portland cement, and the iron pipes with molten lead, well caulked.
2. Cleanse, repair, and render water-tight the drain.
3. Ventilate the drain with heavy cast-iron pipes at least $3\frac{1}{2}$ inches in diameter, carried above house roof to a safe outlet, the joints to be made with molten lead, well caulked.

4. Unstop or cleanse the drain.
5. Provide and fix to the drain a suitable disconnecting trap.
6. Old drain to be partially or wholly abolished, cleansed and sealed off from sewer.
7. Fix suitable gully traps in the yard, area, &c.
8. Defective surface traps to be abolished.
9. Construct manholes of convenient dimensions as required.
10. Repair and cleanse the existing manholes.
11. Provide new or repair existing manhole covers.
12. Provide a fresh air inlet or repair the existing fresh air inlet.

Water-closets.

1. Construct a new water-closet furnished with suitable flushing apparatus and a good flush of water.
2. Abolish the water-closet.
3. Repair the wall, seat, floor, or roof of the water-closet.
4. Light and ventilate the water-closet to the external air.
5. Limewash and cleanse the water-closet walls and ceiling.
6. Ventilate the trap of each water-closet.
7. Provide suitable flushing apparatus to the water-closet, with a good flush of water.
8. Repair and put into proper order the water-closet flushing apparatus.
9. Provide a proper and sufficient water supply to the water-closet.
10. Fix a suitable basin and trap to the water-closet.
11. Cleanse or repair the water-closet basin and trap.

Sink, bath, &c., wastepipes.

1. Disconnect the sink, bath, and other wastepipes from the drain or soil pipe, and construct same to discharge over or under the grating of trapped gullies in the open air.
2. Provide and fix to the sink, bath and other wastepipes suitable lead traps.
3. Ventilate the sink, bath, or other wastepipes which are connected to sealed gully-traps.
4. Repair or unstop the sink, bath, or other wastepipes.

Soil pipes.

1. Fix a new soil pipe of drawn lead or heavy cast-iron pipes at least $3\frac{1}{2}$ inches in diameter, ventilated with pipes same diameter and and carried above the house roof to a safe outlet.

2. Ventilate the soil pipe, with pipes of the same diameter and material, carried above house roof to a safe outlet.
3. Repair, caulk, and make sound the soil pipe.
4. Abolish the existing defective soil pipe.
5. Remove the soil pipe from the inside to the outside of the building.

Water supply.

1. Provide a proper and sufficient supply of water for drinking and domestic purposes.
2. Disconnect the water supply from the cistern supplying water to the water-closet and provide a separate cistern or tap with supply direct from the main.
3. Provide and fix a cistern, furnished with close fitting cover, in suitable position.
4. Repair and make good the storage cistern or cisterns.
5, Cleanse the drinking-water cistern or cisterns.
6. Provide or repair cover of drinking-water cistern.
7. Abolish the existing storage cistern.

Dust-bins.

1. Provide a new receptacle for house or trade refuse, furnished with close fitting cover.
2. Repair the receptacle for house or trade refuse.
3. Abolish the existing foul and defective ashpit or other receptacle for house or trade refuse.

Miscellaneous.

1. Abate the overcrowding of workshop or bedroom.
2. Close as unfit for use, as a dwelling, the underground room or cellar.
3. Repair and render water-tight the house roof.
4. Improve the light and ventilation of the bedroom, workshop, &c.
5. Repair and make good the floors and staircases.
6. Cleanse and limewhite the walls and ceilings of the bedroom, kitchen, staircase, passage, &c.
7. Pave or repair and make good the yard, area, or passage surfaces.
8. Remove the accumulation of offensive refuse.
9. Discontinue the keeping of animals on these premises.
10. Provide suitable metal dung receptacles.
11. Repair and make good the receptacle for stable refuse.
12. Abolish the sunken dung-pit.
13. Abate the nuisance arising from the emission of black smoke.
14. Provide or repair the rain water pipes and eaves gutters.

The forms of notices previously referred to are those prescribed for dealing with the abatement of nuisances and would, therefore, not be good notices for offences under the Public Health Acts, outside the provisions relating to nuisances, *e.g.*, the sanitary inspector may find a house without a water-closet, or a workshop in want of suitable sanitary conveniences or perhaps separate water-closet accommodation is required for persons of each sex, or again an underground room occupied as a dwelling contrary to the prescribed conditions, proof of these offences would be easy enough, though to attempt to prove a nuisance would often be a difficult matter and it is not necessary to do so.

The following form of notice would meet the requirements of such cases :—

Form of Notice.

Borough of

To
Of

Take notice that under the provisions of the

the Council of the Borough of

in the County of being the Sanitary Authority within the meaning of the said Act in and for the said Borough, being satisfied that the house

within the said district,

do hereby require you within days from the service of this notice to

If you make default in complying with the requisitions of this notice, a Summons will be issued requiring your attendance before a Petty Sessional Court, to answer a complaint which will be made for the purpose of enforcing the requirements of this notice, and for recovering the costs and penalties that may be incurred thereby.

Dated the day of 19

(Signed)

Of the said Authority.

It has not previously been considered obligatory on the part of sanitary authorities to give written notice where there is a contravention of any by-law, but it was held to be necessary in the case of Nokes & Nokes *v.* Mayor, &c., of Islington, heard in the King's Bench Division of the High Court.

The case was stated by a Metropolitan magistrate raising a question as to the validity of a by-law of the London County Council. A complaint was preferred by a sanitary inspector on behalf of the respondents against the appellants, Messrs. Nokes, at the Clerkenwell police court, for that the appellants, being the owners, as defined by the by-laws of the London County Council made under Section 39 (1) of the Public Health (London) Act, 1891, of a certain lodging house in Corinth Road, Islington, did not provide and maintain from March 3 to April 20, 1903, one closet or privy for every twelve persons. The by-law in question provides, *inter alia*, as follows:—"The landlord or owner of any lodging house shall provide and maintain in connection with such house, water-closet, earth-closet, or privy accommodation in the proportion of not less than one water-closet, earth-closet, or privy for every twelve persons."

At the hearing it was proved that the appellants were agents for letting and collecting, and, in fact, collected the rent during the period in question, and during such period the house contained nine rooms and one closet only and no privy. In July, 1902, the house was let out in tenements to members of more than one family, and the appellants collected the rents of the several tenements from the tenants. In September, 1902, all the tenants were ejected by the appellants. From September, 1902, to January, 1903, the house was unoccupied. In January, 1903, the whole of the house was let to one tenant—Gates—at the rent (which was a rack-rent) of £36 per annum,

payable £3 per month in advance. On January 5, 1903, three rooms only in the house were occupied by six people. On March 3, 1903, all the rooms in the house were occupied, and continued to be occupied till April 20, 1903, by sixteen people, who constituted four separate families. The rooms in the house not required by Gates for his own occupation were let by him to lodgers, from whom he received rent on his own account.

On March 11, 1903, an intimation from the sanitary inspector was left on the premises and at the appellants' office, requesting the abatement of a nuisance—namely, insufficient water-closet accommodation. A further notice was sent on March 25 by the Medical Officer of Health. On the following day the appellants wrote to him that they were not the "landlord," and also wrote to Gates suggesting that he should get rid of some of his lodgers, so that there should not be more than twelve people in the house. It was objected on the part of the appellants that the by-law was *ultra vires* and illegal, and that the appellants were not the owners within the meaning of the by-law. The magistrate overruled the objections and convicted the appellants.

The Lord Chief Justice, in giving judgment, said that the objection to the by-law was a good one. This case illustrated the importance of there being some provision for notice to the person complained against. The appellants collected the rents that Gates paid, and they might be treated as standing in the position of their client. But Gates was the person who had been responsible for allowing more than twelve persons to be in the house, and therefore, in justice to the appellants, some notice should be given before proceedings were taken against them, and a by-law that did not contemplate any notice was bad, for Section 37 of the Public Health (London) Act, 1891, contemplated that notice should be given by the Local

Authority to the person complained against. It was a good objection to a by-law that imposed a penalty, that before the alleged breach, especially when the complaint was directed against persons who were not owners, although they were to be taken as being in the position of owners, it did not provide that there should be the same kind of notice as that contemplated by Section 37. He thought, therefore, that this by-law was not reasonable.

The other learned judges agreed, and the appeal was accordingly allowed.

Form of By-law Notice.

Borough of

19

I, the undersigned, being the Sanitary Inspector to the being the Sanitary Authority for the said Borough, do hereby give you notice that you have contravened No. of the By-Laws relating to

at No.

by

You are therefore required, within days from the date hereof, to

If you make default in complying with this Notice, a summons will be issued requiring your attendance to answer a complaint which will be made to a Court of Summary Jurisdiction for enforcing the aforesaid By-laws, and for recovering any costs and penalties that you may incur thereby.

To
Of

(Signed)

Sanitary Inspector.

The duties formulated by the Local Government Board for the guidance of Sanitary Inspectors require that he shall, on receiving notice of the breach of any by-laws or regulations made by the Sanitary Authority or the County Council, which it is the duty of the Sanitary Authority to enforce, enquire into such alleged breach of by-laws or regulations.

Lumley, in his work on by-laws, gives the following definition of a by-law:—"A by-law is a law made with due legal obligation by some authority less than the Sovereign and Parliament, in respect of a matter specially or impliedly referred to that authority and not provided for by the general law of the land."

The same writer makes the following remarks on the *properties* of by-laws.

As a by-law is a law made by an inferior authority, it must not only contain all the properties of a public law, but is subject to certain qualifications arising out of the subordination of the authority that makes it.

Hence, in the first place, it will be seen that these propositions are established:—

1. A by-law must be consistent with, and not repugnant to the general law.

2. It must provide something in addition to the general law, and therefore must not simply re-enact it.

3. It must not make a provision in respect of a matter already provided for other than what the general law has prescribed.

But, in the second place, it is necessary to advert to the general requisites of a public law, and thus it is found that:—

4. A by-law must be certain in its enactment, *i.e.*, free from ambiguity, and must afford complete direction to those who are to obey it.

5. It must be general in its application.

6. It must be as it is expressed in the usual authorities, and by the courts in their numerous decisions, reasonable. This term, as it will be seen hereafter, involves a great deal of consideration.

7. It must be positive in its terms, and directed to prohibit or enjoin an act by the persons upon whom it is to operate.

8. It must contain a proper sanction by prescribing a definite penalty for the breach of it.

9. Lastly, the law must not be made in respect of a matter not within the authority of the body enacting it, nor to operate upon persons or in a district not subject to their control.

In technical terms, it must not be *ultra vires*.

In the service of the statutory and other notices the inspector must make himself familiar with the following provisions so as to avoid any technicalities being raised, should legal proceedings be instituted:—

Notices, orders, and other such documents under this Act may be in writing or print, or partly in writing and partly print; and if the same require authentication by the local authority, the signature thereof by the clerk to the local authority or their surveyor, or inspector of nuisances, shall be sufficient authentication (Public Health Act, 1875, Section 266, and Public Health (London) Act, 1891, Section 127; also Section 159, Public Health (Scotland) Act, 1897).

Notices, orders, and any other documents required or authorised to be served under this Act may be served by delivering the same to or at the residence of the person to whom they are respectively addressed, or where addressed to the owner or occupier of premises by delivering the same or a true copy thereof to some person on the premises, or if there is no person on the premises who can be so served by fixing the same on some conspicuous part of the premises; they may also be served by post by a prepaid letter, and if served by post shall be deemed to have been served at the time when the letter containing the same would be delivered in the ordinary course of post, and in proving such service it shall be sufficient to prove that the notice order or other document was properly addressed and put into the post.

Any notice by this Act required to be given to the owner or occupier of any premises may be addressed by the description of the "owner" or "occupier" of the premises (naming them) in respect of which the notice is given, without further name or description (Public Health Act, 1875, Section 267, and Public Health (London) Act, 1891, Section 128; also Section 159, Public Health (Scotland) Act, 1897).

A Local Authority took proceedings under the Public Health Act, 1875, against the agent of the owner of certain property for the abatement of a nuisance. The justices held that the respondent was not the owner within the

meaning of the Act, and dismissed the summons. This decision was reversed by the Divisional Court and the case remitted to them.

At the second hearing it appeared that the respondent had resigned the agency since the first hearing, and the justices again dismissed the summons.

It was held that the justices had jurisdiction to make an order on the respondent requiring him to abate the nuisance, although he was no longer the agent of the owner of the property. (Broadbent *v.* Shepherd, Div. Ct. (1901), 2 K. B. 274).

A sanitary inspector for Poplar had taken out a summons for non-compliance with a notice; the summons was directed to the "owner" and had been left on the premises; the magistrate dismissed the summons on the ground of improper service. The case was afterwards heard in the Queen's Bench Division and reported in the *Times* for April 16, 1894, it being held that the summons was rightly served and that the magistrate ought to have proceeded upon it.

The prosecutor obtained a rule *nisi* for a *mandamus*.

Duplicate, counterfoil, or press copies should be taken of all notices or letters, before being issued from the inspector's office, personally, I prefer press copies, as there is much saving of time and labour, besides which you have a *facsimile* copy of all communications sent out.

Copies of all notices retained should be endorsed to the following effect.

Served a copy of this notice
addressed to

on the day of 19

(Signed)

Sanitary Inspector.

When legal proceedings are authorised, and before the information is laid, the inspector must be supported by the evidence of the Medical Officer of Health and such other persons as from the circumstances of the case appear to be necessary.

The town clerk or other legal adviser of the local authority should be consulted, as to the preparation of the information for the summons and the evidence to be tendered. Inspectors are occasionally placed in the position of solicitors, some from choice and others from compulsion; but the conducting of legal proceedings by a sanitary inspector is altogether out of place and unreasonable, as his duties are sufficiently onerous and unpleasant without adding that which only a person properly trained and educated for the law and court procedure can efficiently perform.

Before the summons is taken out it may be advisable, though not compulsory, to give a polite reminder to the person in default, by sending him a circular letter as follows:—

Borough of

19

SIR (OR MADAM),

Please to comply with the Notice sent you relative to

at

by so doing you will prevent legal proceedings being instituted, and oblige.

Your obedient servant,

Sanitary Inspector.

In the event of no notice being taken of this communication, the inspector, having first obtained the authority of his Council or Committee, as previously advised, should

at once institute the proceedings necessary to ensure the abatement of the nuisance and a compliance with the requisitions of the notice.

The inspector must be able to produce, if necessary, his authority for taking legal proceedings, as provided in the following clause :—

> Any local authority may appear before any court, or in any legal proceeding by their clerk, or by any officer or member authorised generally or in respect of any special proceeding by resolution of such authority, and their clerk, or any officer or member so authorised shall be at liberty to institute and carry on any proceeding which the local authority is authorised to institute and carry on under this Act (Public Health Act, 1875, Section 259 ; and Public Health (London) Act, 1891, Section 123 ; also Section 152, Public Health (Scotland) Act, 1897).

To those responsible for enforcing orders made by justices the following recent case will be of interest :—

This was an appeal upon a case stated from the decision of the Court of Quarter Sessions for the County of Surrey, and raised the question as to whether an order made by justices under Section 96, of the Public Health Act, 1875, was bad, inasmuch as it was signed by one justice only. The appellant was summoned under the Public Health Act before the Court of Petty Sessions at Epsom at the instance of the inspector of nuisances on three complaints, alleging the existence of nuisances on premises of which he was the owner. The complaints were heard by three justices, who, being satisfied of the existence of the alleged nuisances, made orders in each of the cases, requiring the appellant to abate the nuisances within a specified time. Orders in writing in the terms of the orders of the Court were drawn up and were signed by one only of the justices who adjudicated on the hearing of the complaints. The appellant appealed to quarter sessions on the ground, *inter alia*, that the orders were bad

on the face of them. At the hearing of the appeal the appellant contended that the orders were bad, inasmuch as the orders were signed by one justice only, whereas they should have been signed by two or more justices. The quarter sessions overruled the objection, but stated a case for the opinion of the High Court on the question raised by the appellant's objections.

The Lord Chief Justice, in delivering judgment, said he confessed that if he had seen his way to give a decision in favour of the respondents, he would have been glad, as there were no merits in the appellant's case. An important legal principle, however, was involved, and he had to decide the case in accordance with that principle. He had always understood that the orders had to be drawn up in order that, if there appeared to be any objection to the order, that objection might be taken. If Mr. Avory had been able to satisfy him that the magistrate's signature to the order was merely for the purpose of verification, or that the order had not to be drawn up and served, he would have come to a decision in his favour. He thought that the words of Section 96 of the Public Health Act, 1875, and the other statutory provisions referred to, were quite clear. The form of orders given also indicated that the orders ought to be signed by two justices. It seemed to him that it was an objection to these proceedings that only one justice had signed the order, and he thought that on that ground the appeal must be allowed.

Mr. Justice Wills said he had come to the same conclusion. When the forms given for these orders were looked at it became clear that the orders should be drawn up and served. If, therefore, the orders had to be drawn up, he thought that they ought on the face of them be good orders. He was satisfied that the signatures of the justices to these orders were not merely for verification, and that being so, then, in his opinion, on the reading of

the sections not less than two magistrates must sign the order.

Mr. Justice Kennedy was of the same opinion.

The appeal was therefore allowed, but without the costs of the appeal from the quarter sessions.—*The Times.*

As a guide to the preparation of the instructions for the solicitor or other person, having charge of legal proceedings instituted by the sanitary inspector, on behalf of the sanitary authority, for the abatement of nuisances, the following information will meet the requirements of most cases:—

Instructions for Solicitor.

Borough of

19

Name of Complainant
Date of Complaint
Situation of Premises inspected
Date of Inspection
By whom inspected
Date of Intimation Notice
Date when reported to Sanitary Authority
Date of Statutory Notice
Date of any Letters sent
By whom the Notices were served
and how served
Date of any subsequent Visits
Name and Address of Owner, Agent, or Occupier

Note.—Correspondence, Copies of Notices, Letters, and Extracts from Minutes of Sanitary Authority, authorising legal proceedings to be taken—*herewith.*

Remarks

(Signed)

Sanitary Inspector.

As the inspector is supported by the law in his course of action, it is important that he should not be vindictive, but state the truth without exaggerating the offence or giving the court the idea that he is anxious to secure a conviction. Neither is it necessary, to prove his competency for the post, to be always appearing in the police court as prosecutor; but on the contrary, an inspector who is unable to discharge his duties without having to resort to proceedings of this nature, on every occasion, shows his unfitness for the office he holds, and such conduct on the part of public officials tends rather to assist the defendant than the inspector, and, if discovered, will eventually bring disgrace upon sanitary officers and their work.

The sanitary inspector is protected from liability in carrying out his duties by the following clause:—

> No matter or thing done, and no contract entered into by any local authority or joint board or port sanitary authority, and no matter or thing done by any member of any such authority or by any officer of such authority or other person whomsoever acting under the direction of such authority, shall, if the matter or thing were done, or the contract were entered into bonâ fide for the purpose of executing this Act, subject them or any of them personally to any action, liability, claim, or demand whatsoever; and any expense incurred by any such authority, member, officer, or other person acting as last aforesaid shall be borne and repaid out of the fund or rate applicable by such authority to the general purposes of this Act. (Public Health Act, 1875, Section 255; and Public Health (London) Act, 1891, Section 124; also Section 166, Public Health (Scotland) Act, 1897).

Sanitary inspectors, like most public officials, are exposed to the influence of wily persons who are ever ready to solicit some favour, and to recompense the officer with gratuities, or in some other way. It is just as well to remember that acts of this kind render both parties guilty of a misdemeanour as provided in Section 1 of the Public Bodies Corrupt Practices Act, 1889:—

Every person who shall by himself or by or in conjunction with any other person, corruptly solicit or receive, or agree to receive for himself, or for any other person, any gift, loan, fee, or reward, or advantage whatever as an inducement to, or reward for, or otherwise on account of any member, officer, or servant of a public body as in this Act defined, doing or forbearing to do anything in respect of any matter or transaction whatsoever, actual or proposed, in which the said public body is concerned, shall be guilty of a misdemeanour.

Every person who shall by himself or by or in conjunction with any other person corruptly, give, promise, or offer any gift, loan, fee, reward, or advantage whatsoever to any person whether for the benefit of that person or of another person, as an inducement to or reward for or otherwise on account of any member, officer, or servant of any public body as in this Act defined, doing or forbearing to do anything in respect of any matter or transaction whatsoever, actual or proposed, in which such public body as aforesaid is concerned, shall be guilty of a misdemeanour.

Any legal proceedings instituted by the sanitary inspector on behalf of the sanitary authority should be recorded in the Prosecution Register, a specimen of which is given on page 124, and this should be furnished with an index for reference.

It is also essential that in order to observe the rule for the proper service of the notices and the taking of proceedings, he should be acquainted with the following interpretations, given in Section 4, Public Health Act, 1875, and Section 141 of the Public Health (London) Act, 1891 :—

"Owner" means the person for the time being receiving the rack-rent of the lands or premises in connection with which the word is used, whether on his own account or as agent or trustee for any other person, or who would so receive the same if such lands or premises were let at a rack-rent.

See also definition of the word "Owner" given in Section 29, Housing of the Working Classes Act, 1890.

"Rack-rent" means rent which is not less than two-thirds of the full net annual value of the property out of which the rent arises; and the full net annual value shall be taken to be the rent at which the

FORM OF PROSECUTION REGISTER.

No.	Date of Hearing.	Defendant.	Offence.	Magistrate and Court.	Date of Adjournment (if any).	Fines.			Costs.			Total Penalties.			Remarks.
						£	s.	d.	£	s.	d.	£	s.	d.	

property might reasonably be expected to let from year to year, free from all usual tenant's rates and taxes, and tithe commutation rent-charge (if any), and deducting therefrom the probable average annual cost of the repairs, insurance, and other expenses (if any) necessary to maintain the same in a state to command such rent.

"Person" includes any body of persons, whether corporate or unincorporate.

"House" includes schools, also factories and other buildings in which *more than twenty* persons are employed *at one time*.

The words in italics are omitted from the definition of "house" given in the Public Health (London) Act, 1891.

"Lands" and "Premises" include messuages, buildings, lands, easements and hereditaments of any tenure.

"Premises" includes messuages, buildings, lands, easements, and hereditaments of any tenure, whether open or enclosed, whether built on or not, and whether public or private, and whether maintained or not under statutory authority.

See also definitions given in Section 3, Public Health (Scotland) Act, 1897.

BOOK-KEEPING.

In the matter of book-keeping and correspondence the inspector cannot be too careful and methodical. His reports should as far as possible be in writing so as to avoid misunderstanding as to what his advice is upon any subject.

His books should be regularly posted and all letters and other communications, after acknowledgment, put carefully away, but any matter of correspondence which he may have for the Committee's consideration, should be placed together and be in readiness for the next meeting; this will save him much annoyance and worry at the last moment before the meeting, in endeavouring to find the papers he requires. To enable the officer to be methodical,

he should be provided with suitable office furniture in which to keep his books, notices, and other papers.

The books in his possession should be specially adapted for his work, and so arranged, when properly kept, as to furnish a complete and continuous record of the work carried out in his department, but too much clerical work is not desirable and he will be wise to avoid all unnecessary labour in this direction.

In addition to the usual office stationery and the various forms and notices, &c., it is indispensable that the inspector should have all or some of the following books, but this will depend upon the peculiarities of his duties, and the special requirements of his district :—

General Office Books.

Office diary.
Press letter book.
Press notice book.
Complaint book.
Prosecution register.

Abatement of Nuisances.

Inspection note book.
Register of visits and inspections.
House to house inspection book.
Sanitary inspector's report book.
Committee report book.
Smoke nuisance report book.
Pocket book for smoke observations.
House drainage register.

Sale of Food and Drugs Act.

Register of persons from whom samples may be purchased.
Register of samples purchased and result of analysis.
Pocket book under Food and Drugs Acts.

Infectious Diseases and Disinfection.

Infectious disease register.
Disinfecting register and receipt book.

Factories and Workshops.

Inspection book for factories and workshops.
Register of outworkers and contractors.
Register of factories and workshops.

Lodging Houses.

Register of common lodging houses.
Register of houses let in lodgings.

Cowsheds, Dairies, and Milkshops.

Register of cowsheds, dairies, and milkshops.
Inspection book for cowsheds, dairies, and milkshops.

Slaughter Houses and Offensive Trades.

Register of slaughter houses.
Register of offensive trades.

Canal Boats.

Pocket book for the inspection of canal boats.
Register of canal boats.

The preparation of the inspector's annual report, if not regularly kept in the form of a weekly, fortnightly, or monthly summary, becomes a very tedious task at the end of the year to formulate the information necessary to make the report anything like complete in the limited time at the disposal of the officer. I have, therefore, appended such a summary, which, generally speaking is required, and if properly posted for the regular meetings of the Sanitary or Health Committee it will be found useful for reference should the chairman, the medical officer, or other interested person require immediate information respecting the work of the department, besides enabling the inspector to prepare the tables for his annual report with comparative ease, having simply to add up the weekly, fortnightly, or monthly totals as the case may be.

Abatement of Nuisances and Infringement of By-Laws.

Complaints received.
Houses and premises inspected.
Houses and premises re-inspected or visited.
Notices issued (intimations).
Notices issued (statutory).
Summonses taken out.
Summonses dismissed or withdrawn.
Convictions obtained.
Magistrates' orders.
Penalties—Fines.
Costs.

Matters dealt with.

Drains.

Constructed.
Repaired.
Ventilated.
Unstopped or cleansed.
Disconnecting traps fixed.
Old drains partially or wholly abolished, cleansed and sealed off from sewer.
Gully-traps fixed.
Defective surface traps abolished.
Manholes built.
,, repaired or cleansed.
,, covers fixed or repaired.
Fresh air inlets fixed or repaired.
Tested—chemicals.
,, smoke.
,, water.
,, air.

Water Closets.

Constructed.
Abolished.
Repaired.
Ventilation or light improved.

Limewhited or cleansed.
Traps ventilated.
Flushing apparatus fixed.
,, ,, repaired.
Water supply provided.
W.C. apparatus fixed.
,, apparatus cleansed or repaired.

Sink, Bath, &c., wastepipes.

Disconnected.
Trapped.
Ventilated.
Fixed, repaired or unstopped.

Soil Pipes.

Fixed.
Ventilated.
Repaired.
Abolished.
Removed from inside to outside of building.

Water supply.

Provided.
Re-instated.
Disconnected from w.c. supply.
Certificates issued.
Cisterns fixed.
,, repaired.
,, cleansed.
,, covered or covers repaired.
,, abolished.
Wells closed.
Samples of water taken for analysis.

Dust-bins.

Provided.
Repaired.
Ashpits abolished.

Miscellaneous.

Overcrowding abated.
Underground rooms closed as unfit for use as dwellings.
Houses closed under Housing Working Classes Act.
,, ,, ,, Public Health Act.
House roofs repaired.
Light or ventilation of buildings improved.
Floors or staircases repaired.
Premises cleansed or limewhited.
Yard, area, or passage surfaces paved or repaired.
Offensive accumulations removed.
Keeping of animals discontinued.
Dung receptacles provided.
,, ,, repaired.
Dung-pits abolished.
Smoke observations taken.
,, nuisances reported.

Infectious Diseases and Disinfection.

Infectious cases reported.
Medical certificates received.
Certificates of infectious cases sent to school teachers.
Ditto after disinfection.
Houses in which infectious disease occurred.
Visits made to infected houses.
Patients removed to the hospital.
Houses disinfected.
Rooms disinfected.
Articles of clothing, bedding, &c., disinfected.
,, ,, ,, destroyed.

Analysis of Infectious Diseases Reported.

Disease.	No. 1 Ward.	No. 2 Ward.	No. 3 Ward.	No. 4 Ward.	No. 5 Ward.	No. 6 Ward.	No. 7 Ward.	No. 8 Ward.	No. 9 Ward.	No. 10 Ward.	Totals
Plague											
Cholera											
Small-pox											
Diphtheria											
Membranous Croup											
Erysipelas											
Scarlet Fever or Scarlatina											
Typhus Fever											
Enteric or Typhoid Fever											
Relapsing Fever											
Continued Fever											
Puerperal Fever											
Ward or Parish Totals											

Note.—In rural districts the different Parishes would take the place of Wards in this table. The table may also be used for analysing cases of infectious disease reported each month, by inserting the Months for the Wards.

Common Lodging Houses.

Number of houses registered in the borough.
,, lodgers registered for.
,, visits by night.
,, ,, day.
,, lodgers reported as being received.

Houses Let in Lodgings.

Number of houses registered in the borough.
,, lodgers registered for.
,, visits by day.

Inspection of Schools.

Number of schools examined.
,, ,, found clean.
,, ,, ,, dirty.
,, ,, disinfected or cleansed.
,, notices issued to cleanse, &c.
,, ,, ,, for sanitary defects.

Canal Boats.

Number of canal boats registered.
,, applications for registration.
,, ,, granted.
,, inspections made.
,, contraventions of regulations.
,, notices issued.

Markets and Slaughter Houses.

Number of licensed slaughter houses.
,, visits to slaughter houses and markets.
,, seizures of unsound food.
,, orders to destroy unsound food.
,, prosecutions.

No.	Articles.	Weight, &c.
	Beef. Mutton. Pork. Rabbits. Fish. Shell fish.	

Workshops.

Number of workshops on register.
,, registered during the year.
,, closed or discontinued during the year.

Number of visits made to workshops.
,, notices issued *re* limewhiting.
,, ,, ,, overcrowding.
,, light and ventilation improved.
,, gas iron heating stoves ventilated.
,, additional w.c's provided.
,, separate w.c's for the sexes provided.
,, notices issued *re* other sanitary defects.

Cowsheds.

Number of cowsheds on register.
,, applications for registration as cowkeepers.
,, visits made to cowsheds.
,, notices issued *re* limewhiting, &c.

Dairies and Milkshops.

Number of purveyors of milk and dairymen on register.
,, applications for registration as purveyors of milk or dairymen.
,, visits made to milkshops and dairies.
,, notices issued *re* limewhiting, &c.

HOUSE DRAINAGE.

It will be quite unnecessary for me to remind the Sanitary Inspector of the many evils consequent upon the imperfect drainage of houses, these being generally recognised, as most of his work springs from this cause, and it will be his duty to see that the utmost attention is given to this part of his duties while such works are in progress, otherwise repeated complaints will be made of nuisances arising out of bad workmanship.

Faulty construction of house drainage, whether laid inside or outside of the dwelling, leads to the pollution of the soil, the water supply, and the atmosphere. The defects that are usually met with in the examination of drains are numerous, and relate chiefly to the construction; such as the laying and jointing, the materials used, the size and shape of the drain, trapping and ventilation, the method of connecting branch drains with the main drain, and the latter with the public sewer.

A leaky drain allows the liquid filth to soak away into the soil, while the solid portion of the sewage is left to decompose and fill the drains with dangerous gases for want of flushing, the water which should have carried off the solids having escaped from the drain. Another serious omission in the construction of drains, is the absence of a uniform or sufficient gradient, in consequence of which the drains upon examination are often found to be falling the wrong way, being in reality elongated cesspools.

It is unfortunate for the community that sanitary authorities in the Provinces are still without any definite power to compel builders and others, responsible for the execution of drainage works, to give them notice of their intention to carry out such works, or require such persons to furnish the authority or its officers with a plan showing the proposed drains, before proceeding to execute work necessary for the abatement of nuisances.

The Metropolis Local Management Acts Amendment (By-Laws) Act, 1899, has enabled the London County Council to draft by-laws regulating the construction of drains in new and existing buildings and to require builders and others to deposit detailed plans and sections, together with particulars of any proposed works, with the sanitary authority of the district where the building is situate.

By-laws of the above description are required throughout

the country, and if the drains are not laid as at first proposed, the authority should have power to require the plan to be corrected or an amended plan sent in, as the plan first deposited often bears no resemblance to the work as it is finally executed.

Builders, however, with a reputation for reliable work do not hesitate to give such notice, and moreover are ready and willing to afford the sanitary authority and its officers every possible facility for inspecting and testing the drains.

Particulars of drainage works, as well as information relative to plans submitted and approved, should be carefully recorded for future reference.

This may be effected by means of a suitable Drainage Register, a specimen of which is given on page 136.

Occasionally, the sanitary inspector is confronted with an obstinate builder or a parsimonious property owner, who absolutely refuses to give the necessary notice to enable the inspector to inspect the works when in progress, and so satisfy the officer that the works carried out are satisfactory or sufficient. With these individuals he should deal promptly, but cautiously, reporting the circumstances to the sanitary authority, with a view to the ground being opened and the drain laid bare—serving the required 24 hours notice upon the OCCUPIER, or in case of emergency entering the premises without such notice, as provided in the following section :—

The Sanitary Authority may examine any of the following works, that is to say, any water-closet, earth-closet, privy, ashpit, or cesspool, and any water supply, sink, trap, siphon, pipe, or other works or apparatus connected therewith, upon any premises within their district, and for that purpose, or for the purpose of ascertaining the course of a drain, may at all reasonable times by day, after twenty-four hours' notice has been served on the occupier of the premises, or if they are unoccupied on the owner, or in case of emergency without notice, enter on any

FORM OF HOUSE DRAINAGE REGISTER.

BOROUGH OF

No.	Situation of Premises.	No. or Name of House.	No. of Drainage Plan.	Name and Address of Builder.	Date of testing underground work.	Date of Final test (fittings, &c.)	Date of Certificate (if any)	Size, Situation of Drains, and Material.	No. of W.C's. Inside.	No. of W.C's. Outside.	Drains, how Ventilated, Soil Pipe or separate vent, or both.	Situation of Soil Pipe and Material.	No. and Situation of Inspection Chambers or Man-holes.	Is the outlet of the drain trapped?	Other details of Sanitary Arrangements.	Remarks.

premises, and cause the ground to be opened in any place they think fit, doing as little damage as may be.

If any such work as aforesaid is found on examination to be in accordance with this Act and the by-laws of the county council and sanitary authority, and directions of the sanitary authority given in any notice under this Act, and in proper order and condition, the sanitary authority shall cause the same to be reinstated and made good as soon as may be, and shall defray the expenses of examination, reinstating and making good the same, and pay full compensation for all damages or injuries done or occasioned by the examination; but if on examination any such work is found not to be in proper order or condition, or not to have been made or provided by any person according to the said by-laws and directions, or to be contrary to this Act, the reasonable expenses of the examination shall be repaid to the sanitary authority by the person offending, and may be recovered by that authority in a summary manner (Public Health (London) Act, 1891, Section 40; and Public Health Act, 1875, Section 41; also Section 18, Public Health (Scotland) Act, 1897).

As the duties of the sanitary inspector require that "he shall, if directed by the Sanitary Authority to do so, superintend and see to the due execution of all works which may be undertaken under their direction for the suppression or removal of nuisances within his district," it necessarily follows that the officer should make himself thoroughly conversant with the proper principles of good house drainage, and thus be in a position to discern and point out faulty construction in the simple as well as the most complicated system of drainage, whether it be for a cottage in the country or a West End mansion.

All work of this description, whether of old or new property, should be carried out under the supervision and direction of the sanitary inspector, as under such arrangements greater care would be exercised than is usually the case with the dual responsibility of surveyor and sanitary inspector; this would often prevent complaints being made immediately the houses become occupied.

This important question has recently been much dis-

cussed in the Metropolis owing to the action of the London County Council in refusing to pay part of the salary of a Metropolitan sanitary inspector whose duties were chiefly those of drainage inspector.

Whether this work does or does not form part of the duties of a sanitary inspector, as prescribed in the General Order of the Local Government Board, should be once and for all decided, but any arrangement which fails to give the Public Health Department absolute control of works of this nature, is retrogressive, while dual responsibility makes inspection a farce and a delusion; moreover the Local Government Board has expressed the opinion that dual supervision of drains should be avoided.

The position of the Department in this matter has been made the subject of a paper by Mr. W. J. Addiscott, Plymouth, who states that, "when illness of a serious nature occurs in a family by reason of defective drains, the question arises, 'Who is responsible?' I maintain that one department, and one only, should be responsible, and that the Health Department. Under dual control the Surveyor's Department (in the Provinces) is responsible until the house is completed or in occupation for the first time. Immediately the house becomes occupied responsibility passes from them to the Health Department. By this method of dual control responsibility for defects can be shifted from one department to another. The surveyor should have full control up to the house connection, manhole or intercepting trap; from this point all control and responsibility should rest with the Health Department, the inspector being responsible to his committee for the soundness of the drains, soil pipes and fittings connected therewith; thus extending to new buildings the same principle that applies to old premises. There is no branch of 'domestic sanitary work' that a fully trained sanitary inspector is not qualified or capable of pronouncing a judgment on

equally with an engineer. This argument is supported by all local authorities, in their placing the supervision of all sanitary work of occupied houses, whether it be a cottage or mansion, under their control. Again new premises, the sanitary work of which has just been supervised by an expert engineer or the Surveyor's Department, has become occupied, and immediately, if the owner so wishes, he calls in the sanitary inspector from another department, who is then in a position to advise alterations or extensions of the sanitary fittings. This causes unnecessary expense, loss of confidence on the part of the public in the municipal authorities, and possible friction between two well-meaning departments. If one department was responsible for all house drains in new as well as old premises in all stages of construction, then greater confidence would prevail on the part of the public, they knowing that for all purposes connected with house drains the internal sanitary fittings of their homes were, from the start to finish, under the control of the Health Department as the right and proper sphere for its labour."

The inspector's "key note" must always be, in work of this kind, efficiency and durability, combined with the immediate and complete removal of all foul matter directly it is produced; while there must be no return of foul gas from the drain into the house.

Drains are legally defined as follows:—

"Drain" means any drain of, and used for the drainage of one building only, or premises within the same curtilage, and made merely for the purpose of communicating therefrom with a cesspool or other like receptacle for drainage, or with a sewer into which the drainage of two or more buildings or premises occupied by different persons is conveyed (Public Health Act, 1875, Section 4).

For the purposes of Section 19 of the Public Health Acts (Amendment) Act, 1890, the expression "drain"

includes a drain used for the drainage of more than one building.

There is no interpretation of the word "drain" in the Public Health (Scotland) Act, 1897, nor in the Public Health (London) Act, 1891, but for the Metropolis the definition given in the Metropolis Local Management Act, 1855, Section 250, will apply, as follows:—

"Drain" shall mean and include any drain of, and used for the drainage of one building only, or premises within the same curtilage, and made merely for the purpose of communicating with a cesspool or other like receptacle for drainage, or with a sewer into which the drainage of two or more buildings or premises occupied by different persons is conveyed and shall also include any drain for draining any group or block of houses by a combined operation under the order of any vestry or district board.

By Section 23 of the Public Health Act, 1875, where any house within the district of a local authority is without a drain sufficient for effectual drainage, the local authority shall by written notice require the owner or occupier of such house, within a reasonable time therein specified, to make a covered drain.

There is no like provision in the Public Health (London) Act, 1891, for dealing with houses requiring drains, but such power is given under Section 73 of the Metropolis Local Management Act, 1855.

In deciding what is "necessary for the effectual drainage" of a *new* house, under Section 25 of the Public Health Act, 1875, an urban council must consider only what is necessary for the particular house in question; they cannot take into consideration what is desirable, having regard to the disposal of the sewage of the district generally, and upon that ground require separate drains for sewage and surface water. (Matthews *v.* Strachan, Div. Ct. (1901), 2 K. B. 540.

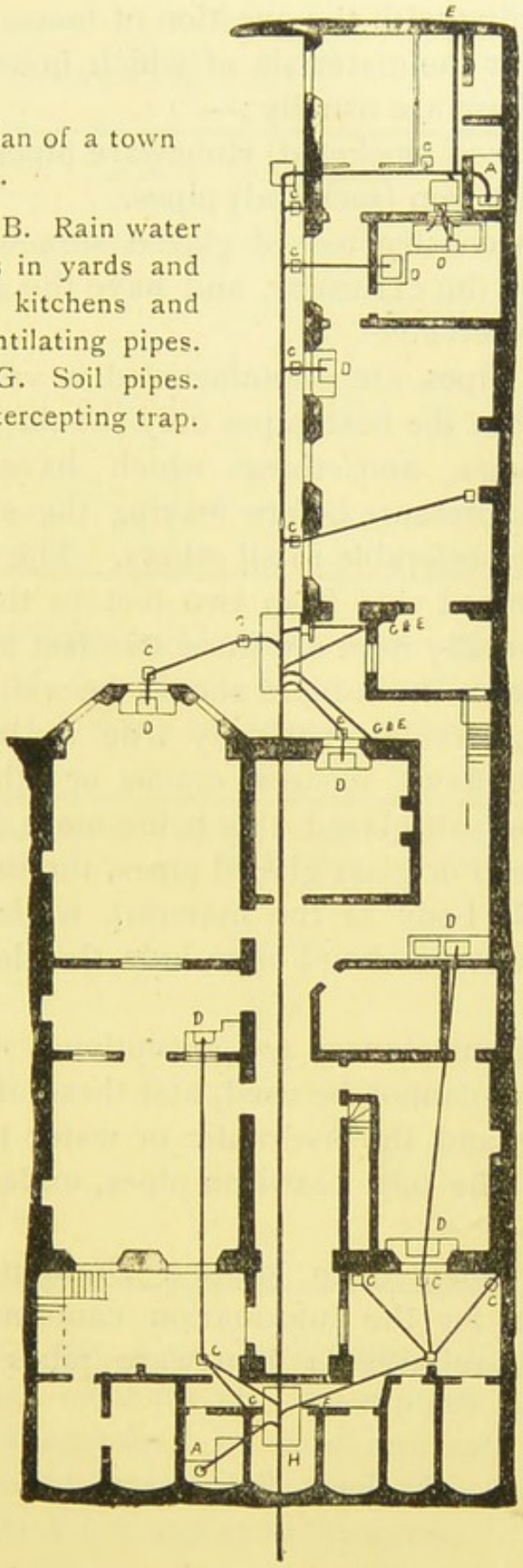


FIG. 3.—Drainage plan of a town mansion.

A. Water-closets. B. Rain water pipes. C. Gully traps in yards and areas. D. Sinks in kitchens and wash-houses. E. Ventilating pipes. F. Fresh air inlet. G. Soil pipes. H. Disconnecting or intercepting trap.

In dealing with the question of house drainage, we have to consider the materials of which house drains should be made; these are usually :—

(1) Glazed (socketed) stoneware pipes.

(2) Cast-iron (socketed) pipes.

Drains constructed of glazed stoneware pipes are undoubtedly the CLEANEST, and have the advantage of being NON-CORROSIVE.

These pipes are manufactured in varying qualities and lengths, but the best pipes only should be used for works of drainage, and those which have been tested by hydraulic pressure before leaving the manufacturer's premises are preferable to all others. The length of the pipes manufactured vary from two feet to three feet, the pipes most generally used are those two feet long.

Stoneware drain-pipes should be well burnt, glazed and socketed, circular, perfectly true in bore, and straight, free from flaws, blisters, cracks or other defects. They should be salt glazed, this being more durable and preferable to lead or glass glazed pipes, the salt glaze permeates the whole body of the material, while other glazes are merely superficial and often hide the defects of worthless material.

The circumstances are exceptional when glazed stoneware pipes cannot be used, and these, if properly laid and able to stand the hydraulic or water test, will be found equal to the best cast-iron pipes, under ordinary circumstances.

I am indebted to Messrs. Doulton & Co., Limited, Lambeth, for the information contained in the following table relative to stoneware pipes manufactured by them :—

Stoneware Pipes.

Internal diameter.	Thickness.	Length in work.	Depth of socket.	Weight of foot.
Inches.	Inches.	Feet.	Inches.	lbs.
3	$\frac{1}{2}$	2	$1\frac{5}{8}$	6
4	$\frac{5}{8}$	2 ft. 6 in.	$1\frac{3}{4}$	9
6	$\frac{11}{16}$	,,	2	14
9	$\frac{13}{16}$	,,	$2\frac{1}{4}$	25

The by-laws of the London County Council provide that drains constructed of stoneware or material other than metal shall be of the following diameter, thickness, &c.:—

Internal diameter.	Thickness of pipe not less than	Depth of socket, not less than	Annular space for the cement, not less than
Inches.	Inch.	Inches.	Inch.
3	$\frac{1}{2}$	$1\frac{1}{2}$	$\frac{5}{16}$
4	$\frac{5}{8}$	$1\frac{3}{4}$	$\frac{5}{16}$
5	$\frac{5}{8}$	2	$\frac{5}{16}$
6	$\frac{5}{8}$	2	$\frac{5}{16}$
9	$\frac{3}{4}$	2	$\frac{7}{16}$

The regulations of the New York Board of Health, U.S.A., provide that earthenware drain-pipes used in connection with dwellings shall be hard and salt glazed, sound and cylindrical, at least $\frac{5}{8}$ inch thick if 5 inches in diameter, and $\frac{3}{4}$ in thick if 6 inches in diameter.

Cast-iron pipes of special weight and thickness (see table on page 145) are now commonly used for drainage work in preference to stoneware pipes. The following advantages are claimed for this material :—

1. Greater strength.
2. Pipes longer (6 feet and 9 feet).
3. More rigid.
4. Fewer joints.
5. Molten lead joint more reliable.
6. More expeditiously laid.

The points which have to be considered before adopting cast-iron pipes for drains are the means available for preserving them from corrosion, the weight and thickness of the pipes and the extra cost, if any, of construction.

Cast-iron drain-pipes should be treated, before being used, with one or other of the preparations specially recommended for protecting iron from oxidation, viz., the late Dr. Angus Smith's composition, the Bower-Barff process, Macfarlane's glass enamel, or other similar means.

The preparation of tar suggested by the late Dr. Angus Smith should be heated to a temperature of 400° F. before application ; great care must be taken in dealing with this material to ensure a proper consistency when cooled. If subjected for some time to the necessary temperature, evaporation makes the residual hard and brittle after cooling. To avoid this, a barrel of oil should be kept at hand to mix with the composition to keep it in its original proportions, if too much oil is added the coating will not be hard enough.

It is best to dip the pipes vertically.

The ordinance of Boston, U.S.A., requires all iron pipes to be coated inside and out with coal-tar pitch, applied hot, or some equivalent substance.

The Bower-Barff process consists of coating the surfaces

of the iron with magnetic oxide. This plan when the surfaces of the iron are so exposed as to be capable of thorough cleansing, gives excellent results. The interior of the pipes require special care in this respect owing to the rough particles of sand left behind, which, at the high temperature required for the production of the magnetic oxide, will form vitreous glazing, unless the pipes are well cleaned beforehand.

The glass enamelled cast-iron pipes manufactured by Messrs. W. Macfarlane & Co. of Glasgow render the interior of the pipes perfectly smooth and the enamel is understood to prevent rust.

Particulars of the thickness and weight of cast-iron drain-pipes required under the By-laws of the London County Council, the weights and thickness of which may be taken as an index of cast-iron drain-pipes in general.

Internal Diameter.	Thickness of Metal not less than	Weight per 9 feet length (including socket and beaded spigot and flanges—the socket not less than $\frac{3}{8}$ inch thick).
Inches.	Inch.	Not less than
3	$\frac{5}{16}$	110 lbs.
4	$\frac{3}{8}$	160 ,,
5	$\frac{3}{8}$	190 ,,
6	$\frac{3}{8}$	230 ,,

All cast-iron pipes must be cylindrical and of a uniform thickness and be free from flaws, air bubbles, shrinkage cracks and sandholes. These pipes should not be brittle, but allow of ready cutting, chipping or drilling.

A careful inspection should be made of each pipe whilst under pressure in a hydraulic testing machine. When

the pipe is under test, the whole length of the pipe should be repeatedly struck with a heavy hammer in order to detect any flaws, and if the sound of the hammer striking the metal is clear or bell-like this is a pretty sure indication of the absence of any of the above imperfections.

Cast-iron pipes should be jointed with spun yarn or hemp and molten lead well caulked. In Boston, U.S.A., the ordinance of that city requires all joints of iron pipes to be run with molten lead and thoroughly caulked and made tight, no paint or putty is to be used on the joint.

In making lead joints in cast-iron pipes, much of course depends upon the skill and experience of the workman. The method of joining cast-iron pipes is as follows :—

A gasket of spun yarn or hemp is inserted into the space between socket and spigot, and well rammed with a caulking tool. This packing should fill about half the depth of the socket, its object being to prevent any molten lead from flowing into the pipe at the joint, and to assist in tightening the joint. A roll of good, tough clay is placed around and pressed against the front of the pipe collar or socket, leaving an opening on the top, where the two ends of the clay roll meet, large enough to admit of pouring in the lead.

This clay ring prevents the escape of molten lead while running the joint. Lead used for making pipe joints should be soft and pure, without any admixture of tin, zinc, or other metal.

If hard or impure lead is used the caulking operation strains the sockets, sufficient at times to burst or split them.

It is important that enough molten lead is poured in at one operation to quite fill the joint; for if the lead is not poured in a continuous stream the joint will not be perfect and homogeneous. As soon as the socket is quite filled, the ring of clay is removed and the lead allowed to

cool, while the superfluous lead is cut off with a cold chisel.

Lead naturally shrinks, so that to make a tight joint it requires to be thoroughly caulked, which is done, first with a hammer and a flat caulking tool, and afterwards with a similar broader tool, with a slight curve corresponding with the size or radius of the pipe.

The rust joint is frequently used for cast-iron pipes when connected to the "blow off" from boilers and for steam pipes. A quickly setting iron cement is composed of:—

98 parts of fine cast-iron borings.
1 part flowers of sulphur.
1 part sal ammoniac.

To be mixed with boiling water before use.

A slow setting rust cement is made up as follows:—

197 parts of fine cast-iron borings.
1 part flowers of sulphur.
2 parts sal ammoniac.

Mixed as before mentioned.

To ensure the tightness of the joints of stoneware pipes, they should be caulked with spun yarn or hemp, and the remainder of the socket filled, and backed with a substantial fillet of Portland cement or an even mixture of the best Portland cement and clean sharp sand. The cement and sand should be thoroughly mixed dry, and then wetted only as required. No lime should ever be used in this mixture, nor should any cement be used which has begun to set.

There are numerous patented joints for stoneware pipes, but these are seldom used for the drainage of houses, unless under specially difficult conditions, such as water in trenches, or when the laying is affected by the influence of tides, &c.

The following brief description of some of the more

popular of these joints will be a sufficient explanation here.

Doulton's self-adjusting joint (fig. 4) is formed by the contact of two bands of composition cast one on the spigot and the other in the socket of the pipe. That on the spigot is of *spherical* form and therefore admits of deflection (on the same principle as a ball and socket joint). The lining in the socket is *cylindrical*, *i.e.*, of the same diameter throughout its depth. A partial withdrawal of the spigot therefore does not impair the joint.

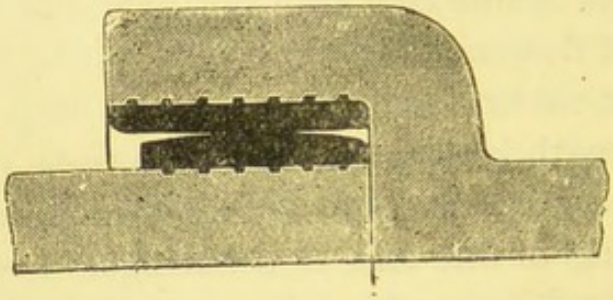


FIG. 4.—Section of Doulton's self-adjusting joint.

The composition of which the joint is made is unaffected by contact with either acids or alkalies, and for this reason is largely used in chemical works in the construction of apparatus required to withstand the action of corrosive liquids.

In jointing these pipes the socket and spigot should be wiped clean. The lubricant (supplied with the pipes) should be slightly warmed and applied evenly with a brush inside the socket of the pipe already laid and round the spigot of the following pipe. Press the pipe home and the joint is complete.

The patent composite joint (fig. 5) also manufactured by the above firm, consists of the original self-adjusting joint attached to pipes with sockets of extra depth. The outer portion of the socket is left free from the bituminous lining, and provision is thus made for the addition of a

Portland cement joint. Double security against leakage is thus attained.

The composition joint, *besides being in itself water-tight*, accurately centres the pipes one with another, and maintains them firmly in position while the cement joint is being made. At the same time, by reason of its spherical form, it allows of adjustment in laying. The possibility of cement entering the pipes and so causing obstructions—which is not unfrequently the case with cement joints

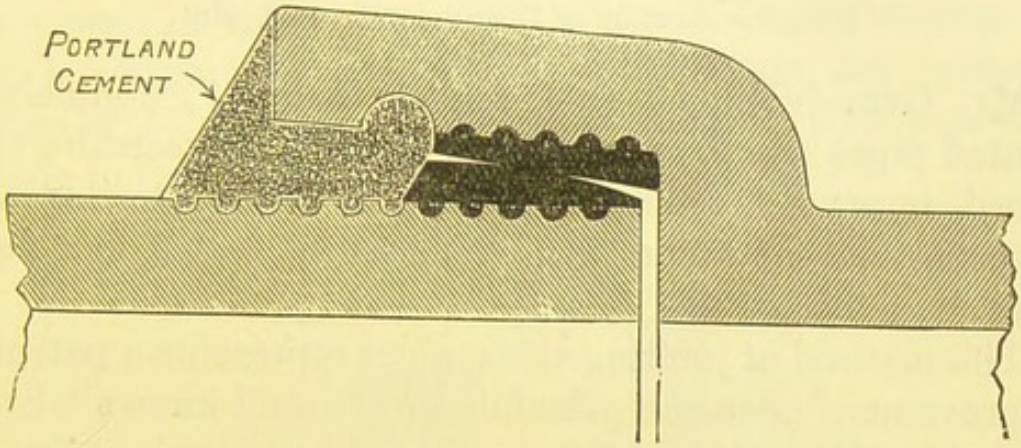


FIG. 5.—Section of Doulton's composite joint.

made in the usual way—is also avoided. The construction of the drain can be rapidly proceeded with, as the cement fillet can be added by separate workmen without hindering the laying of the pipes.

This joint may be regarded as affording exceptional strength and security.

The advantages claimed for the double-seal jointed pipes (fig. 6), manufactured by Messrs. Joseph Cliff & Son, are:—

1. A rigidity equal to that of the ordinary cemented joint is obtained, in conjunction with concentric fitting of the pipes and capability of being quickly laid, tested, and covered in, secured by the Stanford joint.

2. Obstructions caused by cement being squeezed up inside the pipe are avoided.

3. Pipes can at any time be removed by chipping away the portion of the socket containing the cement, at the same time leaving the Stanford joint uninjured.

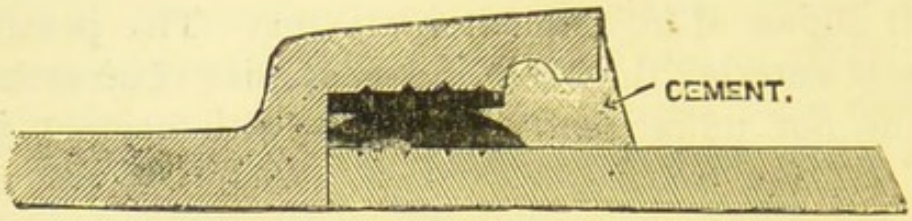


FIG. 6.—Section of Cliff's double-seal joint.

Mr. Geo. Jennings' ("Tyndale's patent") double-seal jointed pipes which are made of selected Dorsetshire clay afford improved facilities for quick laying, testing and covering in, combined with a perfectly sealed and rigid joint.

The method of jointing these pipes represents a patented improvement upon the principle of the well-known "Stanford joint," in the addition of a deeper and under-cut socket, so that after the pipes have been laid and tested the additional security of a fillet of cement may be added, for the purpose of ensuring a more perfect and permanent connection. The concentric fitting of the "Stanford joint" also prevents any possibility of obstruction whilst jointing, due to a frill of cement being squeezed up inside the pipes through the socket.

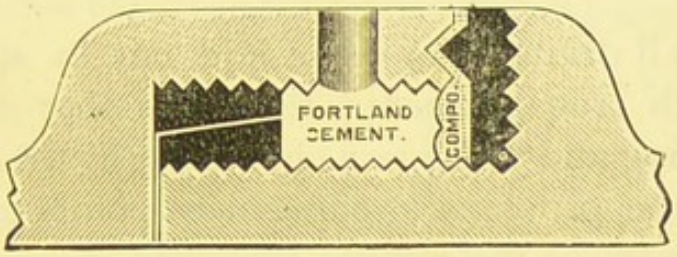
Hassall's invention may be described as follows:—

The pipes have two bands of bituminous material cast on to the spigot end of the pipe about 1½ inches apart, and corresponding rings of the same mixture are cast inside the pipe socket, also 1½ inches apart. These sets of rings, when the pipes are together, form an annular space round the joint of the pipe, which is filled, through a hole provided for the purpose, with liquid cement, which travels round the pipe.

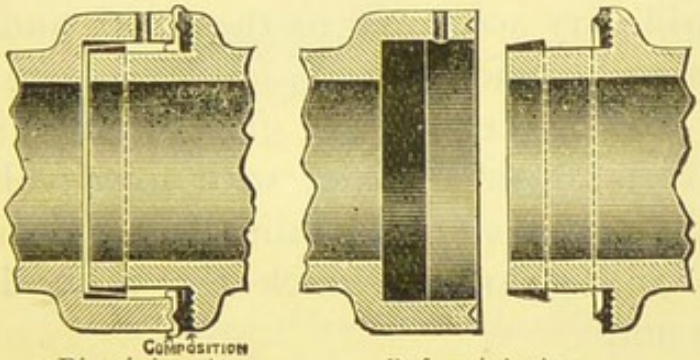
The air and water-tight joint, patented by a Mr. Archer, is formed by an annular space between the spigot and socket of the pipe, into which liquid cement is poured through a hole in the socket. A second hole in the collar, close to that in which the cement is run, allows the escape of air driven out by the cement.

It is necessary that these holes should be laid upwards. Clay is placed on the end of the spigot to prevent the cement from entering the pipe.

Patent Paragon pipes are made eccentric to the pipe (instead of concentric), so that when laid the spigot of the pipe rests on the socket which gives it a firm bearing and the lower part is made thicker and stronger, and is deeply grooved to hold the jointing material. The pipes are made in three forms, varying in depth of socket.



Enlarged section (jointed).



Pipe jointed. Before jointing.

FIG. 7.—Sykes' patented joint.

Sykes' patented joint (fig. 7). This joint is made by placing a thin fillet of grease on the black composition in

the socket, care being taken that it is uniformly placed round; a similar fillet of clay is placed on the rim, but it will require more clay than grease. The clay must be well worked so as not to be too stiff. The pipes having been thus prepared, they can be pushed home, great care being exercised in seeing that the pipe is thoroughly home, and that the clay is compressed.

The joint is made by pouring thick liquid cement grout into the holes provided; a small piece of clay should be placed between the two holes to prevent the grout going down both sides at once. By pouring the grout in one hole and rising up the other side will indicate that the grout has completed the circuit and the joint properly made. A cup made of clay can be advantageously used for directing the grout into the hole.

General observation on the carrying out of drainage work:—

1. That all drains should be laid out in straight lines (fig. 3) with true gradients from chamber to chamber. Disconnecting and inspection chambers (figs. 8, 9, 10, 11 and 12) should be provided at convenient points of the system in order to receive the various branches.

The dimensions of the inspection and intercepting chambers will vary according to the depth and number of connections to be made thereto, but chambers say 2 feet by 3 feet, having cement or glazed brick sides, open channel inverts, fresh air inlet with mica valve (fig. 13) and air-tight cover, afford facilities for inspection, testing, ventilation and cleaning, which the method shown in fig. 14 does not.

No system of drains can be considered complete which is not furnished with one or more manholes or chambers constructed for the purpose of receiving the various branch drains of the premises to be drained, and affording a ready means of access for examination, and testing of the main

drain and its branches, and of removing any stoppage which may occur in the same, without the necessity of opening up the ground, or disturbing the drains in the

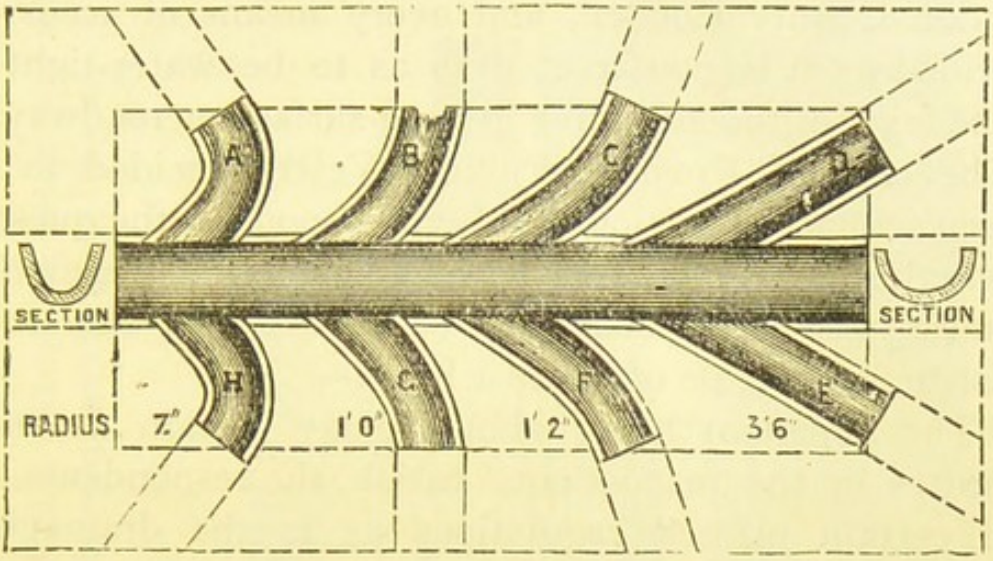


FIG. 8.—Plan of a disconnecting or inspection chamber, showing the method of arranging the various branch pipes.

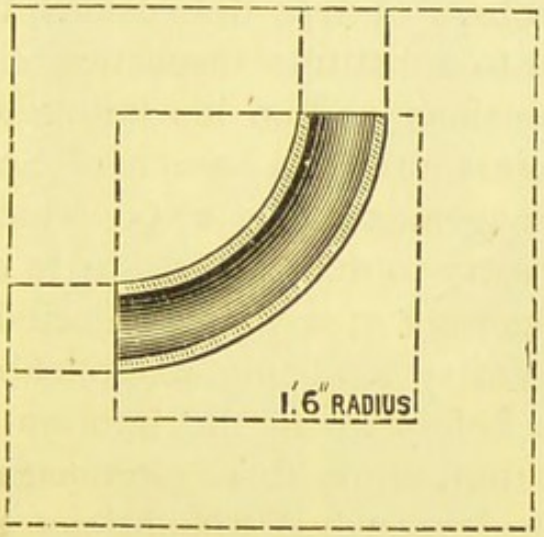


FIG. 9.—Plan of inspection chamber.

least. Stoppages in drains usually occur at the junctions, whether they be square or oblique, and when once broken into, there is no guarantee that the repairs will be efficiently executed, hence the nuisance recurs and the work is

required to be done over again, with additional worry and expense to the owner.

Manholes or means of access to drains are made compulsory in the Metropolis, under the by-laws of the London County Council, and every means of access so provided must be constructed so as to be water-tight up to the level of the adjoining ground-surface or roadway.

The case of Frost *v.* Fulham Vestry decided in the Queen's Bench Division on May 21, 1900, on the question of whether the Vestry had power to enforce its regulations requiring inspection chambers of a particular size to be constructed, will be of interest here:—

"The appellant being about to lay certain drains to premises in the respondents' parish, the respondents sent him certain printed regulations as to the drainage of buildings drawn up by them, which required, among other things, that inspection chambers of drains should be of certain dimensions. The appellant having constructed inspection chambers of less dimensions, the respondents gave him notice to substitute inspection chambers of the prescribed dimensions, and on his failing to do so, laid an information against him for a breach of Section 76 of the Metropolis Management Act, 1855, which empowers a Metropolitan Vestry to make orders as to drainage works. The appellant had not at any time objected to the requirements of the Vestry as being inapplicable in his case. The magistrate before whom the information was heard, found as a fact that, under these circumstances, inspection chambers of the prescribed dimensions appeared to the Vestry requisite to secure the safe and proper working of the appellant's drains, and convicted the appellant.

"It was held on a case stated by the magistrate, that although the Vestry in making orders under Section 76 of the Metropolis Management Act, 1855, must exercise their discretion in each case, the magistrate had found,

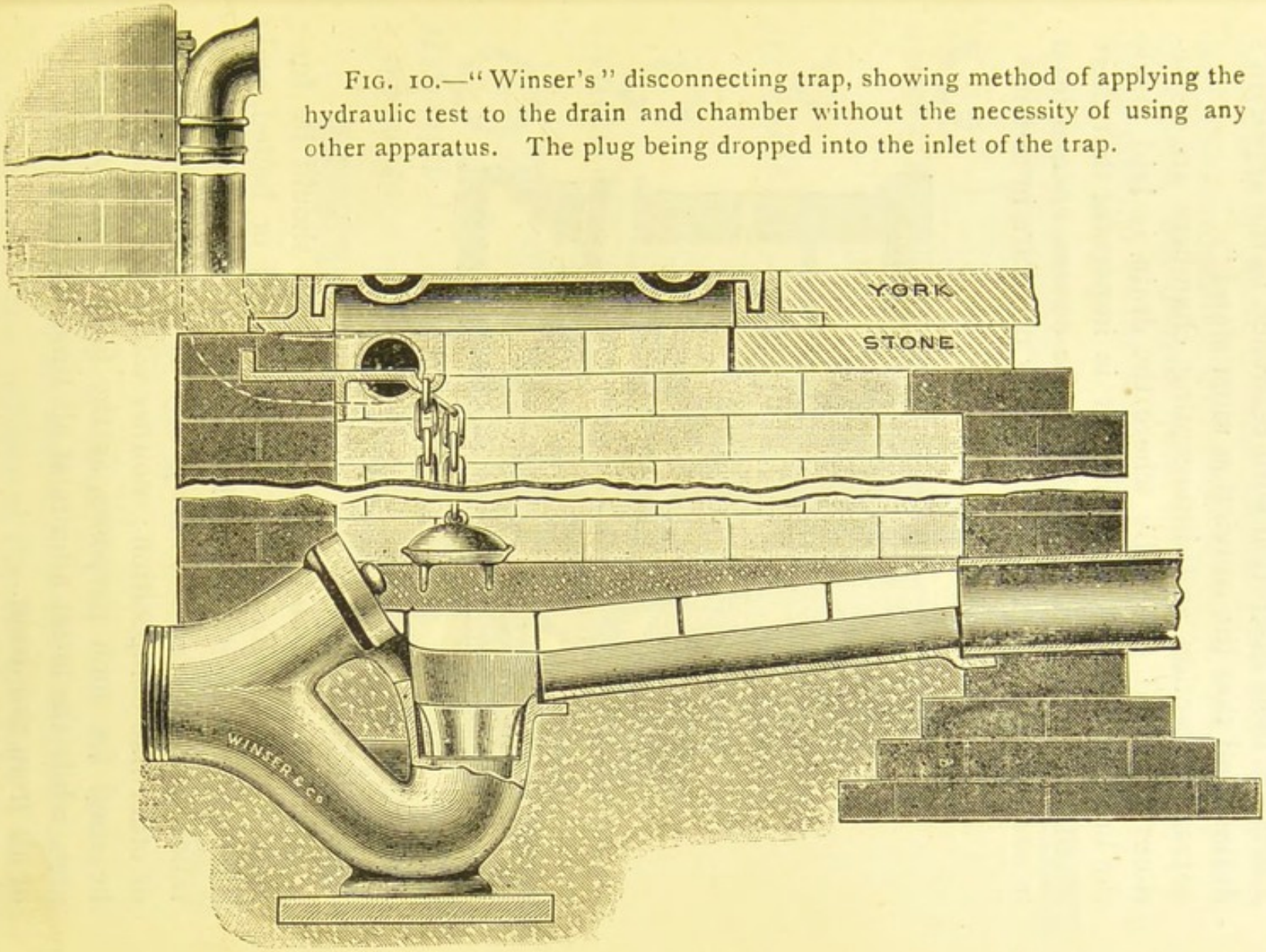


FIG. 10.—"Winser's" disconnecting trap, showing method of applying the hydraulic test to the drain and chamber without the necessity of using any other apparatus. The plug being dropped into the inlet of the trap.

and was justified in finding, as a fact, that the Vestry had exercised their discretion with reference to the appellant's drains, and that the conviction must stand."

Iron inspection and intercepting chambers are sometimes provided, especially where the drain is laid inside the building, but in such cases it is important that there should be an inspection made of the covers, once at least in each year, to see that the working parts are in order.

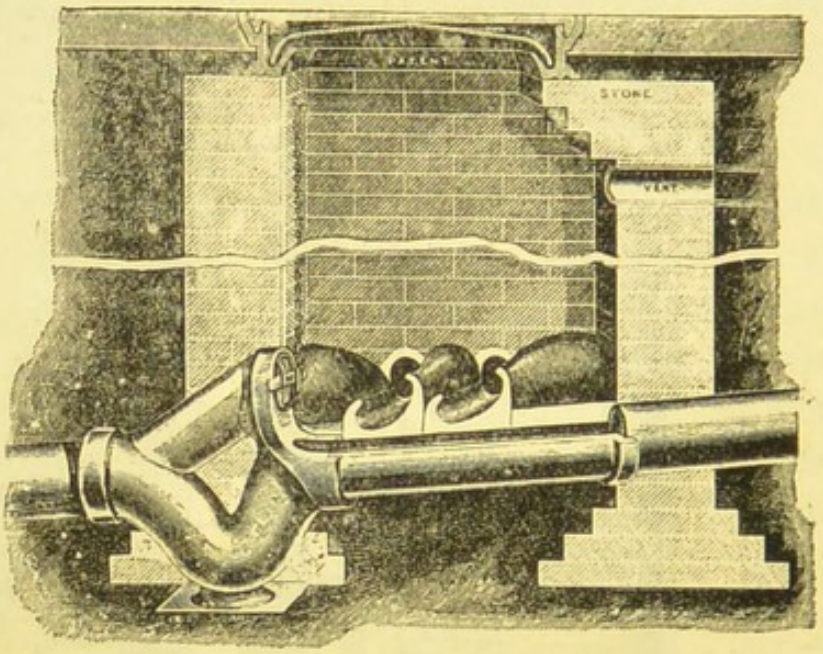


FIG. 11.—Jones' intercepter trap, with lever stopper in cleaning eye.

Every manhole and inspection chamber should be furnished with a suitable iron cover, grooved or bolted, and afterwards hermetically sealed by means of a mixture of tallow and linseed oil, cart-grease or "Winser's" plastic or other like composition; neither water nor sand should be used for such purposes, as the former readily evaporates, while the latter admits at all times of a free passage of air from the drain.

Manholes and chambers built inside buildings should be provided with special double-sealed or counter-sunk

covers (figs. 15 and 16). The cavity of the latter form of cover can be filled in with paving that will harmonise with the surrounding floor surface and at the same time overcomes the danger from slipping and prevents the noise peculiar to the ordinary cover.

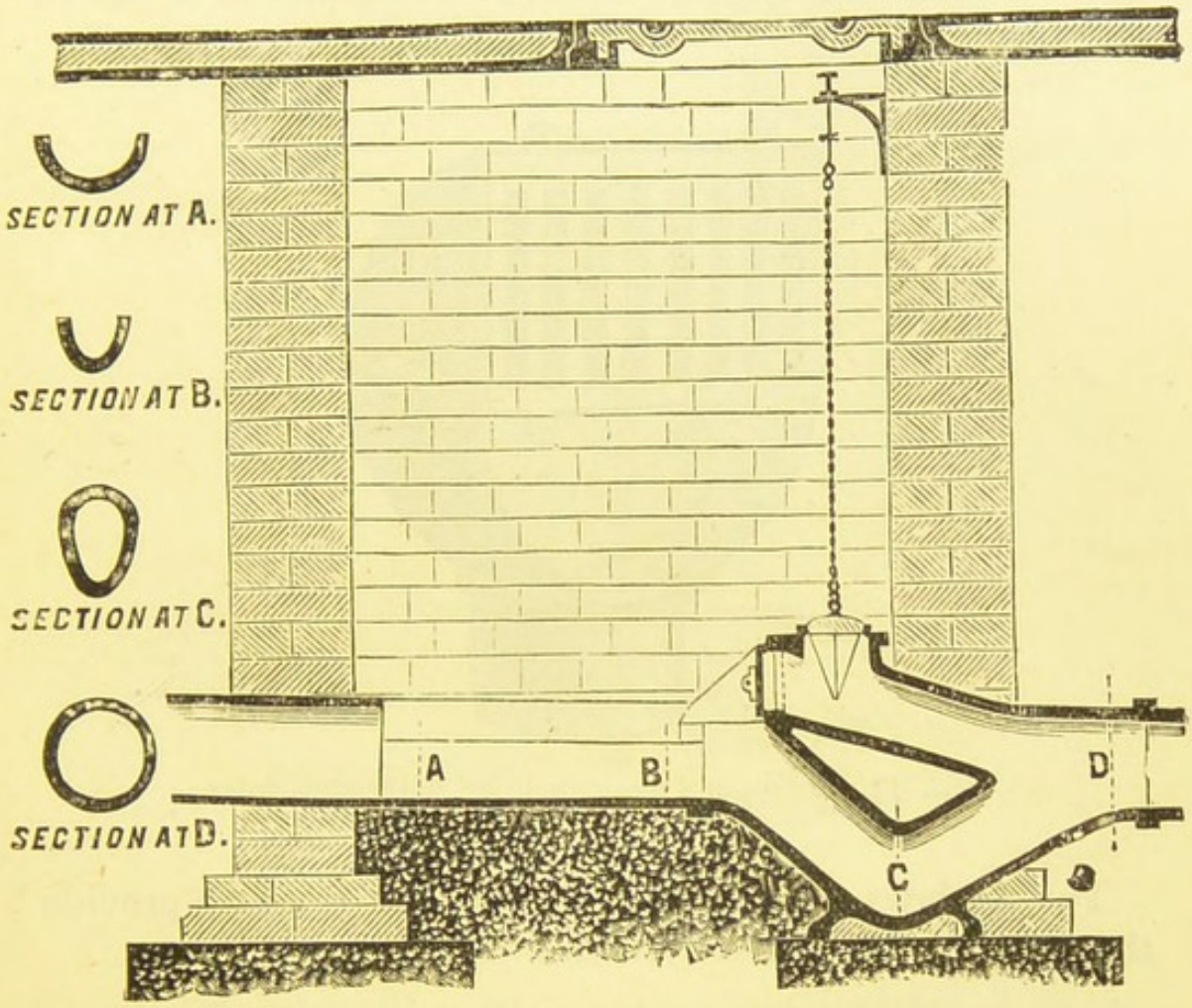


FIG. 12.—Crapper's improved "Kenon" trap.

Specially adapted for deep chambers, as should the trap become temporarily stopped the contents of the chamber may be discharged by raising the valve on the clearing arm.

2. The connection of house drains with the sewer or branch pipes of a drain should be made with great care so as to permit of the delivery of the sewage (figs. 8 and 9) in such a manner as not to impede the sewage in its flow. Square or T junctions must not be used for this purpose,

and it is important that pipes of equal diameter should not join with level inverts; larger pipes should not join on to smaller, but, when diminishing is necessary, the smaller pipes should join pipes of greater diameter by means of suitable taper pipes as illustrated in figs. 17 and 18, otherwise defects similar to those shown in fig. 19 will result.

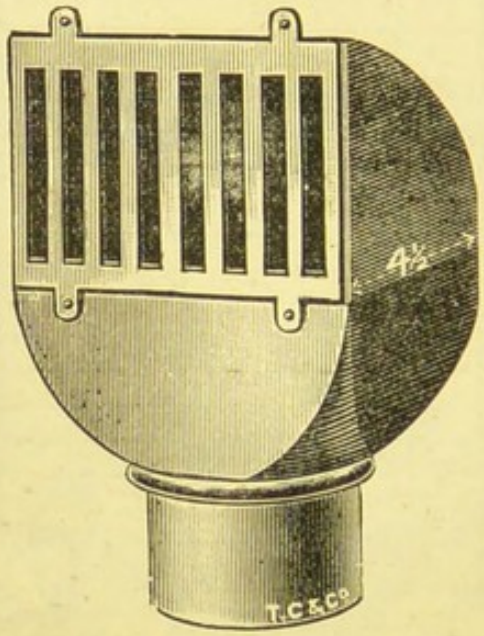


FIG. 13.—Crapper's fresh air inlet, with mica valve.

The by-laws of the London County Council provide that :—

A person who shall erect a new building shall not construct the several drains of such building communicating with a sewer in such a manner as to form in such drains any right-angled junction, either vertical or horizontal. He shall cause every such branch drain or tributary drain to join another drain obliquely in the direction of the flow of such drain and as near as practicable to the invert thereof.

3. Drains should not pass direct from the sewers to the inside of houses. All drains should end outside the house, but when from absolute necessity the drain must be laid through the house, stoneware pipes should have an effec-

tual joint of Portland cement and be bedded in and around with concrete at least 6 inches in thickness, while iron drain pipes should be jointed with molten lead, well caulked with spun yard or gaskin, and be supported on brick piers or concrete. Drains should be ventilated their

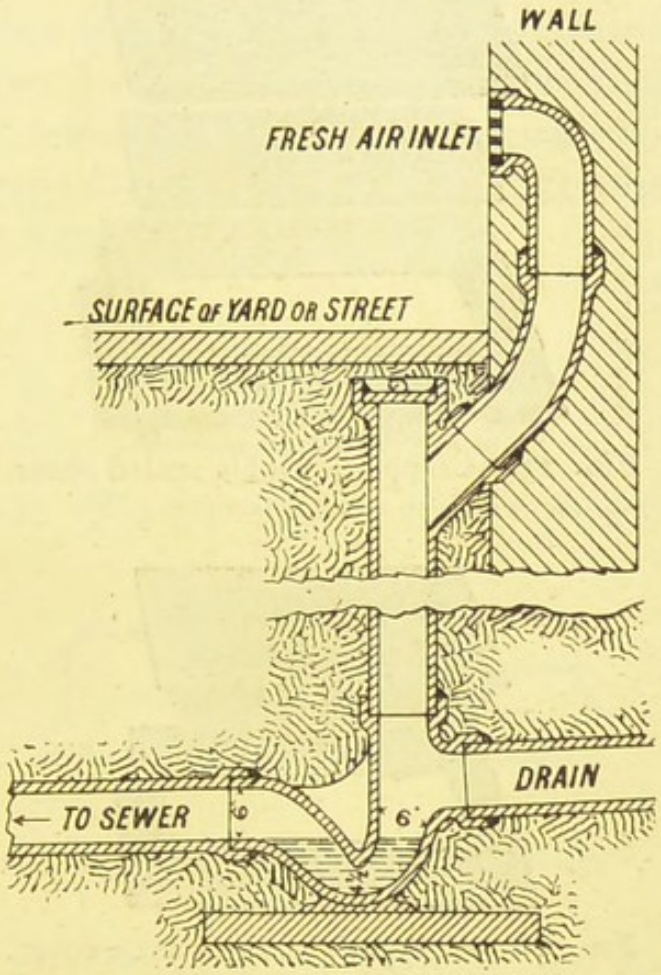


FIG. 14.—Illustration of a simple and less costly method of disconnecting drains.

whole sectional diameter, back and front, outside the house.

4. The Local Government Board (Model By-laws) and the By-laws of the London County Council provide that there shall be on the line of each drain, "*two untrapped openings*," one opening being on the house side of the disconnecting trap, and the second at the summit of the

drain, that is, the soil pipe, if there be one, or where there is no soil pipe, then by an independent ventilating shaft connected to the summit of the drain and carried above the house roof to a safe outlet for foul air.

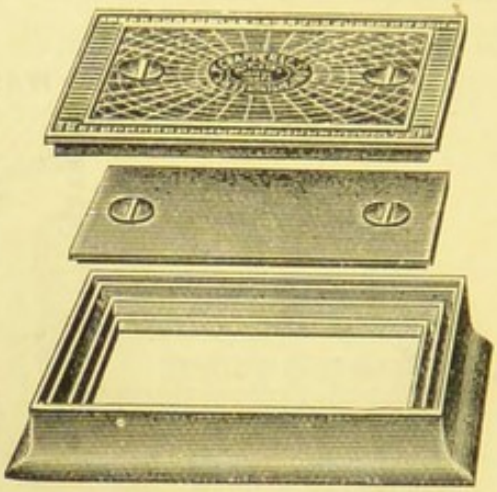


FIG. 15.—Crapper's double sealed cover.

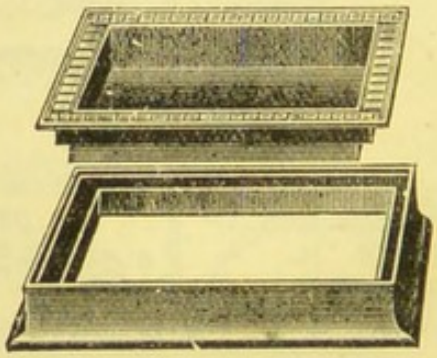


FIG. 16.—Crapper's counter sunk cover.

5. Where drains pass through or under walls, whether laid inside or outside the building, a relieving arch, flag-stone or iron support, should be provided to prevent fracture, through settlement of the building or other like cause.

6. The gradient of a drain must be regulated according to the depth of the sewer to be entered, the length of the drain to be laid, and the depth of the lowest floor level of the premises to be drained. The inclination, however,

should not be greater than 1 in 40 or 3 inches in 10 feet, nor less than 1 in 60 or 3 inches in 15 feet, as a drain which is laid with too great a fall, allows the water to flow away too rapidly, leaving the solids behind. The highest point of the drain-pipes when laid, should be at least two feet below the surface of the ground.

In December of 1901 the Hampstead Borough Council summoned the owner of certain premises in their district for allowing defective drains to exist, and for neglecting to obey drainage By-law No. 4, made under the Metropolis Management Act, 1855.

FIG. 17.—The ordinary taper or diminishing pipe.

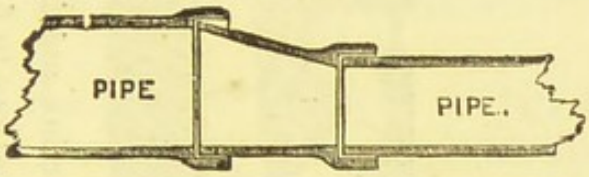


FIG. 18.—Winser's improved taper pipe.

The case for the Borough Council was that in consequence of an intimation from the defendant that certain sanitary work was to be carried out, the Council's Inspector visited the premises. He found that only a portion of the drain was being relaid, leaving a very defective portion untouched, and that the new portion close to the point of junction with one of the manholes had a vertical fall of five feet. In the opinion of the Inspector, as well as that of the Borough Medical Officer and the Engineer and Surveyor, this did not constitute a "suitable fall" within the meaning of the by-law, and was, moreover, likely to result

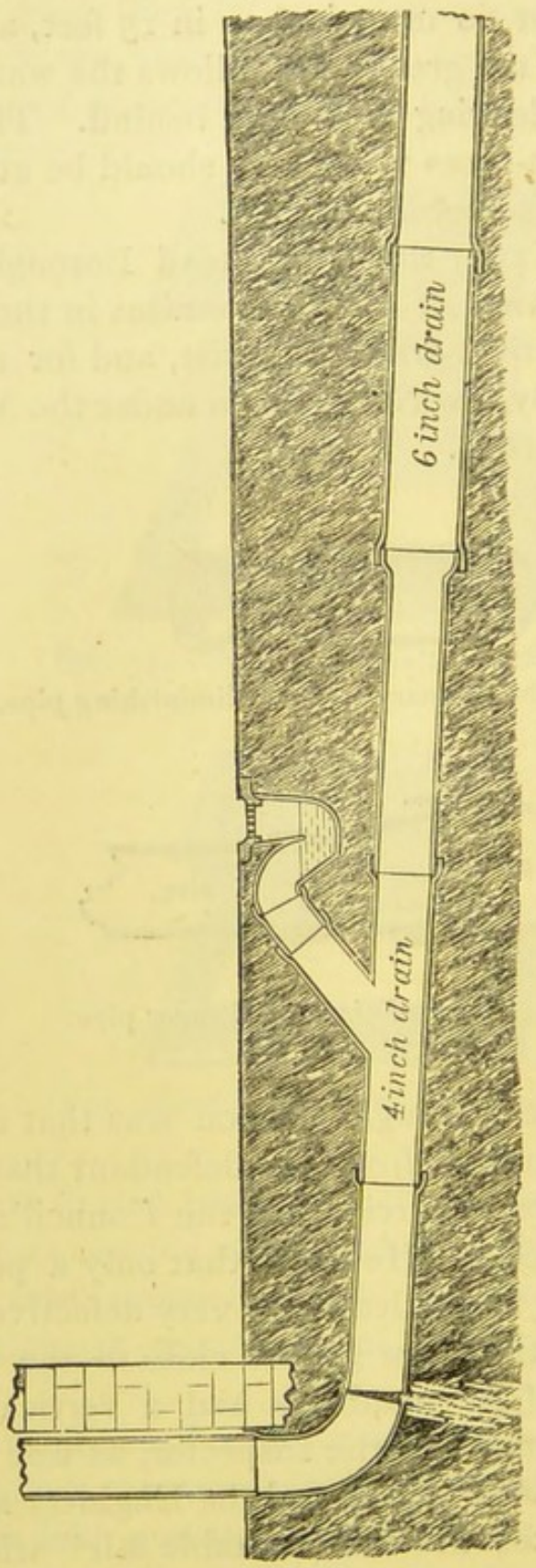


FIG. 19.—Showing defects in the connection and diminishing of drain-pipes, with gully trap connected to drain contrary to flow of stream (Parkes).

in a nuisance by reason of the splashing that would occur in the manhole and the probable blockage. The by-law, it was urged, intended that the drain should be an even gradient, and the only reason suggested for it not being carried out in this instance was the matter of expense. It was contended in defence that the vertical fall was similar to that which obtained in the case of flats, that no such nuisance as had been suggested would arise, and that it was a needless expense for the defendant to relay the untouched portion of the drain, seeing that it was outside the house and at least nine feet below the ground, so that no sewer gas could possibly percolate into the air.

Mr. Curtis-Bennett said he did not agree with the defence that the fall was suitable. In his opinion the whole thing was defective, and had been badly done. It would, therefore, have to be taken up, and done again within a month, and he should grant the Council three guineas costs. He also refused an application to state a case.

To ascertain the proper gradient or fall for drains of various diameters, to be self-cleansing, the diameter of the drain in inches, should be multiplied by 10, and this will give the required gradient, thus : —

Diameter of Pipe and Length of Drain.	Gradient.	Discharge in galls. per minute.
4 in. × 10 = 40 feet.	1 ft. in 40 ft.	140
6 ,, × 10 = 60 ,,	1 ,, 60 ,,	320
9 ,, × 10 = 90 ,,	1 ,, 90 ,,	750

The table of velocity and discharge in circular sewers and drains, when running full, at various rates of inclination, on p. 164, will prove useful.

TABLE OF VELOCITY AND DISCHARGE IN CIRCULAR DRAINS AND SEWERS.

Velocity in Feet per Minute.						Discharge in Cubic Feet per Minute.					
Gradient.	Pipes 4 inches Diameter.	Pipes 5 inches Diameter.	Pipes 6 inches Diameter.	Pipes 9 inches Diameter.	Pipes 12 inches Diameter.	Gradient.	Pipes 4 inches Diameter.	Pipes 5 inches Diameter.	Pipes 6 inches Diameter.	Pipes 9 inches Diameter.	Pipes 12 inches Diameter.
1 in 30	259	301	340	445	539	1 in 30	22·6	41·1	66·7	197	423
1 ,, 35	240	278	314	412	499	1 ,, 35	20·9	38·0	61·7	182	392
1 ,, 40	224	260	294	385	467	1 ,, 40	19·6	35·6	57·7	170	367
1 ,, 45	212	246	277	363	440	1 ,, 45	18·5	33·5	54·4	161	346
1 ,, 50	201	233	263	345	418	1 ,, 50	17·5	31·8	51·6	152	328
1 ,, 55	191	222	251	329	398	1 ,, 55	16·7	30·3	49·2	145	313
1 ,, 66	183	213	240	315	381	1 ,, 60	16·0	29·0	47·1	139	229
1 ,, 65	176	204	231	302	366	1 ,, 65	15·4	27·9	45·3	134	288
1 ,, 70	170	197	222	291	353	1 ,, 70	14·8	26·9	43·7	129	277
1 ,, 75	164	190	215	281	341	1 ,, 75	14·3	26·0	42·2	124	268
1 ,, 80	159	184	208	272	330	1 ,, 80	13·9	25·1	40·8	120	259
1 ,, 85	154	179	202	264	320	1 ,, 85	13·4	24·4	39·6	117	252
1 ,, 90	150	174	196	257	311	1 ,, 90	13·1	23·7	38·5	114	244

It sometimes happens that the gradient obtainable for a drain is not sufficient, or in other words the velocity of flow, owing to the flat state of the drain, is insufficient to prevent deposit of sedimentary matter in the system of drains. Hence it becomes important that arrangements should be made for flushing the drains in order to keep

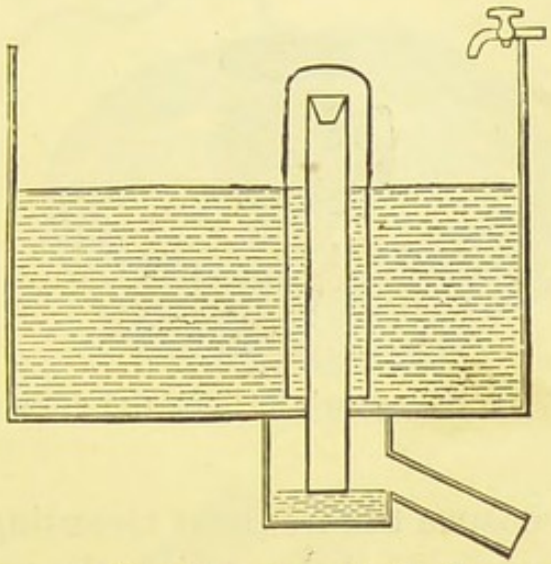


FIG. 20.—Field's automatic flushing tank.

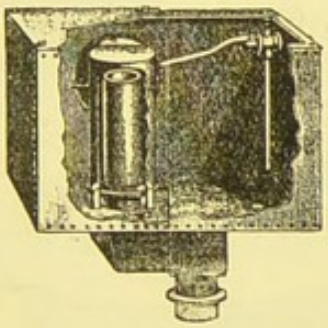


FIG. 21.—Crapper's automatic flushing tank.

them thoroughly cleansed, and in efficient working order. For flushing the drains, a tank or cistern (similar to figs. 20 and 21) is usually provided, the contents being automatically discharged into the drain.

The capacity of the flushing tank or cistern will vary according to the length and diameter of the drain to be

flushed, but generally speaking a tank having the capacity of 30 to 50 gallons of water, and discharged with great rapidity once or twice in every twenty-four hours, will serve to keep the drains satisfactorily cleansed. It is equally important to provide flushing tanks, in connection with flushing-rim gully traps (fig. 22) in large houses or

FIG. 22.—Crapper's flushing rim gully trap.

institutions, to ensure the frequent cleansing of the gullies into which grease is discharged from the scullery sinks, as the old form of grease trap is most objectionable, especially when fixed inside the building, while the retention of large quantities of offensive matter is likely to cause a serious nuisance.

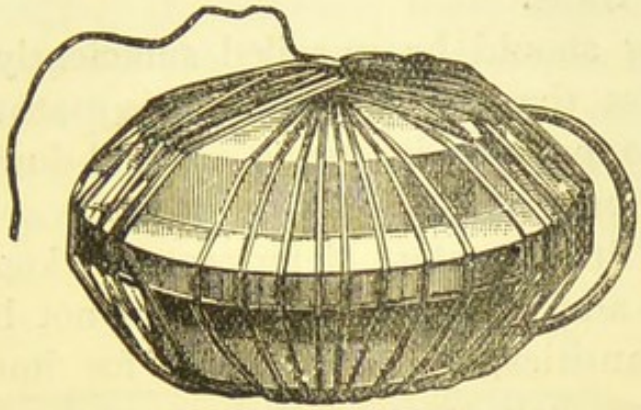
DRAIN TESTING.

All new drains should be tested before being covered, and old drains will frequently require to be tested on the complaint of a nuisance.

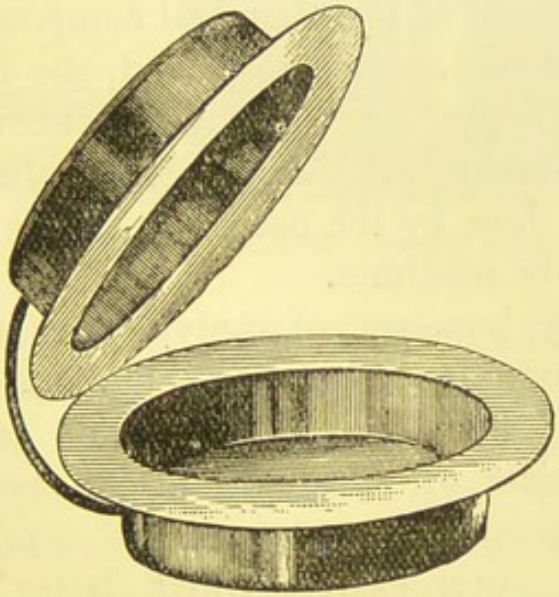
The testing of drains can be carried out by one of the following alternative methods, and each test may of itself give satisfactory results.

The tests are usually of four kinds :—

1. The chemical olfactory, or scent test.
2. The smoke test.
3. The hydraulic or water test.
4. The pneumatic or air test.



Closed, ready for use.



Open, been used.

FIG. 23.—Kingzett's drain tester.

The first of these tests may be carried out by means of Kingzett's (Sanitas Co.) testers, illustrated by (fig. 23), they consist of containers, are sealed and packed with chemicals, and on being flushed through the traps of

a w.c. or gully the containers open, the water then reacts upon the chemical substance thus ejected from it, and the strong smelling smoke which is given off, will enable the inspector to ascertain and localise the defects. In about a quarter of an hour the test will be completed and then the string and its attachments may be withdrawn from the w.c. or gully traps.

The string should be uncoiled sufficiently to allow the tester to pass the trap, moreover it is essential to tie up the string to prevent its being washed down the drain. Hot water should be used, if obtainable.

As these drain testers deteriorate if kept for a few months, it is advisable that they should not be purchased in large quantities, unless required for immediate use, or the testing may prove a failure, and so have to be repeated.

Should the smell of the chemical compounds contained in the drain tester not be perceived, the inspector must not take it for granted that the drain or fittings are sound but he may probably with advantage use the smoke test.

This may be done by the use of a smoke rocket or by means of a smoke machine.

The best way, however, of applying the smoke test is to use a smoke machine, similar to fig. 24, as the smoke generated can thus be applied under pressure. The apparatus consists of a double action bellows covered with specially prepared leather, and a copper cylinder or vessel with an outer casing, which latter is filled with water. In this casing a cover or float is placed, which rises and falls with the action of the bellows. The hose must be connected to the drain or pipe to be tested, and all openings, such as ventilating pipes, plugged. The smoke is produced from specially prepared material, which is placed in the copper cylinder and afterwards lighted; it is necessary to occasionally examine the cylinder to see

whether the smoke material is alight and producing sufficient smoke to carry on the test.

When the inspector has ascertained that the smoke is circulating through the drain, he should make a thorough examination of the house and its surroundings to discover any trace of smoke that may be escaping from the drain or sanitary fittings. If, however, there should be no disconnecting trap on the line of the drain, as it passes from the premises on its way to the sewer, it is sometimes difficult to get the smoke to show itself in the building, as the smoke is probably being blown into the sewer.

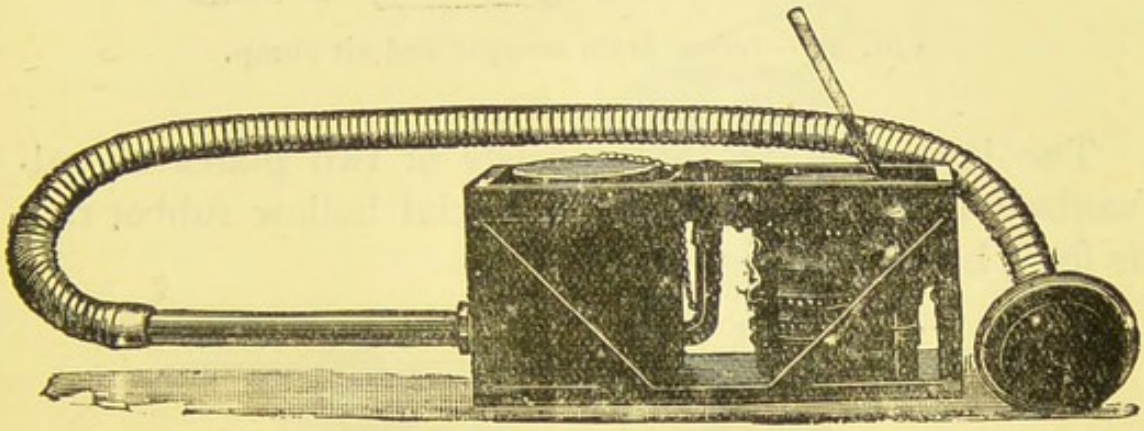


FIG. 24.—Burn Bros' "Eclipse" smoke testing machine.

If the inspector, as in the case of the scent test, finds no trace of the smoke in the house, he will not be justified in concluding that the drain is sound, but should apply the hydraulic or water test. This is done from the disconnecting chamber, should one be provided, or by opening up the ground at the lower end of the drain, exposing and removing one of the pipes and inserting a suitable plug or stopper (figs. 25 and 26) in the drain to be tested.

The stopper (fig. 25) consists of a cylindrical shaped bag; attached to the bag is 6 feet of flexible rubber tube, with a tap at the end, connected to a small hand air pump. The bag is placed in the drain before inflation, and by working the pump it is quickly filled with air, under suffi-

cient pressure to dam the drain and prevent any escape of water. By turning the tap the inflated bag remains in that state as long as required; and when done with, the tap is opened, the air released and the bag withdrawn from the drain.

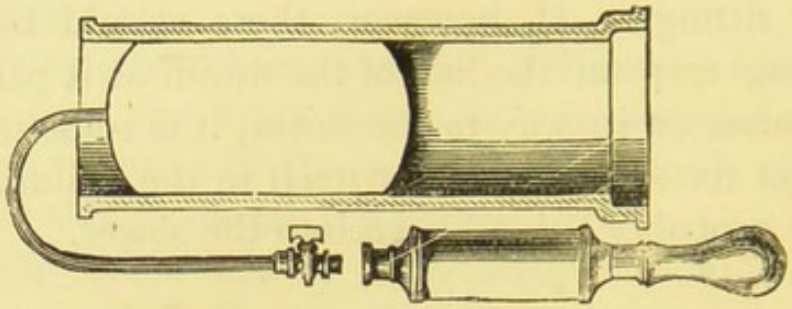


FIG. 25 —Jones' drain stopper and air pump.

The invention (fig. 26) consists of two plates of galvanized iron, between which a special hollow rubber ring is fixed by means of grooves.

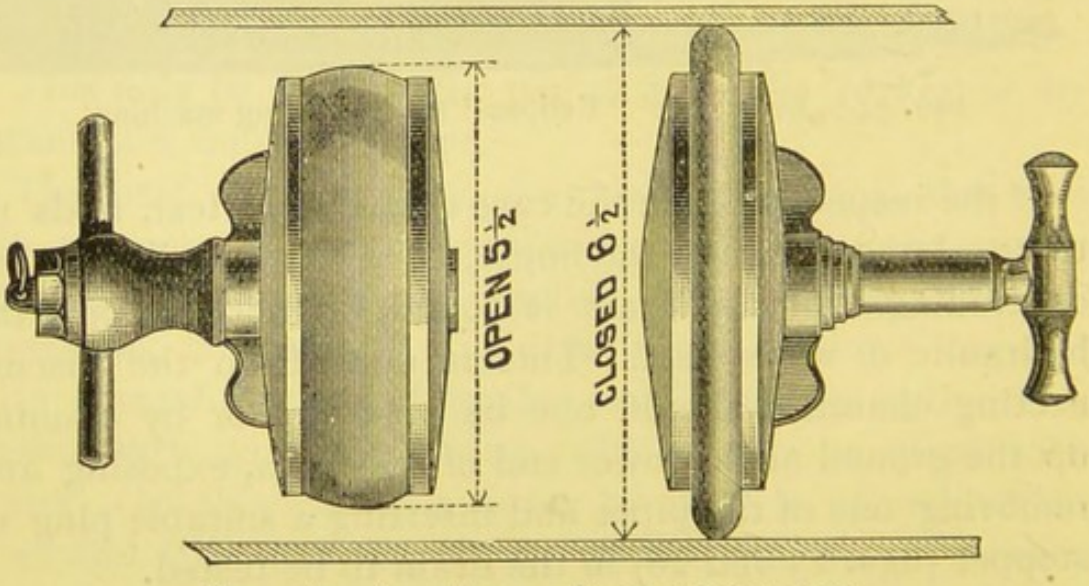


FIG. 26.—Jones' expanding screw stopper.

It is screwed up by a key which causes the rubber to expand outward to the extent of one inch, which is found sufficient to plug any pipe according to the size of the

stopper used. The centre outlet allows the water to be drawn off after testing.

After the stopper has been securely fixed, the drain should be filled with water to the height of 2 feet, at least, as provided in the drainage by-laws of the London County Council.

The patent testing apparatus (fig. 27) with centre outlets for air and water, is fitted with copper cylinder and gauge for registering the extent of any leakage or addition of water during the process of testing, is a most

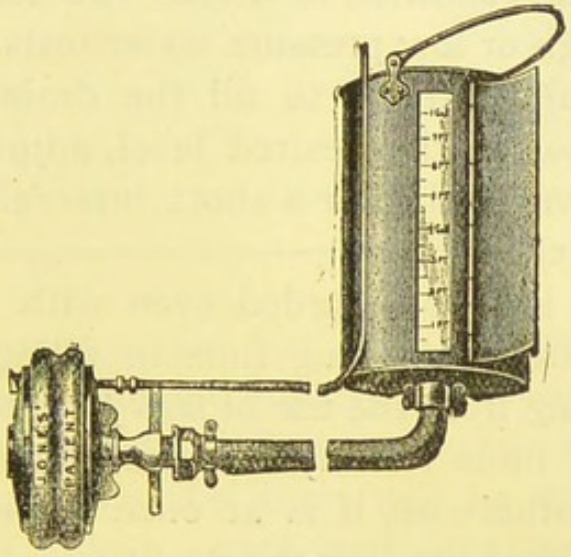


FIG. 27.—Jones' drain testing stopper, gauge and cylinder.

useful and convenient appliance, while it affords facility for applying an unlimited "head" of water for testing purposes by simply extending the tube.

A careful examination should then be made of each pipe, if exposed, to see that no water is escaping therefrom and that the joints are not sweating; the level of the water should be marked and the result awaited for say, thirty minutes to one hour, when—if there is no sign of the water falling, the inspector may conclude that the drain is water-tight.

The water test is the most reliable of all tests for drains and soil pipes, and, if carefully applied, it never deceives the operator. In first class work the soil pipes are frequently tested with water, all traps of water closets being sealed up with sheet lead soldered over the inlets of the traps, a small brass cock being fixed to allow the air in the pipes to escape as the water rises, each cock being closed as the water ascends.

The "Fios" self-recording testing apparatus, the invention of Mr. Frederick J. Gordon Smith, is an instrument which affords a simple and effective means for recording upon a chart, the condition of drains and sanitary fittings under either high or low pressure water tests.

All that is necessary is to fill the drain, chamber, or fitting with water to the desired level, adjust the instrument to that level and after a short interval read off the result from the chart.

The slightest leak is recorded even with a *low pressure* hydraulic test, thereby saving time in filling and the risk of damage arising from the use of *high pressure*.

If any water finds its way into the section under test, by accident or otherwise, it is at once recorded and may be allowed for when reading the result.

The instrument consists mainly of two parts, a revolving drum carrying a chart, and a float; attached to the latter is a pen which by an arrangement of levers follows the rise and fall of the surface of the water; the combination of these two movements (the revolving drum and the motion of the pen) develops a continuous line upon a specially designed chart, showing the result of the test at any point in the course of its duration, indicating the loss or addition of water in decimal parts of a gallon per foot super of the water exposed.

The clockwork causing the drum to revolve once an hour is of simple and strong construction, and of the one-

day type. A check is provided to stop the clock when the instrument is not in use.

When a record is required to extend over a longer period, a slight alteration can be made which reduces the speed of the drum to one revolution in twelve hours.

Cement joints of a drain should be allowed to stand for at least 24 hours before the water test is applied.

The following table shows how much water is required, per foot run of pipe, for filling the drain :—

Diameter of Pipe in inches.	Contents per Lineal foot in gallons.
4	0·54
5	0·85
6	1·22
9	2·75

The pneumatic or air test may be carried out by the aid of the smoke machine already described.

A few strokes of the bellows will raise the float, and if it remains stationary the drain will be proved tight. If the float falls a leak exists, and may be traced by the smoke test, or the use of a gauge will indicate the extent of the leakage.

A great advantage in using this machine is that the operator can ascertain whether the drain is tight or not, without leaving the apparatus. I cannot recommend this test in preference to the water test, either as to efficiency or its general application.

Difficulties frequently arise from complaints as to nuisances, from the leakage of water or sewage into premises and in tracing the course of drains. The inspector will be saved much trouble, time and expense by the use of *fluorescein* for such purposes.

Fluorescein is a dark red crystallin compound, and its alkaline solution possesses a bright green fluorescence which is so intense that 1 part dissolved in alkali and diluted with 2,000,000 parts of water, still shows a fluorescence. This property has been made use of in determining the course of rivers.

The compound may be obtained from a local chemist, but it is necessary to point out that only *fluorescein* which will readily dissolve in water, the instant it is added, should be used. If it floats on the surface of the water and requires stirring it is of no use to the operator.

WATER CLOSETS.

There is no doubt that many water closets still in use are extremely defective in the principle of construction, and instead of being a comfort and convenience are a positive nuisance, and often endanger the lives of persons exposed to their influence. Most of the complaints raised against the water carriage system have been directed solely against the water closet, as being a source of nuisance when introduced within a house. These complaints are in many instances well founded, but the remedy is not to abandon the water carriage system, but to correct the defects in the form of closet which have given rise to these complaints.

A water closet has been defined as "a room having a hopper flushed and discharged by means of water, also the hopper and trap."

The term sanitary convenience, given in Section 141 of the Public Health (London) Act, 1891, includes urinals, water closets, earth closets, privies, and any similar con-

veniences. This definition is taken from Section 11, Sub-section 3, of the Public Health Acts (Amendment) Act, 1890.

If a house within the district of local authority, appears to such authority, by the report of their inspector of nuisances, "to be without a sufficient water closet, earth closet or privy, and an ashpit furnished with proper doors and coverings," the local authority are directed, by Section 36 of the Public Health Act, 1875, to give notice to the owner or occupier of the house requiring him "to provide a sufficient water closet, earth closet or privy, and an ashpit furnished as aforesaid, or either of them, as the case may require. It was held that a local authority had power under this section, upon being satisfied that a house within their district was without a sufficient privy, to require the owner (subject to his right of appeal to the Local Government Board under Section 268) to provide a sufficient water closet in place of the existing privy, Nicholl *v.* Epping U. D. Council (1899) 1 Ch. 844.

A detailed description of the different kinds of water closets in use is unnecessary, while the names given to such appliances are legion. Suffice it to say, that the essential qualities of a good water closet are:—first, that it shall be inodorous; second, it must work efficiently with a minimum quantity of water; third, it should be simple in construction and not liable to get out of order.

A good water closet will allow all matters to be at once conveyed away, and will thus cease to have the power of producing evil, so far as the house is concerned. Those systems which conserve fæcal deposits within, or in close proximity to the house, such as the privy, pail, or earth closet, admit of the danger incurred in storing any dangerous matter, however carefully we may tend and guard against its evil effects.

The pan closet, a bad form of closet, which is still to be

met with, may be divided into four parts:—the basin, pan, *container* or *receiver*, and the trap, which is usually the old lead D-trap.

The container or receiver, being iron, and the trap from its form, are the parts which become foul, besides which, the space between the pan and the level of water in the trap is air-locked, and consequently, when the pan is lowered, the foul air, which the space in question contains, escapes under the nose of the person using the closet.

A pan closet has seldom, if ever, a proper and sufficient flush of water, and however much water is expended for this purpose, it cannot be effectually applied so as to rid the container and the trap of soil. The method adopted for supplying pan closets with water is often another point of objection to their use, inasmuch as the water is invariably drawn from the drinking water cistern by means of a spindle valve and service box, and is a source of water contamination.

Whenever the inspector finds a pan closet is not kept in a clean state, or has an insufficient flush of water, it will justify him in dealing with it as a nuisance and ordering its removal.

The model by-laws of the Local Government Board and the by-laws of the London County Council prohibit the fixing of pan closets and D-traps. A pan closet or D-trap taken down for the purpose of being cleaned or repaired would, if refixed, constitute a new closet, and the sanitary inspector should report this act as a breach of the regulations referred to.

Valve closets (fig. 28), although more expensive, are the best form of water closet apparatus for private houses and business premises, they hold a large body of water, and are not so liable to become a nuisance.

The advantages claimed for the valve closet are:—

1. The bottom valve affords ready and easy access.

2. By an arrangement in the rim of basin, the overflow is flushed each time the valve is lifted.

3. The basin has a square fitting slop top, in one piece of earthenware, and is suitable both for slops and urinary purposes.

4. The box is of cast iron, porcelain enamelled white

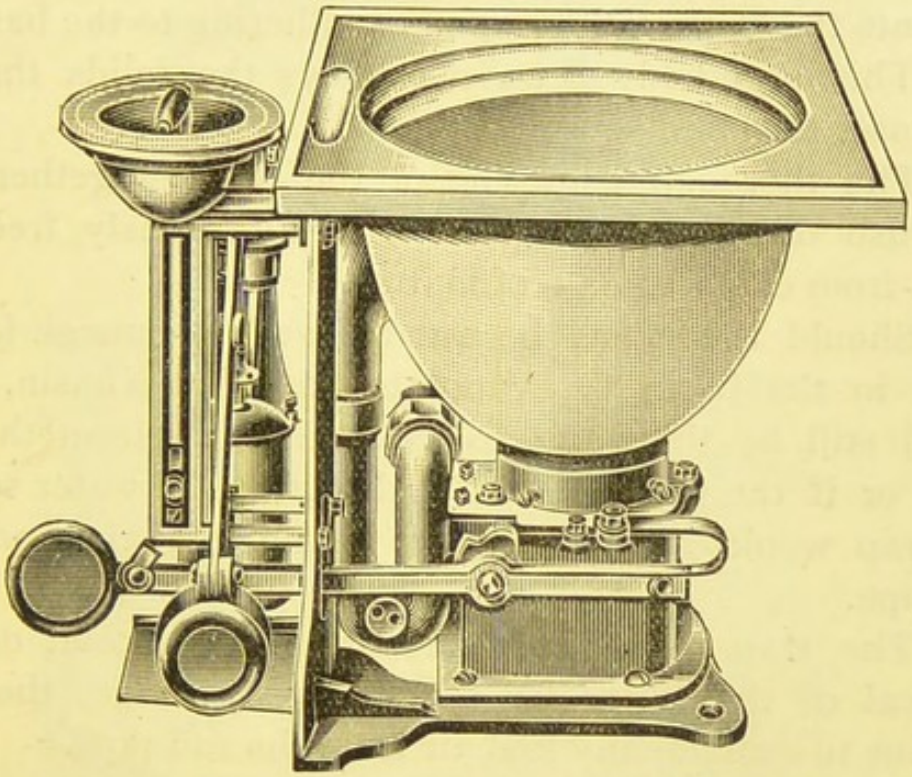


FIG. 28.—Bolding's "Ediros" valve closet.

inside, and is provided with an extra large overflow trap, ventilated at the top in such a manner that each time the closet is used a current of fresh air is drawn into box which effectually prevents syphonage and any accumulation of sewer gas.

5. The overflow being open at the top, and provided with a screw cap at bottom, every convenience is afforded in case of stoppage.

6. The pull is made to work between guides, having a parallel action, and is fitted with a porcelain dish.

7. The lever is provided with a spring which greatly reduces the strain in lifting.

8. The axle is fitted with a stuffing box and so prevents any possibility of leakage through the box.

Mr. S. S. Hellyer has summarised the advantages of valve closets, as follows:—

1. They have a large exposed surface of water, which prevents the fæces falling upon or adhering to the basin.

2. This large body of water conveys the solids through the closet trap and soil pipe.

3. The thorough emptying of the basin, together with the flush of water coming into it simultaneously, frees the closet from every vestige of matter.

4. Should the closet be out of use long enough for the water in the basin to evaporate out of the basin, there would still be the valve to exclude the air from the soil pipe, or if the valve should be defective the water seal of the trap would act as a barrier to the foul air from the soil pipe.

5. The trap being independent of the closet, on the removal of the latter for repairs or breakage, the trap remains to exclude any foul air from the soil pipe.

6. The trap being made of lead, its connection to the soil pipe by a wiped soldered joint is permanent and reliable.

The valve closet is often fixed in preference to any other form of closet, because its action is practically silent, and when the supply of water to the closet is furnished by valve and regulator apparatus attached to the closet, the flushing cistern can be dispensed with.

Bolding's patent "Laydas" syphon action closet is simple in construction and easily fixed, the only wiped joint being the one between the soil pipe and lead trap.

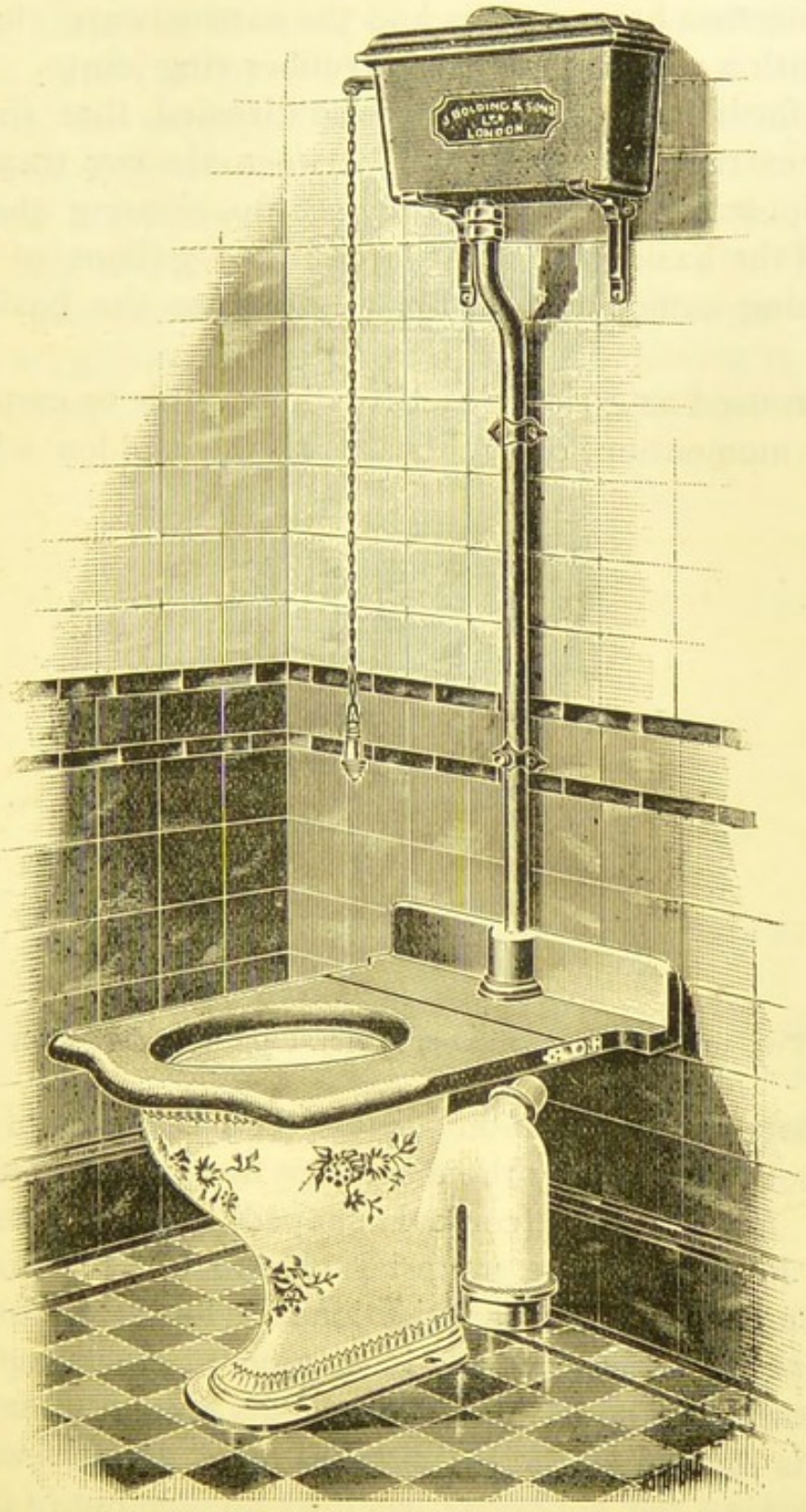


FIG. 29.—Bolding's "Kenon" pedestal closet, showing brass socket connection to S-trap, with flushing cistern, &c., complete.

The inlet of lead trap is provided with brass collar, and the connection between this and the earthenware closet is made with a red lead cement or rubber ring joint.

The flush from the cistern is so directed, that the discharge extracts the air from between the two traps, and syphonic action is immediately set up, clearing the contents of the basin with great force; two gallons of water only, being sufficient to completely cleanse the basin and trap.

When used as a slop closet it is impossible to empty the pan by momentum, or syphonage by the sudden addition

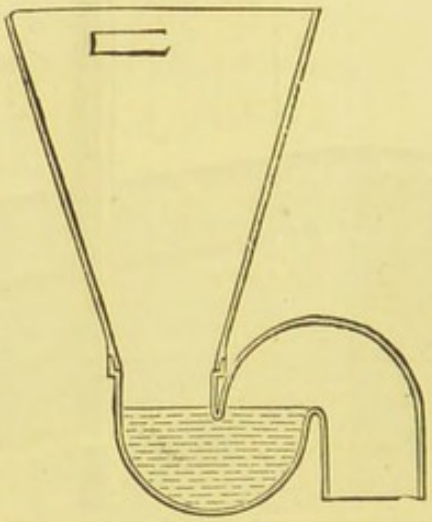


FIG. 30.—Long or tall hopper closet and trap, bad form.

of a large body of water; the syphonic action of closet being set in motion by the discharge from cistern only.

The *long* or *tall* (conical shaped) hopper closet, as shown in fig. 30, the material of which is earthenware or enamelled iron, is an objectionable form of closet because of its shape, and the large amount of surface which is exposed to the fæcal matter. This kind of closet gives what is known as a spiral flush, that is, the water is admitted to the hopper or basin by an opening in its side which causes the water to flow round and round the basin in a spiral fashion, and thus reduces the efficiency of the

flush. They are also made with flushing rims, the latter is the better of the two, as it produces a better flush of water. The custom of fixing a plug or screw-down tap to regulate the supply of water to this kind of closet was at one time very common, and may still be met with; but such an arrangement of flushing any closet is unquestionably bad, and the provision of a syphon action water-waste preventer cistern (fig. 31), to discharge not less than two gallons of water at each flush, having a delivery or flush pipe at least $1\frac{1}{4}$ inch diameter, should be insisted upon.

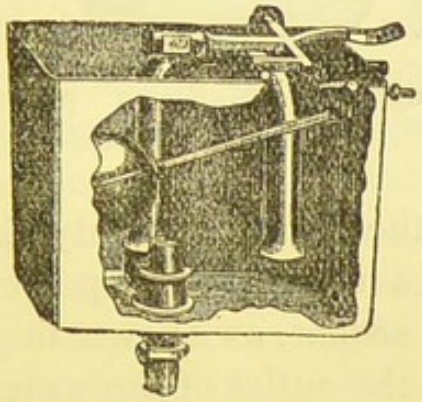


FIG. 31.—Crapper's silent syphon action flushing cistern for w.c's.

The so-called *wash-out closet* with flushing rim, differs in shape and flushing arrangements to the last mentioned closet, but has the similar disadvantage with regard to the amount of exposed surface, and is therefore not a clean closet.

Water closets of the wash-down pattern (figs. 29 and 32) are simple in construction, clean and inexpensive, and comply in every respect with the essential qualities of a good water closet. Fig. 32 is furnished with a lead trap, which, with the form of basin stand, is capable of being fixed at any angle to suit the position of the soil pipe.

A water closet with the outlet of the trap under the base of the apparatus or below the floor level should not

be fixed, as the joint is not accessible and consequently not reliable. The outgo of the trap should be in sight (figs. 29, 32 and 33), to enable the workman to make a reliable connection with the soil pipe or drain and render the joint easy of inspection.

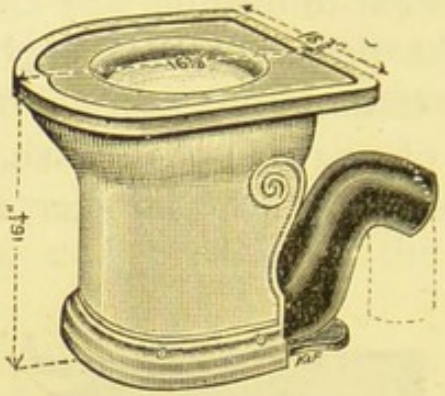


FIG. 32.—Crapper's improved "Marlboro" pedestal wash-down closet with S- or P-trap.

The by-laws of the London County Council require that in all cases where a stoneware trap is connected to a lead soil pipe, a brass socket, as shown in figure 33, shall be inserted to receive the outlet of the water closet trap.

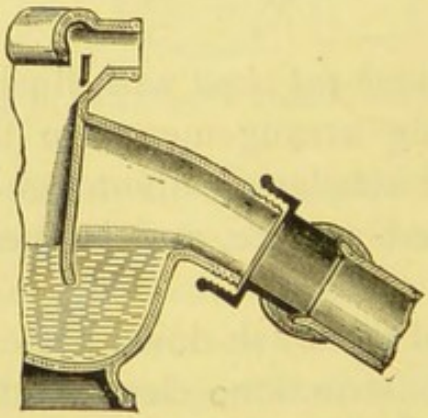


FIG. 33.—Showing method of connecting stoneware trap with lead soil pipe.

The joint between the brass socket and stoneware trap should be made with Portland cement and a wiped soldered oint secures the lead pipe to the brass fitting.

The old fashioned trough closet is still to be found in use at many schools and factories, and is generally the only convenience for small houses in the courts and alleys of our large towns.

These closets are usually supplied with water by means of an automatic flushing tank, fixed a few feet above the apparatus. The capacity of the cistern or tank depends upon the number of closets to be flushed, but five gallons of water should be allowed for each closet.

The earthenware troughs are made in two feet lengths, with sockets and division walls; the troughs should be laid upon a bed of concrete and the outlet trapped.

The drawback to the provision of these closets to small property is their generally neglected condition, owing chiefly to the distance they are obliged to be fixed from the houses, whose occupiers are directly responsible for their cleansing, as what is everybody's duty becomes nobody's, and such closets are, therefore, gradually being discarded, as filthy and indecent appliances.

The latrine trough closet, though less offensive than the ordinary trough closet, has the same objection as regards the large amount of water, which is often allowed to remain for a whole day before its contents are flushed away. Undoubtedly, to delicate persons and children, a group of w.c's, whether open or separate, are dangerous and is a system which should be discouraged. The late School Board for London appealed to the London County Council against orders made upon them by certain Metropolitan Sanitary Authorities requiring the Board to fix separate basins and traps for the use of children attending schools in their district. The County Council, after hearing the evidence adduced by both parties decided in favour of the Sanitary Authority and dismissed the appeal.

Where trough closets or latrines are provided for cottage property, or where one w.c. is set apart for the use of two

or more houses, it is a good plan to have a number on the door of the closet corresponding with the number on the door of the house or houses having the use of the closet, so that if the person or persons liable for their condition fail to keep them clean the inspector will know whom to prosecute.

This will not apply to schools or factories, as there is, nearly always, someone deputed to look after them.

With respect to the cleansing of sanitary conveniences used in common by occupiers of two or more separate dwelling houses, or by other persons, the following provision applies :—

"If any person injures or improperly fouls any such sanitary convenience, or anything used in connection therewith, he shall for every such offence be liable to a penalty not exceeding ten shillings.

"If any sanitary convenience or the approaches thereto, or the walls, floors, seats, or fittings thereof is, or are, in the opinion of the urban authority, or of the inspector of nuisances, or medical officer of health of such authority, in such a state or condition as to be a nuisance or annoyance to any inhabitant of a district for want of the proper cleansing thereof, such of the persons having the use thereof in common, as aforesaid, as may be in default, or in the absence of proof satisfactory to the court as to which of the persons having the use thereof in common is in default, each of those persons, shall be liable to a penalty not exceeding ten shillings, and to a daily penalty, not exceeding five shillings." (Public Health Act (Amendment) Act, 1890, Section 21; and Public Health (London) Act, 1891, Section 46; also Section 31, Public Health (Scotland) Act, 1897).

There is another form of water closet which has been introduced in towns having a limited supply of water, or where the disposal of sewage prevents sanitary authorities from treating the large quantity of water consequent upon the adoption of the general form of water closet.

This apparatus is known as the self-acting slop or waste water closet, and is flushed by means of waste water

collected from the sink or bath, assisted by rain-water. The water is received by the sink or yard gully and is conducted by the drain to a *tipper*, which is made of glazed stoneware, holding about three gallons of water. When the tipper, which is fixed near to the closet trap, is full of water, its contents are emptied with considerable force into the water closet trap, carrying away any deposit. Dr. Sargeant, M.O.H., Lancashire C.C., says, "the use of the waste water closet has been tried in many districts, and experience is favourable to its further adoption."

With ordinary care and a plentiful supply of waste water, these closets may be made a success and help to rid populous localities of nuisances peculiar to the obsolete privy and pail closet, both of which are undesirable for densely populated districts.

The by-laws of the London County Council provide that "any person who shall newly fit or fix any apparatus in connection with any existing water closet, shall as regards such apparatus and its connection with any soil pipe or drain, comply with such of the requirements of the by-laws as would be applicable to the apparatus so fitted or fixed, if the water closet were being newly constructed."

Every water closet in a building should be placed in such a position that one of its sides, at least, should be external; so that ample means may be taken for providing light and ventilation to the apartment, and ventilation to the drain or soil pipe.

Fæces may be removed from the surface of water closets by means of spirits of salts.

SOIL PIPES, BATH, LAVATORY, AND SINK WASTEPIPES.

Soil Pipes.

The material which may be used for soil pipes fixed inside buildings, is drawn lead, but lead and heavy cast-iron may be adopted when the pipes are fixed outside.

By-law 11, of the London County Council, relating to soil pipes provides, as follows:—"Any person who shall provide a soil pipe in connection with a new building for the purpose of conveying to a sewer any solid or liquid excremental filth or shall for that purpose construct a soil pipe in connection with an existing building, shall, whenever practicable, cause such soil pipe to be situated outside such building, and shall construct such soil pipe in drawn lead or of heavy cast iron. Provided that in any case where it shall be necessary to construct such soil pipe within such building, he shall construct such soil pipe in drawn lead with proper wiped plumbers' joints, and so as to be easily accessible."

Zinc and earthenware are materials of the past and should not be allowed now. Zinc has nothing to recommend it, save its cheapness, while earthenware pipes, though smooth and non-corrosive, become dangerous if raised to any great height, while they have too many joints. Soldered or seamed lead pipes are equally objectionable for use as soil pipes, as the two metals have unequal rates of contraction and expansion which cause the seams to rend.

Ordinary commercial lead is injuriously affected by fæcal matter, and on account of its composite character, galvanic

action is set up, which rapidly destroys the pipe. It is very necessary, therefore, that lead pipes should be made of pure lead and not of composition.

Where drawn or seamless lead pipes are fixed as soil pipes, they should be of an even thickness throughout their length, and when fixed, this material will compare favourably with other materials for durability, compactness, appearance, and reliability.

Lead pipes have the advantage over other pipes, in being more expeditiously erected, and easier of manipulation, but extreme care should be exercised, where lead pipes are protected by wooden casings, as frequently the pipes are found to have been punctured by the nails or screws used in the fixing of the casings.

Cast-iron soil pipes should be carefully examined before use to see that they are sound, cylindrical, of uniform thickness, free from flaws, cracks, sand holes, and similar defects. Each pipe must be well coated with an anti-corrosive substance to protect the pipes from the influence of the atmosphere, as recommended for iron drain pipes.

The by-laws of the London County Council require all soil pipes to be of the material, weight and thickness specified in the following table:—

Diameter of Pipe.	Lead.	Iron.	
	Weight per 10 ft. length.	Thickness of Metal not less than	Weight per 6 feet length (including socket and beaded spigot or flanges—the socket not to be less than $\frac{1}{4}$ inch thick).
Inches.	Not less than	Inch.	Not less than
$3\frac{1}{2}$	65 lbs.	$\frac{3}{16}$	48 lbs.
4	74 ,,	,,	54 ,,
5	92 ,,	$\frac{1}{4}$	69 ,,
6	110 ,,	,,	84 ,,

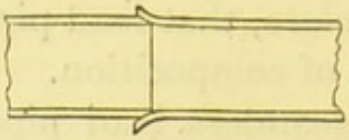


FIG. 34.—Showing lead pipe before wiped joint is made.

FIG. 35.—Showing the finished wiped joint.

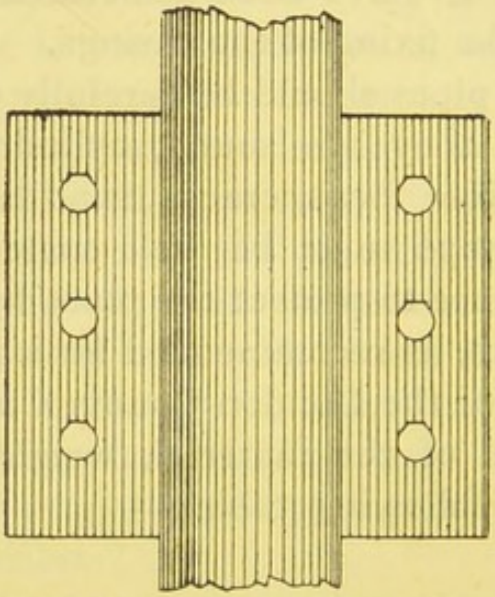


FIG. 36.—Elevation of lead soil pipe and tack.

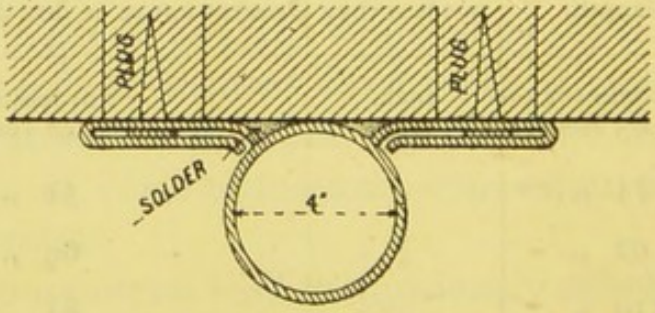


FIG. 37.—Section of lead soil pipe and tack.

Cast-iron pipes of the rain water pipe standard should never be used for soil pipe work, being of uneven thickness, they are as hard as chilled iron, having to be cast thin, and about as brittle and difficult to cut as glass, such pipes are therefore quite unsuited for use as soil pipes; moreover, it is impossible to caulk the joints with molten lead without bursting the sockets.

The best joint for lead soil-pipes is that known as the *wipe* joint (fig. 35). All soil pipes, of whatever material, should be securely fastened or *tacked* (figs. 36 and 37), otherwise the weight of the pipe will cause defective joints, draw the trap of the water closet out of shape, and thus leave the closet untrapped.

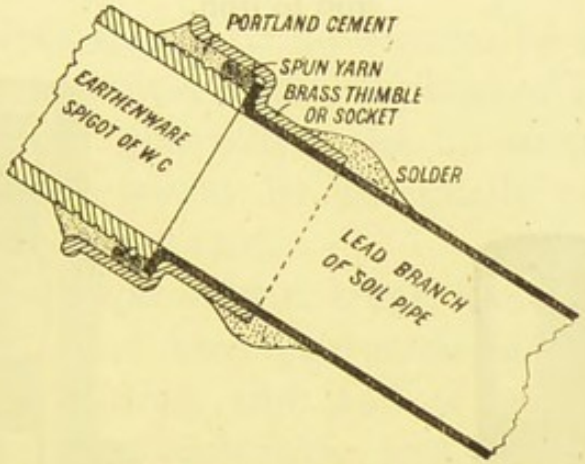


FIG. 38.—Showing method of connecting stoneware w.c. trap to lead soil pipe.

In connecting a lead soil pipe, with an iron or stoneware drain, the by-laws of the London County Council provide that a flanged thimble (fig. 40) of copper, brass, or other suitable alloy shall be inserted between the soil pipe and drain (figs. 39 and 41) connecting such thimble to the lead pipe by means of a wiped or overcast joint, and the joint between the thimble and the stoneware drain pipe to be made with Portland cement, and the connection between

the thimble and iron soil pipe or drain must be made by means of molten lead, properly caulked.

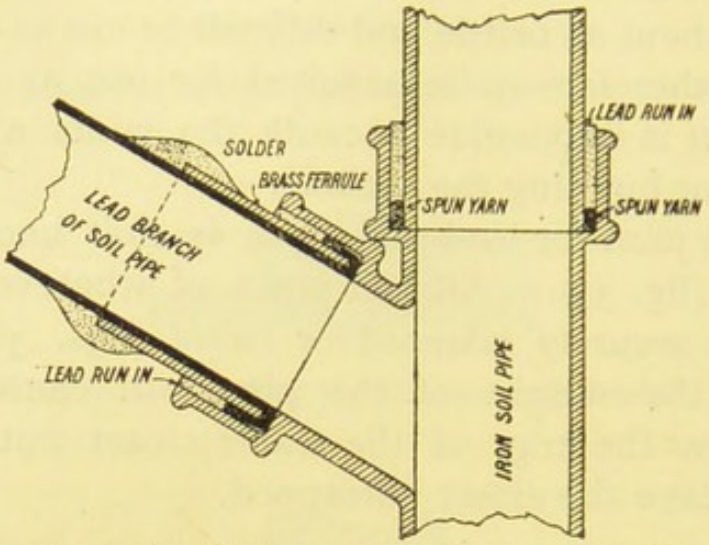


FIG. 39.—Showing method of connecting lead pipe to iron soil pipe and iron to iron.

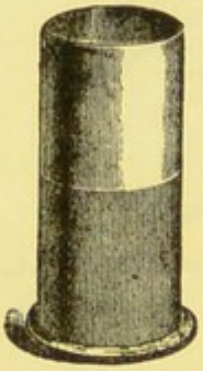


FIG. 40.—Thimble.

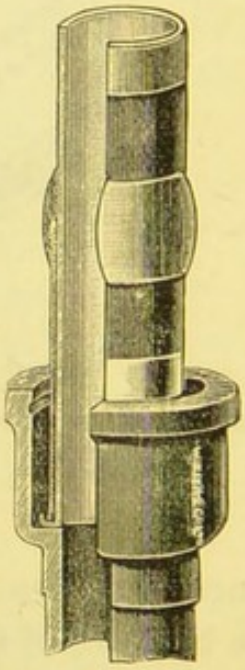


FIG. 41.—Method of connecting lead pipe with drain.

The diameter of soil pipes must not be less than $3\frac{1}{2}$ inches or greater than 6 inches, and of the weights specified in the table on page 187.

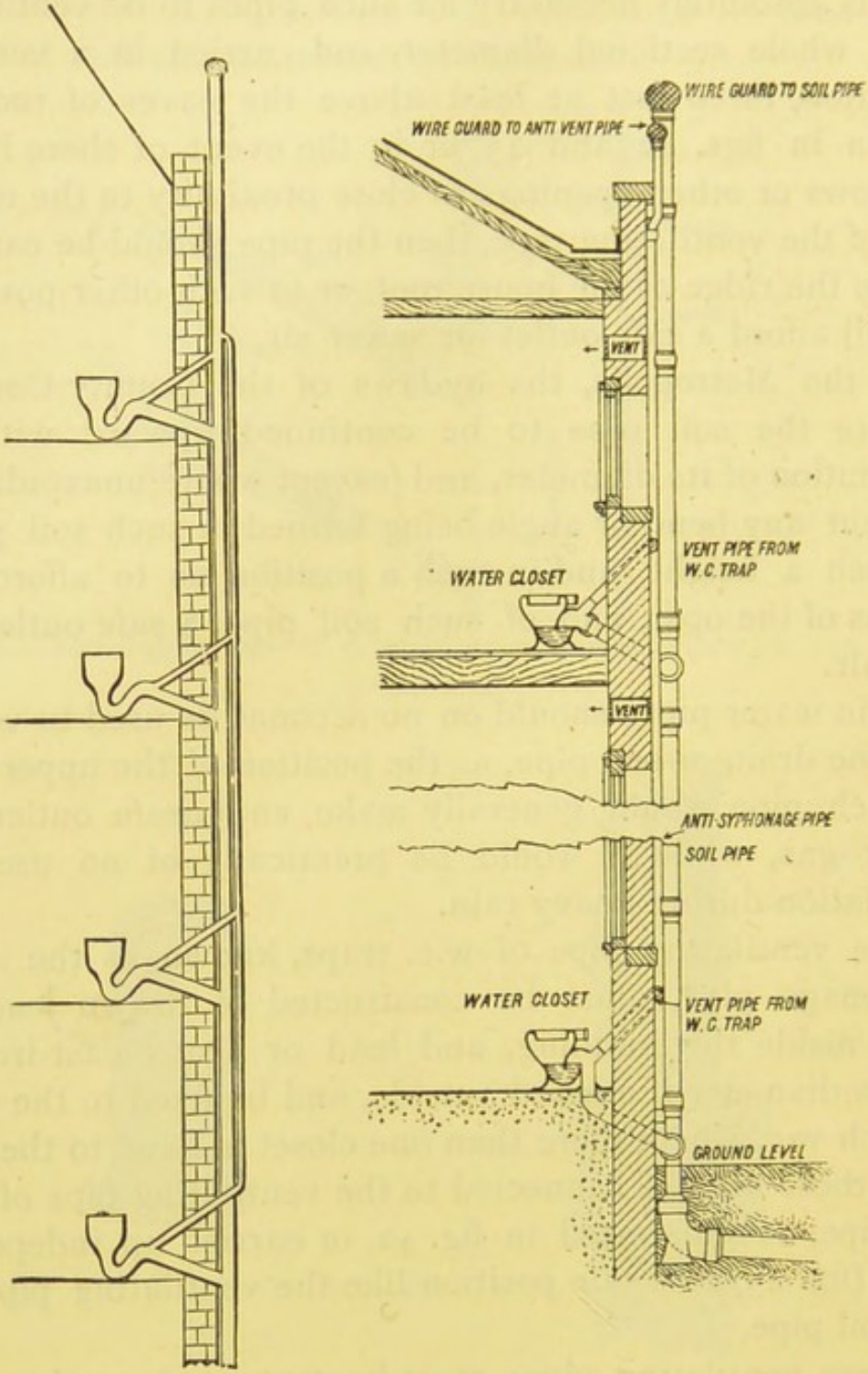
It is absolutely necessary for such pipes to be ventilated their whole sectional diameter, and carried in a vertical direction, three feet at least above the eaves of roof, as shown in figs. 42 and 43, or in the event of there being windows or other openings in close proximity to the upper end of the ventilating pipe, then the pipe should be carried above the ridge of the house roof, or to such other position as will afford a safe outlet for sewer air.

In the Metropolis, the by-laws of the County Council require the soil pipe to be continued upward without diminution of its diameter, and (except where unavoidable) without any bend or angle being formed in such soil pipe, to such a height, and in such a position as to afford by means of the open end of such soil pipe, a safe outlet for foul air.

Rain water pipes should on no account be used to ventilate the drain or soil pipe, as the position of the upper end of such pipe would generally make an unsafe outlet for sewer gas, while it would be practically of no use for ventilation during heavy rain.

The ventilating pipe of w.c. traps, known as the anti-syphonage pipe, must be constructed of drawn lead, if fixed inside the building, and lead or heavy cast-iron 2 inches diameter if erected outside, and be fixed to the trap of each w.c. where more than one closet is fixed to the soil pipe, these may be connected to the ventilating pipe of the soil pipe, as illustrated in fig. 42, or carried up independently (fig. 43) to a safe position like the ventilating pipe of the soil pipe.

These ventilating pipes must be connected to the arm of the soil pipe or the trap, not less than 3 inches and not more than 12 inches from the highest part of the trap, and on that side of the water seal (figs. 42 and 43), which is nearest to the soil pipe. W.C. trap ventilating pipes, whether fixed inside or outside a building, should not be of less weight



FIGS. 42 and 43.—Showing the method of ventilating soil pipes and traps of w.c's.

than 45 lb per 12 feet length of lead, and when of iron, its thickness must not be less than $\frac{3}{16}$ inch and its weight 25 lb per 6 feet length. Cowls, whether fixed or mechani-

cal, ought never to be fixed to the open end of ventilating pipes from drains or soil pipes, being more or less useless, and very liable to create an obstruction.

Ventilating pipes should, therefore, be left quite free and open to the air, or at most protected by means of a wire guard covering (fig. 44).

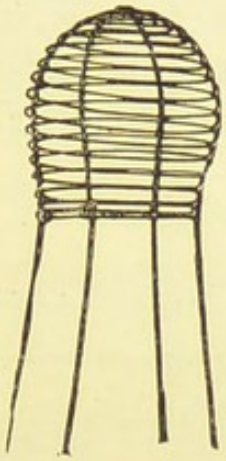


FIG. 44.—Wire guard for the outlet of ventilating pipes.

BATHS, SINKS, &c.

In the selection of a suitable material for these and similar sanitary appliances, the inspector has no voice, provided the material chosen is of a non-absorbent character, though he is often consulted as to the best material to use for particular purposes. Copper, lead, or zinc-lined enamelled iron, stone, slate, and porcelain, are materials in general use, from which a selection could safely be made to suit varying circumstances.

All such fittings should be located in well lighted and thoroughly ventilated rooms, as dark or ill-ventilated bath-rooms or sculleries are by no means desirable, and neglect in these essentials often results in the rooms and appli-

ances becoming dirty and foul-smelling, which conditions are frequently the cause of the very best appliances being made a source of nuisance.

Appliances of this description should not be closed in with woodwork unnecessarily, as enclosures are made receptacles for all that is nasty, by careless and untidy persons, and if they are not made to open it is impossible to inspect or repair the fittings, until the casing has been removed. Sinks erected on pedestals (fig. 45) are by far the best and simplest arrangement.

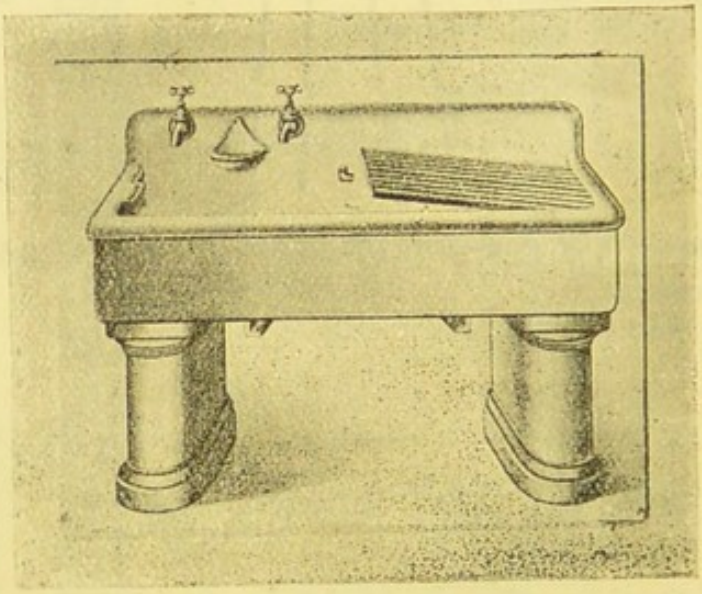


FIG. 45.—Sink erected on pedestals giving free access to wastepipe and trap.

Slop sinks and urinals in private houses are being gradually abolished, and pedestal water closets furnished with slop-tops and balanced seats substituted, but in large institutions and clubs slop sinks similar to fig. 46 are greatly appreciated and much used.

Wastepipes from these appliances may be made of lead or iron, but drawn lead is preferable to all other materials, as it does not corrode and is easily fixed. If there should,

however, be a hot water tap over the sink, wrought iron, heavy cast-iron or drawn lead pipes, with expansion joints, should be fitted to prevent sagging or breaking. The

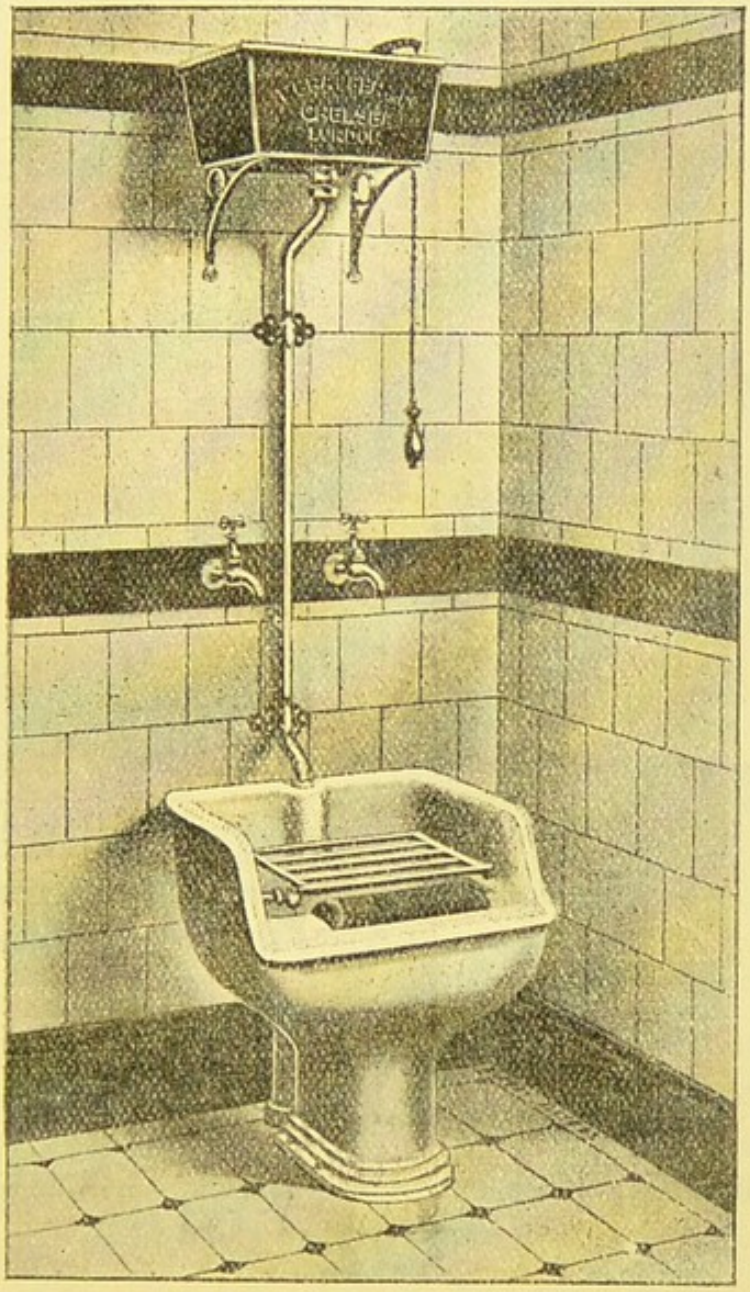


FIG. 46.—Crapper's improved slop-sink, with flushing cistern.

wastepipes of slop sinks and urinals must be treated as in the case of soil pipes, viz., ventilated, trapped, and connected to the soil pipe, or taken separately to the drain,

and the wastepipe continued upwards, to a safe outlet, as a ventilator.

The internal diameter of pipes used for bath, lavatory and sink waste should not be greater than 3 inches nor less than 1½ inches.

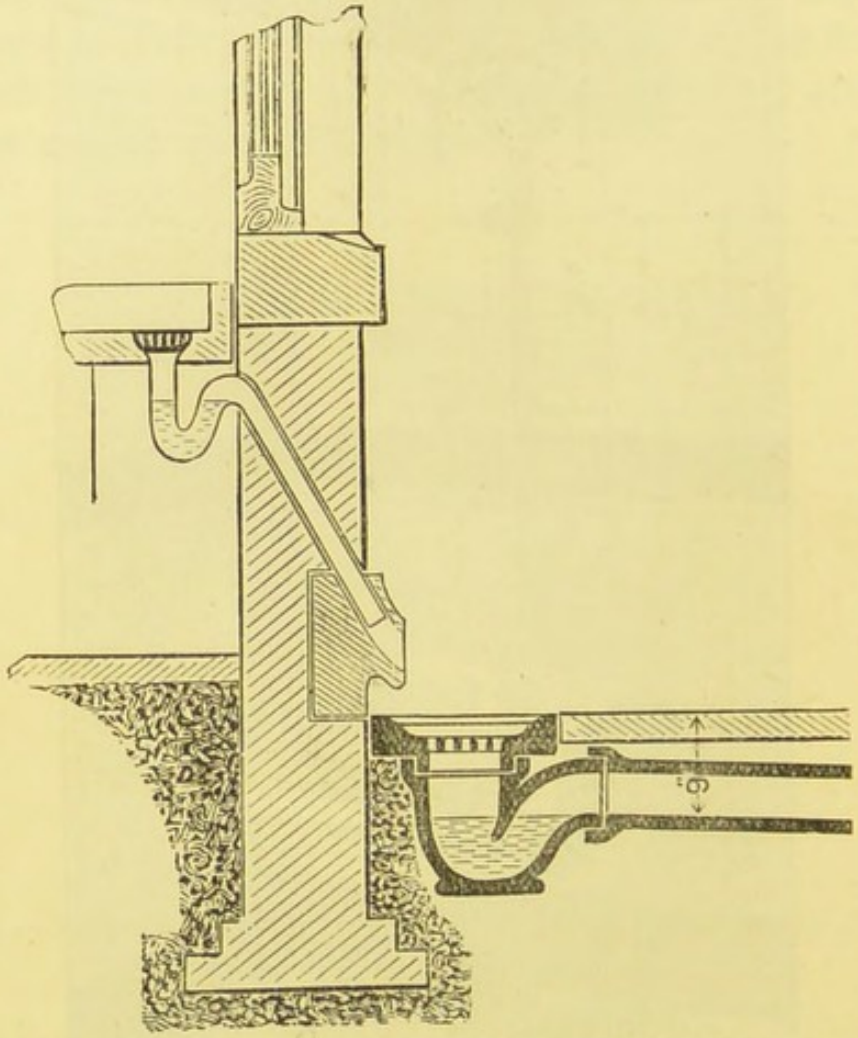


FIG. 47.—Showing sink pipe disconnected from the drain and discharging over a trapped gully.

The best and most effectual way of dealing with waste-pipes from baths, lavatories, and sinks, is to disconnect them from the drain and construct such pipes to discharge over a trapped gully in the open air (fig. 47) should this arrangement be objectionable, then to carry the pipe by an

inlet, specially made for that purpose, in the side or back of the gully under the grating.

There is often a difficulty in disconnecting wastepipes from the drain, where there is no right of frontage or where it is desirable that the traps should be set clear of the pavement, yard, or passage.

Gully traps fixed upon the pavement are a source of danger, besides which they are frequently much abused. To obviate this difficulty the "wall" trap (fig. 48) may be

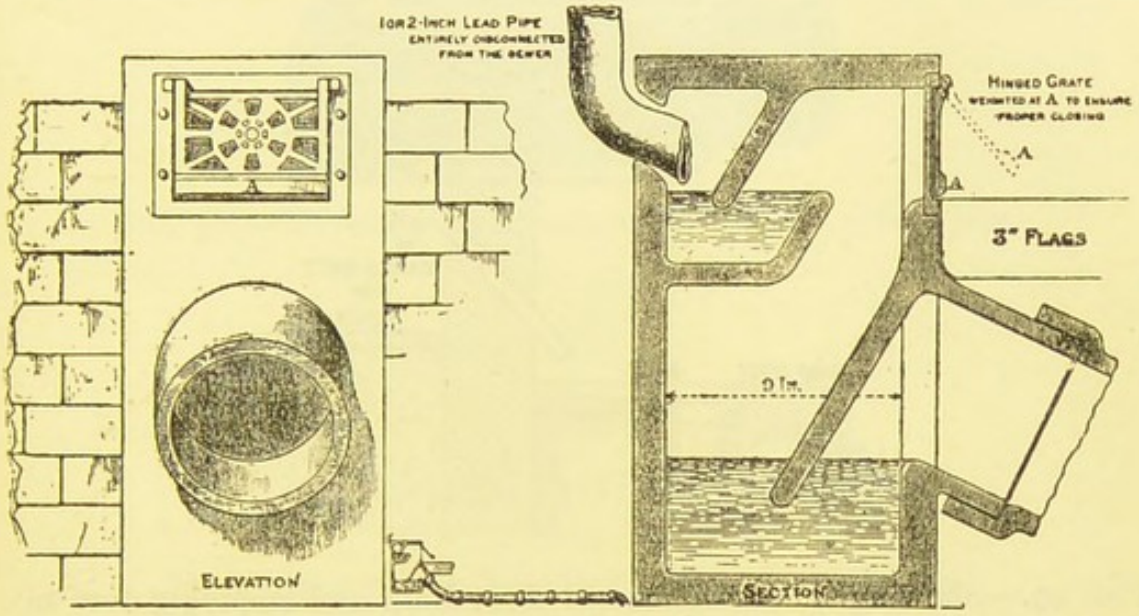


FIG. 48.—Green's patent wall trap.

fixed flush with the wall of the house or other convenient position, without encroaching in the least on the public way, while the hinged grating affords ready access for cleansing the gully trap.

The Model By-laws of the Local Government Board provide that every bath, sink, or lavatory wastepipe, shall be discharged in the open air, over a channel (fig. 49) leading to a trapped gully grating at least 18 inches distant.

Theoretically, this arrangement is good, but in practice the system is most intolerable, as the grease and other

offensive matter from the scullery sink collect in the channel, causing a nnisance, and no one who appreciates order and cleanliness could advocate a continuance of a practice which is the frequent cause of premises being flooded.

The disconnection of wastepipes from drains, although so necessary to cut off the direct communication between the sewer and the house, is not always practicable, especially in the centre of the Metropolis, owing to the entire absence of the required open air space about the building.

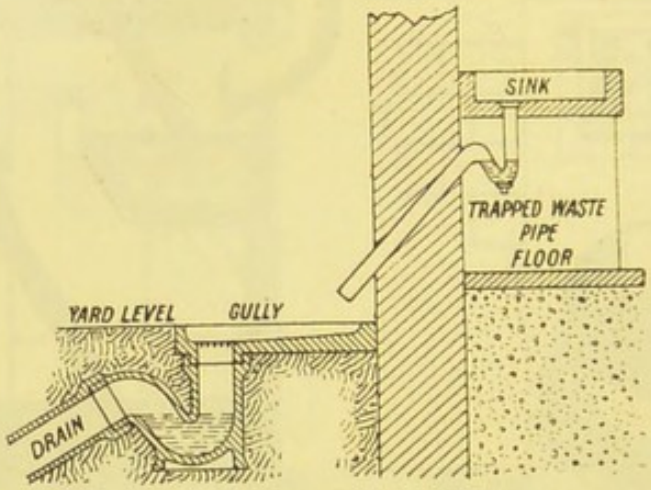


FIG. 49.—Showing sink disconnected from drain and emptying over an open channel.

Under such circumstances, it is usual to fix a SEALED gully trap, or a sealed rain water shoe or access pipe (fig. 50) conveyed to a gully trap, sealed or otherwise, and fixed near the disconnecting chamber, inside the building, constructed to receive the various wastepipes, under the cover and to depend upon efficient trapping and ventilation of the pipes, combined with sound materials and good workmanship, to prevent any nuisance.

Rain water pipes should be treated, in the matter of disconnection, as suggested for wastepipes, except, that it is imperative for all rain water pipes to be constructed to

discharge under the gully grating, as this arrangement will often prevent the flooding of premises during a heavy downpour of rain, due frequently to the surface of the gully grating being covered with paper, &c., and so blocking the entrance to the gully, hence the flooding.

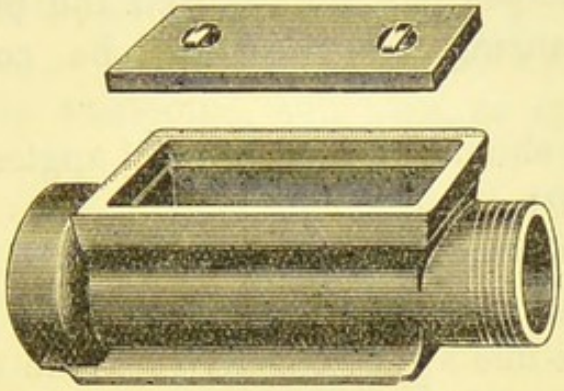


FIG. 50.—Crapper's sealed rain water shoe or access pipe.

GULLIES AND TRAPS.

DISCONNECTING OR INTERCEPTING TRAPS.

To every system of drains are furnished gullies and traps of some description.

For our purposes the term gully means an opening provided for receiving surface and the waste waters of men and animals; while a trap is a barrier placed upon the drain or wastepipe for the purposes of preventing a return of foul air from the sewer.

A trap may be defined "as a construction of or a device in a tube or pipe, designed to retain at a fixed point a body of liquid that is replaced whenever the trap is used and while not hindering the descent of waste matter, seals the conduit at that point against a return flow,

as of noxious gases." (Funk and Wagnall's "Standard Dictionary").

Traps of every description are necessary evils; evils because they retard the flow of water, but necessary to prevent the escape of foul gases from the wastepipe or drain.

Mr. S. S. Hellyer has summarised the principles upon which self-cleansing traps should be constructed, as follows:—

1. The traps should be free from all angles, corners, and places where filth could accumulate.

2. A free way should be made for the discharges to pass through the trap without breaking their form, *i.e.*, the traps should be like a round pipe, so made or bent as to form a water-seal of about 1½ or 2 inches deep.

3. The body of the trap should be smaller than its inlet, so as to hold as small a quantity of water as possible, consistent with the position in which it will be placed and the work it will have to do, to admit of easy changing every time a flush of water is sent through it.

4. A minimum-sized trap should be used, consistent with circumstances, but governed to some extent by the size of the wastepipe or drain on which it is fixed, and the flush of water likely to be sent through it. A trap, though of a self-cleansing form, may become a little cesspool if the size is greater than can be cleansed by an ordinary flush of water.

5. The water way into a trap, for fixing to flat bottomed vessels with a grating over its mouth, should be larger than its body part, or than the wastepipe with which its outlet may be connected, so as to be able to send efficient water flushes through the trap to cleanse it and its waste-pipe.

6. The inlet or mouth of the trap should be so arranged that the water flushes shall fall upon the standing water of

the trap with a vertical pressure so as drive everything foreign out of the trap, and to entirely change its previous contents.

7. The inlet side of all traps fixed upon the drains should be open to the atmosphere, so that any bad air from foul matter decomposing in the trap or coming through it from the drain or sewer, may be readily passed into the open air, or be largely diluted with fresh air before passing into the wastepipe, soil pipe, or drain emptying into such traps.

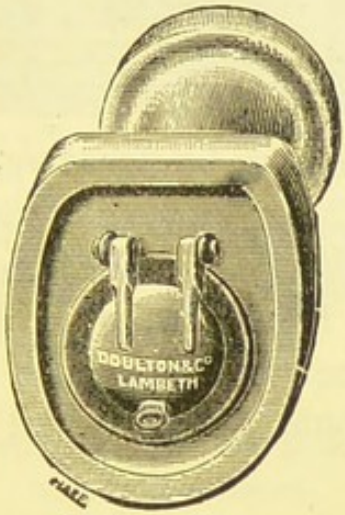


FIG. 51.—The valve or flap trap.

Probably the earliest example of a disconnecting or intercepting trap (?) for house drains was the valve or flap trap (fig. 51); these are more defective and less reliable than water traps as they allow air, to some degree, to pass the valve. Moreover, the oxidation of the valves, if made of iron, and the injury the valve face often sustains, render them a very imperfect and unsafe mode of ensuring the trapping of any opening communicating with the sewer, and such valves can only be looked on as a palliation against the movement of sewer air, and not as an effectual remedy to check its escape.

These valve traps are frequently used by the surveyors of large towns when making drain connections to brick sewers, to prevent the entrance of sewer rats to house drain, but they are of little, if any, service in this direc-

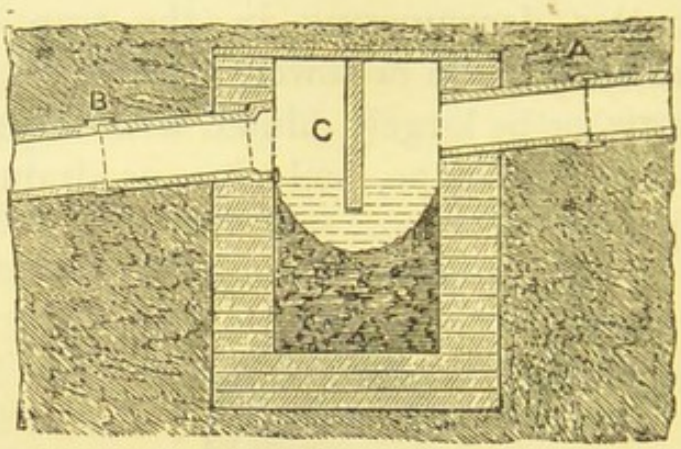


FIG. 52.—Mason or dip-stone trap, bad form.

tion, while they are the common cause of stopped drains as the valves become fixed through corrosion and so interfere with the flow of sewage.

An equally objectionable trap is the brick built mason

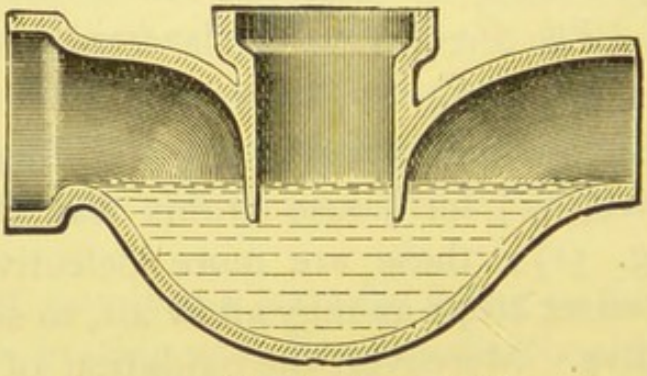


FIG. 53.—Anchor trap, bad form.

or dip-stone trap (fig. 52) as they are not self-cleansing, and offensive matter is consequently retained in the catch-pit, which is the cause of frequent stoppages.

The trap illustrated in figure 53 is a bad form of trap,

as the soil accumulates in the inspection or cleaning eye and ultimately drops into the water-way of the trap and blocks the outlet.

The syphon-shaped drain trap (fig. 54) with means for ventilation, either as an inlet or outlet, or both, is sometimes used where inspection chambers are not provided.

Where disconnecting chambers are constructed at the outlet of the drain, traps similar to figures 55, 56 and 57 are fixed, being adapted for open channel inverts, and they are furnished with raking or clearing arms for removing any obstruction in the drain, between the sewer and the trap, should this be necessary.

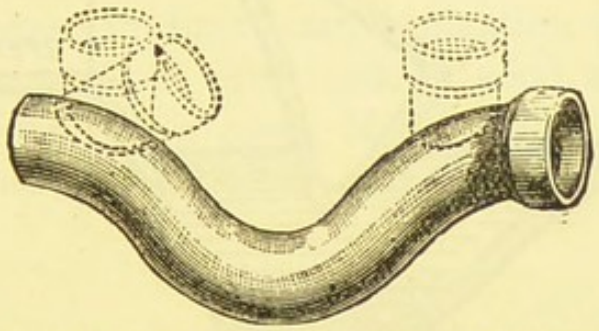


FIG. 54.—Syphon or running trap, with dotted lines showing how it may be ventilated.

The special feature of the trap shown in fig. 57 is that the pipe holding the trapping water is made egg-shaped in section, instead of circular. The flow of sewage through it is consequently accelerated.

Traps of the above description are undoubtedly the best for use on the line of drain, to prevent as far as possible the escape of foul air from the public sewer, which might otherwise enter the dwelling through defective or untrapped drains.

Disconnecting traps holding a large body of water, or those having their inlets at the same level as the outlets should not be fixed, as they both offer great resistance to a thorough cleansing of the trap.

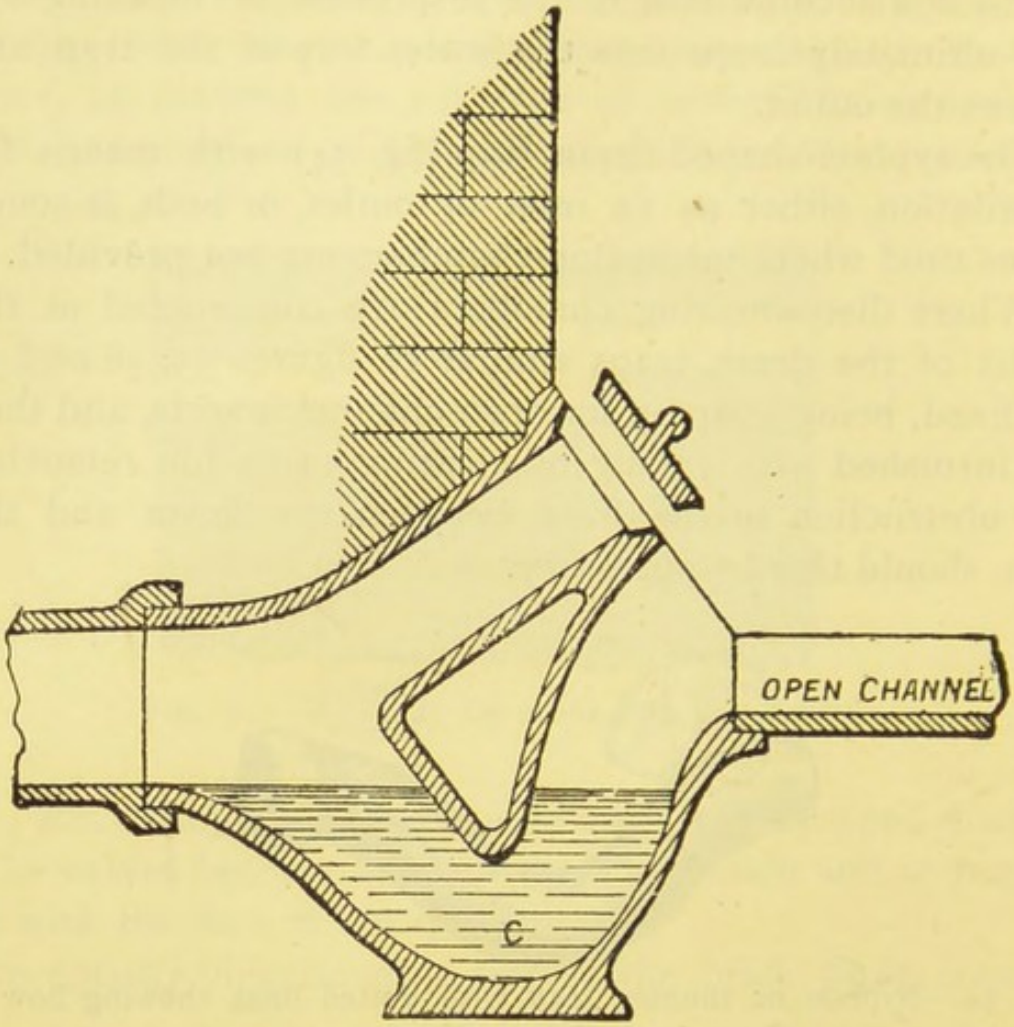


FIG. 55.—Winser's disconnecting or intercepting trap.

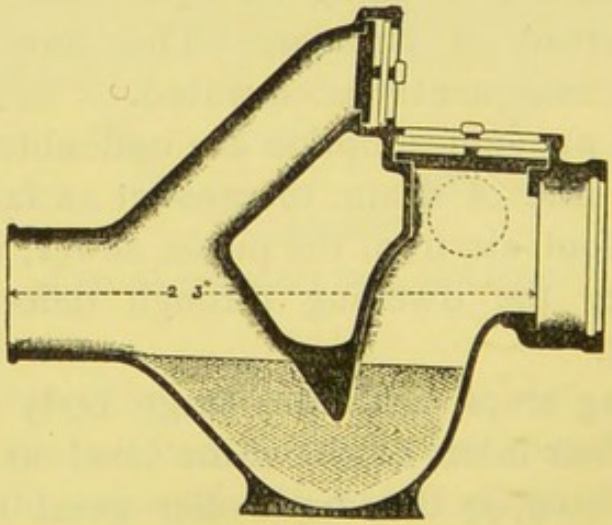


FIG. 56.—Winser's improved iron disconnecting or intercepting trap.

Inspectors should not place too much reliance upon the security of the stoneware cap supplied and fixed on the clearing arm of the disconnecting trap, as these are frequently found loose or entirely out of the socket, thus

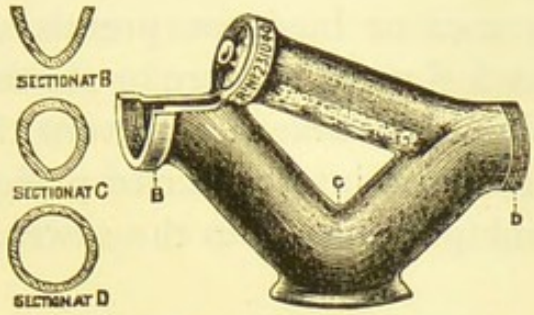


FIG. 57.—Crapper's disconnecting or intercepting trap.

leaving the sewer in direct communication with the house. To avoid danger from this cause, a good and safe substitute will be found in a piece of thin slate inserted in the socket of the clearing arm and secured by a fillet of

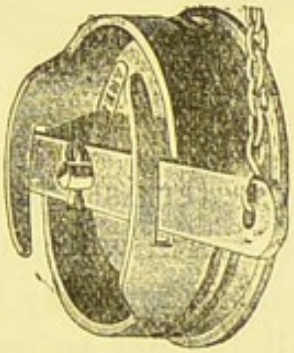


FIG. 58.—Jones' lever stopper for sealing the clearing arm of intercepter trap.

cement. To effect an entrance to the drain, should it be stopped at any time, the slate can be easily broken.

The patent lever stopper (fig. 58) is a very simple and effective device for sealing the clearing arm of the disconnecting trap against the return of foul air from the public sewer, while the lever securely holds the plate in

position as shown, and the strongest pressure from within the sewer cannot displace the stopper. A chain (fig. 11) is attached to the lever when required to be opened, and to prevent the stopper from being lost.

In low-lying or tidal influenced districts where the basement of houses or business premises are subject to flooding by a back flow of sewage or storm water from the sewer, means should be taken to prevent this by fixing on the drain an automatic intercepter trap (fig. 59) capable of resisting the back pressure from the sewer.

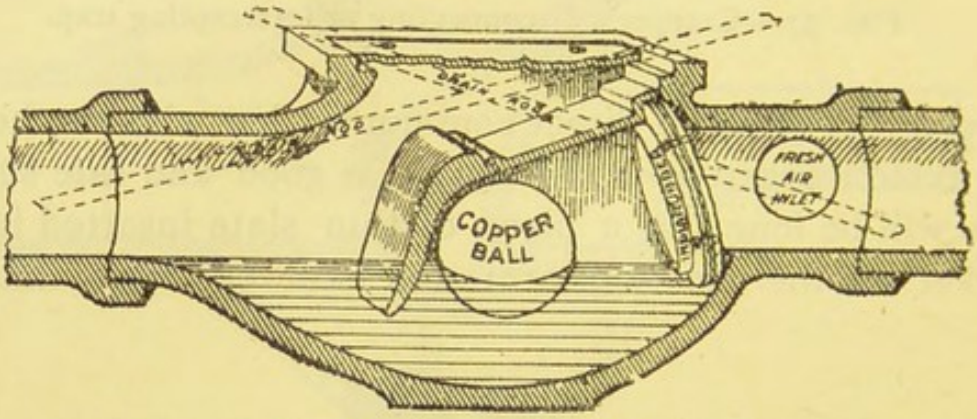


FIG. 59.—Couzens' patent ball-trap intercepter.

The ball-trap intercepter is constructed to prevent any back flow of tidal or storm water from the main sewers. The action is automatic, and any back pressure of water raises the copper ball against an indiarubber seating, thus forming an effectual seal against the flow of water into the premises.

Easy access to the drain is also obtained in the case of stoppage without opening up the ground, as drain rods can be easily applied from the inspection cover, as shown.

Sink or Surface Gully Traps.

Gullies and traps have similar relations to each other, for although we may have traps without gullies, no gully is complete without a trap. The materials of which gully traps are made are iron or stoneware.

H. P. Boulnois, Esq., Engineering Inspector, L.G.B., says that the objects to be considered in selecting gully traps are :—

1. Sufficient area to carry off water.
2. Not easily choked by leaves or other débris.
3. Sufficiency of pit to retain all sand or road detritus, and prevent it being washed into the sewer.
4. The least possible obstruction to the traffic.
5. Constructed so that the pit may be easily cleaned out.
6. Trapped so as to prevent the escape of sewer gas.
7. The drain from it should be easily freed from obstruction.

Stoneware is certainly the best material for gully traps, but where strength is required or where iron drains are constructed, iron gullies might with advantage be used.

Figures 60, 61, 62, 63 and 64 illustrate useful forms of gully traps; figures 61 and 63 are made in two pieces, the top in each case being provided with a number of inlets to receive the various waste or rain water pipes under the gully grating, while the trap is capable of being fixed at any angle or direction of the drain, while figure 62 is specially designed for use in stables, being furnished with a metal screen for intercepting straw and dung.

The flushing rim gully grease trap (figs. 22 and 63) is usually fixed in connection with a flushing tank, (figs. 20 and 21) which is regulated to discharge as often as the

circumstances may prove to be necessary, but not less frequent than once in each day, for the purpose of breaking up the grease and cleansing the trap and the drain,

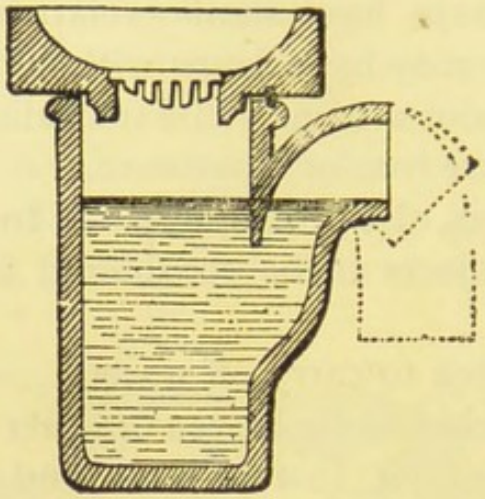


FIG. 60.—Sink or surface gully trap, with S or P outlet.

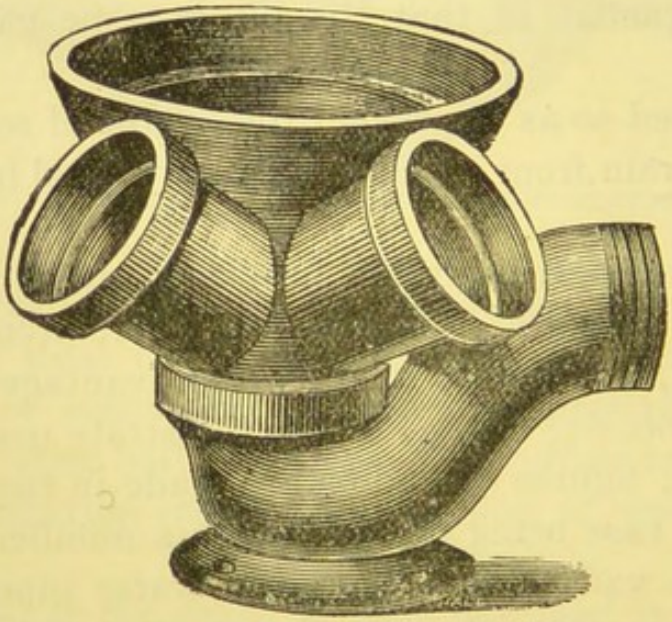


FIG. 61.—Bolding's "Simplex" reversible gully trap with inlets under gully grating to receive the waste-pipes.

experience having shown that the ordinary grease trap or fat trap which is not self-cleansing, becomes a nuisance if not regularly attended to. This trap, being made in two pieces, is convenient for placing in any position or direc-

tion of the drain, and when fixed inside the building it should be furnished with an air-tight cover, and the waste-pipe from the sink ventilated to the exterior.

Couzens' patent gully trap (fig. 64) is constructed to prevent the flooding of cellars or basements by a back flow of sewage from the sewer or water from the river or sea, the action being automatic.

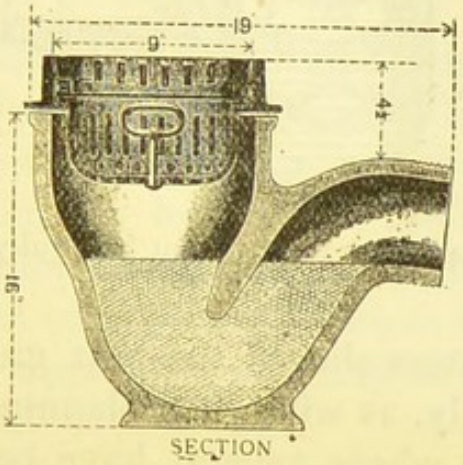


FIG. 62.—Winser's improved stable gully trap.

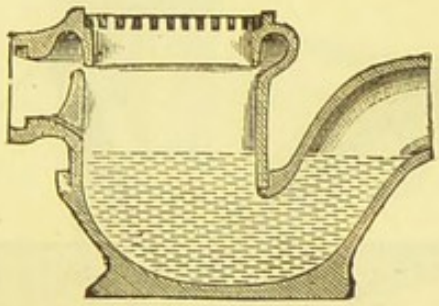


FIG. 63.—Winser's flushing rim gully trap.

Any back pressure of water raises the copper ball against an indiarubber seating, thus making an effectual seal, and should the water evaporate, as is sometimes the case in dry weather, the ball drops on to the bottom seating, forming a seal against sewer gas.

The outlet of this trap is so arranged that it can be readily fixed to shallow drains.

Surface traps which cannot be properly connected to the drain, like the "bell" trap, are prohibited under the by-laws, and should not under any circumstances be allowed.

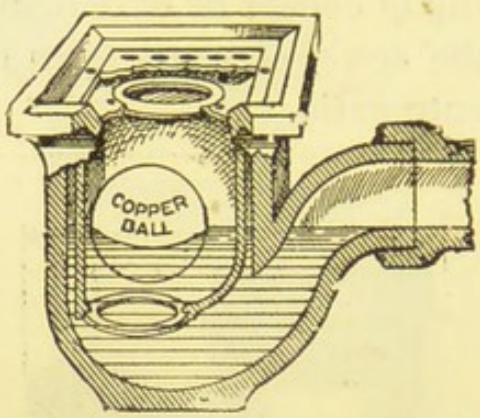


FIG. 64.—Couzens' patent ball gully trap.

Sanitary inspectors should see that gully traps are not fixed unnecessarily, as with good planning, one gully trap will often suffice where several have been fixed. Extra

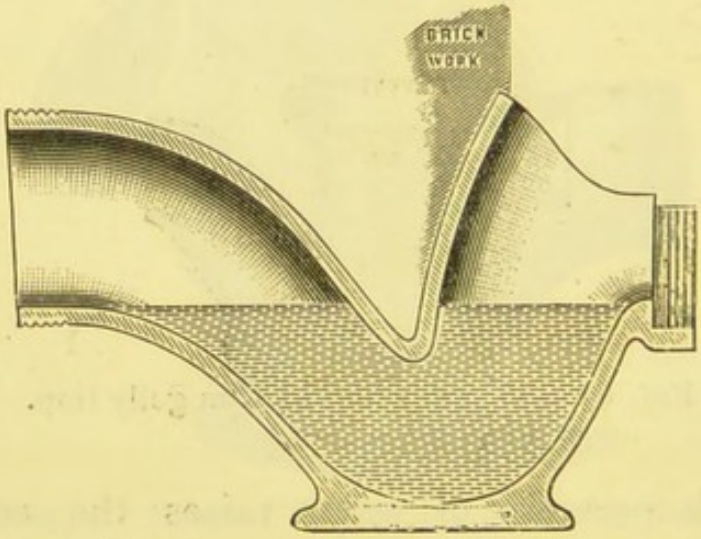


FIG. 65.—Winser's isolation intercepter trap for use on rain water drains.

gullies mean extra labour and expense, to say nothing of an aggravated nuisance arising from the neglect to cleanse the traps. When there are a number of pipes to collect

it is a good plan to form a small manhole and fix an isolation trap (fig. 65) in lieu of a number of gully traps, as by this arrangement the various pipes can be treated as is done in the case of branch drains in ordinary manholes, and still afford perfect disconnection.

Water Closet Traps.

The well known form of D trap is not a self-cleansing trap, and is not now used for water closets, or indeed for any other purpose. These traps are now prohibited from being fixed, under the by-laws of the Local Government Board and London County Council, which provide that a person "shall not construct or fix in, or in connection with, the water closet apparatus, any trap of the kind known as D-trap."

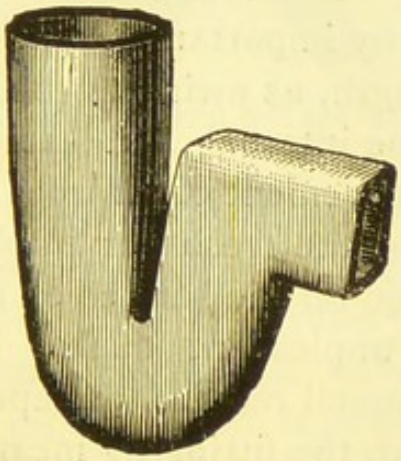


Fig. 66.—Hellyer's lead anti-D trap for water closets.

Water closet traps should not have too deep a water seal, or it may be difficult to wash away the contents of the trap each time the w.c. is used, and for the same reason, traps which hold a large body of water, should not be fixed.

Mechanical traps in any form, for water closets, do not

answer their purpose; the water seal traps are the only ones to be relied upon. It is dangerous to omit to trap water closets, and water closets that are untrapped may be dealt with as a nuisance, or as being contrary to the by-laws.

Stoneware traps for water closets, should be placed above the floor level, while lead (fig. 66) and iron traps may be fixed above or below the floor to suit the closet apparatus.

Traps for Wastepipes.

All wastepipes of baths, lavatories, and sinks should be trapped and ventilated by carrying a vent or puff-pipe through an external wall, but in the case of chambermaid's slop sinks or urinal wastepipes, these should be trapped and ventilated as recommended for soil pipes. This trapping is especially important should the wastepipes be of considerable length, as owing to the difference of temperature between the internal and external air there is an almost continual movement of air from the outside to the inside of the house, the fresh air impinging against the foul matter deposited on the surface of the wastepipes and giving rise to most unpleasant smells. The by-laws of the London County Council require wastepipes to be trapped immediately beneath the fitting by means of a syphon trap with adequate means for inspection and cleansing. Ventilation must also be provided whenever such ventilation may be necessary to preserve the seal of the trap.

In the case of Treasure and Co. *v.* Bermondsey Borough Council, K.B.D. 68 J.P. 206, decided on February 3rd, 1904, it was held that in a new building a lavatory comprising a series of basins where the wastepipes from the several basins where connected to a common

waste discharging over a trapped gully, it was not necessary to provide a separate trap to the wastepipe of each basin, but that one trap only on the common waste could be enforced.

Du Bois' drawn lead traps (fig. 67) are made by hydraulic pressure, in the same manner as lead pipes, and they possess great advantages over traps cast in moulds or made with seams by hand.

Mr. Hellyer suggests the use of S traps for such purposes, and remarks, that by enlarging the mouth of the trap at the bath or sink opening, a larger quantity of water drops on to the water level in the trap, which is thus more

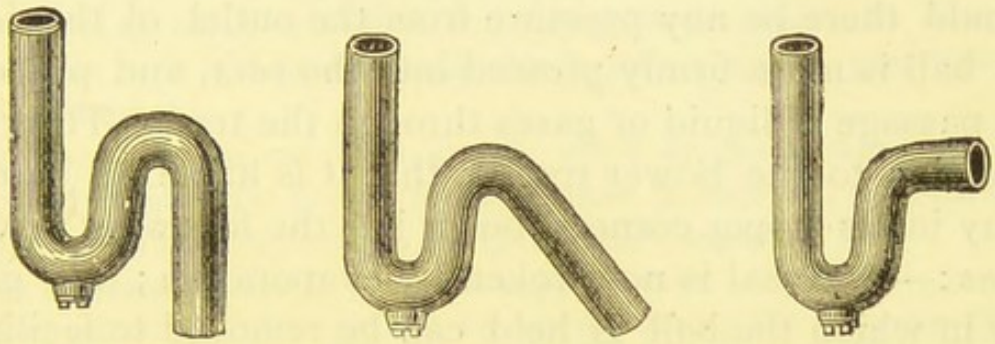


Fig. 67.—Du Bois' P and S traps for waste-pipes.

readily and more effectively flushed. Where traps are fixed to wastepipes they should be placed as near the bottom of the bath, sink, or lavatory as may be practicable, and the trap should not have a greater or less diameter than the pipe to which it is fixed.

For baths or sinks fixed in basements where the outlet of the drain is influenced by tides or the backwash from sewers, it may be necessary to depend entirely upon the trap fixed on the wastepipe, without its being emptied over a trapped gully, in which case the Bower trap, or other similar form of trap, which is mechanically sealed against back pressure by a rubber ball, will be found useful and is described as follows :—

The invention consists in providing a trap with a floating ball which will permit the flow of water and the gases carried with the water in one direction, and prevent their regurgitation.

The inlet pipe of the trap extends downwards into a chamber, which is of somewhat larger dimensions than the inlet pipe. A float ball or valve (preferably a hollow ball of rubber) is placed in the trap beneath the end of the inlet pipe, and this valve is constantly immersed in the water, the dimensions of the trap being such that the ball cannot escape upwards alongside of the inlet pipe.

When the water is poured into the trap, the ball is forced away and permits a free passage to the outlet. Should there be any pressure from the outlet of the trap, the ball is more firmly pressed into the seat, and prevents the passage of liquid or gases through the trap. The chief objection to the Bower trap is, that it is liable to become filthy in its upper corners, but it has the following advantages :—The seal is not broken by evaporation ; the glass cup in which the ball is held can be removed to facilitate cleansing or repairs, and the trap cannot be syphoned out.

Syphonage of Traps.

The seal of a water trap may be destroyed in various ways, *e.g.*, the admission of hot water into the drain will raise the temperature of the air therein, causing expansion and resulting in one or both traps being forced. Evaporation will often cause shallow traps to become dry. Syphoning may happen to a trap from want of ventilation, as the pipes running full bore, a vacuum is created behind a column of water which sucks the water out of the trap. The seal of a trap may be destroyed by capillary action caused by the entry of some foreign substance which

would act as a syphon and drain every drop of water out of the trap, leaving it unsealed ; for example, the traps of sinks are very apt to become untrapped in consequence of thread or hair entering and hanging partly in the water of the trap and partly down the drain, when it acts as a syphon and drains the trap.

The following specification of house drainage work will be found useful to the sanitary inspector :—

Specification.

1. **Excavation and filling in.**—The contractor to take up the pavement and stack the same, fence, light, and watch the opening, dig out and deposit all earth excavated, and construct the drains as directed. Each drain to be laid in a separate trench, unless special permission is obtained from the

No trench to be cut to a greater width or depth than necessary. Should the contractor excavate deeper than is required, the void shall be made good with concrete at the contractor's expense.

The contractor must at his own expense take all necessary precautions to secure the sides of the excavation during the progress of the work, and provide all necessary supports, or whatever may be proper and necessary for the effectual preservation of adjacent premises, water, gas, or other service pipes.

The filling in to be done in 6 inch layers with suitable hard, dry material, and each layer to be properly punned solid.

The material for filling in is to consist of the best portion of the excavated material, and no portion of it which is requisite for making good the trenches will be allowed to be carted away, or any foreign matter substituted in lieu thereof.

2. **Removal of old material, gravel or sand.**—Any gravel or sand required to be excavated for the due carrying out of the works, to become the property of the contractor. Any old materials forming part of existing sewers or drains to become the property of the

and to be removed by the contractor at his own expense to any of the depots as may be directed. In cases where the contractor is directed to take out any old materials forming part of the disused sewers or drains, he will be required to fill up the trenches with approved dry, hard material, to be provided at his own expense.

Any filth, soil, or other offensive matter excavated shall not be deposited on the surface, but at once be put into carts and removed to a place where it will not become a nuisance.

3. **Timber left in trenches.**—It must be distinctly understood that the contractor shall not be entitled to make any claim, or to receive any additional payment or compensation for, or in respect of, any timber or other supports that may, owing to the contractor's negligence, be required to be left permanently in the ground for the effectual preservation of the adjacent premises, water, gas, or other pipes.

Should, however, the contractor be ordered to leave timber in by the in cases where negligence is not attributed to the contractor, he will be paid for such timber according to the schedule of prices.

4. **New pipe drain, method of laying, jointing and testing.**—The drains are to be constructed of glazed stoneware pipes of the required diameter of the best quality, well made, well burnt, circular, perfectly true in bore, and straight, free from flaws, blisters, cracks, or other defects, the thickness in all cases to be not less than one-tenth of such diameter. The pipes shall rest upon a solid bed of Portland cement concrete, at least 6 inches thick, be laid truly to line and inclination, purpose made bends of the proper curvature being used where necessary, holes to be cut in the concrete to receive the sockets of the pipes, and the earth around the pipes to be well packed and rammed. The pipes to be jointed with a collar or gasket of rope yarn soaked in Portland cement before being used, placed round the spigot end of the pipe, and pushed hard in the socket by suitable tools, the socket to be filled and the back of the joint covered with a triangular fillet the full thickness of the pipe, with cement mortar made of one of Portland cement to one of sharp sand well mixed and used fresh. Any loose cement inside the pipes to be removed after laying each pipe, and for this purpose a suitable tool must be kept in the pipe last placed and be drawn through the next joint and then cleaned and replaced.

Drains laid under buildings shall have a foundation of Portland cement concrete laid under them at least 6 inches in thickness, and such drains shall, when laid, be surrounded with Portland cement concrete, 6 inches thick, or shall be laid with cast-iron pipes, with turned and bored, leaded, or with rustless joints.

The whole of the sewers and drains must be made thoroughly watertight and must stand the following hydraulic test both before and after the earth is filled in, to the satisfaction of the

5. **Testing drain.**—The lower end of the drain will be closed by a properly fitting drain plug, and the drain filled with water to a head of

at least 2 feet. Any leaking or defective joints must be made good by, and at the expense of, the contractor.

6. **Inspection notice to be given at office.**—The whole of the sewers, drains, eyes and shafts to be inspected by the before they are covered up. The contractor shall give twenty-four hours' notice in writing to the of all work executed, before the same is covered up.

7. **Connection to sewers.**—All connections with pipe or brick sewers shall be made by the own workman at the expense of the contractor.

8. **Intercepting chambers and air inlet shafts.**—Intercepting and inspection chambers (9 inch brickwork in Portland cement mortar) of dimensions required to be constructed where directed by the with Portland cement concrete foundations, glazed stoneware invert pipes, and approved intercepting trap and protected by an iron cover or covered with strong flags 6 inches thick. Inlet shafts of 4 inch pipes with glazed stoneware traps and grids of approved pattern to be fixed in place of intercepting traps and chambers where required.

9. **Ironwork.**—All cast ironwork used throughout the works is to be of the best of its kind and equal in every respect to the samples to be seen at the office, and must otherwise comply with (as regards cast-iron drain-pipes) the weights and thickness as specified in the table on page 145.

10. **Sewers or drains interfered with.**—Any sewers or drains interfered with or crossed under are to be connected, altered, diverted, supported or lowered, and made good again by the contractor as may be directed by the

11. **Bricks.**—The whole of the bricks used in the several works to be good, hard, square and well burnt, of uniform size and shape, free from limestone or other defects, and to be well watered before being used.

12. **Mortar.**—Mortar for brickwork to be made of Portland cement and clean sharp sand in the proportion of one of cement to two of sand.

13. **Cement.**—The cement to be used in the work shall be the best Portland cement, weighing not less than 110 lbs. to the Imperial striked bushel, and shall not leave a residue of more than 5 per cent. on sieve of 5,625 meshes to the square inch, and when made into briquettes shall bear on the average a tensile strain of not less than 420 lbs. per square inch after being exposed to the air for six hours and subsequently immersed in water for six days.

14. **Reinstate surfaces disturbed.**—Any surface disturbed during the progress of the work to be reinstated to the satisfaction of the at the cost of the contractor.

15. **New flagging.**—Any new flagging which may be required to be of or other approved flags, 3 inches thick, the joints to be squared through, laid and pointed in mortar—the flags to be properly faced and laid on a bed of sand 1 inch thick, the mortar for flagging to be of the best or other lime of approved quality, in the proportion of one of lime to two of sharp clean sand.

16. **Concrete.**—Concrete to be composed of one of sand, one of Portland cement, and five of clean ballast, or broken stones, the stones to be broken so as to pass through a 2 inch ring.

17. **Concrete for finished surfaces.**—Where required, the surface of floors to be finished off with cement skimming, of a thickness of 1 inch in the proportion of one of Portland cement to one and a half of limestone chippings.

18. **Soil pipes, iron.**—Soil pipes to be of the best socketed cast-iron, of the weight and thickness specified in the table on page 187, and be not less than 3½ inches in diameter, properly connected to the drain and jointed with spun yarn and Portland cement, if stoneware drain pipes, and spun yarn and molten lead, if cast-iron pipes, well caulked.

Iron soil pipes to be coated with Dr. Angus Smith's solution, or the Bower-Barff process, as described on page 144, inside and outside, afterwards painted outside with two coats of good oil paint.

All such pipes to be secured to the walls with detachable wrought iron clips, screwed to 14 inches by 6 inches by 2 inches wood grounds or blocks, chamfered, painted three coats, and nailed to a sufficient number of plugs inserted in the joints of the brickwork.

19. **Anti-syphonage pipes to traps of w.c's.**—All soil pipes, whether of lead or iron, must be provided with lead anti-syphonage pipes 2 inches diameter fixed to the trap of each w.c. and carried up as provided in the case of soil pipe ventilators.

20. **Soil pipes, lead.**—Lead soil pipes must not be less than 3½ inches internal diameter, and of solid drawn 8 lb. lead with properly wiped joints, wiped full 3½ inches and to be socketed ¾ inch. All such pipes to be secured to the wall every 6 feet in length by means of a pair of 8 lb. lead tacks, having three wall hooks and plugs to each tack. There must be inserted between the lead soil pipe and the stoneware or iron drain, a brass ferrule, the joint of soil pipe with the drain to be made as specified in the case of iron soil pipes.

21. **Ventilation of soil pipes.**—All soil pipes must be ventilated by means of pipes the same diameter, carried at least 3 feet above the eaves, or to such other position as will afford a safe outlet for foul air. Where no soil pipe exists, a special 4 inch cast-iron ventilating pipe

shall be carried up as provided in the case of soil pipes, from the highest point of the drain, the open end of such soil pipe or ventilator to be protected by a galvanized wire guard (fig. 44) of the full section of the pipe.

22. **Connections of w.c's to soil pipes.**—All stoneware traps of water closets to be connected to lead soil pipes by means of a brass socket properly fixed, the joint between the lead branch and the soil pipe to be outside the wall, and where iron pipes are used, the joint between the lead arm and the iron soil pipe, shall be constructed with a brass ferrule.

23. **Urinal waste pipe.**—All urinal waste pipes to be of good drawn lead, 2 inches to 3 inches in diameter, as may be required.

All urinal wastepipes to be trapped immediately under the basin. These wastepipes to be otherwise constructed in the same manner as soil pipes.

24. **Lavatory, sink, and bath wastepipes.**—All lavatory, sink or bath wastepipes should be constructed of drawn lead from 1½ inches to 3 inches diameter. Each pipe to be trapped as in the case of urinal wastepipes, and furnished with ventilating or puff pipes, should the pipes be more than 10 feet in length. These wastepipes should be constructed so as to discharge either over or under the grating of a trapped gully in the open air. Where such pipes are situated outside buildings, the pipes may be constructed of ordinary rain water pipes, if permitted by the

25. **Iron rain water pipes.**—All rain water pipes must be properly secured to the wall and be painted with two coats of good oil paint both inside and outside, and must be constructed to discharge, as provided in the case of lavatory and other wastepipes.

26. **Lead rain water pipes.**—Lead rain water pipes to be of solid drawn 6 lb. lead and secured to the wall with lead tacks of 6 lb. lead or suitable iron holdfasts.

27. **General.**—The workmanship and materials to be of the best of the several kinds. The whole of the work to be done in a workmanlike manner and to the satisfaction of the

28. **Works to be performed to true intent and meaning of the specification.**—When the contractor shall receive an order to commence any works he shall carry out and perform the same in a good and workmanlike manner, with all true expedition, and to the full intent and meaning of this specification, and in accordance with such instructions as he may from time to time receive, and every drain must be constructed to the precise inclination directed. The decision of the upon all doubtful or disputed points shall be final, binding and conclusive.

WATER SUPPLY.

The water supply of every town or village represents a vast power for good, to cleanse and refresh the air and earth, to irrigate and fertilize the soil, to support life, to drive machinery and to give wholesome drink to man and beast—misapplied it becomes a carrier of disease and death.

A sufficient supply of pure water is, therefore, a service of inestimable value in every household and its necessity is highly appreciated.

The rainfall of England and Wales varies considerably, from 20 inches on the East coast to 70 or 80 inches on the mountain districts of Wales and the watersheds of the Westmoreland and Cumberland lakes. To calculate the amount of water given by rain we must know the amount of rainfall, and the area of the receiving surface; the rainfall is determined by a rain gauge and the area of the receiving surface must be measured.

Assuming the rainfall amounts to 24 inches per annum and the area of the receiving surface 500 square feet, the area if multiplied by 144 (number of inches in one square foot), and this by the rainfall, the product will be the number of cubic inches of rain which has fallen on the given area during the year. In calculating the receiving surface of a house roof, the pitch or slope of the roof should not be taken into consideration, simply the area of the flat surface. To bring cubic inches into gallons, multiply by 40 and divide by 11·091.

In estimating the annual yield of water from rainfall, and the yield at any one time, we ought to know the

greatest annual rainfall, the least, the average, the period of the year when it falls, and the length of the rainless season. It must also be remembered that the amount of rainfall differs very greatly even in places near together.

Water is a compound of hydrogen and oxygen, in the proportion of two atoms of hydrogen to one of oxygen. It is a most powerful solvent, and it greedily absorbs and holds in solution, the gases which are present in the atmosphere.

Absolutely pure water is not to be found in its natural state, as in descending in the form of rain it carries impurities from the air through which it passes. In flowing over lands and percolating through the earth it gathers in its course mineral, vegetable, and animal matters.

A pure natural water is clear, transparent, colourless, free from taste or smell. Bright sparkling water is very deceptive as it often owes its seductive appearance to contact with sewage.

The degrees of purity are classified as follows : —

Wholesome.	1. Spring water.	Very palatable.
	2. Deep well water.	
	3. Upland surface water.	Moderately palatable.
Suspicious	4. Stored rain water.	
	5. Surface water from cultivated land.	Palatable.
Dangerous	6. River water to which sewage gains access.	
	7. Shallow well water.	

The most wholesome water for potable purposes is that obtained :—

1. From rivers and lakes in barren and uninhabited mountainous districts, where the rainfall is heavy and flows rapidly off the land.

2. From deep wells and springs.

The geological formations most favourable for well

sinking are the new red sandstone, chalk and oolites. They form excellent filters, and as the water percolates slowly through the interstices of the rocks, organic impurities are to some extent arrested or so changed as to remove any danger there might otherwise have been in drinking the water.

Wells should not be sunk in populous districts, nor in proximity to cesspools, privies and manure heaps.

Rivers and streams polluted with sewage are not safe sources of supply, though there may be no visible evidence of sewage where the water is abstracted.

Rain water collected from the roofs of houses and other buildings varies in quality according to the state of the atmosphere through which it descends, of the surface upon which it falls, and the receptacle in which it is stored. If proper precautions are taken to ensure the cleanliness and fitness of the receiving surface and tank, there is no reason why rain water should not be obtained from the roofs of houses and other buildings in rural districts. But in towns, especially manufacturing towns, owing chiefly to the state of the atmosphere it would be dangerous to drink such water.

A very ingenious though simple contrivance for separating the rain water (fig. 68), the invention of the late Mr. E. G. Roberts of Haslemere, and manufactured by Mr. H. J. Rogers, Haslemere, Surrey, will be found of the greatest service to the occupiers of country houses, where the collection of rain water is indispensable; they are made for both vertical and horizontal positions.

The horizontal separator consists of a fixed head that receives the water, and a fixed outlet box, with two delivery pipes for foul and pure water respectively. The canter or third part of the separator, is removable, and is balanced upon a pivot resting in two grooves in the iron frame beneath it. A heavy weight on the back of the

canter keeps the front of it usually lifted up in the position shown ; there are two open channels in the upper part of the canter ; when the canter is *up*, the front channel directs the water that comes from the head into the (lower) foul water delivery pipe ; when the canter is *down*, the back channel directs the water into the (upper) pure water delivery pipe. The action can be shown by placing the hand upon the front of the empty canter and pressing

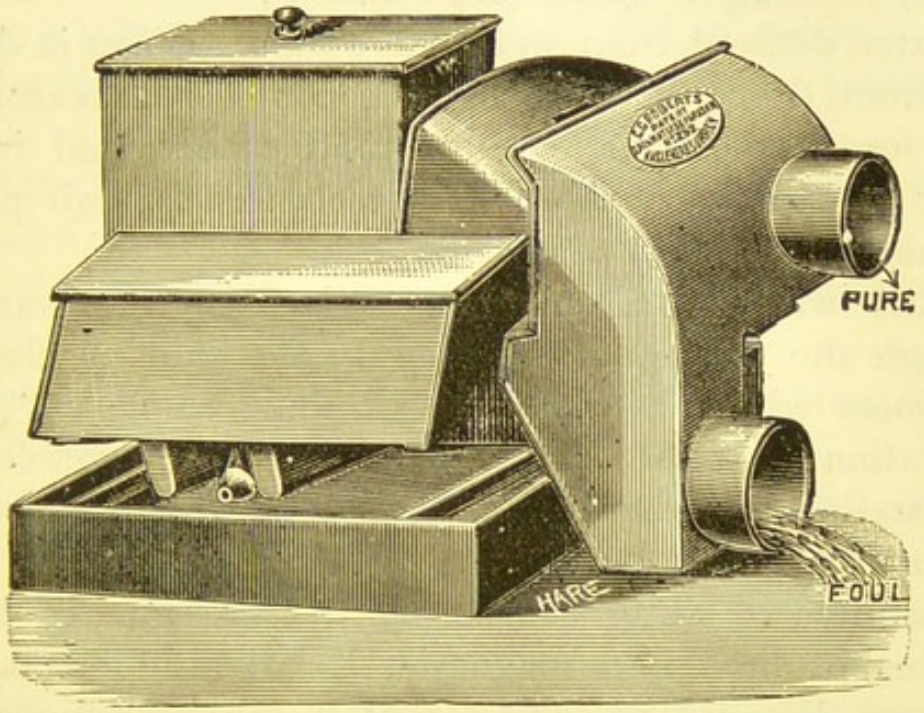


FIG. 68.—Roberts' rain water separator.

with sufficient force to overcome the weight on the opposite side.

The rain water separator, as it is called, has no resemblance to a filter. Instead of attempting to obtain pure from foul water, it rejects the dirty and stores the clean water. It is made of zinc upon an iron frame, and the centre part or canter, is balanced upon a pivot. It is self-acting, and directs into a wastepipe, or foul water tank, the first portion of the rainfall that washes off and

brings down from the roofs soot and other impurities. After rain has fallen a certain time, the separator cants and turns the pure water into the storage tank.

"The value of spring and deep well waters is not merely due to their greater intrinsic chemical purity and palatability, but to their being peculiarly suited for domestic supply from their almost invariable clearness, their uniformity of temperature throughout the year, rendering them cool and refreshing in summer, and preventing their readily freezing in winter (De Rance)."

Water derived from wells more than 100 feet in depth, and from deep-seated springs, is considered reasonably safe, for in these the organic matter contained in the water is rapidly oxidised in percolation through porous and aerated soil and permeable rock.

Hard water not only acts injuriously in washing, through the waste of soap, and to the skin by clogging the pores with curdy matter, but when employed in the generation of steam forms dangerous and troublesome incrustations in the boiler, especially where temporary hardness is very great.

Hardness of water caused by the presence of bicarbonates of lime and magnesia, is called "temporary" hardness, because to some extent it can be removed by boiling; hardness due to the presence of sulphates of lime and magnesia is not diminished by boiling, and is therefore termed "permanent" hardness.

The distribution of water in towns on the constant or intermittent systems of supply is effected by aqueducts and pipes. A constant supply of water is defined by the Water Works Clauses Act, 1863, as a supply "constantly" laid on at such a pressure as will cause the water to reach the top storey of the highest houses within the limits of the Special Act. (See also Sect. 55, Public Health Act, 1875).

The advantages of a constant service of water, are briefly :—

1. That the water can be obtained from a tap in direct communication with the main at any time, except when shut off for repairs, alterations or extensions.

2. Store cisterns are unnecessary, except for trade and hot water purposes ; risks connected with stagnant water, improper connections of supply pipes to w.c's, &c., and overflow pipes to drains are obviated.

3. Risks of pollution through defective pipes are reduced to a minimum, as the pipes are seldom empty.

4. The pipes are less liable to rust ; air in the presence of a little moisture, causes rapid corrosion.

5. There is an abundant supply of water always ready in case of fire.

The "intermittent" supply has the following disadvantages :—

1. The water is turned on only for a limited period each day, varying from one to several hours.

2. The storage of water in cisterns, butts, and other receptacles, renders the water liable to pollution, besides which it entails expense in the erection and maintenance of such vessels.

3. The impurity of cistern water leads to the use of filters, which are seldom, if ever, cleaned out, and thereby aggravate the evil they are intended to remedy.

4. The want of adequate storage accommodation leads to the use of kettles, pans, jugs and other unsuitable utensils which are generally exposed to the vitiated air of overcrowded rooms, and a pure water supply under such conditions is impossible.

5. The withdrawal of the water from the mains causes a vacuum or partial vacuum in the pipes and consequently foul gases may be drawn into the mains through defective pipes and open taps.

6. Except during the hours of distribution, and unless special fire mains are provided, no water can be obtained to extinguish fires until the turncock or fireman has turned on the water. This operation often causes delay at the most critical time in the progress of the fire. Waste of water through defects in pipes and open taps when the water is turned on under these circumstances will interfere greatly with the pressure, thereby necessitating the use of the pump.

7. Under the intermittent system a larger staff of turncocks has to be employed.

8. Where only a short or irregular intermittent service is given, the pressure from the mains cannot be used for motive power. As regards the modern system of a separate water supply to each house, there are many useful and ingenious, though often complicated, sanitary appliances. The introduction of these appliances have been much more rapid and general than the education of the public in the use of them; hence the ignorance which prevails causes considerable trouble and expense.

The public are seldom concerned about their cisterns, butts, or taps, so long as they get water which is clear and palatable. They expect the Water Works authorities to exercise whatever supervision may be necessary, forgetting that the Water Works regulations are designed to prevent waste, and to ensure payment for the water supplied; it will, therefore, be the sanitary inspector's duty to keep an eye on the condition of the store cistern and other water fittings.

The materials of which cisterns are made for the storage of water for potable purposes are wood, lead and zinc lined, slate, iron, stone, or brick-work with a cement lining. The use of lead lined cisterns for the storage of drinking water has been repeatedly condemned by the medical faculty owing to the action of certain (soft) waters

upon lead. "The waters which act most on lead are the purest and most highly oxygenated and those containing organic matter, while those waters which act least on lead are those containing carbonic acid, calcium carbonate and calcium phosphate" (Parkes). Water seldom acts upon tarnished lead, but where new cisterns with lead linings are fixed, or existing cisterns are repaired, the bright lead should be exposed to water for several days, the water thus exposed being entirely drawn off before the cisterns are brought into use and water drawn therefrom for dietetic purposes.

Zinc and galvanized iron cisterns are also acted on by water, and may produce metallic poisoning, though as a matter of fact, zinc and galvanized iron cisterns are in general use, without any apparent serious results.

The overflow pipes of all cisterns, fixed inside houses, should be taken through an external wall, and under no circumstances should such pipes communicate with any drain or soil pipe.

All cisterns must be furnished with suitable close fitting covers, and they should be placed in such a position as to be at all times easy of access for cleaning and repairs. The situation of the cistern as regards chances of pollution of the water is the first consideration. When cisterns are placed in exposed positions, and therefore liable to be affected by frost, they should be carefully protected from the influence of the weather by an exterior lining of wood, felt or brick-work, the space being filled in with several inches of sawdust, care being taken to protect the latter from getting wet.

The by-laws of the Metropolis provide that "the *occupier* of any premises in which a tank, cistern or other receptacle is used for storing water used or likely to be used by man for drinking or domestic purposes or for manufacturing drink for the use of man, shall empty and cleanse

the same, or cause the same to be emptied and cleansed, once at least in every six months, and at such other times as may be necessary to keep the same in a cleanly state and free from pollution."

He shall also cause every tank, cistern or receptacle, whether fixed inside or outside a building, to be placed in a suitable chamber or otherwise placed to prevent pollution of the water and provide and maintain a proper cover.

If two or more tenants have the common use of any such tank, cistern or receptacle, then the above requirements shall apply to the *owner* and not the occupier.

In England it is seldom that frost penetrates to a greater depth than two or three feet below the surface of the ground, and it is customary to lay the water-pipes at about that depth underground; in the case of pipes which are in exposed situations it is necessary to protect them from frost, and this is frequently done by covering them with felt and sawdust or other non-conducting material. The bursting of cisterns may be prevented by putting in a block of wood or a weighted hollow india-rubber ball or other elastic body. If pipes are laid against an external wall they should be fastened to a board and not allowed to be in direct contact with the wall.

The quantity of water consumed per head of the population varies from 5 to 15 gallons per day for cottages, this would include water for the water-closet; but in the case of larger houses where there are a number of water-closets, and the baths are freely used, it often reaches 70 gallons per head per day.

The total rate of 25 gallons per head per day is a liberal allowance for all domestic, trade, sanitary, and public purposes, including waste, of a town in which there is considerable, but not exceptional, manufacturing industries, and in which water closets are not in general use.

In water closet towns 30 gallons per head per day would be sufficient for all purposes.

The late Dr. E. Parkes recommended the following estimate of the daily allowance of water for all purposes :—

Particulars of Supply.	Gallons per Head of Population.
Domestic purposes	12
General baths	4
Water closets	6
Unavoidable waste	3
Total house supply	25
Municipal purposes	5
Trade purposes	5
Total . .	35

If the inspector finds that water is being wasted he should make it his duty to report the matter to the water-works engineer, as excessive waste of water is attended by no corresponding advantage. There is a popular impression that the cleansing of drains and sewers is promoted by the waste of water from taps and w.c's; this is a mistake. Drains and sewers can only be effectually flushed by the sudden discharge of a sufficient volume of water from their highest point, and the quantity required to do this is very small in proportion to the total consumption of any town.

This table shows approximately the capacity of store cisterns of the dimensions given :—

Gallons.	Length.		Width.		Depth.	
No.	Feet.	Inches.	Feet.	Inches.	Feet.	Inches.
30	2	0	1	6	1	8
40	2	7	1	6	1	8
50	2	7	1	7	2	0
60	2	7	1	9	2	2
70	2	10	1	10	2	2
80	3	0	2	0	2	2
90	3	0	2	0	2	6
100	3	0	2	2	2	6
150	3	7	2	5	2	10
200	4	0	2	8	3	0
300	4	0	3	6	3	6
400	4	0	4	0	4	0
500	5	0	4	0	4	0
750	6	0	5	0	4	0
1000	7	6	6	0	4	0

An imperial gallon contains 10 pounds of distilled water at 62° F., and a cubic foot contains nearly 6¼ imperial gallons.

The following section has regard to water supply:—

"Where on the report of the surveyor of a local authority it appears to such authority that any house within their district is without a proper supply of water, and that such a supply of water can be furnished thereto at a cost not exceeding the water rate authorised by any local Act in force within the district, or where there is not any local Act so in force at a cost not exceeding twopence a week, or at such other cost as the Local Government Board may, on the application of the local authority, determine under all the circumstances of the case to be reasonable." (Public Health Act, 1875, Sect. 62).

As to what is meant by *reasonable* cost, see Section 8 of the Public Health (Water) Act, 1878.

A rural district council under Section 3 of the Public Health (Water) Act, 1878, has power to enforce an order to supply water to any house within their district if it appears to them, upon the report of the inspector of

nuisances, that any occupied dwelling house has not available a supply of wholesome water within reasonable distance.

In Scotland the Local Authorities may combine and create special water supply districts under Section 131 of the Public Health (Scotland) Act, 1897, and by Section 125 of the same Act, they may require the owner of any occupied house, which is without a proper supply of wholesome water at or reasonably near the same, to obtain such supply and do all such works as may be necessary for that purpose, and failing his doing so, within twelve months after due notice, the Local Authority may themselves obtain such supply.

In the metropolis an occupied house without a proper and sufficient supply of water is a nuisance that may be dealt with summarily under the Public Health (London) Act, 1891, Section 48, and if it is a dwelling house, it may be closed as unfit for human habitation.

Dwelling houses in the Metropolis, which are newly erected or pulled down and rebuilt, cannot be occupied until the sanitary authority has certified that there is to such house a proper and sufficient supply of water.

The certificate furnished by the sanitary authority is as follows:—

Form of Certificate.

Public Health (London) Act, 1891.

Whereas the house situate and being

within the District for which the Council of the Borough of in the County of London, are the Sanitary Authority within the meaning of the Public Health (London) Act, 1891, has been newly erected *or* pulled down to *or* below the ground floor and rebuilt since the date of

the commencement of the said Act, that is to say, since the 1st day of January, 1892.

Now therefore the said Council, as such Sanitary Authority as aforesaid, do hereby certify that the said house has a proper and sufficient water supply from

as required by the said Act.

Dated the day of 19

Signed

Of the said Sanitary Authority.

Should a sanitary authority refuse the certificate, or fail to give it within one month after written request from the owner, he may apply to a Petty Sessional Court.

In London, if the Metropolitan Water Board cuts off the water supply of any inhabited dwelling house, for any purpose, they must give the Sanitary Authority of the district notice of the withdrawal within twenty-four hours.

The pollution of water is of serious moment, and is most common in towns having an intermittent supply, and in villages where the shallow wells or domestic pumps are in use. In the case of water stored in cisterns the pollution of the water generally arises from the deposits of foreign matter in the cistern, such as bird's droppings, decayed leaves, dust, rats, mice, birds and other objectionable matter which is sure to find its way into such receptacles.

Water is liable, as before stated, to lead and other metallic contaminations from the use of unsuitable materials for cisterns, &c.

Water is frequently found to be polluted with foul gases which it has absorbed, and the water in shallow and other wells is often rendered unfit for use owing to the percolation of liquid matter from privies, drains, manure heaps and surface washings finding their way into the water.

No water closet should be supplied with water from the

drinking water cistern, unless such closet is furnished with a water-waste preventer cistern, or, as is frequently done in the supply of water to valve closets, provided with a regulating valve and intermediate cistern.

If the inspector has reason for doubting the quality of the water supply to any house in his district the following provision will have effect :—

On the representation of any person to any local authority that within their district the water in any well, tank, or cistern, public or private, or supplied from any public pump, and used or likely to be used by man for drinking or domestic purposes, or for manufacturing drinks for the use of man, is so polluted as to be injurious to health, such authority may apply to a court of summary jurisdiction for an order to remedy the same; and thereupon such court shall summon the owner or occupier of the premises to which the well, tank, or cistern belongs if it be private, and in the case of public well, tank, cistern, or pump, any person alleged in the application to be interested in the same, and may either dismiss the application, or may make an order directing the well, tank, cistern, or pump to be permanently or temporarily closed, or the water to be used for certain purposes only, or such other order as may appear to them to be requisite to prevent injury to health of persons drinking the water.

The court may, if they see fit, cause the water complained of to be analysed at the cost of the local authority applying to them under this section.

If the person on whom an order under this section is made fails to comply with the same, the court may on the application of the local authority authorise them to do whatever may be necessary in the execution of the order, and any expenses incurred by them may be recovered in a summary manner from the person on whom the order is made.

Expenses incurred by any rural authority in the execution of this section, and not recovered by them as aforesaid, shall be special expenses (Public Health Act, 1875, Sect. 70, and Public Health (London) Act, 1891, Sect. 54, also Sect. 16, Sub-sect. 3, Public Health (Scotland) Act, 1897).

Should the inspector have reason to suspect that the water supply is polluted, he must immediately report the

circumstances to the Medical Officer of Health for the district and to the local authority, who will probably instruct him to take a sample of the water for purposes of analysis.

A Winchester quart bottle, which holds about half a gallon, stoppered or furnished with a clean cork, should be used for collecting samples of water, care being taken to see that the bottle is absolutely clean, and having been rinsed with the water to be analysed several times.

If the sample of water is taken from a river or reservoir the vessel should be carefully immersed in the water so that the top or neck of the bottle is below the surface.

After the bottle has been securely sealed and marked, the sample should be immediately sent or taken personally to the public analyst, at the same time handing him written particulars as to the source of the sample and the circumstances under which it was taken.

INFECTIOUS DISEASES AND DISINFECTION.

The compulsory notification of infectious disease has added great responsibility to the duties of the Sanitary Inspector, the performance of which is attended with considerable risk of health and even life itself.

The Infectious Disease (Notification) Act, 1889, which was made compulsory by the Infectious Disease (Notification) Extension Act, 1899, and the Public Health (London) Act, 1891, are the two principal Acts governing the law relating to infectious diseases in the United Kingdom.

The reporting of infectious cases is of a dual description, that is to say, the medical attendant as well as the occu-

pier of the house in which the sick person is retained, or the person in charge of the patient are made liable to notify the case, immediately upon becoming aware of the nature of the illness, to the Medical Officer of Health of the district, or if notified by the Medical Officer of a public institution, then the certificate must be sent to the Medical Officer of Health of the district from which the patient was brought.

The expression "infectious disease" means any of the following diseases, namely, small-pox, cholera, diphtheria, membranous croup, erysipelas, the disease known as scarlatina or scarlet fever, and the fevers known by any of the following names, typhus, typhoid, enteric, relapsing, continued, or puerperal (Public Health (London) Act, 1891, Sect. 55). Plague has been added to the list of infectious diseases required to be reported.

The above definition is the same as that given in Section 6 of the Infectious Disease (Notification) Act, 1889.

A sanitary authority has power to extend the definition of infectious disease, provided the Local Government Board assents.

The law of notification as regards infectious disease is, as follows :—

"Where an inmate of any building used for human habitation within a district to which this Act extends is suffering from an infectious disease to which this Act applies, then unless such building is a hospital in which persons suffering from an infectious disease are received, the following provisions shall have effect, that is to say:—

(*a*) "The head of the family to which such inmate (in this Act referred to as the patient) belongs, and in his default the nearest relatives of the patient present in the building or being in attendance on the patient, and in default of such relative every person in charge of or in attendance on the patient, and in default of any such person the occupier of the building shall, as soon as he becomes aware that the patient is suffering from an infectious disease to which this Act

applies, send notice thereof to the medical officer of health of the district.

(*b*) "Every medical practitioner attending on or called in to visit the patient shall forthwith, on becoming aware that the patient is suffering from an infectious disease to which this Act applies, send to the medical officer of health for the district a certificate stating the name of the patient, the situation of the building, and the infectious disease from which, in the opinion of such medical practitioner, the patient is suffering.

"Every person required by this section to give a notice or certificate, who fails to give the same, shall be liable on summary conviction in manner provided by the Summary Jurisdiction Acts to a fine not exceeding forty shillings.

"Provided that if a person is not required to give notice in the first instance, but only in default of some other person, he shall not be liable to any fine if he satisfies the Court that he had reasonable cause to suppose that the notice had been duly given." (Infectious Disease (Notification) Act, 1889, Section 3, and Public Health (London) Act, 1891, Section 55).

The Borough Councils in the Metropolis are required to report all cases of infectious disease to the managers of the Metropolitan Asylums Board within twelve hours of the receipt of the medical certificate, and a similar communication must be sent to the head teacher of the school, if any, attended by the patient or by any child resident in the same house. Notice of such cases, though it is not compulsory, should also be sent to the librarian of any public or private library in the district, so that steps may be taken to prevent the issue of books to infected houses, and to enable the librarian to notify the Sanitary Authority of any books already issued to the inmates of such houses, in order that the same may be collected and disinfected or destroyed.

Form of Certificate sent to the Metropolitan Asylums Board.

Borough of

Date 19

To the Managers of the
Metropolitan Asylum District.

In accordance with the Public Health (London) Act, 1891, I beg to forward you copies of Certificates received by me this day from Medical Practitioners, relative to cases of disease in this district.

Your obedient servant,

Name of Patient.	Age.	Sex.	Address.	Description of Disease.	Name of Medical Practitioner who signed Certificate.	Address.	Date of Certificate.

Form of Certificate sent to Head Teachers.

Borough of

Date 19

To the Head Teacher of the *School.*

Sir,

In compliance with Section 55, Sub-section 4, of the Public Health (London) Act, 1891, I forward you a copy of a certificate, just received, notifying a case of infectious disease in a house of which children attending your School are inmates.

I am, Sir,

Yours faithfully,

Form of Medical Certificate.

Name of Patient Age Sex

Address

If Inmate of Hospital—
Place from which brought
Date

Disease

Whether Case has occurred in—
Private Practice
Public Practice

Date of Certificate

Signed

Form of Notice to Employers.

Borough of

19

Sir,

I beg to inform you for your information that a case of infectious disease, to wit
has occurred at
where in your employ, resides.

I am, Sir,
your obedient servant,

To

The duty of making inquiries into infectious cases forms no part of the sanitary inspector's duties, as prescribed in the general order of the Local Government Board, though it has become the practice for local authorities to impose such duties upon the inspector who thus acts for the Medical Officer of Health.

The inspector upon receiving a report of a case of in-

fectious disease from the Medical Officer of Health should with all dispatch proceed to the house referred to in the medical certificate, making inquiries as to the means available for the isolation of the patient at home, and if necessary arrange for the patient's immediate removal to the infectious disease hospital, should one be provided, afterwards making enquiries as to the probable source of infection, particulars relating to persons living or employed in the building or having been in contact with the patient, and inspecting the house and surroundings, as regards its sanitary condition.

In the Metropolis, the Asylums Board undertakes the removal of infectious cases to their hospitals, and in their own ambulances, upon receipt of application to that effect from the sanitary authority.

If the parent or guardian of the patient, or any person in charge of such patient, refuse to allow the case to be removed to the hospital, the Sanitary Inspector must report the circumstances to the Medical Officer of Health, who alone is responsible for measures taken to prevent the spread of infectious disease, and if the medical officer is of opinion that there is not proper lodging or accommodation for the patient at home, he may issue his certificate to that effect, whereupon application should be made to a justice for an order to remove the patient compulsorily. An application of this nature should, however, never be made until all efforts of persuasion have failed, nor without first giving reasonable notice to the parties concerned of the intention.

If the Sanitary Inspector should hear of, or himself discover, any suspected case of infectious disease, not reported, he must immediately acquaint the Medical Officer of Health with the circumstances.

The following clauses have reference to the removal and detention, in hospitals, of infectious cases :—

Where any suitable hospital or place for the reception of the sick is provided within the district or within a convenient distance of such district, any person who is suffering from any dangerous infectious disorder and is without proper lodging or accommodation, or lodged in a room occupied by more than one family or is on board any vessel . . . on a certificate of a legally qualified medical practitioner and with the consent of the superintending body of such hospital . . . be removed by order of any justice to such hospital at the cost of the local authority and any person so suffering who is lodged in a common lodging house, may, with like consent, be so removed by order of the local authority. (Public Health Act, 1875, Sect. 124 and Sect. 54, Public Health (Scotland) Act, 1897).

The words "or lodged in a tent or van" are added in Sect. 67, Public Health (London) Act, 1891.

A person suffering from an infectious disease had proper lodging or accommodation, so far as he himself was concerned, at his father's house, but that he could not be properly isolated, and there would be danger of infection to other inmates of the house if he remained there. The Court held that there was evidence that he was "without proper lodging or accommodation" within the meaning of Section 124 of the Public Health Act, 1875. (Warwick *v.* Graham, Div. Ct. (1899), 2 Q.B. 191).

Any justice of the peace acting in and for the district of the local authority, upon proper cause shown to him, may make an order directing the detention in hospital at the cost of the local authority of any person suffering from any infectious disease, who is then in an hospital for infectious disease and would not on leaving such hospital be provided with lodging or accommodation in which proper precautions could be taken to prevent the spreading of the disorder by such person. Any order so to be made by any such justice may be limited to some specific time, but with full power to any justice to enlarge such time as often as may appear to him to be necessary. It shall be lawful for any officer of the local authority or inspector of police acting in the district, or for any officer of the hospital, on any such order being made to take all necessary measures and do all necessary acts for enforcing the execution thereof. (Infectious Disease (Prevention) Act, 1890, Sect. 12; and Public Health (London) Act, 1891, Sect. 67; also Sect. 55, Public Health (Scotland) Act, 1897).

To facilitate the necessary enquiries into infectious cases, and the inspection of infected houses I append a form and list of questions for enquiry when visiting such houses, as follows :—

Form of Pocket Book.

Date of Certificate Date the Certificate was received
Name of Patient Age Sex
Address
Description of Disease
Date of onset
Source of Infection (if ascertained)
Milk supply
Sanitary condition of house and surroundings
Isolation, Home or Hospital
,, Name of Hospital
Date of Removal to Hospital
School attended by the Patient
School attended by other children in house (if any)
Whether vaccinated (in cases of Small-pox)
Name of Medical Attendant
Name of Officer making the Inspection
General Remarks

This information should be carefully noted and afterwards entered in the Infectious Disease Register, a specimen of which is given on page 242.

This register will form a complete history of each case reported or discovered, which, with the particulars as to measures adopted for preventing the spread of disease, in the shape of isolation and disinfection, will provide an easy means of reference for the Sanitary Authority, the Medical Officer of Health and, in case of an epidemic, the Medical Inspector of the Local Government Board.

A separate index should be provided and this can with

FORM OF REGISTER.

No. of Case.		
Date of Medical Certificate.		
Date when Medical Certificate was received.		
Name of Patient.		
Age.		
Sex.		
Address.		
Disease.		
Date of onset.		
Source of infection (if ascertained).		
Milk supply.		
Sanitary condition of house and surroundings.		
Where case is isolated (home or hospital).		
If removed to hospital (name of hospital and date of removal).		
School attended by patient or by other children in same house.		
If vaccinated (in cases of small-pox.)		
Particulars of Disinfection.	Date of disinfection.	
	No. of rooms cleansed.	
	No. of rooms fumigated.	
	No. of articles disinfected.	
Name of Medical Practitioner reporting the case.		
Remarks.		

Disease.	Incubation.	Mode of Onset and Early Symptoms.	Rash Appears on	Character of Rash, &c.	Infectious for at least
Variola or Small-Pox.	12 days.	Onset rather sudden, with shivering, vomiting, drowsiness, pain in head and back. Sometimes convulsions occur.	3rd day.	Hard shotty red spots, turning to blisters in 2 or 3 days, and filling with matter about the 12th day.	Until the skin is quite clear.
Diphtheria.	2 to 7 days.	Onset gradual. Weakness, loss of colour and appetite, sore throat, cough and hoarseness often.	None.	Grey patches in mouth, on tongue, or back of throat.	3 weeks.
Scarlatina or Scarlet Fever.	24 hours to 5 days.	Onset sudden, with high fever, vomiting, hot burning skin, sore throat.	2nd day.	Tiny bright red points, making the skin look red all over; first seen on chest, thighs, and back.	6 weeks.
Typhus Fever.	12 days.	Onset sudden, slight headache and malaise, rigors, frontal headache, lassitude, pain in back and limbs, high temperature.	4th or 5th day.	First dirty pink on the back, grouped together in patches, disappear on pressure, afterwards become darker colour and on pressure get paler.	3 weeks.
Enteric or Typhoid Fever.	14 to 21 days.	Onset very gradual, with weakness, fever at night, loss of appetite, drowsiness. Sometimes diarrhœa.	8th day and onwards.	A few rose-coloured spots, chiefly on body, and appearing in daily crops.	——
Rubella or German Measles.	14 to 21 days.	Usually no symptoms before the rash appears. Sometimes weakness, sore throat, and pain in back of neck.	1st or 2nd day.	Red spots, raised; often in groups, first appearing on face, wrists, and ankles, and causing itching.	3 weeks.
Measles.	10 to 12 days.	Onset gradual, with symptoms of feverish cold, sneezing, watering of eyes and cough.	4th day.	Dull red spots, raised; forming groups and crescents, first appearing on face and about the roots of the hair.	3 weeks.
Whooping or Chin Cough.	7 to 14 days.	Onset gradual, with symptoms of feverish cold, and troublesome cough.	None.	Cough getting worse, and after a week, coming on in fits, chiefly at night-time.	4 weeks.
Mumps.	14 to 21 days.	Onset rather sudden, with chilliness, loss of appetite, and pain about the jaws and ears.	None.	Swelling below ears or under the jaws.	3 weeks.
Varicella or Chicken-Pox.	13 to 16 days.	Usually none.	1st day.	Red spots, turning to blisters in a few hours and then drying up.	3 weeks.

Note.—The incubation period is the period between the exposure to infection and the first appearance of symptoms of illness.

advantage be utilised for recording the houses and streets in which infectious cases have occurred.

The tabulated information on page 243 relative to infectious diseases will be found useful.

On the subject of infectious diseases, the 19th Annual Report of the Board of Health of the State of New Jersey, U.S.A., contains the following information as to the source of infection of the diseases here mentioned :—

Disease.	Source of Infection.
Variola or Small-Pox.	1. From previous case of the disease. 2. From infected articles.
Diphtheria.	1. From a previous case of diphtheria. 2. From a case of apparently simple tonsillitis or sore throat. 3. From a case of apparently simple nasal ulceration. 4. From domestic animals (cats, pigeons and fowls) suffering from a throat affection. 5. From infected cows' milk. 6. From infected bedding, clothes, carpets, curtains, books, toys, drinking cups, spoons, forks, lead pencils, &c. 7. From a person who has been in contact with a diphtheria patient, but who has not himself contracted the disease.
Scarlatina or Scarlet Fever.	1. From a previous case of scarlet fever. 2. From a case of sore throat without discoverable rash, but really a mild form of the disease. 3. From infected milk. 4. From infected books, toys, dishes, garments &c.
Typhus Fever.	1. From a previous case. The virulence of the contagion is rapidly destroyed by fresh air and free ventilation, combined with cleanliness, so that the spread of the infection is

generally observed only in the over-crowded and insanitary quarters of the poorest class of the population in industrial towns. It is usually held that fomites do not propagate the infection, but that actual contact or close proximity to a typhus patient is necessary to impart the disease.

Enteric or Typhoid Fever.

1. Water, food, or air, contaminated by the specific virus contained in the excretions of an enteric fever patient.
2. Polluted well waters may remain infective or retain the infection latent for long and unknown periods after the original mode of infection has ceased to operate.
3. The food most often implicated in the production of enteric fever is cows' milk which has acquired its infectiveness by the addition to it of water polluted by excreta, or by contact with cans and utensils which have been infected by polluted water, or by contact with unclean hands. Outbreaks of enteric fever have been traced to ice cream, herb beer, and other drinks manufactured on premises where enteric fever has existed.
4. Oysters, mussels, and other shell-fish grown in waters receiving sewage have also appeared to cause enteric fever.
5. The attendants upon enteric fever patients may become infected by taking meals with unwashed hands.
6. The air of privies, cesspools, drains and sewers which have become the receptacles for the discharges from typhoid patients, is capable of imparting infection to persons who are exposed to concentrated emanations from these sources.
7. The air of the sick room occupied by an enteric fever patient may possibly be the means of transmitting the illness to persons long present in the room, but not where the cleanliness and ventilation of the room are daily

attended to. Enteric fever very rarely spreads in the wards of clean and well-regulated hospitals.

8. Instances are known where washerwomen have contracted the disease from handling infected clothing or bedding of enteric fever patients. The infection may persist for several weeks in infected clothing and bedding shielded from contact with light and air.

Rubella or German Measles.
1. From a previous case of German measles.
2. From infected articles.

Measles.
1. From a previous case of measles.
2. From infected bedding, clothes, carpets, curtains, books, toys, &c.

Whooping Cough.
1. From a previous case of whooping cough.
2. From infected articles.

Mumps.
1. From a previous case of mumps.
2. From infected articles.

Chicken-Pox.
1. From a previous case of the disease.
2. From infected articles.

On the subject of Plague, Mr. Power, Chief Medical Officer of the Local Government Board, in a special memorandum recently issued, states that:—

1. Plague has an incubation period of 3 to 5 (in exceptional cases of perhaps 8 to 10) days.

2. Plague is wont, especially in its earlier manifestations, to assume a mild form, or even to present anomalous symptoms, tending to confound it with other and more innocent diseases.

3. Plague in all its forms must needs be regarded as personally infective.

4. Plague affects rats as well as the human subject; it may, indeed, be found causing mortality among these lower animals antecedent to its definite invasion of the

population. There can be no doubt that the rat and man are, as regards plague, reciprocally infective.

Patients not removed to an infectious hospital should be placed in a room which is so situated as to be quite isolated from the rest of the house, the topmost room in the house being the best, and the person in attendance upon the patient should have no other duty to perform in the house.

When the patient has recovered of the disease, or has been removed to the hospital, the house should be immediately disinfected by means of one or other of the following alternative methods:—

Any books, paper or other articles of little value, which would be ruined by being subjected to high temperature or to immersion in perchloride of mercury (corrosive sublimate), should be destroyed by fire in the room.

If there is no apparatus for disinfecting the bedding and clothing, all such articles should be thrown across lines fixed in the room to be disinfected, or in such a manner as will permit of the sulphur, chlorine, or formalin gas permeating the folds of the bedding and clothing to be disinfected.

All the crevices of the doors, windows and floors should be pasted over with paper; and chloride of lime (bleaching powder), in the proportion of 1½ lb. to every 1000 cubic feet of space in the room, should be placed in a number of suitable receptacles located in different parts of the infected room; one of the receptacles being placed near to the ceiling. The operator should then pour a little hydrochloric or diluted sulphuric acid upon the chloride of lime and at once leave the room, closing the door and repeating the operation of pasting paper round the edges of the door and covering the key hole. The room must then be closed for at least 8 to 10 hours, after which the windows should be thrown open for ventilation.

When the room to be disinfected contains valuable furniture or pictures, &c., chlorine gas ought not to be the agent for fumigating, as this would probably cause serious damage to furniture of this description, and to obviate this risk, the apartments should be fumigated with roll or powdered sulphur, or by sulphur dioxide, which is supplied in cylinders containing about 20 oz. of liquefied gas, this being sufficient to disinfect an ordinary sized room; the latter preparation is handy, but the cost is greater than with ordinary sulphur.

Sulphur, when required for disinfecting or fumigating, should be put in iron pans or other suitable receptacles in the same proportion as in the case of chloride of lime, adopting the same precautions as before described, and placing pans over iron pails containing water to the depth of several inches. The water is evaporated by means of the heat generated by the burning sulphur, and as this condenses gradually on all objects in the room, it brings the sulphurous acid gas, as the disinfecting agent, into material contact with them, thus securing efficient disinfection, for the gas is soluble in water.

To ensure the ignition of the sulphur, a little methylated spirit should be poured upon it, as it lies in the pan, the sulphur can then be lighted with a match or a few LIVE coals from the fire.

Disinfection by formalin is clean and effective, but not so economical as the other methods mentioned.

With this process is used an Alformant lamp or lamps, according to the size and number of the rooms to be disinfected, following the directions here given:—

Place in the upper receptacle 15 to 20 formalin tablets for each 1,000 cubic feet of space to be disinfected, then unscrew the cap of the spirit container and fill with methylated spirit. Replace the cap and unscrew the thimble over the burner. If the wick be new and dry,

unscrew the burner and moisten it with the spirit, and re-screw it into the container. Then light, taking care that the flame is not too high or large. The flame can be easily extinguished by blowing, but after use re-screw the thimble over burner.

Drs. Thresh and Sowden, writing on the subject of disinfection by means of formalin spray, state that in their recent experiments the solutions used were made by diluting a 40 per cent. commercial specimen of formal and corresponded to the percentage given of pure formaldehyde. The results were throughout more uniformly favourable than with any other solution. Excluding the experiments which failed on account of the presence of the bacillus subtilus, ·5 per cent. of formaldehyde killed all organisms on wood and wall-paper, and failed only with the bacillus pyocyaneus on whitewash. With 1 per cent. the only failure was with the streptococcus pyogenes albus on whitewash. With 2 per cent. every surface was absolutely sterilized.

As the result of their experiments they have arrived at the following conclusions:—

1. That for spraying to be efficient every portion of the surface to be disinfected must be thoroughly moistened with the disinfecting solution. Merely passing the spray into a room and trusting to its settling upon the surfaces is utterly unreliable.

2. That whitewashed surfaces require particular attention, being far more difficult to disinfect than surfaces of wood and paper.

3. That solutions containing under 1 per cent. of chinosol or two per cent. of formaldehyde are not absolutely reliable. Solutions, therefore, of not less than these strengths should be used.

4. That a proper spray properly used effects room disinfection in the minimum of time and with the minimum of

expense, and is more reliable than disinfection by sulphur dioxide or formalin vapour.

Fumigation over, the wood-work of doors, floors, and windows should be thoroughly washed and articles of furniture polished, the walls should be stripped of their paper, and before being re-papered they ought to be washed down with a solution of caustic soda ; or apply to the walls, woodwork, floors, carpets, furniture, mattresses, pillows, bric-a-brac, and all other articles which may remain in the room, a solution of perchloride of mercury, in the proportion of 1 of mercury to 1,000 of water.

This solution may be conveniently distributed by spraying it upon the walls, &c., by the aid of a garden pump or other specially constructed apparatus. The wooden pail or tub containing the solution, should be placed upon the floor in the centre of the room, and the solution forced through a hose pipe so that it can be discharged from the spray nozzle directly upon the infected surfaces.

Twenty-four hours after the application of the mercurial solution, all infected surfaces should be thoroughly washed with water. Re-papering of walls is not necessary under these circumstances as a sanitary measure, but only to replace paper which may have been damaged by the treatment.

The following provision deals with wilful exposure of infected persons and things :—

Any person who :—

1. While suffering from any dangerous infectious disorder wilfully exposes himself without proper precautions against spreading the said disorder in any street, public place, shop, inn, or public conveyance without previously notifying to the owner, conductor, or driver thereof that he is so suffering ; or
2. Being in charge of any person so suffering, so exposes such sufferer ; or
3. Gives, lends, sells, transmits or exposes, without previous disin-

fection, any bedding, clothing, rags, or other things, which have been exposed to infection from any such disorder,

shall be liable to a penalty not exceeding five pounds; and a person who, while suffering from any such disorder, enters any public conveyance without previously notifying to the owner or driver that he is so suffering, shall in addition be ordered by the court to pay such owner and driver the amount of any loss and expense they may incur in carrying into effect the provisions of this Act with respect to disinfection of the conveyance.

Provided that no proceedings under this Section shall be taken against persons transmitting with proper precautions any bedding, clothing, rags, or other things for the purpose of having the same disinfected. (Public Health Act, 1875, Sect. 126, and Public Health (London) Act, 1891, Sect. 68, also Sect. 56, Public Health (Scotland) Act, 1897).

My previous remarks on the method of disinfection have had reference to those districts where there are no disinfecting machines or stoves, so far as bedding and clothing are concerned.

In districts where such machines have been provided, all articles of clothing and bedding should be taken to the disinfecting station, and there disinfected at the required temperature (250° to 260° F.) and for the proper period in the machine, before being used again, and they are not on any account to be taken back to the room from which they were removed until disinfected, and unless such room has undergone fumigation and a thorough cleansing as before mentioned.

All articles of bedding and clothing should be carried to and from the disinfecting station in closed vans—one van being set apart for infected goods, while the other should be used entirely for articles disinfected.

The work of disinfection should be carried out by men specially employed for that purpose, the disinfecting staff being under the supervision and direction of the Medical Officer and Chief Sanitary Inspector.

The disinfection of bedding and clothing by heat (or steam) is a matter which Dr. Parsons has given great attention to, and he gives the following conclusions in a report to the Local Government Board as the result of his experiments :—

1. With the exception of spore-bearing cultivations of the bacillus of anthrax, all the infective materials experimented on were destroyed by exposure for one hour to dry heat of 220° F., or five minutes exposure to steam at 212° F. Spores of bacillus anthrax required for destruction four hours' exposure to dry heat of 220° F., or one hour's exposure to dry heat of 245° F., but were destroyed by five minutes' exposure to a heat of 212° F. in steam or boiling water.

It may be assumed that the contagia of the ordinary infectious diseases of mankind are not likely to withstand exposure to an hour's dry heat of 220° F., or one of five minutes to boiling water or steam of 212° F.

2. Dry heat penetrates slowly into bulky or badly conducting articles, as bedding and clothing; the time commonly allowed for the disinfection of such articles being insufficient to allow an adequate degree of heat to penetrate into the interior. Steam penetrates far more rapidly than dry heat, and its penetration may be aided by employing it under pressure, the pressure being relaxed from time to time, so as to displace the cold air in the interstices of the material.

In hot air the penetration of heat is aided by the admixture of steam, so as to moisten the air, but hot moist air did not appear to have a greater destructive effect upon spores of anthrax bacilli than dry heat.

3. Scorching begins to occur at different temperatures with different materials, white wool being soonest affected. It is specially liable to occur where the heat is in the radiant form. To avoid risk of scorching the heat should

not be allowed much to exceed 250° F., and even this temperature is too high for white woollen articles.

4. By a heat of 212° F. and upwards, whether dry or moist, many kinds of stains are fixed in fabrics so that they will not wash out. This is a serious obstacle in the way of the employment of heat for the disinfection previous to washing of linen, &c., soiled by the discharge of the sick.

5. Steam disinfection is inapplicable in the case of leather, or of articles which will not bear wetting. It causes a certain amount of shrinkage in textile materials, about as much as an ordinary washing. The wetting effect of the steam may be diminished by surrounding the chamber with a jacket containing steam at a higher pressure so as to superheat the steam in the chamber.

6. For articles that will stand it, washing in boiling water (with due precaution against re-infection) may be relied on as an efficient means of disinfection. It is necessary, however, that before boiling, the grosser dirt should be removed by a preliminary soaking in cold water. This should be done before the linen leaves the infected place.

7. The objects for which disinfection by dry heat or steam is especially applicable are such as will not bear boiling in water, *e.g.*, bedding, blankets, carpets, and cloth clothes generally.

8. The most important requisites of a good apparatus for disinfection by heat are (*a*) that the temperature in the interior shall be uniformly distributed; (*b*) that it shall be capable of being maintained constant for the time during which the operation extends; and (*c*) that there shall be some trustworthy indication to the actual temperature of the interior at any given moment. Unless these conditions be fulfilled, there is risk on the one hand, that articles exposed to heat may be scorched, or on the other

hand, that through anxiety to avoid such an accident the opposite error may be incurred, and that the articles may not be sufficiently heated to ensure their disinfection.

9. In dry heat chambers the requirement (*a*) is often very far from being fulfilled, the temperature in different parts of the chamber varying sometimes as much as 100°. This is especially the case in apparatus heated by the direct application of heat to the floor or sides of the chamber. The distribution of temperature is more uniform in proportion as the source of heat is removed from the chamber, so that the latter is heated by currents of hot air rather than by radiation.

10. In chambers heated by gas, when once the required temperature has been attained, but little attention is necessary to maintain it uniform, and in the best made apparatus this is automatically performed by a thermo-regulator. On the other hand, in apparatus heated by coal or coke the temperature continually tends to vary, and can only be maintained uniform by constant attention on the part of the stoker.

11. In very few hot air chambers did the thermometer with which the apparatus was provided afford a trustworthy indication of the temperature of the interior; in some instances there was an error of as much as 100° F. This is due to the thermometer, for reasons of safety and accessibility, being placed in the coolest part of the chamber, and the bulb being enclosed, for protection, in a metal tube which screens it from the full access of heat. The difficulty may be overcome by using, instead of a thermometer, a pyrometer, actuated by a metal rod extending across the interior of the chamber.

12. In steam apparatus the three requirements above mentioned are all satisfactorily met, and for this reason, as well as on account of greater rapidity and certainty of action of steam, steam chambers are in his opinion greatly preferable to those in which dry heat is employed.

13. It is important that the arrangements of the apparatus, the method of working, and the mode of conveyance to and fro should be such as to obviate risk of articles which have been submitted to disinfection coming into contact with others which are infected.

As regards disinfecting apparatus, there are several machines recommended, which have had a fair trial, notably, Washington Lyons; Goddard, Massey and Warner's; Dr. Thresh's; Alliott and Paton's; and Reck's patent steam disinfectors. The following is a brief description of these machines:—

Washington Lyons' steam disinfector consists essentially of a steam jacketed disinfecting chamber. Disinfecting is performed by high pressure steam in the chamber. The valves and fittings are self-acting, so that steam is automatically admitted into both the chamber and the jacket at the required pressure.

The air is removed from the chamber and from the interstices of the goods by means of a vacuum producing apparatus or air pump.

The apparatus is constructed of iron or steel boiler plates, with steel ends capable of resisting the working pressure. The fastenings are simple, and the apparatus is self-contained, requiring no brickwork or setting. This machine is made in various sizes, and with a door at each end, so that each end of the machine can project into a different apartment and thus prevent infected goods contaminating those which have been purified. The apparatus can, however, be supplied with a door at one end only when specially required.

The object of Messrs. Alliott and Paton's improved steam disinfector is to secure the advantage of the use of saturated high pressure steam without wetting the goods, and to enable clothing, bedding, &c., to be thoroughly aired before leaving the machine.

In this machine the air is removed from the chamber and from the interstices of the goods by means of a vacuum producing apparatus or air pump, the result being that the moment either hot air or steam is admitted to the chamber, the articles undergoing disinfection are at once penetrated.

The goods may be either warmed up or not at pleasure; the fittings are so arranged that it is impossible for the attendant to carelessly turn steam on the goods in the chamber, without first turning on the steam to the hot jacket, but the apparatus is capable of being used as a simple hot air oven, heated by steam, without introducing steam into the chamber.

These machines are made in various sizes and shapes, but as regards the latter the makers recommend the circular form as the best.

The Nottingham steam disinfecting apparatus, manufactured by Messrs. Goddard, Massey, and Warner, consists of a steam boiler, with safety valve, water gauge, pressure gauge, and force pump enclosing the closet, 5 ft. × 5 ft. × 6 ft. 6 in., back to front open at each end, with a gauge for showing the pressure inside.

The ends are closed by two hollow steel doors, connected to the boiler in such a manner by the pipes that water and steam is always circulating through them, consequently the inside closet is surrounded by the inner skin or plates of the boiler, which keeps the sides at an equal temperature with that of the steam. Thus there is absolutely no possibility of any condensation taking place. There is also a chamber built in the flues for heating the air, connected to the disinfecting closet by a pipe and valve. The apparatus is supplied with an exhauster, connected to the closet by the pipe and valve. Upon opening the valve and starting the exhauster, a strong current of hot air passes through the closet, and coming

into contact with the articles inside, prepares them for the admission of steam.

After the articles have been disinfected and the steam exhausted, the hot air is again turned on, to carry off any steam remaining in the closet.

The method of working the apparatus is as follows:— A fire is lighted and the closet filled with the articles to be disinfected. The doors are closed and screwed up, making a perfectly steam tight joint. In the meantime steam has risen to 20 lb pressure per square inch on the boiler, blowing off at the dead weight safety valve. This latter is of such a size that steam cannot rise above 20 lb pressure, thus preventing any damage which could occur through inattention. The exhauster is now set to work by opening the valve and steam supply, causing a current of hot air to pass through the valve into the closet and so drying the articles.

After this operation has continued for some little time the valves are closed. The steam is then admitted to the closet by another valve, and in about two minutes the pressure in the closet and boiler are the same as shown on the gauges. The pressure is then increased until it blows off at the safety valve. The articles are left in the closet from 20 to 30 minutes according to their character. Then the valve is closed, and valve to exhauster opened, this operation allows the steam in the closet to escape, the pressure soon falling to zero. The valves are again opened, and hot air passed through the closet, displacing any steam in it which would condense on the articles when the door is opened, also thoroughly drying the articles that have been disinfected. In a few minutes the door may be opened, the valves closed, and the disinfected articles taken out on the opposite side of the apparatus to which they are put in.

Dr. Thresh's "current steam" disinfector consists of

a central chamber to receive the articles to be disinfected, surrounded by a jacket containing a saline solution boiling at a temperature of about 220° F., and giving off steam having a temperature a little above 212° F. The machine is heated by a small furnace, and the steam given off is conducted into the central chamber, and after exerting its heating and disinfecting effects upon the bedding, &c., it escapes into the chimney. The steam is not confined under any pressure save that of the atmosphere. As the water evaporates, an equivalent supply is introduced automatically from a small cistern with a ball-valve arrangement. When the steam has passed for a sufficient length of time the raising of a lever cuts off all communication with the inner chamber, and the steam escapes directly into the open air.

Then, upon opening the aperture below the door of the inner chamber, air is drawn through a coil of tubes surrounded by the boiling liquid, becomes heated, traverses the inner chamber, displaces the steam, and dries the articles contained therein. At the expiration of an hour from the commencement of the operation, the bedding, &c., may be removed, as disinfection is then complete. The articles will be found to be quite as dry as when introduced.

A steam heated machine on the above principle is made for use where steam is available, while for small hospitals and for use in emergencies the makers of this machine make a disinfector which uses steam and the vapour of formal.

A. B. Reck's disinfectors are made of circular, oval or rectangular section and of capacities of from 16 to 250 cubic feet; they are protected against loss of heat by hair felt, they are made of strong steel plates and fitted with two strong doors, one for admission and the other for delivery, with a carriage for the objects and with first class fittings, especially with a very reliable steam pres-

sure regulating valve that automatically keeps an even steam pressure in the disinfectors quite independently of the boiler pressure.

The disinfectors are built for ordinary work for 7 pounds pressure, but they can be supplied if desired so as to use a higher pressure and to complete the process in a still shorter time.

Where no steam boiler already exists on the spot it is advisable to connect the disinfectors with boilers constructed on purpose for them. The construction of these boilers protect against transfer of water by the steam from the boiler to the disinfector. The boiler is divided into two parts, an upper cylinder over the disinfector, and a common saddle boiler placed under the disinfector and connected with the upper cylinder by two circulating water tubes. The saddle boiler, the tubes and half of the cylinder are filled with water, and the cylinder contains so much water that feeding is only necessary one time during each disinfecting process.

Sanitary authorities have power to purchase disinfecting apparatus (see Sect. 122, Public Health Act, 1875, and Sect. 59, Public Health (London) Act, 1891, also Sect. 46, Public Health (Scotland) Act, 1897).

The following list of duties for men employed in disinfecting will be found useful as a guide to the medical officer of health or the chief sanitary inspector.

Duties of the Engineer.

1. He must be on duty at 7 a.m. and devote his whole time to the work of the Public Health Department.

2. He must be directly responsible for the disinfection or destruction of all articles of bedding and clothing brought to the disinfecting station from infected premises.

3. He must follow the instructions given or posted up at the station as to the working of the disinfecting apparatus.

4. He shall be responsible for the care and cleanliness of the machines, destructor, windows, walls, shelves, floors, lavatory, drains, &c., at the station.

5. He shall keep a book or books in which to record all articles brought to the station by the Disinfector for disinfection or destruction, and shall check the inventories of such articles, so brought, on their arrival.

6. He shall make a weekly and a monthly return of the number of houses, rooms, and articles disinfected, and of articles destroyed, such returns to be made on the prescribed form, which the Engineer shall deliver to the Chief Sanitary Inspector at his office, as directed.

7. He must act generally under the direction and supervision of the Medical Officer of Health or the Chief Sanitary Inspector and report to the latter officer any defects or requirements of the station from day to day.

8. He shall go off duty under ordinary circumstances at 5.30 p.m. (Saturdays at 2 p.m.), but he may be liable to be called at any time. Meal hours 8 to 8.30 a.m., and 12 to 1 p.m.

9. He shall not absent himself from duty at any time, unless with the consent of the Medical Officer of Health or the Chief Sanitary Inspector.

Duties of the Disinfector.

1. He must be on duty at 7 a.m., and devote his whole time to the work of the Public Health Department.

2. He must be directly responsible for the collection of all articles of bedding, clothing, &c., requiring disinfection or destruction, the disinfection of houses or other premises, and for the return of such articles after being disinfected.

3. He shall take an inventory, on the prescribed form, of all articles removed for disinfection or destruction, and shall, before leaving the house, see that such inventory is examined and checked by the owner or his representative, who must sign the first receipt on the form.

The inventory will be checked at the station by the Engineer and when the articles have been disinfected they shall be returned, and the person receiving them must sign the second receipt on the form.

4. All infected goods must be carried through the house to the van in canvas bags provided for this purpose, and such bags shall, after use, be disinfected in the disinfecting apparatus at the close of each day.

5. He must not, whilst in charge of infected articles, go into any house or place of business, unless so required in the discharge of his

duties, nor mingle with the public, nor otherwise do anything which might spread infection.

6. He must assist the Engineer in keeping clean and orderly the Disinfecting Station, and also help the Driver in the cleansing or disinfecting of the vans.

7. He must act generally under the direction and supervision of the Medical Officer of Health or the Chief Sanitary Inspector.

8. He shall go off duty under ordinary circumstances at 5.30 p.m. (Saturdays at 2 p.m.), but he may be liable to be called at any time. Meal hours 8 to 8.30 a.m., and 12 to 1 p.m.

9. He shall not absent himself from duty at any time, unless with the consent of the Medical Officer of Health or the Chief Sanitary Inspector.

Duties of the Driver.

1. He must be on duty at 7 a.m., and devote his whole time to the work of the Public Health Department.

2. He must be directly responsible for the care and cleanliness of the horse, vans, stables, harness, and fittings connected therewith.

3. He must use the van marked with red lines for collecting infected articles, while the van with white lines must be used only for returning such articles after disinfection.

4. He must not, whilst in charge of an infected vehicle, go into any house or place of business, unless so required in the discharge of his duties, nor mingle with the public, nor otherwise do anything which might spread infection.

5. He must assist the Engineer in keeping clean and orderly the Disinfecting Station, and also help the Disinfector, when so required, in the collection of articles requiring disinfection or destruction, and in the return of such articles after disinfection.

6. To prevent risk or inconvenience to the public he must see that prompt steps are taken for the speedy conveyance of infected or disinfected articles to and from the station. He must drive at all time with caution.

7. He must act generally under the direction and supervision of the Medical Officer of Health or the Chief Sanitary Inspector.

8. He shall go off duty under ordinary circumstances at 5.30 p.m. (Saturdays at 2 p.m.), but he may be liable to be called at any time. Meal hours 8 to 8.30 a.m., and 12 to 1 p.m.

9. He shall not absent himself from duty at any time, unless with the consent of the Medical Officer of Health or the Chief Sanitary Inspector.

Form of Disinfecting Register and Receipt Book.

Borough of

Public Health Department.

Particulars of disinfection, &c., carried out at
Disease Where isolated, home or hospital
Date of removal to hospital 19
Date of disinfection 19
Name of hospital No. of rooms disinfected

Description and number of articles disinfected or destroyed :—

Aprons	Handkerchiefs	Sundries:–	
Antimacassars	Mattresses		
Bodices	Mats (Door)		
Blankets	Nightdresses		
Bolsters	Overcoats		
„ (Cases)	Pyjamas		
Beds	Petticoats		
„ (Hangings)	Pinafores		
„ (Spreads)	Pillows		
Blinds	„ (Cases)		
Chemises	Palliasses		
Collars	Rugs		
Cuffs	Singlets		
Combinations	Shirts		
Costumes	Stockings	* Articles to be destroyed :—	
Corsets	Socks		
Caps	Skirts		
Cushions	Suits		
Counterpanes or Quilts	Sheets		
Capes	Serviettes		
Curtains (Lace)	Table (Cloths)		
„ (Fancy)	„ (Covers)		
Carpets (Large)	Trousers		
„ (Small)	Towels		
Drawers	„ (Sanitary)		
Dresses	Toilet (Covers)		
Fronts	„ (Mats)		
Frocks	Vests		
Feeders	Waistcoats		

19

This is to certify that the above is a correct inventory of the articles removed from for the purpose of disinfection, and I authorise you to destroy such articles as are mentioned in the column marked *.

Signed

19

This is to certify that I have received back in good condition all the articles enumerated in the above inventory, except those which I authorised you to destroy.

Signed

Form of Disinfector's Report.

Borough of

Disinfecting Station.

A return of the houses and articles of bedding and clothing disinfected after infectious diseases for the ending 19

Situation of Premises Disinfected.	Date of Disinfection.	Disinfection, carried out.		Disease.	Date when Patient was removed to the Hospital.	Name of the Hospital.
		Articles.	Rooms.			

The inspector is required to have some knowledge as to the various disinfectants in use, and for convenience I append a list of those most commonly used:—

Carbolic acid and powder.
Chloride of lime and chlorine gas.
Condy's fluid.
Permanganate of potash.
Terebene.
Sanitas fluid, oil and powder.
Jeyes' fluid and powder.
Sulphur or sulphurous acid gas.
Iodine.
Bromine.
Phenyl.
Corrosive sublimate or perchloride of mercury.
Izal.
Alkalised gas creosote.

The following circular has been issued by the Local Government Board to sanitary authorities in England and Wales, together with two Orders of Council :—

Orders of Council of 31st January, 1899,
and 26th July, 1900.

Local Government Board, Whitehall, S.W.
Jan. 10th, 1901.

SIR,—I am directed by the Local Government Board to enclose a copy of an Order made by the Lords of Her Majesty's Most Honourable Privy Council approving a resolution passed by the Pharmaceutical Society of Great Britain that liquid preparations of carbolic acid and its homologues containing more that 3 per cent. of those substances should, except in certain cases connected with agriculture and horticulture, be deemed poisons within the meaning of the Pharmacy Act, 1868, and the Second Part of Schedule A to that Act.

The Board have reason to believe that in a very large number of cases where local authorities disinfect or procure the disinfection of premises and things which have been exposed to infection, the disinfectant employed is carbolic acid. They desire to take this opportunity, therefore, of pointing out that whenever the disinfectant employed is carbolic acid, or any other poison within the meaning of the Pharmacy Act, 1868, only bottles similar to those prescribed by the regulations adopted by the Pharmaceutical Society of Great Britain, and approved by an Order of the Lords of the Council, dated the 31st January, 1899, should be used to contain it.

A copy of the last mentioned Order is also enclosed.

I am, Sir, your obedient Servant,

S. B. PROVIS, Secretary.

The Town Clerk, or Clerk to the District Council.

The term *disinfectant* should be used only to designate the substances which can prevent the spread of infectious diseases by destroying their specific poisons.

It, however, very often happens that the substances which are recommended as disinfectants are little more than deodorants.

The selection of the disinfectants which the inspector may require for distribution from the Public Health department to the public, should be left to the Medical Officer of Health.

When houses have been disinfected, it is important that the head teacher of the school attended by the patient or other children in the same house, and the Librarian of the Public Library of the district should be notified of this fact, in order that the teacher may know when to re-admit children to school, and the librarian when to allow books to be issued to this house again. The following is a copy of a notice suitable for this purpose: —

FORM OF NOTICE.

Borough of 19

SIR,

I beg to state, for your information, that the undermentioned houses have been disinfected after infectious disease:—

Address.	Date of Disinfection.

I am, Sir,
Your obedient Servant,

To

NOTE.—The Medical Officer of Health advises that children from infected houses should not be allowed to return to school for at least seven days after the house has been disinfected.

It occasionally happens that persons, especially tailors and clerks, residing at a house where a case of infectious disease has occurred, are prohibited from following their

respective occupations until the sanitary authority, or its officers, has reported that the house in question has been disinfected. This information may be given in the following manner :—

Form of Certificate.

Borough of 19

Sir,

I hereby certify that No.
has been disinfected after a case of infectious disease.

Sanitary Inspector.

Sanitary authorities are under no obligation to grant this certificate, or to give the school teacher or librarian notice that certain houses have been disinfected, but as a matter of precaution the practice should be encouraged.

VENTILATION.

Ordinarily, atmospheric air consists chiefly of oxygen and nitrogen, in the proportion of 209·6 of the former to 790·0 of the latter, and 0·4 of carbonic acid per 1,000 volumes, accompanied by traces of watery vapour, ammonia, ozone and suspended matters.

Oxygen of the air is that element upon which strength, heat, and life depend, while nitrogen is useful only to dilute and mix with oxygen, and it is in proportion as carbonic acid, produced by respiration and combustion, is present in the atmosphere, that we estimate its purity or otherwise.

The late Drs. Parkes and De Chaumont have shown

that when the amount of carbonic acid (CO_2) in the air exceeds the standard of 0·6, the air becomes close and decidedly unpleasant, while each individual, by means of expired air, renders 3,000 cubic feet of air impure in the space of one hour.

It is obvious, therefore, that the quantity of air supplied to a room, in order to make it reasonably safe for occupation, should be sufficient to remove all sensible impurity, so that a person coming from the external air shall perceive no trace of odour, or difference between the room and the outside air in point of freshness.

The amount of fresh air required to pass through a given air space in a fixed time, in order to maintain a certain degree of purity, should be equal to the total amount of air expired during that time; but this (3,000 cubic feet per hour for each person) is far more than most people are able to obtain; for in the crowded rooms of the artisan class, the average entire space would probably be more often less than 300 cubic feet per head than 1,000; as a matter of fact, the expense of larger, or a greater number of smaller rooms, would be fatal to the chance of such an ideal standard being carried out.

The Local Government Board recommend a minimum of 300 cubic feet of air space for each person above the age of ten years; two children under the age of ten years are to be counted as one adult.

The object of ventilation is the removal of foul air and the supply of pure air, or in other words, it means the maintenance of the atmosphere in that condition of purity, temperature, movement and moisture, which is found to be most agreeable to its inhabitants and most conducive to their health and vigour.

The ventilation of any apartment, whether of dwellings, public buildings, or workshops, depends on three conditions:—

1. The quality of the external air.

2. The quantity of air that can be admitted to the apartment, in a given time, including its mode of distribution.

3. Its freedom from any noxious ingredient developed by combustion, trade, business, or manufacture, the exhalations of men and animals, and from any other special cause.

The principles of ventilation may be classified as follows:—

1. Natural ventilation, produced by the external wind agency.

2. Ventilation by the operation of gravity or heat agency.

3. Ventilation by fans, pumps and blowers, or mechanical agency.

The forces at work in natural ventilation are diffusion and the action of the winds, and the diffusion of gases depends upon their density, whilst the great value of wind pressure in purifying the atmosphere is beyond question, as with strong winds and storms all the foul air is dispersed, and the atmosphere becomes fresh and invigorating.

Ill-fitting doors and windows allow of the passage of a considerable quantity of air, and old plaster of walls and ceilings afford a ready instance of porosity, as will be observed by the blackened condition of the plaster through having acted like a filter.

Pettenkofer and Roscoe have shown that diffusion occurs through brick and stone, and Pettenkofer believes that one of the evils of a newly built and damp house, is that diffusion cannot occur through its walls.

The aspirating power of the wind in blowing across the top of a chimney causes an up current of air at right angles to itself, and a moving body sets in motion all the

air in its vicinity, which cause alone greatly assists natural ventilation.

Appliances mostly used for this system of ventilation are various in character, but of simple construction. Some are inserted into the chimney or into a special flue, passing up by the side of the chimney, or into the walls, ceiling and roofs.

The second method of ventilation is produced by artificially lowering the specific gravity of the air by increasing its temperature. Heat, by expanding the air, makes it lighter, causing it to rise, which thus displaces and removes any given quantity; moreover, heat has great influence over the atmosphere, because as the air is expanded, there is less oxygen in the same volume, but as it contracts by cold, the oxygen is increased.

Fresh air admitted to a room may be warmed in various ways:—

1. By passing it through a box containing coils of hot water or steam pipes, or gas jets.

2. The air may be admitted into air chambers behind or round grates or stoves and thus be warmed. The first method recommended is considered the best.

In the dwelling house the air is warmed by the open fire, but in large establishments the heat is chiefly obtained by the methods above described.

Thirdly, by the proper application of the mechanical agency as a means of ventilation, we are able to introduce fresh air into a room at any required rate of movement, while the quantity of air admitted is placed under easy and immediate control.

The introduction and extraction of air by mechanical means, in a manner sufficiently simple, automatic, and inexpensive, is however a matter surrounded with considerable difficulties, and consequently this method of ventilation can only be adopted in large establishments,

or where the cost of mechanical contrivance is disregarded.

Should the air space be large, it will be evident that the necessity for a frequent renewal of air will be less, and less the chances of a draught. Should the air space be small, say 500 cubic feet, with a man in it who is to be provided with 3,000 cubic feet of air every hour, the air could not be properly distributed before reaching the person, and a draught would consequently be felt. Increase the air space to 1,000 cubic feet, and the problem would be much easier, for a small current of air mixing with a larger volume of air in the room is more easily broken up, while the occupant of the room being further removed from the inlet for fresh air, the movement is not nearly so perceptible, but this will depend in great measure upon the rate of movement at which the air can be made to enter the room, without the movement being noticeable or injurious.

To ventilate any apartment properly the question turns on the power of introducing fresh air without creating a draught, and as regards small rooms, Dr. Parkes records the fact that Pettenkofer found that with perfect mechanical means a frequent change of air is possible, as by the use of a steam engine he ventilated an air space of 424 cubic feet with comfort, changing the air of the room six times in the hour.

If the renewal of air is carried on by natural ventilation, a change at the rate of six times in the hour could not be attempted. A change equal to three times in the hour is all that is practically attainable, and if this be correct, 1,000 cubic feet should be the minimum allowance of the initial air space.

Whatever system of ventilation is adopted, the air must be taken from a pure source, the entering air should if possible be of a temperature of about 60° F., and the tubes

so constructed as to be easily cleaned, otherwise dirt lodges and the air becomes impure.

According to Parkes, it is desirable that each "inlet" should not be larger than 48 to 60 square inches in area.

Provided there are means of warming and equable movement of the air, which is not always easy to get, there might be larger inlets, and therefore easy distribution, and a smaller air space to begin with.

If the inlets are 48 square inches in area, the rate of movement through them to supply a space of 500 cubic feet with 3,000 cubic feet of air per hour would be 2½ feet per second, and if as should be the case with artificial ventilation, the inlet is 72 to 80 square inches in size, the rate of movement would only be a little over 1½ cubic feet per second, which would be imperceptible even at the orifice.

The inlets should be small and numerous rather than large and single, this will give a more uniform distribution of air to every part. They should be conical (Ellison's air bricks) or trumpet-shaped, the wider opening being next to the room so that the air spreads out "fan" like. Externally they should be protected by a hood or other similar arrangement, so that the wind will be prevented from flowing too rapidly through them, as if the currents are strong, draughts are felt.

Valves should be provided to partially close the openings so as to regulate the incoming air, or the change will be too rapid. If the inlets are covered with wire gauze, &c., this should be frequently cleaned.

Inlets should not be placed too near outlets, or the fresh air may at once escape; theoretically the position of an inlet is at the floor level, but this cannot be strictly carried out, as the admission of cold air at such a level would cause great discomfort to the occupants of the room by chilling the feet.

In changing the air of a room the vitiated air should always be extracted from the highest point, and fresh air admitted in a vertical direction above the level of the head (Boyle).

Fresh air may be introduced into a room by means of vertical tubes, as shown in figs. 69, 70 and 71, this gives

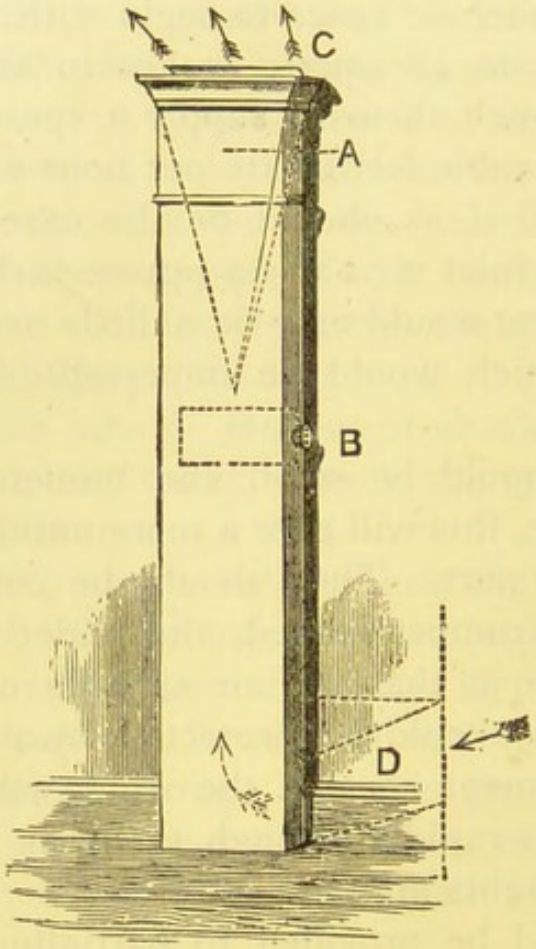
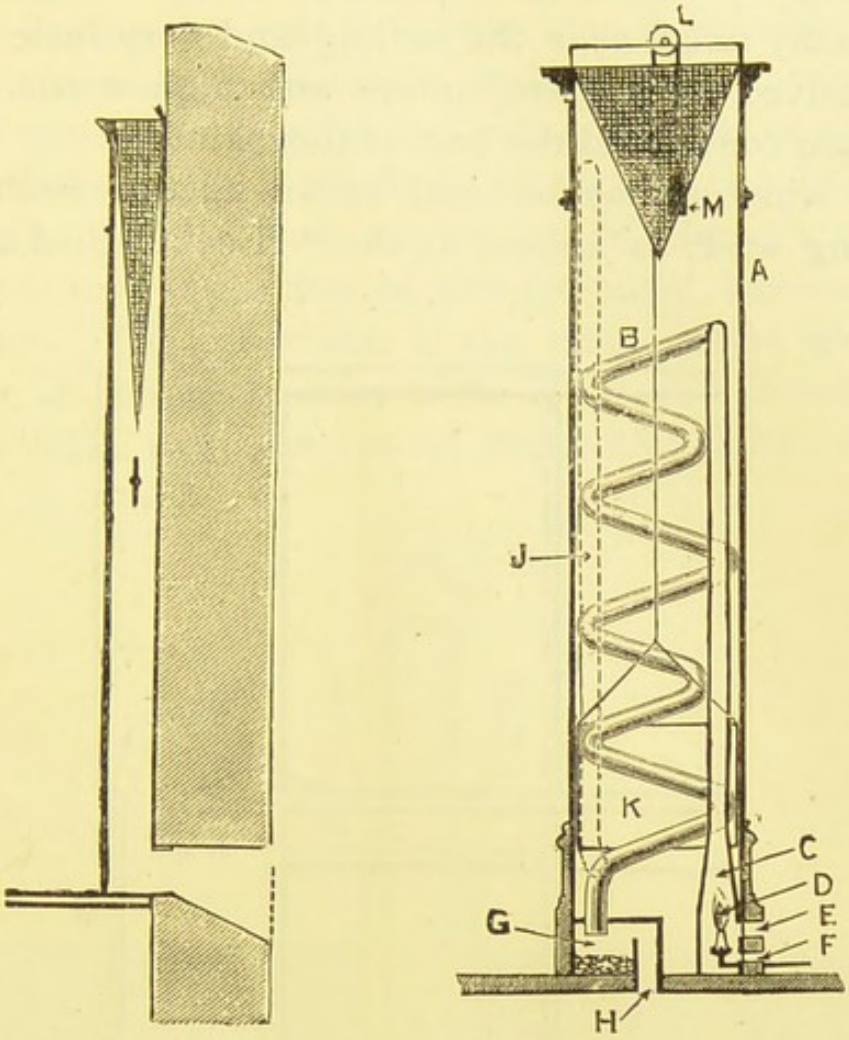


FIG. 69.—Boyle's (Tobin's) vertical tube inlet—view from room.

an upward current which is retained for several feet before it begins to spread and descend; with variable winds, however, the results may be reversed.

The "Sheringham" valve, as shown in fig. 72, is a capital contrivance for the admission of fresh air—the air passes from the exterior through an air brick, and is then directed upwards by the valve opening which can be easily



FIGS. 70 and 71.—Boyle's vertical tubes—entering air heated by gas jet.

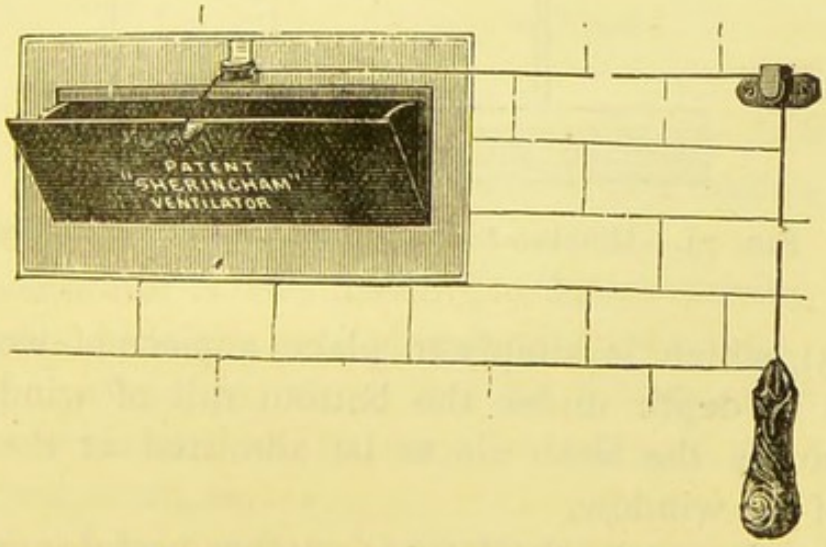


FIG. 72.—Hayward's "Sheringham" valve ventilator.

regulated by means of a balanced weight—these valves are usually fixed near the ceiling and very little draught is perceived from them, unless with high winds. These inlets are considered the best of their kind.

The window may be used as an inlet for fresh air by adopting what is known as the "Hinckes-Bird method"

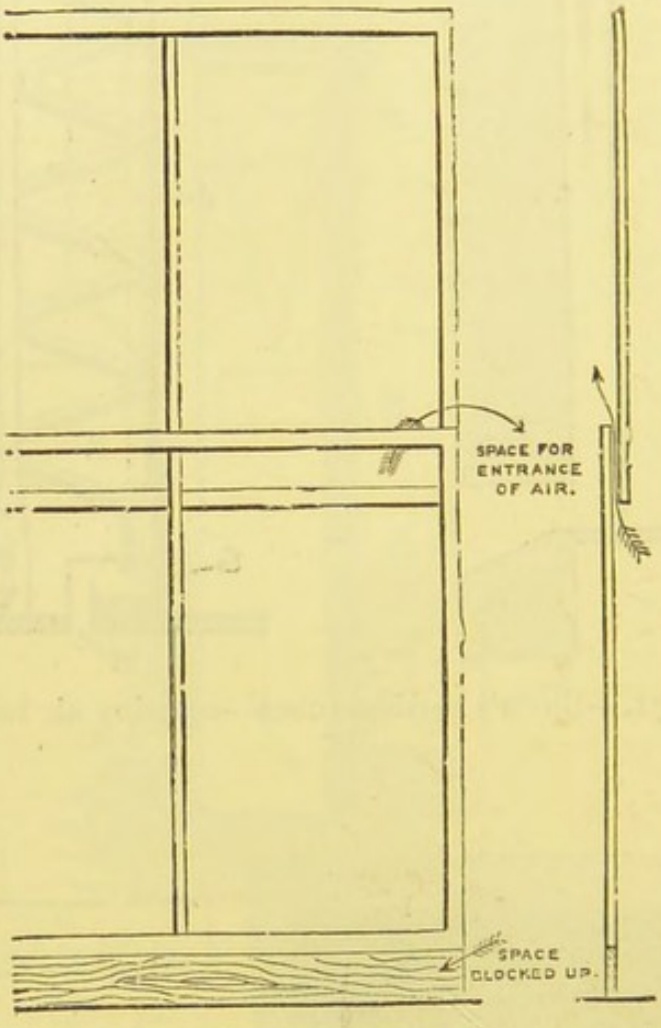


FIG. 73.—Hinckes-Bird's plan of window ventilation.

(fig. 73), which is simply to place a piece of wood 3 or 4 inches in depth under the bottom rail of window sash, this causes the fresh air to be admitted at the meeting rails of the window.

The "Cooper" ventilator is another useful invention for

admitting air into rooms, and consists of a circular piece of glass having as a rule five apertures in it, which works on a pivot through its centre, and is fixed on one of the window panes having a corresponding number of openings, the admission of air is regulated by turning the disc.

Another plan is that known as M'Kinnell's (fig. 74) circular tube. It consists of two cylinders, one encircling the other. The inner one is the outlet tube; the outer cylinder or ring is the inlet tube. The air is drawn in at a lower level than the top of the outlet tube, when it

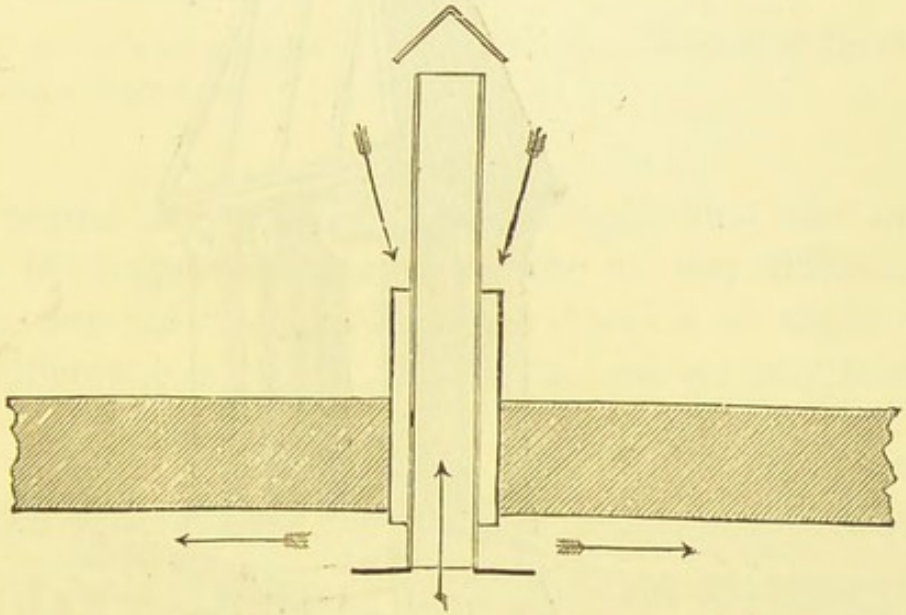


FIG. 74.—M'Kinnell's ventilator.

enters the room, it is thrown up towards the ceiling, and then to the wall by a flange placed on the bottom of the inner tube.

This ventilator is very useful for rooms having no external walls, or in the case of underground rooms.

Figs. 69, 70, 71, 75, 76, 78 and 80, illustrate several of Boyle's ventilators, which may be adapted to suit the varied circumstances.

The places for "outlets" will depend upon the position

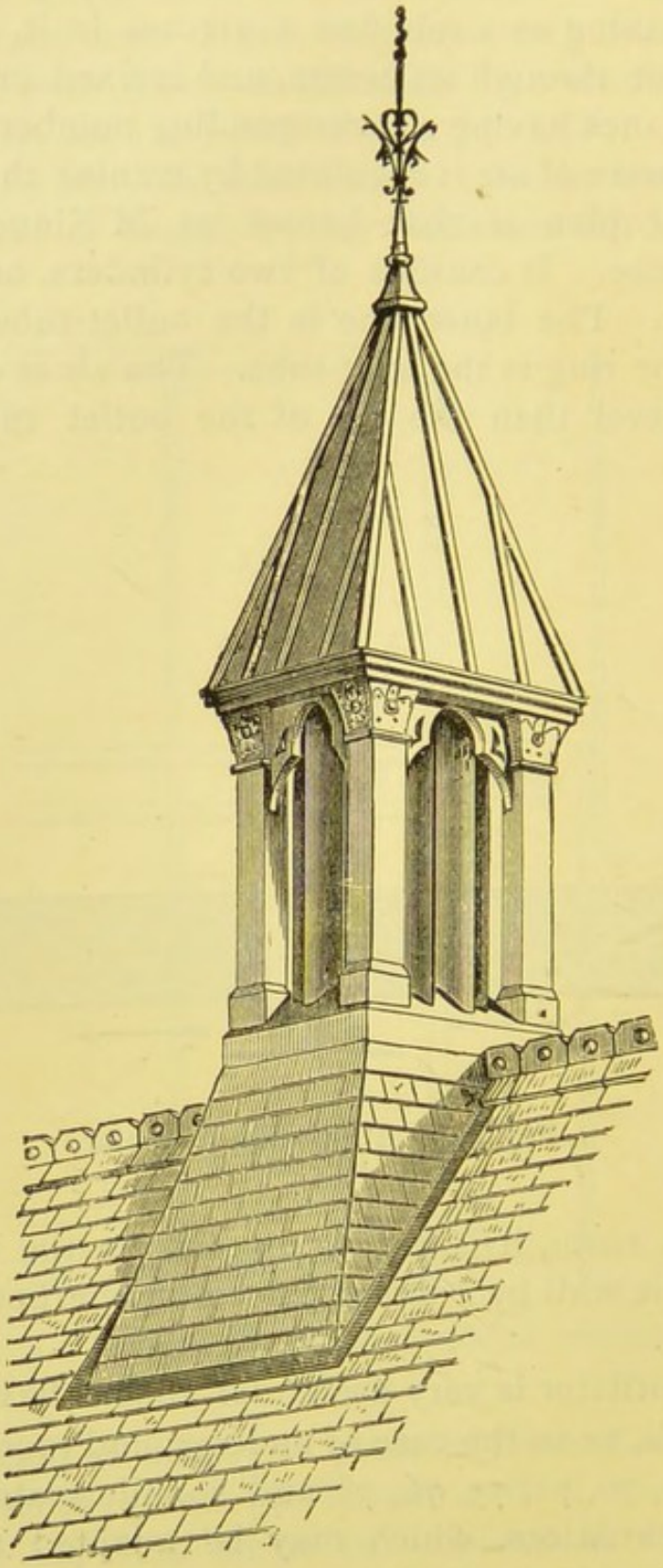


FIG. 75.—Boyle's air pump, ridge ventilator.

of the "inlets"; if there are facilities for heating the air, they may be fixed at almost any point, but under ordinary circumstances they should be fixed as near to the ceiling as practicable.

Fig. 76.—Panel air inlet—view from room.

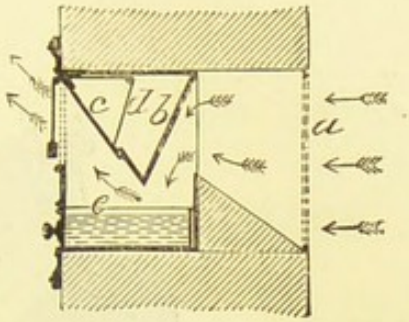


Fig. 77.—Section of fig. 76.

As heated air expands, it is thought that the outlets should be larger than the inlets, but as the difference in volume, due to change of temperature, is so slight, even if the difference is 30° F., a cubic foot of air only becomes

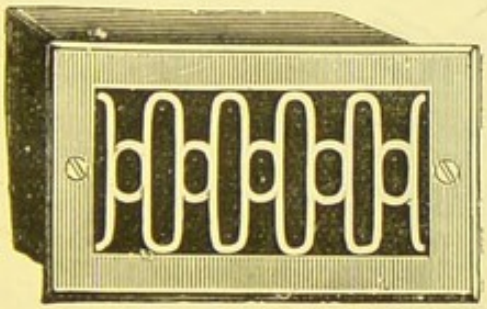


Fig. 78.—Mica flap ventilator—view from room.

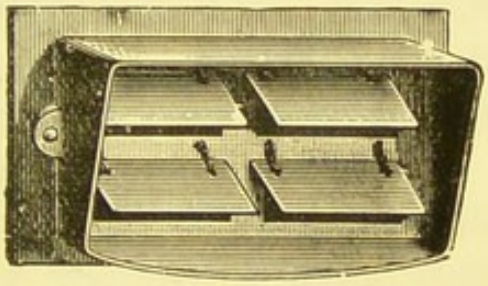


Fig. 79.—View from chimney of fig. 78.

1·061 cubic feet, which is equal to an increase of about $\frac{1}{17}$, the inlets and outlets can, therefore, be of the same size.

In case there should be several outlets in one room they should commence at the same distance from the floor, and

be of the same height, or the discharge will be unequal, while they should have a corresponding share of exposure to the sun and winds.

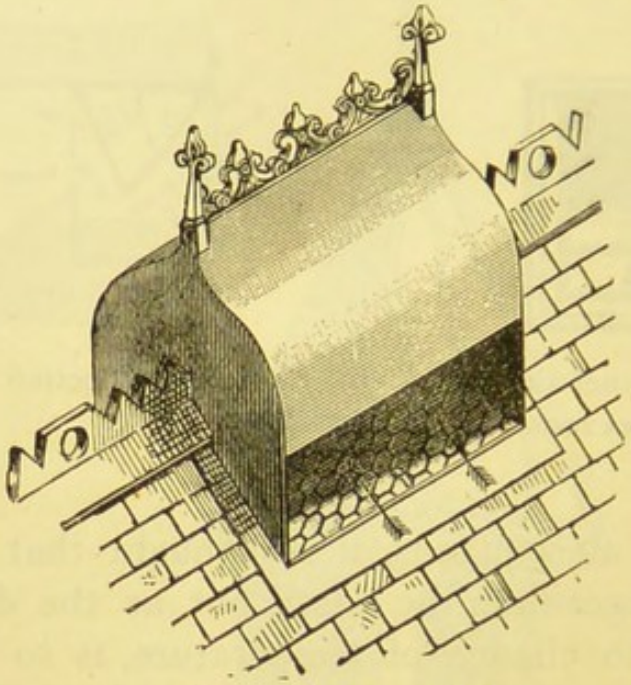


FIG. 80.—Ridge ventilator.

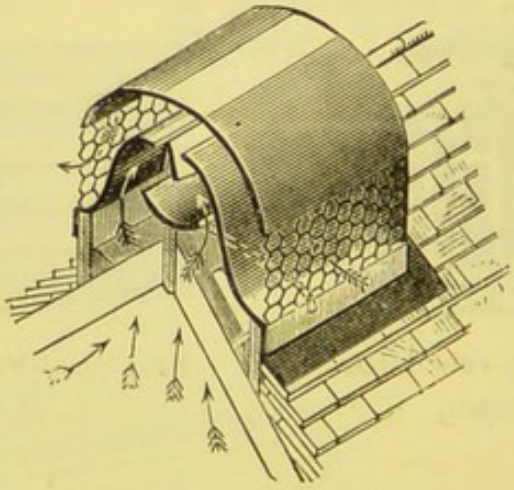


FIG. 81.—Section of fig. 80.

The following rules should be observed as regards the ventilation of rooms, viz. :—to have the fresh air pure, to distribute it properly, and to adopt such means as may be

necessary for securing the "outlets" from cold, or ensuring that they are artificially warmed, and for distributing the air, which with every precaution will occasionally pass down them.

MEASUREMENT OF CUBIC SPACE.

When measuring the cubic space of a room, a lofty ceiling should not be made to compensate for a deficiency of floor space, as the impurities produced by respiration collect round about the persons who have evolved them.

In measuring the rooms of dwellings and of workshops it has become the practice of sanitary authorities and others, to fix the maximum height of any room at 12 feet, whatever its actual height may be, and to enforce a minimum of floor space of $\frac{1}{12}$ the cubic space. However desirable and necessary such a standard may be to prevent overcrowding, occupiers are entitled to have the gross measurements, regardless of the important difference the height may make to the health and comfort of persons occupying the rooms by reducing the floor space.

Many people imagine that cubic space may take the place of change of air, or in other words, if a larger cubic space be given, a change of air may be dispensed with, or less fresh air be required. This is quite erroneous, even the largest space can only provide sufficient air for a limited time, after which the same amount of fresh air must be supplied hourly, whether the space be large or small.

This is shown by the following table prepared by the late Dr. F. de Chaumont :—

Table showing the degree of contamination of the air (in terms of CO_2) by respiration and the amount of air necessary to dilute to a given standard of 0·2 *per* 1000 *volumes of air, exclusive of the original amount present in the air.*

Amount of Cubic Space (= Breathing Space) for One Man in Cubic Feet.	Ratio per 1000 of CO_2 from Respiration at the end of one Hour if there has been no Change of Air.	Amount of Air Necessary to Dilute the Standard 0·2 during the First Hour.	Amount Necessary to Dilute to the given Standard every Hour after the first.
100	6·00	2900	3000
200	3·00	2800	3000
300	2·00	2700	3000
400	1·50	2600	3000
500	1·20	2500	3000
600	1·00	2400	3000
700	0·86	2300	3000
800	0·75	2200	3000
900	0·67	2100	3000
1000	0·60	2000	3000

The inspector should have a fair knowledge of mensuration so as to be able to ascertain the cubical contents of rooms in suspected cases of overcrowding, the registration of houses let in lodgings, of common lodging houses and for other purposes.

With square and rectangular shaped rooms the task will be a simple matter, but it frequently happens that some portions of a room, such as a window, take different forms and hence it becomes necessary to know the rules of measurement which will assist the officer under varying circumstances.

To ascertain the cubical contents of a square or rectangular shaped room, multiply the length, breadth and height together, and the result is the number of cubic feet, for example :—

$$12 \times 10 \times 9 = 1{,}080 \text{ cubic feet.}$$

10

120

9

1,080

The 1,080 cubic feet divided by 300, the *minimum* amount of air space recommended by the Local Government Board for common lodging houses, would admit of three adult persons and one child, under 10 years of age, occupying such a room, the balance of air space, 30 cubic feet, should be retained to cover loss of air space, by furniture, &c.

The following rules of mensuration will be of service:—

Circumference of circle	= Diameter × 3·1416 or by $3\frac{1}{7}$.
Area of a circle	= Square of diameter × 0·7854.
Area of segment of circle	= Divide cube of rise by twice the chord and "add" to the result $\frac{2}{3}$ of chord "multiplied" by rise.
Area of ellipse	= Product of two diameters × 0·7854.
Solidity of cone	= Area of base × one-third perpendicular height.
Solidity of globe	= Cube of diameter × 0·5236.
Surface of globe	= Square of diameter × 3·1416.
Area of triangle	= $\frac{1}{2}$ product of base and altitude will be the area.
Area of regular polygon	= Multiply the perimeter or sum of the sides by the perpendicular drawn from the centre to one of the sides, and half the product will be the area.

A man of average size occupies the space of about three cubic feet.

A mattress, a pillow, three blankets, one coverlet, and two sheets of a soldier's bed occupies about 10 cubic feet, when folded together loosely.

All projections, solid pieces of furniture, cupboards, &c., should be measured and their cubical contents deducted from the gross measurement.

This table shows the minimum of cubic air space allowed for each person, under the following circumstances :—

Class of Dwelling, &c.	Minimum cubic space allowed.		Remarks.
	Adults.	Children.	
Canal boats	60	40	Boats built prior to 1878, for each child not less than 30 c. f.
Common lodging houses (Met.)	240	120	
Common lodging houses (Prov.)	300	150	
Houses let in lodgings (Met.)	300 and 400	150 and 200	The larger amount is required where a room is used both as a living and bedroom.
Houses let in lodgings (Prov.)	350 and 450	175 and 225	
Factories and workshops	250 and 400	—	400 c. f. is required in cases where overtime is worked, and when a workroom is used also as a sleeping apartment.

MEAT INSPECTION.

The sanitary inspector is required to keep a strict watch over the food supply of his district, unless as is the case in some towns, an inspector is specially appointed for that work; it is therefore necessary that he should make himself thoroughly acquainted with the diseases of animals which render the meat unfit for human food after the

animal has been slaughtered and deposited in the slaughter house or shop; also as regards fish and other foods, solid or liquid, whether exposed for sale, or in preparation for sale, or deposited for the purpose of sale, and intended for the food of man.

The Local Government Board states that:—

He shall from time to time, and forthwith upon complaint, visit and inspect the shops and places in which is exposed for sale, or in which is deposited for the purpose of sale or of preparation for sale, any animal, or any article, whether solid or liquid, intended for the food of man, and examine any such animal or article which may be therein. If any such animal or article appears to him to be diseased, or unsound, or unwholesome, or unfit for the food of man, he shall seize and carry away the same himself or by an assistant, in order to have the same dealt with by a justice according to the provisions of Section 47 of the Public Health (London) Act, 1891: provided that in any case of doubt arising under this clause, he shall report the matter to the Medical Officer of Health, with the view of obtaining his advice thereon.

The above regulation applies also to inspectors of nuisances appointed under the Public Health Act, 1875.

The Royal Commission on tuberculosis considered that meat inspectors should possess certain qualifications. Their recommendation on the subject will be found on page 21 of their report, and is as follows:—

We recommend that in future no person be permitted to act as a meat inspector until he has passed a qualifying examination before such authority as may be prescribed by the Local Government Board (or Board of Agriculture), on the following subjects:—

(*a*) The law of meat inspection, and such by-laws, regulations, &c., as may be in force at the time he presents himself for examination.

(*b*) The names and situations of the organs of the body.

(*c*) Signs of health and disease in animals destined for food, both when alive and after slaughter.

(*d*) The appearance and character of fresh meat, organs, fat, and blood, and the conditions rendering them, or preparations from them, fit or unfit for human food.

At present a person cannot be required to pass a qualifying examination of the kind referred to before he acts as a meat inspector; but the Local Government Board is of opinion that, in the case of a borough or urban district, where the work connected with the proper discharge of the duty of meat inspection is sufficient to justify the appointment of a separate officer for the purpose, it is very desirable that such an appointment should be made, and that the Council should satisfy themselves that the person appointed possesses adequate knowledge of the subjects mentioned in the recommendation of the Royal Commission.

In the smaller districts, where the work of meat inspection is not sufficient to render necessary the appointment of a separate officer, the Board consider that regard should be had to these qualifications in making future appointments to the office of Inspector of Nuisances.

The Council of the Sanitary Institute has established a voluntary examination for persons desirous of qualifying for an appointment of inspectors of meat and other foods on the lines recommended by the Report of the Royal Commission on Tuberculosis, and the syllabus, which has the approval of the Local Government Board, includes the subjects specified in the Report, and is as follows:—

A knowledge of the laws, by-laws, and regulations affecting the inspection and sale of meat and other articles of food, including their preparation and adulteration.

Signs of health and disease in animals destined for food, when alive and after slaughter. Tuberculin and other tests.

The names and situations of the organs of the body in animals. The distinctions between the parts and visceral organs in different domestic animals. Size, weight, and form of the organs of ox, cow, horse, sheep, calf, pig. Position of lymphatic glands.

The appearance and character of fresh meat, organs, fat, blood, fish, poultry, milk, fruit, vegetables, and other food, and the conditions

rendering them, or preparations of them, fit or unfit for human consumption.

The hygiene of byres, lairs, cowsheds, and slaughter houses, and all places where animals destined for the supply of food are kept.

The hygiene of markets, dairies, and other places where food is stored, prepared, or exposed for sale.

Practical methods of stalling and slaughtering animals, preserving and storing meat and other foods.

The following are specimen questions put to candidates for this examination :—

1. State the legal provisions for dealing with unsound meat, and the procedure to be adopted by an inspector.

2. Describe the appearance of the carcase of an ox which has died of anthrax, and state what procedure is necessary under the Contagious Diseases of Animals Acts.

3. Mention some of the most common causes of dropsy in animals, and describe the appearance of a dropsical carcase.

4. What is the appearance of a healthy lymphatic gland in a pig, and what glands would you specially examine for signs of tuberculosis ?

5. What are the more common parasites found in the ox, sheep, and pig ? Name the part of the animal usually most affected. State what the appearance of the dressed carcase is, and how you would proceed to examine a carcase supposed to be infected.

6. What is the normal temperature of cows, sheep, and birds ? What change in temperature is found in a reaction to Tuberculin ?

7. Describe the differences in form which would enable you to distinguish the livers of horses, oxen, sheep, and pigs.

8. Describe the appearance and other characteristics of wholesome beef, veal, pork, and mutton.

9. What preservatives are in common use for the preservation of foods ? How are they usually applied in the case of (*a*) butchers' meat, (*b*) bacon or ham, (*c*) milk and butter ?

10. Describe the provisions necessary for lighting, ventilation, water supply, and drainage of a well-constructed cowshed.

11. What conditions affect the proper bleeding of animals prepared for food, and what signs of insufficient bleeding do you recognise ?

12. What would be the normal temperature in horses, cattle, and sheep as indicated by a thermometer placed in the rectum ? What does an increase of temperature indicate, and what symptoms are usually associated with persistent high temperatures ?

13. Describe the appearances of the flesh in the carcases of the following animals: Ram and wether, goat, horse, ox, bull and heifer c

14. Upon what grounds would you decide that a consignment of potatoes was unfit for food? What power has an inspector to deal with such a consignment at a railway depot?

15. You are asked to inspect and pass as fit for food the carcase of an ox which has recently been slaughtered: State in detail the method of your procedure, noting the points which call for special attention. Make your answer as complete as possible.

16. What is meant by (*a*) chilled meat, and (*b*) frozen meat? Describe the appearance of each kind, and compare them with that of home killed meat.

17. What are the appearances presented by the carcase of a sheep which had suffered from pleurisy? Explain what would justify you in seizing such a carcase.

18. How can you detect trichinosis in the carcase of a pig? Where would you look for the parasite?

19. How would you recognise in the carcase the sex of the animal? State how the ox differs from the cow and heifer, and the ram from the ewe. What are the chief points which would guide you in giving an opinion as to age?

20. How would you distinguish between the liver of a sheep from that of a calf, pig, or dog?

21. Give the conditions which render the destruction of the entire carcase and all the organs of an animal affected with tuberculosis desirable, as recommended in the Report of the Royal Commission on Tuberculosis (1898).

22. What model by-laws have been issued by the Local Government Board which are applicable to slaughter houses? State them in detail as far as you know.

23. What is margarine cheese and under what conditions can it be sold for food?

24. Under what Act, and in what way is provision made for the storage of milk? State the conditions under which milk ought to be kept, so as to ensure its purity and cleanliness.

25. Describe the contents of the thorax or chest; what organs are situated in it, and how are they placed. How is this cavity separated from the abdominal cavity, and what organs does the latter contain?

26. What parasitic diseases are said to be associated with fish, and in what kind of fish is the encysted worm of the parasite demonstrated?

27. Compare the bony skeleton of the horse with that of the ox, and

state the chief points of difference in the carcase of these animals when exposed for sale.

28. What is frozen meat? How may it be recognised, and what procedure do you adopt in making an examination to ascertain its fitness for food?

29. State the chief indications of disease met with in meat exposed for sale, and state in detail how you would proceed to examine a consignment sent to the market and shipped from a home port. What are the diseases of cattle an inspecting officer should watch for?

30. In the examination of the carcase of an ox, the internal organs of which have been removed and cannot be inspected, describe accurately the appearances which would lead you to the conclusion—

(*a*) That the animal had died a natural death; or

(*b*) That it had suffered from a serious disease before being slaughtered.

31. Under what circumstances would you condemn the whole carcase of an animal which had suffered from tuberculosis?

32. Name the diseases that occur in animals used for food, and state briefly how they may be recognised while the animal is alive.

33. Trace the gullet or œsophagus from the pharynx to the stomach, and name some of the chief structures it passes by or through in its course.

34. What is a "sweetbread"? What glands may be substituted for it and how would you recognise them?

35. How would you proceed to examine *Salted Meat?* What are the chief points to which you would direct your attention?

36. What are the adulterations usually met with in (*a*) pepper, (*b*) cocoa, (*c*) arrowroot, (*d*) coffee, (*e*) butter? How would you proceed in the event of your suspecting adulteration of these articles of food?

37. What is the composition of lime juice, and what is the standard usually adopted in the mercantile marine?

38. What is the alcoholic strength of beer and porter? How are these fermented drinks prepared, and what are the usual adulterations (if any)?

39. Compare the relative values of fresh and condensed milk. How is the latter prepared, and how would you proceed to examine a sample submitted to you to report upon?

40. Describe what you consider the best methods of slaughtering oxen, sheep, and pigs, and give your reasons.

41. What general regulations should be observed in the conduct of a slaughterhouse?

42. What is the naked-eye appearance of a healthy lymphatic gland

on section, and what appearances may be observed in diseased conditions? Indicate the positions of those lymphatic glands which you would examine in order to determine the condition of the carcase.

43. What are the chief diseases met with or likely to occur in either home-bred or imported animals, which may be regarded as more or less rendering their flesh unfit for human food?

44. The parasite *cysticercus bovis* is present occasionally in oxen. Of what does it consist? What is the naked-eye appearance of flesh so affected, and what disease does this cysticercus give rise to in man?

45. Mention the common parasites in the lungs of calves, sheep, and pigs. Describe the conditions they produce in the live animal and the effects on the food value of the carcase.

46. How can meat which has been refrigerated be distinguished from home-killed meat? Describe fully what changes take place in meat as the result of refrigeration.

47. How would you judge of the fitness for human food of the following articles, viz., butcher's meat, eggs, fish of different kinds, sausage, cheese, and tinned meat? What are the signs of unfitness for human food in these articles?

48. What are the common adulterations of cow's milk? State precisely under what conditions milk should be collected, stored, and distributed so as to reach the consumer as pure and clean as possible. What is the best method of cleaning milk cans and other vessels used in the transit of milk?

49. State the legal provisions for dealing with unsound meat, and the procedure to be adopted by an Inspector.

50. Describe briefly the life-history of the parasites known as Cysticercus Cellulosæ and Flukes.

51. Describe the symptoms of actinomycosis and tuberculosis in a cow, and the appearances after death by which you could distinguish between the two diseases.

52. Describe the distinctive features of the liver, spleen and kidney of an ox, of a horse, of a sheep, and of a pig.

53. Distinguish between the following joints of a plain bull:—

(*a*) Ribs; (*b*) Sirloin; (*c*) Round;

and the corresponding joints of a horse; stating any difference in the respective tissues and bones which would guide you in your opinion.

54. Describe the appearance of a healthy, as contrasted with an unhealthy, lymphatic gland. Where would you look for tuberculous lymphatic glands in a stripped carcase?

55. Describe the appearance and other characters of wholesome beef, veal, pork, and mutton.

56. What are the appearances of fish kept for some time in a refrigerator, as contrasted with fish kept in a shop or market for twenty-four hours at summer heat?

57. In what circumstances can any sample of food, under the Sale of Food and Drugs Act, 1899, be taken in course of delivery? What is the definition of "food"?

58. What statutory powers exist to prohibit the sale of a particular supply of milk, and under what circumstances can they be exercised?

59. Describe the appearances in the flesh of a pig suffering from measles.

60. Name the diseases of the sheep which (*a*) in every, or (*b*) in any, stage render the flesh unfit for human food. Indicate the parts of the body of the quadruped principally or more frequently affected in each case, and describe the appearances by which the several diseases may be recognised.

61. What action would you take with regard to the carcase of an animal exposed for sale that was suffering from tuberculosis in a localised form? What part of the carcase would you cut to ascertain if the disease was generalised?

62. How could you distinguish the kidney of a calf from that of a horse, sheep or pig?

63. What special dangers are there in respect of oysters and shell fish generally, and also in respect of canned foods?

64. Describe in detail any model cowshed that you have actually seen, and contrast its condition with one which you have also seen but which, in your opinion, is unfit for such a purpose.

65. What principles should be adopted in the regulation of markets with a view to their hygienic control?

66. Give a short résumé of the various methods which have been proposed for the humane slaughtering of animals destined for the food of man; stating your opinion as to the advantages and disadvantages of each.

The provisions of the Public Health Acts relative to the powers of the inspector and medical officer of health, in dealing with unsound food, are as follows:—

Any medical officer of health or sanitary inspector may at all reasonable times enter any premises and inspect and examine:—

(*a*) any animal intended for the food of man which is exposed for sale, or deposited in any place for the purpose of sale, or of preparation for sale, and

(*b*) any article, whether solid or liquid, intended for the food of man, and sold or exposed for sale or deposited in any place for the purpose of sale or of preparation for sale,

the proof that the same was not exposed or deposited for any such purpose, or was not intended for the food of man, resting with the person charged; and if any such animal or article appears to such medical officer or inspector to be diseased, or unsound, or unwholesome, or unfit for the food of man, he may seize and carry away the same himself or by an assistant, in order to have the same dealt with by a justice.

If it appears to a justice that any animal or article which has been seized or is liable to be seized under this section is diseased, or unsound, or unwholesome, or unfit for the food of man, he shall condemn the same, and order it to be destroyed or so disposed of as to prevent it from being exposed for sale or used for the food of man; and the person to whom the same belongs or did belong at the time of sale or exposure for sale, or deposit for the purpose of sale or of preparation for sale, or in whose possession or on whose premises the same was found, shall be liable on summary conviction to a fine not exceeding fifty pounds for every animal, or article, or if the article consists of fruit, vegetables, corn, bread, or flour, for every parcel thereof so condemned, or, at the discretion of the court, without the infliction of a fine, to imprisonment for a term of not more than six months with or without hard labour.

Where it is shown that any article liable to be seized under this section, and found in the possesion of any person, was purchased by him from another person for the food of man, and when so purchased was in such a condition as to be liable to be seized and condemned under this section, the person who so sold the same shall be liable to the fine and imprisonment above mentioned, unless he proves that at the time he sold the said article he did not know, and had no reason to believe, that it was in such condition.

Where a person convicted of an offence under this section has been within twelve months previously convicted of an offence under this section, the court may, if it thinks fit, and finds that he knowingly and wilfully committed both such offences, order that a notice of the facts be affixed, in such form and manner, and for such period not exceeding twenty-one days, as the court may order, to any premises occupied by that person, and that the person do pay the costs of such affixing; and if any person obstructs the affixing of such notice, or removes, defaces, or conceals the notice while affixed during the said period, he shall for each offence be liable to a fine not exceeding five pounds.

If the occupier of a licensed slaughter house is convicted of an offence

under this section, the court convicting him may cancel the license for such slaughter house.

If any person obstructs an officer in the performance of his duty under any warrant for entry into any premises granted by a justice in pursuance of this Act for the purposes of this section, he shall, if the court is satisfied that he obstructed with intent to prevent the discovery of an offence against this section, or has within twelve months previously been convicted of such obstruction, be liable to imprisonment for any term not exceeding one month in lieu of any fine authorised by this Act for such obstruction.

A justice may act in adjudicating on an offender under this section, whether he has or has not acted in ordering the animal or article to be destroyed or disposed of.

Where a person has in his possession any article which is unsound, or unwholesome, or unfit for the food of man, he may, by written notice to the sanitary authority specifying such article, and containing sufficient identification of it, request its removal, and the sanitary authority shall cause it to be removed, as if it were "trade refuse." (Public Health (London) Act, 1891, Sect. 47; and Sects. 116-119, Public Health Act, 1875; and Sects. 28 & 31, Public Health Act (Amendment) Act, 1890; also Sect. 43, Public Health (Scotland) Act, 1897). See also Sect. 289 and 292-3 of the Markets and Fairs Clauses Act, 1847.

The last part of the above section takes away the ground of a common defence in prosecutions for having unsound meat in one's possession; it being very often suggested that the food seized had been set aside with the object of destroying it, or to await the inspector's visit for inspection before offering the article for sale.

As the officer is appointed for public purposes, and not to assist the dealer in deciding whether such food is fit for sale, the latter being quite competent to judge for himself, it follows that should the article be deposited in a market or shop for instance, or where sales of such commodities are usually carried on, it is the duty of the inspector to take possession of any food which he believes to be diseased or unsound, and which is intended for the food of man, with a view to its being taken before a justice or not, as "seizures now are unnecessary."

Meat belonging to the plaintiff, and alleged to be unwholesome, was seized by the inspector of nuisances and condemned by a magistrate.

The owner was proceeded against, but the summons was dismissed by the justice for a defect in form, and no order was made as to costs. On an arbitration under the Public Health Act, 1875, the arbitrator found that the meat was sound, and awarded the plaintiff compensation. In an action on the award, it was held, that the finding of the arbitrator as to the soundness of the meat was conclusive; that the Corporation was liable to pay to the plaintiff full compensation for the damage sustained by reason of the acts of their officer, and that such compensation included the costs to which the plaintiff was put in opposing the summons. (Walshaw *v.* Brighouse Corporation, C.A. (1899), 2 Q.B. 286).

In the case of Queen *v.* Dennis, reported in the "Times" for May 29, 1894, it was held that if a person voluntarily handed to the sanitary inspector an article of food which was unsound, he could not be convicted of having the food in his possession, neither could it be said that the article had been seized by the inspector.

Articles which are exposed for sale, or deposited in any place for the purpose of sale, or of preparation for sale, may be seized, but in the case of Vinter *v.* Hind, 10 Q.B.D. 63, it was decided that a seizure made after sale, was not within the section. The defendant slaughtered a cow which had had milk fever, and sold several portions of it for the food of man. One of the purchasers handed the meat to Vinter, who was inspector of nuisances for the district. Vinter had it destroyed by order of a magistrate, and then sought to convict Hind of an offence under the section, and it was held that Vinter had no power to seize it *after sale*, although it was intended for the food of man; whereas, to come within the section it must be both ex-

posed for sale and intended for the food of man. This decision was undoubtedly in accordance with the wording of the section, but it clearly exposed a defect in its working which hampers a local authority in its endeavour to maintain the good health of its district. The Public Health Act (Amendment) Act, 1890, Section 28, and Section 47 of the Public Health (London) Act, 1891, also Section 43, Public Health (Scotland) Act, 1897, removes this defect, and provides that the section shall apply in such a case as that of Vinter *v.* Hind, and gives an inspector power to inspect any article of food, even after sale, and take the same proceedings if he find it to be diseased, &c., as if he had found it exposed for sale at the time of his inspection.

It was formerly considered that if the magistrate once made an order for the destruction of the meat, the defendant could not in a prosecution under this section call evidence for the purpose of showing that the meat which had been condemned was not in fact unsound, and that view was supported by a dictum of Justice Stephen in the case of Vinter *v.* Hind, but this dictum was expressly overruled in the case of Waye *v.* Thompson, 15 Q.B.D. 342, on the ground that it is necessary that a man should be heard upon the question in a case where he is subjected to the liability to imprisonment, and therefore an inspector has not only to satisfy the magistrate who makes the order for destruction that the meat is unsound, but he must also be prepared to establish the fact when the case comes to be fought in open court. The difficulty of establishing a case is often increased by the erroneous idea that it is necessary to establish that the meat is unfit for the food of man.

Forms of Orders for Destruction usually contain the words "and unfit for the food of man," in addition to the words "diseased or unsound or unwholesome," which are left to be filled in according to the circumstances, and

summonses nearly always contain the words "and unfit for the food of man." All this increases the difficulties unnecessarily. Nothing could be more undesirable as a rule than these words, and I have found by experience that it is wiser to leave out the words "unfit for the food of man," and simply allege that the meat is either diseased or unsound, as the case may be. It is usually a comparatively easy thing to prove that a piece of meat is diseased, but I never knew a case yet where the defence was not prepared to produce evidence that the meat in question was not "unfit for the food of man."

For instance, in the Glasgow tuberculosis case, many eminent medical men and veterinary surgeons were called for the defence to prove that the meat was not unfit for the food of man. In the first case of tuberculosis I had, the summons as issued alleged as usual that the meat was unfit for the food of man. There was no intention of fighting the Glasgow case over again, which on that summons it would have been quite competent for the defence to have compelled us to do, so a fresh summons was issued simply alleging that the meat seized was diseased, and the learned counsel who appeared for the defence admitted that on the second summons as worded, he could do nothing but plead in mitigation of penalty.

The case of Thomas *v.* Van Os, Div. Ct., Q.B. (1900), 448, where proceedings had been taken before a magistrate, under Section 47 of the Public Health (London) Act, 1891, for the condemnation as diseased, or unsound, or unwholesome, or unfit for the food of man, of an article seized by the medical officer of health or sanitary inspector, it was held, that the Magistrate had no jurisdiction to enquire whether the article was intended for the food of man, but he is bound to order its destruction upon being satisfied that it is in fact diseased, or unsound, or unwholesome, or unfit for the food of man.

An interesting question arises as to the person against whom you may proceed. The words in the Section are "the person to whom the same belongs or did belong at the time of exposure for sale, or in whose possession or on whose premises the same was found, shall be liable to a penalty," &c. The case of Newton *v.* Monckom, 58 L.T., N.S. 231, was decided on this point. There the under bailiff of a large landowner (who had two cows slaughtered because they were affected by disease) was sent to Portsmouth to arrange with a butcher to take the carcases. The under bailiff sent the carcases in his own name consigned to the butcher at Portsmouth station. The butcher examined the carcases and stated to the under bailiff that they were of no use to him. The meat was seized while lying at the station and condemned, and proceedings were taken against the under bailiff "as being the person to whom the same belonged," and he was convicted. Against this conviction he appealed, and appealed successfully, for it was held that although he might have been convicted as being the person "in whose possession the same was found," the evidence showed that he was not the person "to whom the same belonged" at the time of exposure for sale. The judgment of Justice Smith in that case was remarkable. He said:—"It seems to me that two classes of persons may be convicted, namely, the person to whom the meat belonged, and the person in whose possession or on whose premises it was found." The statement was not necessary for the decision of the case before him, and therefore is not a binding statement of the law. But if it is correct it means that if you convict the person in whose possession the meat is found, you cannot afterwards convict the person on whose premises the same was found.

Curiously enough, I had a case in which this very point arose. A man, A. B., was caught in the act of dressing

a heifer in the slaughter house of one C. D.; the heifer was found to be very badly affected with tuberculosis, and was accordingly seized. Proceedings were taken against A. B. as being the person in whose possession the carcase was found, and also against C. D. as being the person on whose premises the same was found. A. B. was convicted and sentenced to imprisonment; C. D.'s case then came on, and the point was raised whether he could be convicted or not, seeing that A. B. had already been convicted. It was contended that on the words in the Section three persons could be convicted. (1) The person to whom the same belongs or did belong at the time of exposure for sale. (2) The person in whose possession the same was found. (3) The person on whose premises the same was found. The case was adjourned for a week to enable the magistrate's clerk to consider it. In the meantime the facts were submitted by a person interested to the *Justice of the Peace* newspaper, and they gave an opinion against the contention, and relied on the dictum of Justice Smith to which I have referred; but a case was submitted for the opinion of one of the leading Junior Counsel on the Northern Circuit, and he advised that the whole three persons could be convicted. When the case came on again, the clerk to the magistrate gave an opinion in our favour.

In a Scotch case (Dickson *v.* Linton, 15 Ct. of Sess., 4th series, J.C. 76), it was decided that in order to obtain a conviction against the occupier of premises for having unsound meat on his premises, it was not essential to prove that the accused knew either of the meat being on his premises or of its unsound condition, and this view is supported by the judgments in the English case of Mallinson *v.* Carr (1891), 1 Q.B. 48, and of Blaker *v.* Tillstone, 70 L.T. Rep., N.S. 33.

Under the provisions relating to unsound food, &c., it is

provided that "the inspector of nuisances may at all reasonable times inspect meat, &c., exposed for sale or deposited in any place for the purpose of sale or of preparation for sale and intended for the food of man," and that "the person to whom the meat, &c., belongs or did belong at the time of exposure for sale, or in whose possession or on whose premises the same was found, shall be liable to a penalty." In the case of Small *v.* Bickley, 32 L.T., N.S. 726, it was held that a Sunday afternoon might in certain circumstances be a reasonable time for examining meat. It was contended in a case, though without success, that as the words only referred to exposure for sale, a person to whom meat belonged which was seized while "deposited in any place for the purpose of sale or of preparation for sale," could not be convicted. The case to which I refer was that of Mallinson *v.* Carr (1891) 1 Q.B. 48. There one Kettlewell sold a cow to the defendant Carr for thirty shillings, with a stipulation that it was not to be offered for human food. The beast was slaughtered and cut up into four quarters. Kettlewell heard that the carcase was going to be offered for human food, and he gave notice to the inspector of nuisances, and by him the meat was seized. But in the subsequent proceedings the justices refused to convict, being of opinion that the decision in Vinter *v.* Hind applied, and that inasmuch as the meat was not exposed for sale at the time of seizure no offence had been committed. Mallinson obtained a case for the High Court, and on appeal the case was remitted with a decision that the magistrates were wrong in point of law. Justice Hawkins said, "I can find nothing in the section which says that no man, even although he has unsound meat in his possession which is intended for the food of man, and although he is preparing it for sale with the intention of selling it can be convicted unless he actually exposes it for sale. I cannot think it

could ever have been intended that, however great a quantity of diseased or unsound meat a man has in his possession for the purpose of selling it, he should be liable to no penalty under the Act. The Legislature cannot have intended that construction." Justice Stephens said "the justices have misapprehended the judgment in Vinter *v.* Hind. That case was entirely different from the present. It turned upon a different collection of words in the Statute, requiring a different coincidence of things in order to constitute an offence . . . . . The offence is having in a person's possession or on his premises, meat which is unsound or unfit for human food. There was unquestionable evidence in the present case that the respondent committed that offence. He was in possession of meat which was unsound and unfit for human food, and it is not an element of that offence that the meat should either have been exposed for sale or prepared for sale . . . I cannot agree with the argument that unless there is an exposure for sale, no offence is committed."

The statement that all diseases must affect the composition of the flesh, and that, though animal poisons may be neutralized or destroyed by the process of cooking and digestion, the composition of the muscles must exert an influence on the composition of human nitrogenous tissues, which no preparation or digestion can remove, is no doubt right in *principle*, but if the officers responsible for the inspection of meat were to put this principle into practice, the meat supply would become seriously reduced, and the high price consequent upon that would put the purchase of meat altogether beyond the reach of the poor.

It is, therefore, evident that upon the Inspector and Medical Officer of Health rests great responsibility in carrying out these duties, as the officers will frequently have to determine the fitness or otherwise of meat intended as human food.

The following diseases of animals are declared to render the meat unfit for the food of man :—

Cattle-plague.
Pleuro-pneumonia.
Sheep-pox.
Cow-pox.
Influenza.
Rheumatism.
Black quarter or splenic fever.
Splenic apoplexy or braxy.
Pig typhoid.
Scarlatina or swine fever.
Quinsy or strangles.
Anthrax.
Tænia—producing encysted parasites.
Trichinæ.
Tuberculosis.

The post-mortem appearances of the meat of slaughtered animals which have suffered from the diseases mentioned, according to Dr. F. Vacher, are as follows :—

Cattle plague.—In the early stages there is a redness of the mucous membrane lining the respiratory passages, the alimentary canal, and the organs of generation—in the intestines there is a viscid, blood-coloured secretion.

In an advanced stage of the disease there will be a yellow, cheesy deposit in the nares and larynx, patches of ecchymosis on the intestines, urinary and generative organs, and extravasations beneath the endocardium and pericardium, and swollen mesenteric glands. There is emphysema of the lungs and the blood is dark and thick.

According to Dr. Murchison, the lining "membrane" of the fourth stomach is studded with numerous minute superficial ulcers. The urine is probably always albuminous.

Pleuro-pneumonia.—The pleura is thickened, the lungs

show signs of adherence to the pericardium or diaphragm —if the disease is not extensive, the change in the colour of the lungs will be the best indication—the bright pink hue of health giving place to grey, mottled with spots, blue, purple and red. The lungs will be much larger and heavier, when placed in water they will sink to the bottom, and there is loss of elasticity in them. The weight of the lungs, which are usually from 5 to 8 pounds, will be increased to 30 or 40 pounds. The meat is dark and ill-bled.

Sheep-pox.—This disease resembles human small-pox, though the pustules are larger than those of human small-pox, varying from $\frac{3}{8}$ to $\frac{1}{2}$ inch in diameter. The mucous membrane is the seat of the eruption, the lungs contain spots in which the specific virus is deposited—in severe cases the joints and hoofs are inflamed and swollen, the eyes blood-shot and the nostrils packed with discharge. The lymphatic glands are enlarged and inflamed; the meat has a nauseous smell and the flesh is soft and pale and too moist.

Cow-pox.—The eruption of cow-pox is severe, the udder pustules assuming the appearance of running ulcers, while in a living beast the mouth is very sore; there is exhaustion from diarrhœa and fever.

Influenza.—Red patches denuded of epithelium are to be seen in the mouth—the conjunctiva and cornea are inflamed—there is pus in the nares and sinuses, the face is smeared with pus and blood, patches of ecchymosis are visible on the intestines and other abdominal viscera. The meat is dark, ill-bled, soft and watery.

Rheumatism.—Resembles influenza in beginning as a simple cold—joints stiff or thickened with deposit, fluid should be looked for in and around the affected joints; the animal has probably been slaughtered owing to obstruction in the bowels with hardened fæces, and the flesh is charged with watery fluid and is sour.

Black quarter or splenic fever.—A swelling of the fore-quarter or haunch, part affected dark and unwholesome looking from erysipelas, spleen swollen and dark coloured, lungs generally congested, serous membranes stained more or less with ecchymosis.

Splenic fever, according to a report of the Veterinary Department of the Privy Council, has the following post-mortem appearances:—

1. The lungs sometimes partially congested, and commonly blown up with air between their lobules.

2. The first, second and third stomachs are usually healthy. The fourth stomach is intensely congested at its upper end.

3. The intestines are, with rare exceptions, congested and blood-stained, more or less throughout their whole extent.

4. The liver often congested, is not materially implicated in the disease. The gall bladder has its coat sometimes thickened by a gelatinous-looking fluid, and its contents are dark and viscid.

5. The spleen is always enlarged, it should usually weigh one to one and a half pounds, but it is found in the disease as high as five, six and even eight pounds in weight. It is dark coloured, and its structure broken up.

6. The kidneys are congested, and the mucous membrane within them often blood-stained; in a small percentage of cases the bladder contains clear urine. In the great majority of cases this organ is greatly distended by bloody urine, and its internal lining is dotted with small bright pin-point-like extravasations.

7. The brain and spinal cord are congested more or less.

Splenic apoplexy or braxy.—When it affects sheep it resembles splenic fever with "head" symptoms; the spleen, which is rather over one pound in a beast, and rather over two ounces in weight in a sheep, will be quadrupled;

subjects of this disease are not likely to be slaughtered before it proves fatal—the meat cannot be bled properly.

Pig typhoid.—Diffused and patchy redness of the skin, small ulcerations in the mouth and in the throat organs, stomach congested, ulcers on large and small intestines, the larger intestines most frequently affected, ulcers vary in form and size, they increase in size and run into one another, forming eight-shaped figures, large branching irregular sores, or ulcer chains or groups, the spleen usually darker, lungs often pneumonic and on dissection display tiny white specks due to cheesy deposit in small bronchial tubes. Generally there is some pleural exudation, the liver in severe cases is enlarged from congestion; if the eruption is abundant the carcase should not be passed.

Scarlatina or swine fever.—Acute inflammation of the skin and mucous membrane, the eruption specky at first, but soon spreads over the whole surface of skin and is of a bright scarlet colour, the glands are inflamed and enlarged, a strong solution of salts is often used by the butcher to bleach the outer skin, but the colour cannot be removed by this means from the subcutaneous fat.

Quinsy or strangles.—Glandular swellings in neck, organs of the throat inflamed, cheeks and underside of neck very red and swollen, there are raised red spots in the mouth.

Anthrax.—The skin is frequently congested, livid rather than red, extravasations into the tissue and beneath serous and mucous membranes, lymph is exuded in greater or less quantity, rendering the carcase swollen and sodden.

Tænia—producing encysted parasites.—This disease is known as *cysticerci cellulosæ*, is very common in pigs, and produces tapeworm in the human subject, if the parasites are taken into the stomach alive. The parasites are found in and between the muscles, fibres, on the surface of the muscles,

and in the walls of the heart. The egg-shaped infest the bladder, they vary in size from $\frac{1}{8}$ to $\frac{1}{2}$ inch, and are easily seen and removed from the bladder upon gentle pressure. There is nothing remarkable in "measly pork" but the bladder worm, measles is the name given because of the appearance of the flesh on section. There is swelling round the shoulders. Young pigs are the most susceptible to the disease.

Trichinæ.—Trichinæ in pork may be seen without the aid of a magnifier, the flesh being distinctly speckled. A thin section of the muscle should be put into dilute liquor potassæ and water, in the proportion of 1 to 8, when the white specks will be clearly seen; to see the coiled up worm itself apply a pocket lens. The lungs are sometimes inflamed.

Tuberculosis or consumption.—Sometimes called "grapes" because of the resemblance of the tubercles to a bunch of grapes. The tubercles or tumours vary in size from a pea to a walnut, they are found chiefly on the surface and in the lungs and on the walls of the chest, but in severe cases may be found in the liver, udder and glands of the neck. To remove traces of this disease, the butcher will carefully strip off portions of the lining membrane; the tubercles, if the disease is of long standing, will be large and "cheesy." It frequently happens that an animal having all the appearance of being healthy will be found seriously affected with the disease when slaughtered. But the affected beasts are as a rule very much emaciated and the meat will not "set."

The Royal Commission on Tuberculosis recommended that the Local Government Board should be empowered to issue instructions from time to time for the guidance of meat inspectors, prescribing the degree of tubercular disease which, in the opinion of the Board, should cause a carcase, or part thereof, to be seized.

Pending the issue of such instructions we are of opinion that the

following principles should be observed in the inspection of tuberculous carcases of cattle :—

(*a*) When there is miliary tuberculosis of both lungs. (*b*) When tuberculous lesions are present on the pleura and peritoneum. (*c*) When tuberculous lesions are present in the muscular system or in the lymphatic glands embedded in or between the muscles. (*d*) When tuberculous lesions exist in any part of an emaciated carcase.	The entire carcase and all the organs may be seized.
(*a*) When the lesions are confined to the lungs and the thoracic lymphatic glands. (*b*) When the lesions are confined to the liver. (*c*) When the lesions are confined to the pharyngeal lymphatic glands. (*d*) When the lesions are confined to any combination of the foregoing, but are collectively small in extent.	The carcase, if otherwise healthy, shall not be condemned, but every part of it containing tuberculous lesions shall be seized.

In view of the greater tendency to generalisation of tuberculosis in the pig, we consider that the presence of tubercular deposit in any degree should involve seizure of the whole carcase and of the organs.

In respect of foreign dead meat, seizure shall ensue in every case where the pleura has been "stripped."

The Local Government Board have issued the following circular to councils of Metropolitan and other boroughs, and of urban and rural districts, on the above recommendations :—

SIR,

I am directed by the Local Government Board to state that they have had under consideration the report of the Select Committee of the House of Commons on the Tuberculosis (Animals) Compensation Bill, 1904, in which reference is made (*a*) to the variety of practice alleged to exist with regard to the amount of tubercular deposit, the existence of which in a carcase is held to justify its total condemnation ; and (*b*)

to complaints made by butchers as to the injury caused to them by their prosecution in open court for having tuberculous meat upon their premises.

With regard to (*a*) it appears to the Board to be most desirable that there should be uniformity in the practice of meat inspectors in dealing with the carcases of cattle; and they have already on two occasions, viz., in their circular letters of the 11th March, 1899, and 6th September, 1901, set out, and urged the observance of, the principles laid down by the Royal Commission on Tuberculosis in their report of 1898 with respect to the degree of tubercular disease which should cause a carcase or part thereof to be seized. . . . . .

The Board are of opinion that, at the present time, measures more stringent than those advocated by the Royal Commission are not called for; but they would impress upon the Council the expediency and desirability of insisting upon those of their officers who are employed as meat inspectors acting in strict accordance with the principles thus laid down, if this is not already the case.

With regard to (*b*) the Select Committee expresses their view that, if a butcher who is in possession of tuberculous meat has notified the fact to the proper authority as soon as he could be reasonably expected to be aware of it, the case should not be taken into court.

The Board understands that in some districts the course recommended by the Committee is followed now, but where this is not so the Board suggest that, having regard to the serious consequences which may result to a butcher from prosecution in open court for being in possession of tuberculous meat, the Council should act upon the view expressed by the Select Committee in cases where such possession is voluntarily and promptly disclosed by the owner.

I am, Sir, your obedient Servant,

S. B. Provis, *Secretary*.

September 7, 1904.

The following indications of Tuberculosis, both in the carcase and in the living animal, drawn up by Dr. Collingridge, the Medical Officer of Health for the City of London, and Mr. King, Veterinary Inspector to the Corporation, has been compiled for the guidance and use of persons dealing in meat:—

Signs of Tuberculosis in the Carcase and Organs.

At the time of slaughter when the carcase and all the organs are available for examination, there should be no difficulty in detecting the presence of tubercle.

Beef.—Any unnatural appearance should be looked for, and any case of doubt referred to an Inspector before sending meat to market. The following are indications of disease:—

(i) The kernels on the paunch and in the fat round the entrails are enlarged, and may be hard and gritty, or soft and cheesy, according to the stage of the disease.

(ii) The lungs are studded with small masses containing matter, varying from the size of a pin's head and upwards, the larger being gritty when cut into.

If there are many of these masses they may form bunches like grapes, and the disease often spreads to the skirt and the inner side of the ribs, when the lungs grow to the ribs and skirt, and have to be cut away in dressing.

(iii) As the disease progresses the masses of tubercle are found on the other side of the skirt, and inside the flanks, into which the intestines sometimes grow.

"Stripping" or removal of skin from the inside of the ribs or flanks only partially removes the signs of disease, while it always arouses suspicion, and must be considered as proof that the person dressing the animal had guilty knowledge of the existence of disease (Tuberculosis).

The Local Government Board has ordered that Stripping, in the case of foreign dead meat, shall be sufficient reason for condemnation.

(iv) White or yellowish masses in the liver, which on cutting present the appearances described above in (i).

Pork.—The conditions are more stringent, and the Report of the Royal Commission advises that all pigs showing any evidence of Tuberculosis should be condemned.

It frequently occurs, however, that well nourished pigs are tuberculous; therefore special attention should be paid to the kernels on the mudgeon and on the belly and weasand. These should be split with a knife to ascertain if they are hard or gritty.

The kernels on the windpipe and between the lungs should be carefully examined.

The lungs should be tested by pressure between the finger and thumb —hard, shotty lumps will indicate disease. All the kernels should be of natural size and colour, free from all gritty feeling or cloudy appearance.

It is strongly recommended that no pigs, the lungs of which have grown to the side, and no meat of a doubtful character should be sent to market.

Tuberculosis—Symptoms in the Living Animals.

In the early stages of this disease the majority of animals may appear to be in perfect health, there being no symptoms which would lead a veterinary surgeon, farmer or butcher to say definitely that the animal was suffering from Tuberculosis, although those in constant attendance on the animal would notice that at times they appear to be out of sorts and have a disinclination for their food, and occasionally after feeding, especially if the lungs are the seat of the disorder, the animal has a sharp, irritable cough, but as the disease advances in many cases the symptoms become more pronounced and more obvious to those attending and feeding the animals; there is often enlargement of the glands of the throat, the nose becomes dry and the eyes have a glassy appearance and often appear to sink in the socket; the cough becomes more frequent, the coat dry and staring, and the hide tight; the animals also often suffer from intermittent diarrhœa. On tapping the chest of an animal in this condition with the fingers, there will often be found a dulness, or a sound of solidity in patches over the region of the lungs, and the animal gradually loses flesh.

When the udder is affected, small nodular swellings can be felt in one or more of the quarters; these gradually enlarge and run together until the whole quarter or quarters become a diseased mass; this differs from ordinary Mammatis or Garget, inasmuch as there is little or no pain on pressure and the swellings gradually increase.

Should the owner of cattle find an animal exhibiting any of the above symptoms, it is his duty, in the interests of the community at large, to seek the advice of his veterinary surgeon, who will be able to satisfy him as to the condition of the animal, either by the symptoms present or by the use of Tuberculin.

Diseases of animals, which in their later stages may render the meat unfit for the food of man, are:—

Foot and mouth disease.
Hoof-rot.
Jaundice.
Texas fever.
Inflammatory diseases of the lungs.
Cardiac dropsy.
Enthetic disease.

To assist in the detection of certain diseases of *animals*, the Board of Agriculture has issued the following description of diseases:—

Cattle plague.—The early symptoms of the plague are, rise of internal temperature; the animal stands with its head hanging down, ears drawn back, and coat staring; it refuses all food and occasionally shivers. A mucous discharge flows from the eyes and nostrils. The extremities are cold; the breathing is laboured and frequently accompanied with moaning.

The inner part of the upper lip and roof of the mouth and all visible mucous membranes are reddened and are not unfrequently covered with an eruption of minute pimples, and later on with a bran-like exudation. The bowels are occasionally constipated, but in most instances diarrhœa soon sets in, the evacuations being slimy and very frequently of a dirty yellow colour. The prostration of strength is great, the animal staggering when made to move. In milch cows the secretion of milk is rapidly diminished and soon ceases altogether. The disease usually ends fatally in from six to ten hours.

Pleuro-pneumonia.—The attack is mostly insidious, the animal appearing but little affected at the outset.

The internal temperature is always increased, even in the earliest stages of the disease; it may reach 104° or 105° F.

A short dry husky cough, which continues throughout, and is easily excited by moving the animal, is one of the

earliest symptoms. The breathing is increased in frequency and altered in character, is often accompanied with a grunt, and becomes painful as the disease advances.

A dull sound is emitted on percussing the side of the chest over the diseased lung. Firm pressure applied to this part will cause the animal to shrink.

The appetite is generally diminished, but rarely lost except in the advanced stages of the disease.

In milch cows the secretion of milk is always lessened but not completely stopped.

Foot and mouth disease.—Premonitory symptoms are, rise of temperature; the animal frequently smacks its lips, and shows by the movement of its tongue that the mouth is the seat of suffering; and the saliva flows freely from the mouth. An examination of the mouth shows the existence of vesicles on the tongue and often on the inner part of the upper lip on the pad.

Often the vesicles are broken, exposing the surface beneath. The animal seldom refuses food, but rolls it about in its mouth, and often drops instead of swallowing it. In most instances the feet are affected as well as the mouth, and blisters will form between the toes, causing the animal to walk tenderly, and frequently to catch up one foot after the other and shake it as if to dislodge something which was producing pain. In milch cows the teats are occasionally affected with vesicles, especially at the opening of the milk duct, which often lead in this situation to sores and crusts being formed, preventing the ready flow of milk. The disease is of short duration, rarely produces death, and frequently exists simultaneously among the cattle, sheep and pigs of the farm.

Sheep pox.—A contagious eruptive disease affecting sheep, the chief symptoms of which are the elevation of temperature, general febrile disturbance and marked prostration, great thirst, loss of appetite, discharge from eyes

and nose, and the appearance of papules in the skin of parts of the body which are either hairless or covered by hair instead of wool, such as the inside of the forearms, and thighs, under surface of tail, &c.

At the seat of these papules, vesicles and sometimes even pustules may form, which afterwards dry up and leave brownish crusts.

Sheep scab.—This disease is due to the presence of a small parasite which causes great irritation to the affected animal by its movement over the surface of the skin.

The parasite may be transferred from one sheep to another by contact or by portions of the wool of an infected sheep which may become detached upon hurdles, posts, hedges and other things against which the diseased sheep may have been rubbing. This constant rubbing is the prominent symptom in sheep scab, but as sheep may rub themselves from other causes than scab, it is important that the veterinary inspector should examine the wool with a pocket lens to determine whether the acarus is present. Sometimes the acari are difficult to find in the wool, and in such cases a portion of the scab should be removed from the skin, soaked in a small quantity of soda and water, and examined under a microscope with a lens of low power, when some of the dead acari, portions of the limbs, or some of the ova, will be found.

Swine fever.—The most prominent symptoms of this malady are a short husky cough, loss of appetite, great thirst and prostration, elevation of temperature, often as high as 105° F., or more, constipation at first, followed by profuse fœtid diarrhœa, with traces of blood, and in the later stages even crusts from the ulcerated surface of the intestine being passed, frequently an eruption of the skin of the insides of the thighs, belly, and axillæ, and behind the ears, and in some cases more or less appearance of paralysis of the hind extremities before death.

Anthrax.—In most cases the sign of an outbreak of anthrax or splenic fever is the discovery of a dead animal in the pasture or byre. Probably the animal was left a few hours before in apparent health; at least there was nothing to attract attention, or give any warning of the approaching catastrophe. Occasionally, and in the case of sheep not uncommonly, there are certain premonitory symptoms of an attack of anthrax which can be recognised by an expert. The affected animal is dull and disinclined to move. If one of a herd or flock is attacked, the fact is indicated by the separation of the sick animal from the rest. Close observation will enable the observer to detect an occasional shiver which seems to pass rapidly over the body, and then cease.

Sometimes a little blood is discharged from the nose and also with the fæces, and from time to time the animal will cease to feed, and stand with the head bent towards the ground. On closer inspection it will often be found that there is a good deal of swelling under the throat, extending down the neck, and the swollen part will at first be tender to the touch and hot, but as the disease goes on it becomes insensitive, cold and clammy.

The shivering fits now become more frequent, and perhaps, while these signs are being noted, the animal will suddenly roll over on its side, and, after a few violent struggles, expire.

As regards the unwholesomeness of meat arising from decomposition, Dr. Christison in his work on "Poisons" says:—"The tendency of putrefaction to impart deleterious qualities to animal matters originally wholesome has long been known, and is quite unequivocal. To those who are not accustomed to the use of tainted meat, the mere commencement of decay is sufficient to render meat insupportable and noxious. Game, only decayed enough to please the palate of the epicure, has caused severe

cholera in persons not accustomed to eat it in that state."

The practice of eating game which is "high" is common, not only in this, but other countries, and rotten fish is used by the Burmese, Siamese, and Chinese, as a sort of condiment, without bad effect.

Dr. Pavy says:—"Cooking doubtless neutralizes, to some extent, the effect of decomposition, and the secretion of the stomach (gastric juice), with the strongly antiseptic properties it possesses, will tend to prevent any further advance of ordinary decomposition as soon as the food reaches the stomach. Notwithstanding these salutary influences, however, experience shows that the resisting power enjoyed by those accustomed to our mode of life is not sufficient to allow meat tainted with decomposition to be consumed without incurring a risk of more or less severe gastro-intestinal derangement, if nothing more, being set up."

Though it is the custom in this, as well as other countries, to eat game in a "high" state, it is evident that meat of any kind in this condition cannot always be partaken of with impunity, and whenever the inspector finds beef, mutton, fish, rabbits, &c., intended for the food of man, which is putrid, he should adopt the measures provided by the Acts to prevent its being sold as human food.

Generally speaking good meat has the following characteristics:—

1. It is neither of a pale pink colour nor of a deep purple tint, for the former is a sign of disease, and the latter indicates that the animal has not been slaughtered, but has died with the blood in it or has suffered from acute fever.

2. It has a marbled appearance from the ramifications of little veins of fat among the muscles.

3. It should be firm and elastic to the touch, and should

scarcely moisten the fingers, bad meat being wet, sodden and flabby, with the fat looking like jelly or wet parchment.

4. It should have little or no odour, and the odour should not be disagreeable, for diseased meat has a sickly cadaverous smell, and sometimes a smell of physic. This is very discoverable when the meat is chopped up and drenched with warm water.

5. It should not run to water or become very wet on standing, but should, on the contrary, dry upon the surface (Dr. Letheby).

Frozen meat is easily recognised from meat which is home-killed, before it is defrosted, as it is cold and hard, but if kept for a short time in the open air, depending of course on the condition of the weather, it becomes soft, sodden and wet. The fat has a pinkish tinge, due to its being stained with the meat juice, and is moreover of a dull colour. These latter characteristics are quite obvious when the meat is cut in sections.

Mr. G. T. Billing, London, states that "horse flesh is very coarse in texture, dark in colour, and has a peculiar sickly smell and a soapy feel. The fat is very oily and yellow in colour. It is very difficult to detect horse flesh (especially when all the fat has been removed) from bull flesh, by its general appearance, but it can be easily detected by its characteristic smell. It is very unlikely that the bones will be present if horseflesh should be found on unlicensed premises; but, at the same time, it will be as well to point out some of the most important differences between the bone of the horse and ox. There are eighteen ribs in the horse, against thirteen in the ox; the ribs of the horse are very narrow and curved (hoop shaped). The ribs of the ox are very flat and broad, and less curved, being almost straight. The elbow bone of the ox is larger than that of the horse.

The internal organs of the horse most likely to be palmed off for those of the ox are: the heart, liver, and tongue.

The heart of the horse is usually less pointed at the apex than in the ox. The fat on the ox heart is whiter, firmer, and more abundant. In the base of the ox heart is a small bone, the os cordis, which is rarely, if ever, present in the horse. The horse's heart is sometimes made pointed at the apex by hanging it up (base downwards) when hot. By altering its shape in this manner the horse's heart may easily pass for that of the cow or ox.

The liver of the horse is composed of three distinct lobes (with a small lobe attached), while in the ox there is only one lobe. There is a gall bladder attached to the ox liver, but none is present in the horse.

"The tongue of the horse is broad at the tip of the blade, and very smooth and flat. In the centre of the blade is a very distinct line, running lengthwise. There are five bones in the horse's tongue against nine in the ox's. The tongue of the ox is very pointed at the tip of the blade. The blade is somewhat rounded, and is shorter than in the horse. At the thick end of the blade is a distinct prominence, and its surface is very rough and bristly.

"The kidney of the horse is composed of one lobe. The kidney of the ox is composed of numerous lobes.

"The spleen of the horse is long and thin, and sharp at the edges, one end is much broader than the other, the colour is similar to that of the ox."

Specimens of diseased meat, for production in Court in any legal proceedings, may be preserved in spirits, placed in a wide-necked bottle.

The weight of animals in a normal state of health should be, as follows:—

An ox should weigh not less than 600 lb., and will range from this to 1,200 lb.

A cow may weigh a few pounds less; a good fat cow will weigh from 700 to 740 lb.

A heifer should weigh 350 to 400 lb.

A full grown sheep will weigh from 60 to 90 lb., but the difference in different breeds is very great.

A full grown pig weighs from 100 to 180 lb. or more.

The soundness of fish may be noticed by the smell, and if lifted, fresh fish would be firm and stiff. Any drooping of the tail when the fish is held in an horizontal position may be taken to indicate that the fish is not fresh.

Dr. Vacher gives the following useful table to show when fish is in season :—

Fish.	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Brill	—	—	in	in	in	in	in	in	in	in	in	—
Cod	in	in	in	—	—	—	—	—	—	in	in	in
Eels	in	in	in	—	—	in	in	in	in	in	in	in
Flounder	—	—	—	—	—	—	in	in	in	in	in	—
Hake	—	—	—	in	in	in	in	in	in	in	in	in
Haddock	in	in	—	—	—	—	—	in	in	in	in	in
Halibut	—	—	in	in	in	in	—	—	—	—	—	—
Herring	—	—	—	—	—	—	in	in	in	in	—	—
Mackerel	in	in	in	in	in	in	in	—	—	in	in	in
Plaice	—	—	—	—	in	in	in	in	in	in	in	in
Salmon	—	—	in	in	in	in	in	in	—	—	—	—
Skate	in	in	in	in	—	—	—	in	in	in	in	in
Smelt	in	in	in	in	in	—	—	—	in	in	in	in
Sprats	in	in	in	—	—	—	—	—	—	—	in	in
Sole	in	—	—	in	in	in	in	in	in	in	in	in
Turbot	in	in	—	—	in	in	in	in	in	in	in	in
Whitebait	—	—	—	in	in	in	in	in	—	—	—	—
Whiting	in	in	in	—	—	—	—	—	in	in	in	in

SLAUGHTER HOUSES.

The duties attending the inspection of slaughter houses are very onerous, especially if they are private slaughter houses, as owing to the distance of such premises one from the other, supervision in the matter of meat inspection becomes next to impossible, even upon days set apart for slaughtering, but still more so at night, when it is possible, as I have reason to know, for suspicious animals to be run into such places under cover of darkness, slaughtered, dressed, and possibly cut up into joints, and removed to the butcher's shop, before the inspector hears of such acts, or has a personal opportunity of visiting the slaughter house, and thus the meat of animals which have suffered from an acute disease is often sold without the slightest protection to the public.

It is highly necessary that local authorities should, as occasions present themselves, use the powers which they possess to refuse the granting or renewing of licences to "private" slaughter houses, but rather, as these things must be, it would be to the interest of the public health that they should establish one or more public slaughter houses, giving every facility to butchers to slaughter cattle upon suitable premises, and in convenient situations.

These establishments would afford ample means for inspecting the animals brought to be slaughtered, and the meat before removal for sale, and it would put a stop to the vendors of *slink* meat, who depend chiefly upon butchers in possession of private slaughter houses for facilities to slaughter.

Dr. Harris, Medical Officer of Health for the Metro-

politan Borough of Islington, has summarised his views upon the question of public slaughter houses, as follows:—

I.—Hygienic Reasons.

(*a*) The erection of such buildings would remove nuisances from the neighbourhood of dwelling houses.

(*b*) Putrifiable matter would be excluded from the sewers.

(*c*) Meat would be protected from liability to exposure from foul emanations.

(*d*) Thorough examination of all meat for disease would be ensured.

(*e*) The traffic in diseased meat would be materially limited.

II.—Economic Reasons.

(*a*) Less liability of the meat to spoil because slaughtered under better conditions.

(*b*) More blood and offal would be saved.

(*c*) There would be a saving from order, the proper division of labour, avoidance of driving animals through the streets, and the doing of business on a large scale.

(*d*) Abattoirs properly managed yield a fair profit.

III.—Humanitarian Reasons.

(*a*) Much of the cruelty to animals that now occurs would be put an end to, owing to the use of improved appliances for slaughtering.

(*b*) The driving of weary and exhausted cattle through our streets would be avoided owing to the abattoirs being situated near railway stations.

(*c*) The street danger to the public would be greatly lessened.

The following interpretation of terms, as to slaughter houses, cattle, &c., are contained in Section 141, Public Health (London) Act, 1891:—

The expression "slaughterer of cattle or horses" means a person whose business it is to kill any description of cattle or horses, asses, or

mules, for the purpose of the flesh being used as butcher's meat; and the expression "slaughter house" means any building or place used for the purpose of such business.

The expression "knacker" means a person whose business it is to kill any horse, ass, mule, or cattle which is not killed for the purpose of the flesh being used as butcher's meat; and the expression "knacker's yard" means any building or place used for the purpose of such business.

This is the same definition as that given in Section 6, Public Health (Scotland) Act, 1897.

The expression "cattle" includes sheep, goats, and swine.

"Slaughter house" includes the buildings and places commonly called slaughter houses and knacker's yards, and any building or place used for slaughtering cattle, horses, or animals of any description for sale.

It is enacted by Section 169 of the Public Health Act, 1875, that to enable *urban* authorities to regulate slaughter houses within their district, the provisions of the Towns Improvement Clauses Act, 1847, in respect to slaughter houses, shall be incorporated with this Act.

The incorporated provisions are as follows:—

SECTION 128.—The Commissioners (Urban Sanitary Authority) shall, from time to time, by by-laws . . . . . make regulations for licensing, registering and inspection of slaughter houses . . . . . for preventing cruelty therein, and for keeping the same in cleanly and proper state, and for removing filth once in every twenty-four hours, and requiring them to be provided with a sufficient supply of water, and the imposition of penalties not exceeding £5 for breaking the by-laws, and for a continuing offence the sum of ten shillings for every day the nuisance is continued after "conviction for the first offence."

SECTION 129.—Provides that the justices before whom any person is CONVICTED of killing or dressing any cattle contrary to the provisions of this or the special Act (Public Health Act, 1875) or of non-observance of any by-laws or regulations in this or the special Act, in addition to any penalty imposed, may suspend the license for any period not exceeding two months, and may forbid for that period the slaughtering

of cattle therein, and upon a second or subsequent like offence may revoke the license, and forbid absolutely the slaughtering of cattle upon these "premises."

SECTION 130.—Every person who slaughters or allows the same to be used as a slaughter house during the suspension of a license, is liable to a penalty of £5 for every day during which the offence continues.

The Local Government Board has advised Sanitary Authorities, before the license for a slaughter house is granted, that the following rules as to site and structure should influence their decision upon each application for a license.

1. The premises to be erected or to be used and occupied as a slaughter house, should not be within 100 feet of any dwelling house, and the site should be such as to admit of free ventilation by direct communication with the external air on two sides at least of the slaughter house.

2. Lairs for cattle in connection with the slaughter houses, should not be within 100 feet of a dwelling house.

3. The slaughter house should not in any part be below the surface of the adjoining ground.

4. The approach to the slaughter house should not be on an incline of more than 1 in 4, and should not be through any dwelling house or shop.

5. No room or loft should be constructed over the slaughter house.

6. The slaughter house should be provided with an adequate tank or other proper receptacle for water, so placed that the bottom shall not be less than six feet above the level of the floor of the slaughter house.

7. The slaughter house should be provided with means of thorough ventilation.

8. The slaughter house should be well paved with asphalte or concrete, and laid with proper slope and channel towards a gully, which should be properly trapped and covered with a grating, the bars of which should not

be more than three-eighths of an inch apart. Provision for the effectual drainage of the slaughter house should also be made.

9. The surface of the walls in the interior of the slaughter house should be covered with hard, smooth, impervious material to a sufficient height.

10. No water closet, privy, or cesspool should be constructed within the slaughter house.

There should be no direct communication between the slaughter house and any stable, water closet, privy, or cesspool.

11. Every lair for cattle in connection with the slaughter house should be properly paved, drained and ventilated.

No habitable room should be constructed over any lair.

The undermentioned provisions apply to slaughter houses :—

The owner or occupier of any slaughter house licensed or registered under this Act shall, within one month after the licensing or registration of the premises, affix, and shall keep undefaced and legible on some conspicuous place on the premises, a notice with the words "Licensed Slaughter House," or "Registered Slaughter House," as the case may be.

Any person who makes default in this respect, or who neglects or refuses to affix or renew such notice after requisition in writing from the urban authority, shall be liable to a penalty not exceeding five pounds for every such offence, and of ten shillings for every day during which such offence continues after conviction. (Public Health Act, 1875, Sect. 179).

Licenses granted after the adoption of this part of this Act for the use and occupation of places as slaughter houses shall be in force for such time or times only, not being less than twelve months, as the urban authority shall think fit to specify in such licenses.

Upon any change of occupation of any building within an urban sanitary district registered or licensed for use and used as a slaughter house, the person thereupon becoming the occupier or joint occupier shall give notice in writing of the change of occupation to the Inspector of Nuisances.

A person who fails or neglects to give such notice within one month after the change of occupation occurs shall be liable to a penalty not exceeding five pounds.

Notice of this enactment shall be endorsed on all licenses granted after the adoption of this part of this Act.

If the occupier of any building licensed as aforesaid to be used as a slaughter house for the killing of animals intended as human food is convicted by a court of summary jurisdiction of selling, or exposing for sale, or for having in his possession, or on his premises, the carcase of any animal, or any piece of meat or flesh diseased or unsound, or unwholesome or unfit for the use of man as food, the court may revoke the license. (Public Health Act (Amendment) Act, 1890, Sects. 29-31).

In the Metropolis and Scotland application for the granting or renewing of licences to slaughter cattle, must be made annually (see Section 20, Public Health (London) Act, 1891, and Section 33, Sub-sections 2 and 3, Public Health (Scotland) Act, 1897); in London the applicant must give at least 14 days' notice to the Sanitary Authority in whose district the premises are situated, and in Scotland 21 days' notice must be given. A Sanitary Authority in London may show cause against the granting or renewing of any such licence, but if it is intended to oppose the renewal or granting of any licence, notice of such intention must be given to the applicant. Any slaughter house which ceases to be used as such for a period of nine months, in the Metropolis, the County Council have the power, under the by-laws, to revoke the licence. Under the London Government Act, 1899, Section 6, Sub-section 4, the Sanitary Authorities in the Metropolis have had transferred to them the duty of enforcing the by-laws and regulations with respect to slaughter houses.

Form of Application for a License to erect Premises for Use and Occupation as a Slaughter House.

To the Sanitary Authority for the Borough of

I,

Of

do hereby apply to you for a license, in pursuance of the statutory provisions in that behalf, for the erection of certain premises to be used and occupied as a slaughter house; and I do hereby declare that to the best of my knowledge and belief the schedule hereunto annexed contains a true statement of the several particulars therein set forth with respect to the said premises.

Schedule.

1. Boundaries, area, and description of the proposed site of the premises to be erected for use and occupation as a slaughter house.	
2. Description of the premises to be erected on such site:— (*a*). Nature, position, form, superficial area and cubical contents of the several buildings therein comprised. (*b*). Extent of paved area in such buildings, and materials to be employed in the paving of such area. (*c*). Mode of construction of the internal surface of the walls of such buildings, and materials to be employed in such construction. (*d*). Means of water supply—position, form, materials, mode of construction and capacity of the several cisterns, tanks, or other receptacles for water to be constructed for permanent use in or upon the premises. (*e*). Means of drainage—position, size, materials, and mode of construction of the several drains.	

(*f*). Means of lighting and ventilation.

(*g*). Means of access for cattle from the nearest street or public thoroughfare.

(*h*). Number, position, and dimensions of the several stalls, pens, or lairs to be provided on the premises.

(*i*). Number of animals for which accommodation will be provided in such stalls, pens, or lairs, distinguishing:—

1. Oxen.
2. Calves.
3. Sheep or lambs.
4. Swine.

Witness my hand this day of 19

(*Signature of Applicant*).

(*Address of Applicant*).

Form of Application for a License for the Use and Occupation of Premises as a Slaughter House.

To the Sanitary Authority for the Borough of in the County of

I, of

do hereby apply to you for a license, in pursuance of the statutory provisions in that behalf, for the use and occupation as a slaughter house of the premises hereinafter described; and I do hereby declare that to the best of my knowledge and belief the schedule hereunto annexed contains a true statement of the several particulars therein set forth with respect to the said premises.

Schedule.

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1. Situation and boundaries of the premises to be used and occupied as a slaughter house.

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2. Christian name, surname, and address of the owner of the premises.

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3. Nature and conditions of applicant's tenure of the premises:—

(*a*). For what term; and whether by lease or otherwise.

(*b*). Whether applicant is sole owner, lessee, or tenant; or whether applicant is jointly interested with any other person or persons, and if so, with whom.

---

4. Description of the premises;

(*a*). Nature, position, form, superficial area, and cubical contents of the several buildings therein comprised.

(*b*). Extent of paved area in such buildings, and materials employed in the paving of such area.

(*c*). Mode of construction of the internal surface of the walls of such buildings and materials employed in such construction.

(*d*). Means of water supply—position, form, materials, mode of construction, and capacity of the several cisterns, tanks, or receptacles for water, constructed for permanent use in or upon the premises.

(*e*). Means of drainage—position, size, materials, and mode of construction of the several drains.

(*f*). Means of lighting and ventilation.

(*g*). Means of access for cattle from the nearest street or public thoroughfare.

(*h*). Number, position, and dimensions of the several stalls, pens, or lairs provided on the premises.

(*i*). Number of animals for which accommodation will be provided in such stalls, pens, or lairs, distinguishing:—

1. Oxen.
2. Calves.
3. Sheep or lambs.
4. Swine.

Witness my hand this day of 19

(*Signature of Applicant*)

(*Address of Applicant*)

Form of Register of Slaughter Houses.

Borough of

Folio

Date of registration.	Date of license.	No. of license.	Christian name, surname, and address of owner or proprietor of slaughter house.	Christian name, surname, and address of occupier of slaughter house.	Situation of slaughter house.	Number of animals for which accommodation is provided on the premises.			

COMMON LODGING HOUSES AND HOUSES LET IN LODGINGS.

The inspection of common lodging houses and houses let in lodgings forms a very disagreeable part of the sanitary inspector's duties. In the Metropolis, the inspection of common lodging houses is delegated to the County Council, who have recently prepared new by-laws regulating such houses, and they have a special staff of inspectors appointed for this work. The super-

vision and inspection of houses let in lodgings is maintained under by-laws, and these are practically the same in the Metropolis as in the provinces, except in the matter of air space of rooms so let off. The metropolitan regulations provide that the minimum space required for rooms used solely as sleeping apartments shall, in the case of houses let in lodgings, be 300 cubic feet; while for rooms used jointly for sleeping and living purposes, shall be 350 cubic feet of air space per head for every adult. The air space required under provincial regulations is 400 to 450 cubic feet under the same circumstances.

Houses let in lodgings are under the immediate care of the Sanitary Authorities in England and Scotland.

It is absolutely necessary that the inspector should occasionally pay nocturnal visits to common lodging houses, in order to see to the due observance of the by-laws as to the separation of sexes and to overcrowding; and in some districts this practice prevails in the case of houses let in lodgings.

Frequent visitations by day are required to enforce the provisions as to ventilation of rooms and airing of bedding, the cleaning and sweeping of rooms and staircases and the washing of bedding, &c.

The Local Government Board has made model by-laws regulating common lodging houses, for the following purposes:—

For fixing and from time to time varying the number of lodgers who may be received into a common lodging house, and for the separation of the sexes therein; and

For promoting cleanliness and ventilation in such houses; and

For the giving of notices and the taking precautions in the case of any infectious disease; and

Generally for the well ordering of such houses.

The following is a summary of the sections of the Public Health Act, 1875, dealing with common lodging houses, with directions as to the inspection of such houses before registration :—

Section 76 provides that the local authority is only to register those houses which have been approved of as common lodging houses, in pursuance of Section 78; and only such persons can be registered as the keepers, who produce proper certificates of character.

Section 77 not only prohibits a person from keeping an unregistered house, but prohibits him from keeping a registered common lodging house, if he himself is not registered as the keeper of it. But while a penalty recoverable summarily is imposed by Section 86 for receiving lodgers in an unregistered house, no such penalty is imposed for acting as the keeper of a common lodging house without being registered as such keeper.

Section 251 directs offences under the Act to be prosecuted in the manner directed by the Summary Jurisdiction Acts, but those Acts only relate to the prosecution of offences for which some punishment or penalty is prescribed.

It seems, therefore, that the unregistered keeper of a registered common lodging house, though he may be liable to be indicted, is not liable to be prosecuted summarily for keeping the house as a common lodging house.

Section 78 gives power to the local authority to refuse to register the house if their officer does not consider it to be a proper house to be used as a common lodging house, but they are not authorised to refuse to register the keeper of the house, because they do not approve of him, or are not satisfied as to his character—if he produces a certificate of character in due form and duly signed—unless the applicant has been three times convicted under the clauses relating to common lodging houses.

While considering the section which has reference to the inspection of such houses, it is essential that in all structural details the fitness of the premises should be carefully ascertained before the house is placed on the register. The rules which guide the inspecting officer in his examination of the premises, may be thus briefly indicated:—

1. The house should possess the conditions of wholesomeness needed for dwelling houses in general.

2. It should have arrangements fitting it for its special purpose of receiving a given number of lodgers.

3. The house should be dry in its foundations and have proper drainage, guttering and spouting, with properly laid and substantial paving of any yard area abutting upon it. Its drains should have their connections properly made, and they should be trapped where necessary and adequately ventilated.

Except the soil pipe, from a properly trapped water-closet, there should be no direct communication of the drain with the interior of the house. All waste pipes from sinks, baths, basins or cisterns should be disconnected from the drain and made to empty in the open air over trapped gullies. The soil pipe should be efficiently ventilated. The closets or privies, and the receptacles of the house, should be in a proper situation, of proper construction, and adapted to any scavenging arrangement which may be in force in the district. The house should have a water supply of good quality, and if the water be stored in cisterns they should be conveniently placed and of proper construction to prevent fouling of water. The walls, roof and floors of the house should be in good repair; inside walls should not be papered, the rooms and staircase should possess the means of complete light and ventilation; the windows should be of adequate size, able to open to the full extent, or if sash windows, to open both top and

bottom. Any room proposed for registration that has not a chimney, should be furnished with a special ventilating shaft or opening, but a room not having a window to the outer air, even if it has a special means of ventilation, can seldom be proper for registration.

4. The number for which the house and each sleeping room may be registered, will depend greatly upon the dimensions of the rooms, and their facilities for ventilation, and partly upon the accommodation of other kinds. In a room of ordinary construction to be used for sleeping where there are the usual means of ventilation by window and chimney, about 300 cubic feet of air is recommended for each person, several towns have by-laws requiring 350 cubic feet per inmate, but in many rooms it will be right to appoint a larger space, and this can only be determined upon inspection of the particular room. Single iron bedsteads should be used in preference to double ones, or those of different material. The house should possess a kitchen and day-room accommodation apart from its bedrooms, and a sufficiency of this will have to be attended to; rooms that are partly underground may not be improper for day-rooms. The amount of water supply, closet and privy accommodation, and the provision of refuse receptacles should be proportionate to the number for which the house is to be registered. If the water supply is not supplied from works with constant service, a quantity should be secured for daily use on a scale, of not less than ten gallons a day per registered inmate where there are w.c's, or five gallons a day where there are dry closets. For every twenty lodgers a separate closet or privy should be required in the case of common lodging houses, but in houses let in lodgings there should be at least one closet for every twelve persons.

The washing accommodation should, wherever practicable, be in a special place, and not in bedrooms or living

rooms, and the basins for personal washing, should be fixed and have water taps and discharge pipes, connected with them.

Section 81.—It will be noticed that the Local Authority has power to require a supply of water to be obtained at a reasonable rate; they have, therefore, more discretion in the matter than is given them by Section 62.

Section 82 requires the walls and ceilings to be lime-washed at certain stated periods.

In two metropolitan boroughs a by-law with respect to houses let in lodgings was made by the Council of the Borough under Section 94 of the Public Health (London) Act, 1891, requiring the landlord of a lodging house (the definition of which included any house occupied by the members of more than one family) to cause every part of the premises to be cleansed, and the ceilings and interior walls to be lime-washed, in the first week of April in every year. In one case "landlord" was defined as the person who received the rack rent of the premises; and in the other case the definition included the person who received the profits arising from the letting of the house as a lodging house.

It was held, that having regard to the wide definition of lodging house and landlord the by-law was, in both cases, unreasonable and bad, because it contained no provision that a landlord, before becoming liable to a penalty for a breach of the by-law, should receive notice that the requirements of the by-law had not been complied with.

Also held, by Lord Alverstone, C.J., and Kennedy, J., Willis, J. dissenting, that so far as the by-law required the work to be done in the first week of April, the by-law was not unreasonable. (Stiles *v.* Galinski. Nokes *v.* Borough of Islington (No. 2), Div. Ct. (1903) 615).

Section 83 provides that a penalty may be imposed if the keeper of a common lodging house fails to report the

number of lodgers received during the preceding day or night, if so required, upon schedules provided by the Local Authority (see p. 340); these reports are not very reliable, as in most cases the schedules have been filled up just prior to being brought to the Sanitary Office, instead of each morning. The number of lodgers, however, actually in the house will never be less than is stated on the schedule.

Section 84.—Under the Common Lodging House Act, 1851, the keeper is liable for not giving notice of the existence of fever within 48 hours, but by this section he must notify immediately the person is taken ill; this is also provided for under the provisions of the Public Health (London) Act, 1891, and the Infectious Diseases (Notification) Act, 1889. This section has been amended by Section 32 of the Public Health Act (Amendment) Act, 1890.

Section 85 gives power of entry at "all times," and it is needless to say how very important this provision is to inspectors, especially in the matter of overcrowding.

Section 86 enumerates the offences for which the keeper of a common lodging house is liable, and the penalty in each case.

Section 87.—To render a house a common lodging house, the inmates must be persons PROMISCUOUSLY brought together and not members of the same family, the allegations that the inmates are members of the same family, would, therefore, if proved, be a defence to any proceedings taken under the clause of this Act relating to common lodging houses.

Section 88.—If two convictions for overcrowding be obtained within three months, an order directing it to be closed for a specified time under section 109 may be made by the court, but if the keeper of a common lodging house be convicted within three months against any of the pro-

visions of this Act relating to common lodging houses, the court may adjudge that he shall not keep a common lodging house for a period of five years after conviction, without a licence in writing from the Local Authority.

In Scotland, common lodging houses are dealt with in Sections 3, 84, 89-100 of the Public Health (Scotland) Act, 1897; and houses let in lodgings, by by-laws made under Section 72 of the same Act.

With respect to the by-laws relating to and regulating common lodging houses, it is not necessary to consider them as they differ in different towns.

What is a common lodging house? So far we have no legal definition given to us. The Act does not give us any definition of the class of house referred to by the somewhat vague term common lodging house, and there cannot well be any conclusive decision of the point as the question must always be more or less one of fact.

The General Board of Health, in a circular dated October 17, 1853, stated that they deemed it expedient that the following opinions of the then Law Officers of the Crown, Sir A. E. Cockburn (late Chief Justice), and Sir W. P. Wood (late Lord Chancellor), should be brought under the notice of the Local Boards of Health throughout the country.

First opinion.

It may be difficult to give a precise definition of the term "common lodging house," but looking at the preamble and general provisions, it appears to us to have reference to that class of lodging houses in which persons of the poorer class are received for short periods, and though strangers to one another, are allowed to inhabit one common room. We are of opinion that it does not include hotels, inns, public houses, or lodgings let to the upper and middle classes.

Second Opinion.

The points upon which our opinion is desired, appear to us to be the following :—

1. What is the meaning of that part of the definition of a common lodging house in our former opinion, which refers to parties inhabiting a common room being "strangers to one another"? The observation would imply that we meant that the parties must be persons previously unacquainted with another. Our obvious intention was to distinguish lodgers promiscuously brought together from members of one family or household.

2. Whether lodging houses, otherwise coming within the definition, but let for a week or longer period, would, from the latter circumstance be excluded from the operation of the Act? We are of opinion that the period of letting is unimportant in determining whether a lodging house comes under the Act now in question.

3. Who is to be considered the keeper of a common lodging house where the owner, letting the lodgings, does not himself reside in the house? We are of opinion that where he neither resides in the house, nor exercises any control over its management, but simply receives the rent, he cannot be considered the keeper. It is clear, that in such a case, he would not comply with the Act. But where the owner, though not resident in the house, either in person or through an agent, colourably or otherwise exercises control over its management, we have no doubt that he should be considered the keeper.

A serious difficulty arises where the owner *bona fide* lets different parts of the house to different individuals, and these lessees take in lodgers of such a description as would in the ordinary case constitute the house a common lodging house. The question which here arises is, whether each apartment so used is to be considered a common lodging

house, of which the lessee is the keeper. It seems to us difficult to suppose that the Act that refers to common lodging houses was intended to apply to single apartments, so that every room in the house might become a separate common lodging house. On the other hand it is to be observed, that part of a house, "if used as a common lodging house," shall be included in the Act.

Considering, therefore, that apartments thus let and occupied are especially within the mischief intended to be remedied by the Act, we think an attempt should be made to treat them as common lodging houses, and to enforce the provisions of the Act against the tenants who thus admit lodgers. At the same time we feel bound to say we entertain considerable doubts as to the results.

The question as to what is a common lodging house came before the Common Pleas Division. A house was held to be a common lodging house which received all comers; the itinerant character of the greater number of the lodgers making it possible, as a rule, that they did not make any long stay at the house. Justice Grove said, "the object of this provision in the Act being to promote health by preventing dirt and overcrowding, the evidence seems to me clearly to show that this is a house to which such a provision is applicable."

Section 3 of the Common Lodging Houses Act, 1853, provides that "a person shall not keep a common lodging house unless his name as the keeper thereof be entered in the register kept under the Common Lodging Houses Act, 1851."

The respondent kept a house for the reception of male lodgers, which was not carried on for the sake of making a profit, but solely for the purpose of assisting the poorer classes. The lodgers were charged 6*d*. or 8*d*. a night, and for this each lodger got the use of a common dining hall and sitting room, and the right to the exclusive occupation

of a cubicle which contained a bed, and which was separated from the rest of the dormitory by walls six and a half feet high made of tiles. A certain number of the lodgers were of a better class than the inhabitants of an ordinary common lodging house, but substantially the lodgers were of that description. Drunken and disorderly men, and men who were suspected of being criminals or verminous were not admitted, but all other men were admitted on payment. The house was not registered as a common lodging house.

It was held, that since the inmates of the house were persons of the poorer class, who were likely to be in a dirty and insanitary condition, and since they occupied at least part of the house in common, it was a common lodging house within the meaning of the Common Lodging Houses Acts, 1851 and 1853, and ought to have been registered. (Logsdon *v.* Trotter, Div. Ct., 1 Q.B. (1900) 617).

The definition of a common lodging house as defined by the Public Health (Scotland) Act, 1897, means a house or part thereof where lodgers are housed at an amount not exceeding fourpence per night, or such other sum as shall be fixed under the provisions of this Act, for each person whether the same be payable nightly or weekly, or for any period not longer than a fortnight, and shall include any place where emigrants are lodged, and all boarding houses for seamen, irrespective of the rate charged for lodging or boarding.

Common lodging houses in the Metropolis are still governed by Common Lodging Houses Acts, 1851 and 1853, administered by the London County Conncil.

Information tabulated on p. 336, respecting common lodging houses, obtained from inspectors and medical officers of health in different parts of the country, will be of interest as showing the importance which common

District.	By whom inspected.	Number of Houses Registered.	Total Lodging Accommodation.	Number of Lodgers reported as being received during 1895.	Total Number of Beds.	Bed Accommodation.			Number of Model Lodging Houses.	Model Lodging Houses owned by Sanitary Authority or Private Person.	Model Lodging Houses specially built or adapted from existing building.
						Males.	Females.	Married Couples.			
Birmingham	Sanitary Authority	78	1,777	28,771	1718	1583	76	118	2	Private	1 Specially built 1 Adapted.
Birkenhead	,,	10	338	No record	325	309	7	13	1	Not stated	Not stated.
Blackburn	,,	52	1,056 adults 93 children	,,	—	—	—	—	—	—	—
Bury	,,	13	594	,,	—	—	—	—	—	—	—
Bath	,,	7	152	,,	131	113	7	11	—	—	—
Bristol	,,	49	243	,,	1094	898	30	83	—	—	—
Brighton	,,	3	53	,,	—	—	—	—	—	—	—
Bradford	,,	41	2,119	358,257	—	—	—	—	2	Not stated.	Not stated.
Bolton	,,	32	705	—	—	—	—	—	—	—	—
Croydon	,,	17	137	—	—	—	—	—	1	Private	Not stated.
Dublin	,,	97	1,675	25,215	1242	1631	26	59	1	Not stated	,,
Glasgow	,,	81	9,372	No record	9372	9359	13	—	7	Sanitary Authority	,,
Halifax	Police	17	787	,,	683	—	—	—	—	—	—
Hull	Sanitary Authority	45	1,596	,,	1548	1500	Males and Females	48	1	Not stated	Not stated.
Huddersfield	Police	17	416	70,546	273	256	28	66	1	Sanitary Authority	,,
Leeds	,,	83	3,683	569,400	—	—	—	—	2	Not stated	,,
Liverpool	Sanitary Authority	705	14,186	No record	—	—	—	—	140	Private	2 Specially built.
London County Council	County Council	611	—	—	—	—	—	—	3	1 County Council 2 Private	Specially built.
Manchester	Police	268	7,028	263,606	6560	1617	41	382	36	Not stated	6 Specially built 30 Adapted.
Norwich	Sanitary Authority	6	199	No record	188	173	4	11	—	—	—
Nottingham	,,	68	1,160	,,	976	350	300	194	2	Not stated	Not stated.
Newcastle-on-Tyne	,,	71	1,878	—	—	—	—	—	—	—	—
Oldham	Police	14	1,134	281,492	1042	878	72	92	34	Private	3 Specially built 31 Adapted.
Salford	Sanitary Authority	39	1,156	No record	1156	—	—	—	1	Sanitary Authority	Specially built.
Sheffield	Police	42	1.500	,,	1407	1321	25	77	—	—	—
Sunderland	Sanitary Authority	29	751	,,	—	—	—	—	1	Private	—
Wigan	,,	22	613	144,828	560	499	8	53	3	Not stated	Adapted.

lodging houses play in the housing of our tramps or vagrant population, and the consequent need for a strict supervision of such houses, by every sanitary authority.

It will be gathered from the statistics referred to, that common lodging houses are sometimes inspected by the police, even in the provinces, this to many persons would appear proper, but without disparaging the abilities of the police force to deal with such houses, I would say, that on matters of public health, the police of all men are least competent to exercise their supervision over them, having as a rule no special training in this direction, and where officers have the necessary abilities, such duties are neglected for other police duties in which they are more particularly interested.

Form of Notice for Common Lodging Houses.

To *Of*

Whereas, in pursuance of the statutory provision in that behalf, you have been duly registered by the Sanitary Authority for the Borough of as the keeper of a common lodging house, situated at in the said Borough.

Now I, clerk to the said Sanitary Authority, do hereby give you notice that, in the exercise of powers conferred upon them in that behalf, the said Sanitary Authority have fixed as the maximum number of lodgers authorised to be received at any one time into such house, and into the several rooms therein, the number specified in respect of such house and of each of such rooms in the Schedule hereunto appended.

Schedule.

Borough of

Common lodging house situated at

Name of keeper

The maximum number of lodgers authorised to be received at any one time into this house is .

The maximum number of lodgers authorised to be received at any one time into each of the several rooms in this house is the number

specified in respect of such room in the appropriate column of the following table:—

	Description or number of room.	Dimensions or cubical contents of room.	Maximum number of lodgers.
Ground storey . .			
First storey . .			
Second storey . .			
Topmost storey .			

For the purpose of this notice every two children under the age of *ten years* may be counted as one lodger.

Witness my hand this day of 19

Clerk to the Sanitary Authority.

Form of Notice for Houses Let in Lodgings.

Borough of 19

Sir,

You are hereby required as the landlord of the house to furnish me with the following information, within the period of 14 days from the service of this notice, in order that such house may, if necessary, be placed upon the Register of Houses let in Lodgings.

I am, Sir,

Your obedient servant,

To

Information required for the Registration of Houses Let in Lodgings.

Borough of

Name and Address of Landlord of the House

Name of Street, Court, or place where the House is situate, and No. or Name of the House

Number of Water Closets in the House, and where each Water Closet is situate

Total number of Floors and of Rooms in the House

Total number of Rooms let in Lodgings, or occupied by members of more than one family

Means of Entrance

Garden or Yard

Date

Signature of the Landlord.

Borough of

Number of Rooms. (Each room to be numbered from 1 upwards).	Number of Lodgers in each Room.				Name of the Lessee of each room, and the amount of rent or charge per week payable by each Lessee.	Purpose for which each room is used. State whether for living, sleeping, or both, or for trade, if so for what trade.
	Men.	Women.	Children under 10 years.	Total Statutory persons.*		
Basement—						
Front room . .						
Back room . .						
Ground floor—						
Front room . .						
Back room . .						
First floor—						
Front room . .						
Back room . .						
Second floor—						
Front room . .						
Back room . .						
Third floor—						
Front room . .						
Back room . .						
Additional rooms (if any)—						
Total						

The aforementioned information and headings will form a basis for a Register of houses let in lodgings.

* Two children under 10 years of age may be counted as one person.

Form of Register for Common Lodging Houses.

No. of common lodging house.	Date of registration.	Name of keeper	Situation of house registered.	No. of bedrooms set apart for lodgers and registered.	Dimensions of each room.	Cubical contents of such rooms.	Number of lodgers allowed in each room.

Form of Schedule Register.

(Weekly return of lodgers received.)

Name of keeper *Address*

No. of lodgers for the week ending.	Males of full age.	Females of full age.	Males exceeding 10 and under 21 years.	Females exceeding 10 and under 21 years.	Males under 10 years.	Females under 10 years.	Total.	No. of lodgers allowed.

FACTORIES AND WORKSHOPS.

Sanitary authorities, or district councils, as the Factory and Workshop Act of 1901, erroneously names them, are solely responsible for the administration of the public health provisions of the Act, so far as they apply to workshops, workplaces, domestic factories and domestic workshops, but the Secretary of State for the Home Department has the power to enforce the Act in their default.

By Section 149, the expression "workshop" means:—

1. (*a*) Any premises or places named in Part II. of the Sixth Schedule to this Act, which are not a factory; and

(*b*) Any premises, room, or place, not being a factory, in which premises, room, or place, or within the close or curtilage or precincts of which premises, any manual labour is exercised by way of trade or for purposes of gain in or incidental to any of the following purposes, namely:—

(i.) The making of any article or of part of any article; or,

(ii.) The altering, repairing, ornamenting, or finishing of any article; or,

(iii.) The adapting for sale of any article,

and to or over which premises, room, or place the employer of the persons working therein has the right of access or control.

"Workshop" includes a tenement workshop.

"Tenement workshop" means any work place in which, with the permission of or under agreement with the owner or occupier, two or more persons carry on any work which would constitute the workplace a workshop if the persons

working therein were in the employment of the owner or occupier.

2. A part of a factory or workshop may, with the approval in writing of the chief inspector, be taken for the purposes of this Act to be a separate factory or workshop.

3. A room solely used for the purpose of sleeping therein shall not be deemed to form part of the factory or workshop for the purposes of this Act.

4. Where a place situate within the close, curtilage, or precincts forming a factory or workshop is solely used for some purpose other than the manufacturing process or handicraft carried on in the factory or workshop, that place shall not be deemed to form part of the factory or workshop for purposes of this Act, but shall, if otherwise it would be a factory or workshop, be deemed to be a separate factory or workshop, and be regulated accordingly.

5. A place or premises shall not be excluded from the definition of a factory or workshop by reason only that the place or premises is or are in the open air.

Premises which were used in the daytime as a shop for the sale of sweetmeats by retail, were used at night after shop hours for the purpose of packing sweetmeats into ornamental boxes in which they were sold. It was held, on these facts, there was evidence to justify the finding that the premises were a "workshop" within the meaning of the Factory and Workshop Act, 1878. (Fullers, Ltd. *v.* Squire, Div. Ct. (1901), K.B., 209).

A "factory" is defined to be a place in which machinery is moved by the aid of steam, water, or other mechanical power.

Certain classes of workshops are factories whether mechanical power is employed or not, these are:—Print works; bleaching and dyeing works; earthenware works; lucifer match works; percussion cap works; cartridge

works; paper staining works; fustian cutting works; blast furnaces; copper mills; iron mills; foundries; metal and india rubber works; paper mills; glass works; tobacco factories; letterpress printing works; bookbinding works; flax Scotch mills; and electrical stations.

Bakehouses in which mechanical power is used and laundries using mechanical power (except the laundries of prisons, religious and charitable institutions, or private families) can also be dealt with as workshops.

H.M. Inspectors of Factories have to perform all the duties which relate to the sanitary condition of factories, but they are empowered to call in the assistance of the officers of the Sanitary Authority if necessary.

The following is a summary of the sanitary requirements of workshops:—

1. They shall be kept in a cleanly state and free from effluvia arising from any drain, privy, water closet, earth closet, urinal, or other nuisance.

2. They shall not be overcrowded while work is carried on therein, as to be dangerous or injurious to the health of the persons employed therein.

3. They shall be ventilated in such a manner as to render harmless, so far as is practicable, all the gases, vapours, dust, or other impurities generated in the course of the manufacturing process or handicraft carried on therein that may be injurious to health.

By Section 36 of the Factory and Workshop Act, 1878, where, in any factory, a process is carried on by which dust is "generated and inhaled by the workers to an injurious extent," the factory inspector has power to require a fan or other means of ventilation to be provided. In proceedings under this Section:—

It was held, that it was not necessary to prove that any worker had sustained actual injury from inhaling the dust, but that it was sufficient if it was proved that dust was

generated and inhaled by the workers to an extent that must in the long run be injurious. (Hoare *v.* Ritchie and Son, Div. Ct., 434).

The provisions of the Act relating to ventilation cannot be enforced in respect of domestic factories and domestic workshops, nor places where only men are employed.

4. Fire escapes must be provided to factories constructed since January 1, 1892, and workshops constructed since January 1, 1896, in which more than 40 persons are employed.

Factories and Workshops erected prior to these dates, are to be inspected from time to time, and if any are not provided with reasonable means of escape, power is given to serve a notice upon the owner, specifying the works necessary to be carried out within a certain period.

5. There shall be sufficient and separate water closet accommodation for the use of both sexes employed therein.

6. The medical officer of health is required, where no abstract of the Factory or Workshop Act, 1901, is affixed in the workshop, to give written notice to the Factory Inspector of the district, as soon as he becomes aware, that any child, young person, or woman is employed in the workshop.

7. Where notice of an act, neglect or default is given by the Inspector of Factories to the Sanitary Authority, under Section 5 of the Factory and Workshop Act, 1901, the Sanitary Authority must inform the Inspector of the proceedings taken, in consequence of such notice, and if proceedings are not taken, within one month, for punishing or remedying such act, neglect, or default, the factory inspector may institute like proceedings in default of the sanitary authority.

By the Factory and Workshop Act, 1891, Section 2, Sub-section 2, where notice of an act, neglect, or default was given by a factory inspector under Section 4 of the

Factory and Workshop Act, 1878, to a sanitary authority, and proceedings are not taken within a reasonable time for punishing, or remedying the act, neglect, or default, the inspector may take "the like proceedings for punishing or remedying the same as the sanitary authority might have taken." A factory inspector having given notice to a sanitary authority that there was a deficiency of sanitary accommodation in a certain factory within their district, and the sanitary authority not having taken within a reasonable time any proceedings for punishing or remedying the same, the inspector gave notice to the factory owner under this Sub-section and under Section 22 of the Public Health Acts (Amendment) Act, 1890, which had been adopted in the district, requiring him to erect certain specified sanitary conveniences, and on his neglect to comply with the notice summoned him before justices in petty sessions:—

It was held (by Lord Alverstone, C.J., Grantham, Bruce and Darling, JJ., Phillimore, J., dissenting) that the justices had no jurisdiction to enquire into the suitability or sufficiency of the sanitary accommodation existing at the factory, or required by the notice of the inspector.

An appeal lies to Quarter Sessions under Section 7 of the Public Health Acts (Amendment) Act, 1890, from the requirements of the factory inspector in such a case. (Tracey *v.* Pretty and Sons, Div. Ct., 444).

The Home Department never enforced the above decision, but in 1904 they proceeded again to enforce their requirements in default of the Sanitary Authority, and Messrs. Pretty and Sons appealed to Quarter Sessions, and appealed successfully. Counsel for the Home Department sought to make the Home Secretary's Order of Feb. 4, 1903, the standard of the minimum accommodation, but it was shown that the order did not apply to Ipswich.

The above sanitary and other requirements are equally applicable to bakehouses and laundries.

What is meant by sufficient and suitable sanitary accommodation has been made the subject of an order by the Home Secretary, as follows:—

THE SANITARY ACCOMMODATION ORDER OF FEBRUARY 4, 1903.

In pursuance of Section 9 of the Factory and Workshop Act, 1901, I hereby determine that the accommodation in the way of sanitary conveniences provided in a factory or workshop shall be deemed to be sufficient and suitable within the meaning of the said section if the following conditions are complied with and not otherwise:—

1. In factories or workshops where females are employed or in attendance there shall be one sanitary convenience for every 25 females.

In factories or workshops where males are employed or in attendance there shall be one sanitary convenience for every 25 males; provided that:—

(*a*) In factories or workshops where the number of males employed or in attendance exceeds 100, and sufficient urinal accommodation is also provided, it shall be sufficient if there is one sanitary convenience for every 25 males up to the first 100, and one for every 40 after.

(*b*) In factories or workshops where the number of males employed or in attendance exceeds 500, and the District Inspector of Factories certifies in writing that by means of a check system, or otherwise, proper supervision and control in regard to the use of the conveniences are exercised by officers specially appointed for that purpose it shall be sufficient if one sanitary convenience is provided for every 60 males, in addition to sufficient urinal accommodation. Any certificate given by an Inspector shall be kept attached to the general register, and shall be liable at any time to be revoked by notice in writing from the Inspector.

In calculating the number of conveniences required by this order, any odd number of persons less than 25, 40, or 60, as the case may be, shall be reckoned as 25, 40, or 60.

2. Every sanitary convenience shall be kept in a cleanly state, shall be sufficiently ventilated and lighted, and shall not communicate with any workroom except through the open air or through an intervening ventilated space; provided that in workrooms in use prior to January 1, 1903, and mechanically ventilated in such manner that air cannot be

drawn into the workroom through the sanitary convenience, an intervening ventilated space shall not be required.

3. Every sanitary convenience shall be under cover and so partitioned off as to secure privacy, and if for the use of females shall have a proper door and fastenings.

4. The sanitary conveniences in a factory or workshop shall be so arranged and maintained as to be conveniently accessible to all persons employed therein at all times during their employment.

5. Where persons of both sexes are employed, the conveniences for each sex shall be so placed or so screened that the interior shall not be visible, even when the door of any convenience is open, from any place where persons of the other sex have to work or pass; and, if the conveniences for one sex adjoin those for the other sex, the approaches shall be separate.

6. This order shall come into force on the first day of July, 1903.

7. This order may be referred to as the Sanitary Accommodation Order of February 4, 1903.

As it appeared to me that the above order was of no service to Sanitary Authorities in general I wrote to the Home Secretary for information and the following letter in reply confirms that view:—

WHITEHALL.
September 2, 1904.

SIR,

With reference to your letter of the 11th ultimo, I am directed by the Secretary of State to say that his powers under Section 9 (2) of the Factory and Workshop Act, 1901, are limited by Sub-section 4 of that Section, and consequently his Order of February 4, 1903, does not apply to the County of London, nor to any place in which Section 22 of the Public Health Acts (Amendment) Act, 1890, is in force.

In those districts in which the Order does not apply the provision of sanitary accommodation is left to be dealt with by the Local Authorities under the powers of the Public Health Acts, and many of these have adopted a standard similar to, or more stringent than, that laid down in the order . . . . .

I am, SIR,
Your obedient servant,
HENRY CUNYNGHAME.

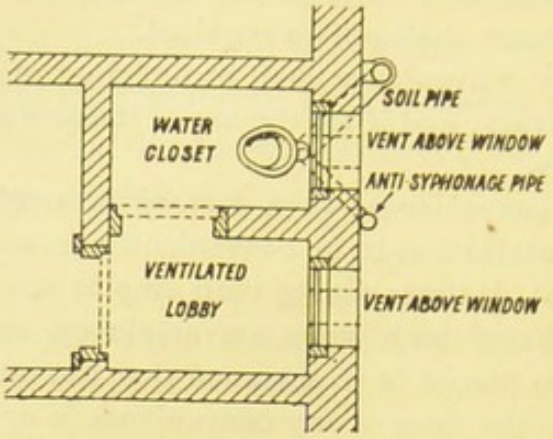

FIG. 82.—Illustrates the method usually adopted in the construction of w.c's for workshops, &c., to comply with Clause 2 of the above order.

With respect to the provision of sanitary conveniences for the use of persons employed in or in attendance at workshops or workplaces, the case of Bennett *v.* Harding heard in the Queen's Bench Division on June 14, 1900, is of special interest, as defining the meaning of workplace.

By Section 38 of the Public Health (London) Act, 1891, every factory, workshop, and workplace, is to be provided with sufficient accommodation in the way of sanitary conveniences, having regard to the number of persons employed in or in attendance at such building, &c.

It was held:—1. That the stables of a cab proprietor, where a number of persons were employed as horse-keepers and cab-cleaners, formed a workplace within the section.

2. That the fact that cabdrivers came to the stables as customers only, did not prevent their being persons in attendance at the buildings.

Per Channell, J. The question whether the cabdrivers were persons in attendance or not, was a question of fact depending upon whether or not they remained at the stables for substantial periods of time.

The Factory and Workshop Act, 1901, Section 97, provides that:—

1. It shall not be lawful to let, or suffer to be occupied, or to occupy any room or place as a bakehouse, unless the following regulations are complied with:—

(*a*) A water closet, earth closet, privy, or ashpit must not be within or communicate directly with the bakehouse.

(*b*) Every cistern for supplying water to the bakehouse must be separate and distinct from any cistern for supplying water to a watercloset.

(*c*) A drain or pipe for carrying off fæcal or sewage matter must not have an opening within the bakehouse.

2. If any person lets or suffers to be occupied or occupies any room or place as a bakehouse in contravention of this section he shall be liable to a fine not exceeding forty shillings, and to a further fine not exceeding five shillings for every day during which any room or place is so occupied after a conviction under this section.

Sections 101 and 102 of the same Act provides that:—

1. An underground bakehouse shall not be used as a bakehouse unless it was so used at the passing of this Act.

2. Subject to the foregoing provision, after the first day of January one thousand nine hundred and four an underground bakehouse shall not be used unless certified by the district council to be suitable for that purpose.

3. For the purpose of this section an underground bakehouse shall mean a bakehouse, any baking room of which is so situate that the surface of the floor is more than three feet below the surface of the footway of the adjoining street, or of the ground adjoining or nearest to the room. The expression "baking room" means any room used for baking, or for any process incidental thereto.

4. An Underground bakehouse shall not be certified as suitable unless the district council is satisfied that it is suitable as regards construction, light, ventilation, and in all other respects.

5. This section shall have effect as if it were included among the provisions relating to bakehouses which are referred to in section twenty-six of the Public Health (London) Act, 1891.

6. If any place is used in contravention of this section, it shall be deemed to be a workshop not kept in conformity with this Act.

7. In the event of the refusal of a certificate by the district council, the occupier of the bakehouse may, within twenty-one days from the refusal, by complaint apply to a court of summary jurisdiction, and if it appears to the satisfaction of the court that the bakehouse is suitable for use as regards construction, light, ventilation, and in all other respects, the court shall thereupon grant a certificate of suitability of the bakehouse, which shall have effect as if granted by the district council.

8. Where any place has been let as a bakehouse, and the certificate required by this section cannot be obtained unless structural alterations are made, and the occupier alleges that the whole or part of the expenses of the alterations ought to be borne by the owner, he may by complaint apply to a court of summary jurisdiction, and that court may make such order concerning the expenses or their apportionment as appears to the court to be just and equitable, under the circumstances of the case, regard being had to the terms of any contract between the parties, or in the alternative the court may, at the request of the occupier, determine the lease.

9. As respects every retail bakehouse, the provisions of this part of this Act shall be enforced by the district council of the district in which the retail bakehouse is situate, and not by an inspector; and for the purposes of this section the medical officer of health of the district council shall have and may exercise all the powers of entry, inspection, taking legal proceedings and otherwise of an inspector.

In this section the expression "retail bakehouse" means any bakehouse or place, not being a factory, the bread, biscuits, or confectionery baked in which are sold, not wholesale, but retail, in some shop or place occupied with the bakehouse.

Special power is given, under this section, to medical officers of health, but the inspector of nuisances or sanitary inspector is not mentioned.

The following may serve as model regulations for bakehouses :—

1. Every bakehouse shall be kept in a cleanly state, and free from effluvia arising from any drain, privy, water closet or other nuisance. The floors shall be carefully swept at least once every twenty-four hours, and the sweepings shall be immediately placed in an impermeable covered receptacle, and removed from the bakehouse at no longer intervals than every twenty-four hours.

2. All the inside walls of the rooms of the bakehouse, and all the ceilings or tops of such rooms, and all the passages and staircases of the bakehouse, shall either be painted with oil, or varnished, or limewashed. Where painted with oil or varnished, there shall be three coats of paint or varnish; and the paint or varnish shall be renewed once at least in every seven years, and shall be washed with hot water and soap once at least in every six months. Where limewashed, the limewashing should be renewed once at least in every six months.

3. The troughs and all the utensils used in the making of bread and pastry shall be kept scrupulously clean, and must be capable of being moved about for the purpose of cleaning the floor.

4. A place on the same level with the bakehouse, and forming part of the same building, shall not be used as a sleeping place:—(*a*) Unless it is effectually separated from the bakehouse by a partition extending from the floor to the ceiling. (*b*) Unless there be an external glazed window of at least nine superficial feet of area, of which at the least 4½ superficial feet are made to open for ventilation.

5. No water closet, earth closet, privy, or ashpit shall be within or communicate directly with the bakehouse.

6. Any cistern for supplying water to the bakehouse shall be separate and distinct from any cistern for supplying water to a water closet.

7. No drain or pipe for carrying off fæcal or sewage matter shall have an opening within the bakehouse, and every sink-waste, or other pipe used for carrying off surface water within the bakehouse, shall be efficiently trapped and disconnected from any drain.

8. Every bakehouse shall be efficiently lighted, shall be ventilated so as to render harmless all gases and dust, and shall not be overcrowded while work is carried on therein.

9. Every bakehouse shall be used for the purposes of the trade only.

FORM OF INSPECTION BOOK.

BOROUGH OF

Name of Occupier and Situation of Workshop.	Nature of Business.	No. of Workrooms.	Dimensions of Workrooms.	Cubical Contents of Workrooms.	No. of Workers allowed.	No. of Persons employed.			Inspector's Report.
						Men.	Women.	Young persons.	

10. No animal shall be kept in the bakehouse on any pretence whatever.

11. No person suffering, or who has recently suffered, from any infectious disease shall be permitted to enter the bakehouse, or take part in the manufacture or sale on the premises, of bread, biscuits, or confectionery.

12. The owner or occupier of a bakehouse shall give immediate notice to the Medical Officer of Health of any case of infectious disease occurring on the premises.

Workshop inspectors will require, at the commencement of the work, to make a register of all workshops within the district, as required by section 131 of the Factory and Workshop Act, 1901, and afterwards visit each premises to ascertain its sanitary condition, whether the workrooms are overcrowded, and to fix the number of persons allowed to occupy each workroom. There will also be special complaints to receive attention. The inspector must be furnished with the necessary books for this work, in addition to the register of workshops, he should have an inspection or pocket book, containing particulars of the dimensions of workrooms inspected, and the number of workers allowed in each room, this will prove of great service when making subsequent visits or re-inspections; he must also have a register of outworkers and contractors.

The following are specimens of the books referred to :—

FORM OF OUTWORKERS AND CONTRACTORS REGISTER.

Borough of

No.	Name and Address of Outworker.	Name and Address of Employer.	Situation of Premises where Business is carried on.	Nature of Business.	REMARKS.

Form of Workshop Register.

Borough of

No.	Name of Occupier and Situation of Workshop.	Nature of Business.	No. of Workrooms.	Dimensions of Workrooms.	Cubical Contents of Workrooms.	No. of Workers allowed.	Remarks.

Any nuisances discovered as a result of workshop inspection must be dealt with by the inspector, as in the case of ordinary nuisances, while the reports should be entered in the sanitary inspector's report book, to avoid multiplying books, which only leads to confusion.

The Factory and Workshop Act, 1901, Section 107, provides that the occupier of a factory or workshop and every contractor employed by such occupier, must keep a list showing the names and addresses of all persons directly employed by them in the business, but working off the premises, and he shall send, on or before the first day of February and August of each year, copies of such lists to the Sanitary Authority.

The lists kept by the occupier and contractor shall be open to the inspection of the factory inspector and any officer duly authorised by the Sanitary Authority, moreover:—"Every district council shall cause the lists received in pursuance of this section to be examined, and shall furnish the name and place of employment of every outworker included in any such list whose place of employment is outside its district to the council of the district in which his place of employment is."

Form of Notice.

Borough of

19

To the

Factory and Workshop Act, 1901.

Sir,

In accordance with the above mentioned Act, I beg to notify to you that the persons whose names and addresses are annexed are employed as outworkers by firms in this District.

I shall be glad if you will inform the Medical Officer of Health of this District of any case of infectious disease which may occur at the houses referred to in the accompanying list.

I am, Sir,

Your obedient Servant.

Signed

Sanitary Inspector.

Name and Address of Outworkers.	Name and Address of Employers.

CANAL BOATS.

The Sanitary Inspector is deputed to inspect canal boats plying within his district, but the registration of canal boats can only be effected in those districts prescribed by the Local Government Board as registration authorities.

There are two canal boat Acts, viz., the Canal Boats

Act, 1887 and 1884, and powers are given to the Local Government Board to make regulations for:—

1. The registration of canal boats, including certificates of registration, fees in connection with such registration, and

2. For the lettering, marking, and numbering of such boats, and

3. For fixing the number, age, and sex of the persons who may be allowed to dwell in a canal boat having regard to the cubic space, ventilation, provision for the separation of the sexes, general healthiness, and convenience of accommodation of the boat, and

4. For promoting cleanliness in and providing for the habitable condition of canal boats, and

5. For preventing the spread of infectious disease by canal boats.

A registration authority is compelled to register all boats which conform to the following regulations:—

The following conditions shall be complied with before a canal boat is registered; that is to say:—

The boat shall contain a cabin or cabins, clean, in good repair, and so constructed as to be capable of being maintained at all times weather-proof, dry, and clean.

The interior of any after cabin intended to be used as a dwelling shall contain not less than 180 cubic feet of free air space, and the interior of any fore cabin, if intended to be so used, shall contain not less than 80 cubic feet of free air space.

Every cabin, if intended to be used as a dwelling, shall be provided with sufficient means for the removal of foul and the admission of fresh air, exclusive of the door or doors and of any opening therein.

Every cabin, if intended to be used as a dwelling, shall be so constructed or fitted as to provide adequate and convenient sleeping accommodation for the persons allowed by these regulations to dwell in the boat.

If the boat be a "narrow" boat, every cabin intended to be used as a dwelling shall be so constructed or fitted that there shall be no locker or cupboard obstructing the free passage from the door to the bulkhead,

and no shut-up cupboard above the cross-bed on more than one side of the cabin.

One cabin at the least in the boat shall be furnished with a suitable stove and chimney in a safe and convenient situation, and in all other respects sufficient for the reasonable requirements of the persons allowed by these regulations to dwell in the boat.

The boat shall be properly furnished or fitted with lockers, cupboards, and shelves of suitable construction and adequate capacity, and in all other respects sufficient for the reasonable requirements of the persons allowed by these regulations to dwell in the boat.

The boat, if intended to be ordinarily used for the conveyance of any foul or offensive cargo, shall contain, between the space to be occupied by such cargo and the interior of any cabin intended to be used as a dwelling, two bulkheads of substantial construction, which shall be separated by a space not less in any part than four inches, and open throughout to the external air, and furnished with a pump for the removal of any liquid from such space, and the one next adjoining the space to be occupied by the cargo shall be watertight.

The boat shall be furnished with a suitable cask or other appropriate vessel or receptacle of sufficient capacity for the storage of not less than three gallons of water for drinking.

For the purpose of fixing the number, age, and sex of the persons who may be allowed to dwell in a canal boat, which conforms to the conditions of registration provided by these regulations, and which shall, in pursuance of the statutory provisions in that behalf, have been registered as a dwelling, the following rules shall apply :—

Subject to the conditions prescribed with respect to the separation of the sexes, the number of persons who may be allowed to dwell in the boat shall be such that in the cabin or cabins of the boat there shall not be less than 60 cubic feet of free air space for each person above the age of 12 years, and not less than 40 cubic feet of free air space for each child under the age of 12 years.

Provided that in the case of a boat built prior to the thirtieth day of June, one thousand eight hundred and seventy-eight, the free air space for each child under the age of 12 years shall be deemed sufficient if it is not less than 30 cubic feet.

Provided also, that in the case of a boat registered as a "fly" boat, and worked by shifts, by four persons above the age of 12 years, there

shall be not less than 180 cubic feet of free air space in any cabin occupied as a sleeping place by any two of such persons at one and the same time.

A cabin occupied as a sleeping place by a husband and wife shall not at any time while in such occupation be occupied as a sleeping place by any other person of the female sex above the age of 12 years, or by any other persons of the male sex above the age of 14 years.

In the case of a boat built prior to the thirtieth day of June, one thousand eight hundred and seventy-eight, a cabin occupied as a sleeping place by a husband and wife may be occupied by one other person of the male sex above the age of 14 years, subject to the following conditions :—

That the cabin be not occupied as a sleeping place by any other person than those above mentioned.

That the part of the cabin which may be used as a sleeping place by the husband and wife shall at all times while in actual use, be effectually separated from the part used as a sleeping place by the other occupant of the cabin by means of a sliding or otherwise movable screen or partition of wood or other solid material so constructed or placed as to provide for efficient ventilation.

A cabin occupied as a sleeping place by a person of the male sex above the age of 14 years must not, at any time, be occupied as a sleeping place by a person of the female sex above the age of 12 years, unless she be the wife of the male occupant, or of one of the male occupants.

Should any structural alterations be made to a canal boat, affecting the conditions upon which the certificate of registration was granted, the certificate is rendered invalid; and if default is made in complying with the regulations referred to, the master and owner if in default, are each liable to a fine of twenty shillings; these regulations do not apply, however, except when the boat is occupied as a dwelling.

All sanitary authorities through whose district a canal passes, are required to see that proper supervision and

inspection is made of canal boats, whether or not a registration authority; and in the event of the officer being obstructed in the performance of his duty, the person, so obstructing, is liable on conviction to a penalty of forty shillings.

The following are the interpretations as to canal and canal boats:—

"Wide boat" means a boat not less than seven feet six inches beam.

"Narrow boat" means a boat of less than seven feet six inches beam.

"Canal boat" means any vessel, however propelled, used for the conveyance of goods along a canal, and not a ship registered under the Merchant Shipping Act, 1854, and the Act amending the same.

"Canal" includes any river, inland navigation, lake, or water being within the body of a county, whether it is or not within the ebb and flow of the tide.

"Day" means the hours between six o'clock in the morning and nine o'clock at night.

"Owner" includes a person who, though only the hirer of a canal boat, appoints the master and other persons working such boat.

"Master" means the person having for the time being command or charge of the boat.

"Parent" includes guardian, and every person who is liable to maintain or has the actual custody of any child.

The following rules have been adopted for determining the internal dimensions and cubical capacity of the cabin or cabins;—distinguishing in each case, where necessary, the rate of deduction:—

Rule A (for "wide" boats).

Measure:—

The height from the floor to the roof in the middle of the cabin.

The length from the bulkhead to the door of the opposite cupboard.

The width across the cabin at the bulkhead.

The product of the height, length, and width thus measured will represent, for the purpose of this rule, both the gross and the net cubical capacity or free air space.

RULE B (for "narrow boats).

Measure :—

The height from the floor to the roof in the middle of the cabin.

The length from the bulkhead to the end of the cabin at the side of the doorway.

The greatest width from side to side of the boat at the bulkhead.

The product of the height, length, and greatest width thus measured will represent the gross cubical capacity of the cabin.

To obtain the net cubical capacity or free air space of the cabin, deduction from the gross cubical capacity should be made in accordance with the following directions :—

If the cabin have only the following shut-up cupboards or lockers, viz., a table cupboard, a side bed-locker or cupboard, a cross bed-locker or lockers, and a cupboard above the cross bed—

(*a*) If the height of the cabin be not less than five feet, deduct one-fifth.

(*b*) If the height of the cabin be less than five feet, deduct one-fourth.

If the cabin have only the following shut-up cupboards or lockers, viz., a table cupboard, a cross bed-locker or lockers and a cupboard above the cross bed—

(*a*) If the height of the cabin be not less than five feet, deduct one-sixth.

(*b*) If the height of the cabin be less than five feet, educt one-eighth.

If the cabin have only the following shut-up cupboards or lockers, viz., a table cupboard and a cupboard above the cross bed—

(*a*) If the height of the cabin be not less than five feet, deduct one-tenth.

(*b*) If the height of the cabin be less than five feet, deduct one-twelfth.

As the Canal Boats Inspector is not afforded very much time in which to complete his enquiries when making the inspections, he would effect a considerable saving of time by having a pocket book with the following printed headings :—

Form of Pocket Book.

Date Boat's name
No. Registered at
Owner's Name and Address
Captain's ditto
Is it a *Wide*, *Narrow*, or *Fly* Boat?
Is Registration marked *on stern*, or *on both sides?*
Was Certificate produced?
Did it identify Owner with Boat?
No. of Adults registered for Aft. Fore
,, occupying Aft. Fore
Did any Female over 12 years occupy?
Was partition separating sexes, of wood?
When was Cabin last painted?
State general condition of Cabin?
Was Ventilation efficient?
Was Water Vessel, *Cask*, *Jug*, or *Tin Can* on board?
Was pump used every 24 hours?
If offensive Cargo, were there Double Bulkheads?
Was any occupant ill?
Remarks and *Contraventions* (if any) of the Acts or Regulations.

Register of Canal Boats.

Registration Authority.

1. Registration Number of the boat
2. Name of the boat, or if there be no name, the Number
3. Christian Name, Surname, and Address of Owner
4. Christian Name and Surname of Master
5. Route along which the boat is accustomed or intended to ply.
6. Nature of the traffic in which the boat is accustomed or intended to be employed
7. Mode of propulsion;
   and whether a "wide" or "narrow" boat;
   and whether to be used as "fly" boat worked by shifts
8. Number of cabins in the boat
9. Dimensions and cubical capacity of the cabin or cabins:—

After Cabin:—

Height
Length
Width
Gross cubical capacity
Net cubical capacity or free air space.

Fore Cabin:—

Height
Length
Width
Gross cubical capacity
Net cubical capacity or free air space.

(For rule of measurement and of deduction adopted, see page 359).

10. Date of application for registration
11. Date of examination by officer of authority
12. Date of registration
13. Place to which the boat is registered as belonging, for the purposes of the Elementary Education Acts

[This must be some place which is either a School District, or is part of a School District, and is situate wholly or partly within the jurisdiction of the Registration Authority. See Canal Boats Act, 1877, Sect. 7].

14. Maximum number of persons for which the boat is registered, subject to the conditions prescribed with regard to the separation of the sexes.

[Note.—In the case of a boat built after June 30, 1878, three

children under the age of 12 years may be reckoned, as regards the minimum of free air space, as equivalent to two persons above the age of 12 years. In the case of a boat built prior to June 30, 1878, two children under the age of 12 years may be reckoned as equivalent to one person above the age of 12 years. See Art. 8a of the Order].

As a "fly" boat worked by shifts persons.

Otherwise than as a "fly" boat.

In after cabin persons.

In fore cabin persons.

15. Observations.

Examining Officer's Report on Canal Boats.

1. Time and place of examination of canal boat
2. Name, or if there be no name, the number of canal boat examined
3. Christian name, surname, and address of owner
4. Christian name and surname of master
5. Route along which the boat is accustomed or intended to ply
6. Nature of the traffic in which the boat is accustomed or intended to be employed
7. Mode of propulsion, and whether a "wide" or "narrow" boat and whether to be used as a "fly" boat worked by shifts
8. Number of cabins in the boat
9. Dimensions and cubical capacity of the cabin or cabins

After Cabin:—

Height Length

Width Gross cubical capacity

Net cubical capacity or free air space

Fore Cabin:—

Height Length

Width Gross cubical capacity

Net cubical capacity or free air space

(For rule of measurement and of deduction adopted see p. 359).

10. Description of the construction, furniture, and fittings of the boat, and the several cabins thereof, as regards the following details, viz.:—

(*a*) Whether each cabin is clean, in good repair, weatherproof, and capable of being kept dry and clean.

(*b*) What means are provided in each cabin for the removal of foul and the admission of fresh air, exclusive of the door or doors and of any opening therein.

FORM OF NOTICE.

CONTRAVENTION OF CANAL BOATS ACTS, ETC.

Boat No. Registered at
Owner's Name
Address
Master's Name
Contravention

State Sec. of Act or Regulations and particulars.

19
Date Boat inspected.
Date Complaint note sent Owner.
Latest date stipulated for return of Certificate.
Date reply (if any) and substance thereof.
Date Certificate received.
Date of Certificate signed by
Canal Boat Inspector for the
Port, Urban or Rural
S. A. of

REMARKS.

Initials of H. M. Chief Inspector under Canal Boats Acts on visit of Enquiry and Date.

19

CANAL BOATS ACTS, ETC.

SIR,

I have to request that you will have the complaint named on the annexed form—having reference to a boat of which you are the Registered Owner—remedied forthwith, and thereafter obtain the Certificate that such has been done (also on the form annexed), signed by some duly appointed Inspector of Canal Boats, and return the same here, as addressed, within days from this date, *otherwise proceedings will be taken.*

This Notice is not required by the Acts, and does not prevent proceedings being commenced against you in the meantime by any other Sanitary Authority.

Your obedient Servant,

M

19

CANAL BOATS ACTS, ETC.

Re Canal Boat No. Registered at

COMPLAINT.

The above-named boat was met with on the day of 19 contravening the in so far that

State Sec. of Act or Regulation.

19

CERTIFICATE.

I hereby certify *that I inspected the above-named Boat this date and found that the cause of complaint had now been remedied.*

Signature
Canal Boat Inspector for the
Port, Urban or Rural
Sanitary Authority of

REMARKS (if any).

N.B.—If this form is not *duly returned by the Owner within the specified time* legal proceedings will be taken.

(*c*) What provision is made in respect of lockers, cupboards, and shelves in the boat.

(*d*) What provision is made for sleeping accommodation in each cabin.

(*e*) If the boat be a "narrow" boat, whether every cabin intended to be used as a dwelling is so constructed or fitted that there shall be no locker or cupboard obstructing the free passage from the door to the bulkhead, and no shut-up cupboard above the cross bed on more than one side of the cabin.

(*f*) Whether each or either cabin contains a stove and chimney of uitable construction and situation.

(*g*) If the boat be intended to be used for the conveyance of any foul or offensive cargo; whether there are, between the space to be occupied by such cargo, and the interior of each cabin intended to be used as a dwelling, two bulkheads of substantial construction, of which that one next adjoining the space to be occupied by the cargo shall be watertight and which shall be separated by a space not less in any part than four inches, and open throughout to the external air, and furnished with a pump for the removal of any liquid from such space.

(*h*) Whether the boat is furnished with a suitable cask or other appropriate vessel or receptacle of sufficient capacity for the storage of not less than three gallons of water for drinking.

General Observations as to the Fitness of the Boat for Registration as a Dwelling.

Dated this day of 19

Examining Officer]

DAIRIES, COWSHEDS, AND MILKSHOPS.

The powers of the privy council, as to dairies, &c., were transferred to the Local Government Board by the Contagious Diseases (Animals) Act, 1886, Sect. 9, which also

transferred to local authorities the powers formerly exercised by quarter sessions; while the administration of the Contagious Diseases (Animals) Acts, 1878-1886, is restricted by Sect. 39 of the Local Government Act, 1888, to County Councils and Boroughs which have a population of 10,000 and upwards, with the exception of Sect. 34 of the Contagious Diseases (Animals) Act, 1878, as amended by Sect. 9 of the Act of 1886, which is cast upon Urban and Rural Sanitary Authorities.

The London Government Act, 1899, Sect. 6, Sub-sect. 4, transfers the duty of inspecting, registering, and of enforcing the by-laws in respect of cowsheds, dairies, and milkshops, from the London County Council to each Metropolitan Borough Council.

The Contagious Diseases (Animals) Act, 1894 repeals the Contagious Diseases (Animals) Acts, 1878-1893, with the exception of Sect. 34 of the 1878 Act and Sect. 9 of the Act of 1886.

By Section 34 of the Act of 1878 the Local Government Board are enabled to make orders for the following purposes:—

1. For the registration with the local authority of all persons carrying on the trade of cowkeepers, dairymen, or purveyors of milk.

2. For the inspection of cattle in dairies, and for prescribing and regulating the lighting, ventilation, cleansing, drainage, and water supply of dairies and cowsheds in the occupation of persons following the trade of cowkeepers or dairymen.

3. For securing the cleanliness of milk stores milkshops, and for milk vessels used for containing milk for sale by such persons.

4. For prescribing precautions to be taken for protecting milk against infection and contamination.

5. For authorising a local authority to make regulations

for the purposes aforesaid, or any of them, subject to such conditions, if any, as the Privy Council might prescribe.

Sanitary Authorities are required by the Dairies, Cowsheds and Milkshops Order, 1885, to keep a register of every person in their district carrying on the trade of a cowkeeper, dairyman or purveyor of milk, and the authority must give notice from time to time by advertisement or otherwise, that persons carrying on such businesses are to be registered. A person who sells the milk of his own cows in small quantities to his workmen or neighbours need not be registered.

The Dairies, Cowsheds, and Milkshops (Amended) Order of 1899, provides that Article 15 of the 1885 Order shall be so altered that for the purposes of the provisions of Articles (*a*) and (*b*) thereof the expressions in the said article which refer to disease shall include, in the case of a cow, such disease of the udder as shall be certified by a veterinary surgeon to be tubercular. It will thus be seen that the disease tuberculosis is now put under the control of the Local Authority, but only so far as the udder is diseased, and only in the district of the Local Authority itself. If power to examine the udders of cows at outside farms is required by Local Authorities, they have to obtain a special Act of Parliament, and this has been obtained by several of our large towns, in which direction Manchester led the way.

Acting upon the representations before-mentioned, the Local Government Board, in March, 1899, issued the Model Regulations, and in a circular letter to Local Authorities invited those Authorities who had not already done so, to make such regulations and those who had already made regulations, to amend theirs on the lines of the model if considered necessary.

In such a case the Board's confirmation is not required, but as the Board retain the power to revoke any regula-

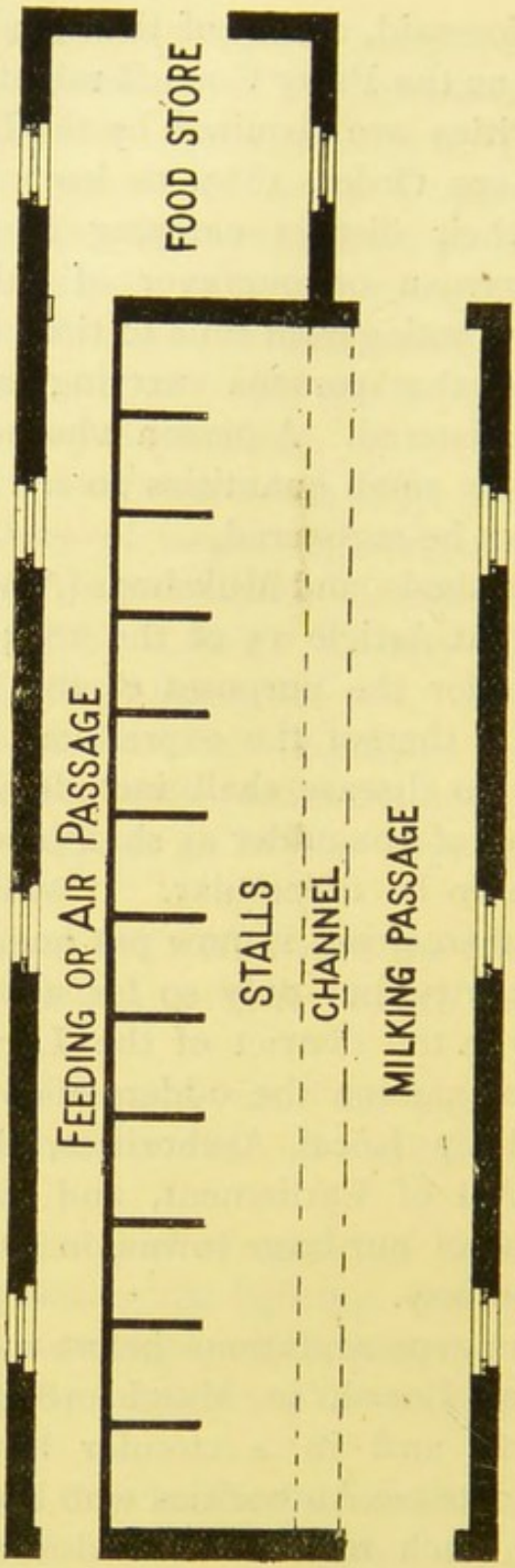

FIG. 83.—Plan of a model cowshed.

tions which they consider of too restrictive a character or otherwise objectionable, they suggest that the draft of any regulations which a Local Authority propose to make

should be sent to them for consideration before being formally adopted.

A special case was stated by the Magistrates of Southport, raising the question of the validity of the local by-laws relating to the ventilation and air space of cowsheds within the Borough.

The by-law provided that there must be 800 cubic feet of free air space for each animal, the appellant who had been convicted for contravening the regulations, contended (1) that the regulation was one that could not be made by the Mayor, &c., acting as the Local Authority under the Contagious Diseases (Animals) Act, 1878, and the Dairies, Cowsheds, and Milkshops Order of 1885; (2) that the word ventilation in the 13th Section of such Order did not authorise any regulation with regard to the quantity of air space, and (3) that the provisions of Section 34 of the Contagious Diseases (Animals) Act, 1878, and Section 9 of the Act of 1886, &c., did not authorise the making of any Order of the Privy Council regulating air space or free air space, and that, therefore, any restrictions imposed under such Acts or Orders were invalid.

The Court upheld the validity of the by-laws, and stated that there was nothing wrong in a Privy Council Order under the Act dealing with air space. In fact, they had provided for air space as well as ventilation for all dairies and cowsheds, both old and new, though it was difficult to see why in Sections 7 and 8 ventilation and air space were included and not in Section 13.

Form of Application for Registration Under "The Dairies, Cowsheds, and Milkshops Order."

Borough of

The undersigned hereby applies for registration under the provisions of the above named Order in Council—

Name of applicant in full

State whether "Cowkeeper," "Dairyman," or "Purveyor of Milk"
State where premises, upon which trade is carried on, are situate
State what other trade (if any) is carried on, on the premises
Signature of applicant
Date of application 19

Signed

Form of Register.

Borough of

Register of Cowsheds, Dairies, and Milkshops.

No.	Date of Registration.	Name of Occupier.	Situation of premises registered.	Whether registered as cowkeeper, dairyman, or purveyor of milk.	Remarks.

No person can occupy any building for the purpose of carrying on any of these businesses, which was not so occupied before July, 1879, unless he has made provision to the satisfaction of the Sanitary authority for lighting, ventilation (including air space), cleansing, drainage and water supply.

These premises should undergo a thorough examination, either upon application for, or immediately after registration.

Power was given to Sanitary Authorities by the Dairies, Cowsheds and Milkshops Order, 1885, to make regulations for the following purposes:—

(*a*) For the inspection of cattle in dairies.

(*b*) For prescribing and regulating the lighting, ventilation, cleansing, drainage, and water supply of dairies and

cowsheds in the occupation of persons following the trade of cowkeepers or dairymen.

(*c*) For securing the cleanliness of milk stores, milkshops, and of milk vessels used for containing milk for sale by such persons.

(*d*) For prescribing precautions to be taken by purveyors of milk and persons selling milk by retail against infection or contamination.

The Infectious Diseases (Prevention) Act, 1890, and Public Health (London) Act, 1891, defines the terms, dairy and dairyman, as follows:—

The expression *dairy* shall include any farm, farmhouse, cowshed, milk store, milkshop or other place from which milk is supplied, or in which milk is kept for the purpose of sale.

The expression *dairyman* shall include any cowkeeper, purveyor of milk, or occupier of a dairy.

The registration of these businesses cannot lawfully be withheld by the Sanitary Authority, but if the conditions of the regulations as to dairies, &c., adopted by the local authority are not complied with, proceedings may be instituted against the offender.

Form of Pocket Book.

Borough of

Inspection Book for Cowsheds, Dairies, and Milkshops.

Date of inspection 19
Situation of premises inspected
Name of occupier
Name and address of owner or agent
Particulars of premises inspected:—
No. of cows kept
No. of cowsheds
No. of places used for storing milk

Dimensions and cubical contents of each cowshed:—

No. 1	No. 3	No. 5
No. 2	No. 4	No. 6

Average space per head of cattle
Remarks as to drainage
Remarks as to water supply
Remarks as to the ventilation of the cowsheds, &c.
Superficial area of the windows (if any) in each of the cowsheds
General remarks:—

The following regulations will indicate the requirements of Dairies, Cowsheds, and Milkshops:—

MODEL REGULATIONS MADE BY THE LOCAL GOVERNMENT BOARD WITH RESPECT TO DAIRIES, COWSHEDS, AND MILKSHOPS, FOR THE GUIDANCE OF SANITARY AUTHORITIES.

Interpretation.

1. Throughout these regulations the expression "The Council" means the
the expression "the District" means the
the expression "Cowshed" includes any dairy in which milking cows may be kept, and the expression "Cowkeeper" means any person following the trade of a cowkeeper or dairyman who is, or is required to be, registered under the Dairies, Cowsheds, and Milkshops Order of 1885.

For the Inspection of Cattle in Dairies.

2. Every occupier of a dairy wherein cattle may be kept, and which the Medical Officer of Health, or the Inspector of Nuisances, or any other officer of the Council specially authorised by them in that behalf, may visit for the purpose of inspecting cattle, and every person for the time being having the care or control of any such dairy, or of any cattle therein, shall afford such Medical Officer of Health, Inspector of Nuisances, or officer, all reasonable assistance that may, for the purpose of the inspection, be required by him.

For prescribing and regulating the Lighting, Ventilation, Cleansing, Drainage, and Water Supply of Cowsheds and Dairies in the occupation of Persons following the trade of Cowkeepers or Dairymen.

PART I.

The regulations in this Part shall apply to cowsheds, the cows from which are habitually grazed on grass land during the greater part of the year, and, when not so grazed, are habitually turned out during a portion of each day.

Lighting.

3. Every cowkeeper shall provide that every cowshed in his occupation shall be sufficiently lighted with windows, whether in the sides or roof thereof.

Ventilation.

4. Every cowkeeper shall cause every cowshed in his occupation to be sufficiently ventilated, and for this purpose to be provided with a sufficient number of openings into the external air to keep the air in the cowshed in a wholesome condition.

Cleansing.

5. (1) Every cowkeeper shall cause every part of the interior of every cowshed in his occupation to be thoroughly cleansed from time to time as often as may be necessary to secure that such cowshed shall be at all times reasonably clean snd sweet.

(2) Such person shall cause the ceiling, or interior of the roof, and the walls of every cowshed in his occupation to be properly limewashed *twice* at least in every year, that is to say, *once* during the month of May and *once* during the month of October, and at such other times as may be necessary.

Provided that this requirement shall not apply to any part of such ceiling, roof, or walls, that may be properly painted, or varnished, or constructed of or covered with any material such as to render the limewashing unsuitable or inexpedient, and that may be otherwise properly cleansed.

(3) He shall cause the floor of every such cowshed to be thoroughly swept, and all dung and other offensive matter to be removed from such cowshed as often as may be necessary, and not less than *once* in ever day.

Drainage.

6. (1) Every cowkeeper shall cause the drainage of every cowshed in his occupation to be so arranged that all liquid matter which may fall or be cast upon the floor may be conveyed by a suitable open channel to a drain inlet situate in the open air at a proper distance from any door or window of such cowshed, or to some other suitable place of disposal which is so situate.

(2) He shall not cause or suffer any inlet to any drain of such cowshed to be within such cowshed.

Water Supply.

7. (1) Every cowkeeper shall keep in, or in connection with, every cowshed in his occupation a supply of water suitable and sufficient for all such purposes as may from time to time be reasonably necessary.

(2) He shall cause any receptacle which may be provided for such water to be emptied and thoroughly cleansed from time to time as often as may be necessary to prevent the pollution of any water that may be stored therein, and where such receptacle is used for the storage only of water he shall cause it to be properly covered and ventilated, and so placed as to be at all times readily accessible.

PART II.

The regulations in Part I., and also the following regulation, shall apply to all cowsheds other than those the cows from which are habitually grazed on grass land during the greater part of the year, and, when not so grazed, are habitually turned out during a portion of each day.

8. A cowkeeper shall not cause or allow any cowshed in his occupation to be occupied by a larger number of cows than will leave not less than *eight hundred feet* of air space for each cow.

Provided as follows:—

(*a*) In calculating the air space for the purposes of this regulation, no space shall be reckoned which is more than *sixteen feet* above the floor; but if the roof or ceiling is inclined, then the mean height of the same above the floor may be taken as the height thereof for the purposes of this regulation.

(*b*) This regulation shall not apply to any cowshed constructed and used before the date of these regulations coming into effect, until two years after that date.

Part III.

9. In this Part, the expression "Dairy" means a dairy in which cattle are not kept.

Lighting.

10. Every cowkeeper shall provide that every dairy in his occupation shall be sufficiently lighted with windows, whether in the sides or roof thereof.

Ventilation.

11. Every cowkeeper shall cause every dairy in his occupation to be sufficiently ventilated, and for this purpose to be provided with a sufficient number of openings into the external air to keep the air in the dairy in a wholesome condition.

Cleansing.

12. (1) Every cowkeeper shall cause every part of the interior of every dairy in his occupation to be thoroughly cleansed from time to time as often as may be necessary to secure that such dairy shall be at all times reasonably clean and sweet.

(2) He shall cause the floor of every such dairy to be thoroughly cleansed with water at least *once* in every day.

Drainage.

13. (1) Every cowkeeper shall cause the drainage of every dairy in his occupation to be so arranged that all liquid matter which may fall or be cast upon the floor may be conveyed by a suitable open channel to the outside of such dairy, and may there be received in a suitable gully communicating with a proper and sufficient drain.

(2) He shall not cause or suffer any inlet to any drain of such dairy to be within such dairy.

Water Supply.

14. (1) Every cowkeeper shall cause every dairy in his occupation to be provided with an adequate supply of good and wholesome water for the cleansing of such dairy and of any vessels that may be used therein for containing milk, and for all other reasonable and necessary purposes in connection with the use thereof.

(2) He shall cause every cistern or other receptacle in which any such

water may be stored to be properly covered and ventilated, and so placed as to be at all times readily accessible.

(3) He shall cause every such cistern or receptacle to be emptied and thoroughly cleansed from time to time as often as may be necessary to prevent the pollution of any water that may be stored therein.

For Securing the Cleanliness of Milk Stores, Milkshops, and of Milk Vessels used for containing Milk for Sale by Persons following the trade of Cowkeepers or Dairymen.

Cleanliness of Milk Stores and Milkshops.

15. Every occupier of a milk store or milkshop shall cause every part of the interior of such milk store or milkshop to be thoroughly cleansed from time to time as often as may be necessary to maintain such milk-store or milk-shop in a thorough state of cleanliness.

Cleanliness of Milk Vessels.

16. (1) Every cowkeeper shall from time to time as often as may be necessary cause every milk vessel that may be used by him for containing milk for sale to be thoroughly cleansed with steam or clean boiling water, and shall otherwise take all proper precautions for the maintenance of such milk vessel in a constant state of cleanliness.

(2) He shall, on every occasion when such vessel shall have been used to contain milk, or shall have been returned to him after having been out of his possession, cause such vessel to be forthwith so cleansed.

For prescribing Precautions to be taken by Purveyors of Milk and Persons selling milk by retail against Infection or Contamination.

17. (1) Every purveyor of milk or person selling milk by retail shall take all reasonable and proper precautions, in and in connection with the storage and distribution of the milk, and otherwise to prevent the exposure of the milk to any infection or contamination.

(2) He shall not deposit or keep any milk intended for sale—

(*a*) in any room or place where it would be liable to become infected or contaminated by impure air, or by any offensive, noxious, or deleterious gas or substance, or by any noxious or injurious emanation, exhalation, or effluvium; or

(*b*) in any room used as a kitchen or as a living room; or

(*c*) in any room or building, or part of a building communicating

directly by door, window, or otherwise with any room used as a sleeping room, or in which there may be any person suffering from any infectious or contagious disease, or which may have been used by any person suffering from any such disease and may not have been properly disinfected; or

(*d*) in any room or building or part of a building in which there may be any direct inlet to any drain.

(3) He shall not keep milk for sale, or cause or suffer any such milk to be placed, in any vessel, receptacle or utensil which is not thoroughly clean.

(4) He shall cause every vessel, receptacle or utensil used by him for containing milk for sale to be thoroughly cleansed with steam or clean boiling water after it shall have been used, and to be maintained in a constant state of cleanliness.

(5) He shall not cause or suffer any cow belonging to him or under his care or control to be milked for the purpose of obtaining milk for sale—

(*a*) unless, at the time of milking, the udder and teats of such cow are thoroughly clean; and

(*b*) unless the hands of the person milking such cow, also, are thoroughly clean and free from all infection and contamination.

Penalties.

18. Every person who shall offend against any of the foregoing regulations shall be liable for every such offence to a penalty of *five pounds*, and in the case of a continuing offence to a further penalty of *forty shillings* for each day after written notice of the offence from the Council.

Provided, nevertheless, that the justices or court before whom any complaint may be made or any proceeding may be taken in respect of any such offence may, if they think fit, adjudge the payment as a penalty of any sum less than the full amount of the penalty imposed by this regulation.

Commencement of the Regulations.

19. These regulations shall come into force on and after the day of 19

Revocation of Regulations.

20. From and after the date on which these regulations shall come into force, all regulations heretofore made under, or having effect in pursuance of the Dairies, Cowsheds and Milkshops Order of 1885, shall, so far as the same are now in force in the district, be revoked.

THE SALE OF FOOD AND DRUGS ACTS, AND MARGARINE ACT.

The Local Government Board in their regulations for the Sanitary Inspector, require that:—

> He shall, when and as directed by the Sanitary Authority, procure and submit samples of food, drink, or drugs suspected to be adulterated, to be analysed by the analyst appointed under "The Sale of Food and Drugs Act, 1875," and upon receiving a certificate stating that the articles of food, drink, or drugs are adulterated, cause a complaint to be made, and take the other proceedings prescribed by that Act.

These are exceedingly unpleasant duties and they are surrounded by many difficulties, legal and otherwise. It is absolutely necessary for the officer to act cautiously in the matter of procedure, and he is compelled, from the nature of his duties, to resort to various tactics to ensure success in obtaining samples of food and drugs, such as are sold to the general public. To do this, he has frequently to employ agents to make the purchases, as, after a time, he is easily recognised by the dishonest tradesman. Where agents are appointed to the work, they should by preference be females, or young persons of either sex, and must be reliable and intelligent persons, capable of standing a severe cross-examination in the witness box, in case legal proceedings are instituted.

It is necessary to change the agents frequently, as they also become known to the vendors, if employed continuously in one district. The practice of exchanging agents with the inspectors of adjoining districts might be encouraged.

In making purchases care should be taken to ask for the

specific article wanted, not "please let me have half a pound of one shilling coffee or a pound of 'that' pointing to the article required." Let the vendor or his agent name his own price, from which the officer can take his choice, as all such transactions should be *bona fide*, and with no attempt to deceive respectable and honest business men, and as if the inspector's living depended upon the number of convictions obtained. Unfortunately all tradesmen do not conduct their business on honest principles, and therefore it is necessary to keep a sharp look out for suspicious persons and to adopt such measures as will ensure the suppression of adulteration.

The Acts governing the sale of Food and Drugs and Margarine, are:—Sale of Food and Drugs Acts, 1875, 1879 and 1899, and the Margarine Act, 1887.

The expression "food" shall include every article used for food or drink by man, other than drugs or water, and any article which ordinarily enters into or is used in the composition or preparation of human food; and shall also include flavouring matters and condiments. (Food and Drugs Act, 1899, Section 26).

The expression "drug" includes medicine for internal or external use.

Section 13 of the Sale of Food and Drugs Act, 1875, provides that:—

> Any medical officer of health, inspector of nuisances, or inspector of weights and measures, or any inspector of a market, or any police constable under the direction and at the cost of the local authority appointing such officer, inspector, or constable, or charged with the execution of this Act, may procure any sample of food or drugs, and if he suspect the same to have been sold to him contrary to any provision of this Act, shall submit the same to be analysed by the analyst of the district or place for which he acts.

The order of procedure to be adopted by persons purchasing samples of food or drugs to be analysed, is laid

down in Sect. 14, of the Act of 1875, as amended by Sect. 13, of the Food and Drugs Act, 1899, and is as follows :—

The person purchasing any article with the intention of submitting the same to analysis shall, after the purchase has been completed, forthwith notify to the seller or his agent his intention to have the same analysed by the PUBLIC analyst, and shall divide the article into three parts to be then and there separated, and each part to be marked and sealed or fastened up in such a manner as its nature will permit, and shall, *if required to do so*, deliver one of the parts to the seller or his agent.

He shall afterwards retain one of the said parts for future comparison and submit the third part, if he deems it right to have the article analysed, to the analyst.

In the case of Barnes *v.* Chipp, L.R. 3 Ex. D. 176, 47 L.J. 85, it was decided that the notification required to be given by the purchaser to the seller under this section, viz. :—"that the sample had been purchased for the purpose of having it analysed by the public analyst" is a condition precedent to a prosecution under this Act.

The case of Mason *v.* Cowdary, Q.B.D., May 31, 1900, is important as showing the procedure that must be followed when dividing samples purchased for analysis.

An inspector acting under the Sale of Food and Drugs Acts purchased for the purposes of analysis six bottles of a certain drug. He, without opening any of the bottles, divided them into three lots of two bottles each, delivered one lot to the seller, retained another lot, and submitted the third lot to the analyst.

It was held that each bottle was a separate article within the meaning of Section 14 of the Sale of Food and Drugs Act, 1875, and consequently that there had been no division of the article purchased into three parts as required by that section.

It is provided by Section 6 of the Food and Drugs Act, 1875, that "no person shall sell to the *prejudice of the purchaser* any article of food or any drug which is not of the nature, substance, and quality of the article demanded by such purchaser."

A considerable conflict of opinion has arisen as to what the words "to the prejudice of the purchaser" really mean. Section 8 of the Act provides that a sale shall not be deemed to be to the prejudice of the purchaser which is a sale of an article of food or a drug mixed with any matter or ingredient not injurious to health, and not intended fraudulently to increase its weight, bulk, or measure, or conceal its inferior quality, if at the time of delivering such article or drug he shall supply to the person receiving the same a notice by label distinctly and legibly written or printed on or with the article or drug, to the effect that the same is mixed.

It has been held that a sale is not to the prejudice of the purchaser if the purchaser knows that the article which he buys is not of the nature, substance, and quality demanded by him, even though no label is delivered to him by the vendor pursuant to the provisions of the 8th Section. This was the point raised in Sandys *v.* Small, 3 Q.B.D., 449. There an information was preferred by Sandys, the inspector under the Sale of Food and Drugs Act, against Small, charging that Small did unlawfully sell to him half a pint of an article purporting to be whisky, which article was not of the nature, substance, and quality of whisky. It appears that Sandys employed one Samuel Slack to go into Small's public house and ask for half a pint of whisky; the whisky was poured into a bottle without observation as to its quality, or any label being put on the bottle. Slack paid for the whisky and went out and handed it to Sandys, who thereupon went into the house and went through the usual formula prior to having the article

analysed. A notice was posted in the bar (which notice Sandys had seen) stating that "all spirits sold here are mixed." It was held that under the circumstances the purchaser was not prejudiced. Lord Chief Justice Cockburn said:—"This appeal must be dismissed. I should be very sorry to diminish by any decision of this Court the effect of so useful an Act of Parliament as that which we are now considering. It is an Act which is of the greatest advantage and assistance to small consumers in humble station, who may be subject to imposition and who may be defrauded. We must, however, be careful not to interfere with the relation of vendor and purchaser, and must not limit the freedom of contract and dealing which mutually exists between parties to a bargain. Section 6 of the Sale of Food and Drugs Act provides in effect that, when a vendor who proposes to sell a particular article, sells it in a state altered in some way or other from that in which it originally existed, and from the quality of the article demanded by the purchaser, it is to be assumed he has done this to the prejudice of the purchaser unless he duly and sufficiently makes known the fact of such alteration to the purchaser; but if the alteration of substance demanded is known to the purchaser, and if the customer purchases the article on that footing, then it cannot be intended that such a dealing should be interfered with. If a vendor sells a mixed article of food he must prove that the purchaser was aware that the article was mixed. The statute shows clearly how the vendor can secure himself against the presumption of his having acted fraudulently, and if he gives the notices required by the Act he thus gets rid of all chance of having any information prepared against him. If, however, he does not follow the provisions of Section 8 with regard to the giving of notices, he must then prove in some other and satisfactory way that the transaction was good and free from fraud, and if he can

show that he told the purchaser, or brought in any way to the knowledge of the purchaser, that the article sold had mixed with it some matter which is not injurious to health, and which is not intended fraudulently to increase its bulk, weight, or measure, then I am of opinion that no offence has been committed within the provisions of the statute, inasmuch as there has been no such sale to the prejudice of the purchaser. There may be cases therefore in which it is sufficient for the vendor to rely upon a notice hung up in the bar as was done here, even though, as in this case, a notice was not actually delivered to the purchaser, nor was there any label on the bottle. We have nothing before us to show that the purchaser was in any way deceived; only we do not think it necessary to send the case back on this ground, because both from the statements in the case, and from the fact that the publican had affixed notices in conspicuous places, I think it is clear that the purchaser was well aware of what he was buying."

In the case of Spiers and Pond *v.* Bennett (*Times* Law Report, May 6, 1896), the firm purchased all milk sold by them under a warranty of its purity and genuine quality, and took all possible precautions to ensure its being supplied to their customers in proper condition, but they were unable to guarantee it as either new, pure, or with all its cream. It was held, the alteration in the milk was sufficiently disclosed by the framed notice placed on the counter, and reversed the decision of the magistrate.

Morris *v.* Johnson, 54 J.P., is a case on the same point. There Morris, the inspector under the Sale of Food and Drugs Acts, sent his assistant into Johnson's public house, and without going into the bar or kitchen he went into a club room and asked for whisky, and that supplied was 37 degrees under proof. A notice that "all spirits are diluted," was stuck up in the bar and kitchen, but not in

the club room, and nothing was said to the assistant on delivery. The case was remitted to the justices to enquire whether the assistant knew that the practice was at Johnson's house to sell only diluted spirits. Justice Matthew said: "In this case it appears that this publican was carrying on his ordinary business in his own way, and that there was no intention whatever to defraud anybody. It was at least odd that these customers on this occasion did not go into the ordinary rooms where the notice was put up, and which might have informed them if they were in doubt, but found their way at once into the club room where they sat down and called for some whisky. Under these circumstances I think we must be critical in looking at the evidence, as it was incumbent on the respondent to satisfy the justices that the appellant did know that the spirits sold in the house were sold in a diluted state. The purchaser's complaint is that they did not see the notice, but then there was no finding in the case whether they did not know well enough of the diluting of all spirits before being sold at the respondent's house. That point is not at all made clear, and therefore I think we must remit the case to the justices to have this point found. If the justices find that the men did not know that the spirits were sold diluted, then there should have been a conviction; but if they did know then there should be no conviction.

As to what may be considered a proper notice, Section 12 of the Food and Drugs Act, 1899, provides that the label referred to in Section 8 of the Sale of Food and Drugs Act, 1875, shall not be deemed to be distinctly and legibly written or printed within the meaning of that section unless it is so written or printed that the notice of mixture given by the label is not obscured by other matter on the label; provided that nothing in this enactment shall hinder or affect the use of any registered trade mark,

or of any label which has been continuously in use for at least seven years before the commencement of this Act; but the Comptroller-General of Patents, Designs, and Trade Marks shall not register any trade mark purporting to describe a mixture unless it complies with the requirements of this enactment. This section does not prohibit entirely the placing of other matter on the label, as in the case of the margarine label.

Gage *v.* Elsey, 48 L.T., N.S. 226, was a similar case, in which the publican on handing the spirits to the inspector said, "That is what we sell to the public, and there is our notice," pointing to a notice to the usual effect; it was held that the purchaser was not prejudiced.

In deciding therefore whether a purchaser is prejudiced, the question is:—Was the purchaser actually deceived? Did he know that the article sold to him was diluted or mixed, as the case may be? If he did know, then there can be no conviction under the 6th section.

Absence of knowledge of adulteration on the part of the purchaser is a necessary condition precedent to a conviction. But what of absence of knowledge of the adulteration on the part of the vendor? Is it a good defence to prove that the vendor had no knowledge that the article which he sold was adulterated? This point was discussed in the case of Betts *v.* Armstead, 58 L.T., N.S. 811. There the inspector of nuisances at Nottingham bought at Armstead's shop a loaf of bread, which on analysis was found to contain alum in the proportion of 48 grains to the four-pound loaf. Armstead and two of his men gave evidence that there was not, and had never been any alum on the respondent's premises; that no alum had been used in the manufacture of the bread; that they were not aware that there was any alum in the flour from which the bread had been made; and that if any alum was in the bread, it must have been in the flour

when purchased by the respondent. He could not take advantage of Section 25 of the Act, as apparently he had no express written warranty. Still the justices considered that he was innocent, and dismissed the case. On appeal it was held that the absence of knowledge was no defence, because to decide otherwise, would be to decide that Section 6 must be construed as if it read, "no one shall *knowingly* sell to the prejudice of a purchaser." That was not the intention of the Legislature, as Section 5 provides that no one shall be liable to be convicted under the 3rd and 4th sections if he can prove absence of knowledge, so that Section 6 was purposely omitted.

The case of Lane *v.* Collins, 14 Q.B.D. 193, is interesting, as showing the great care which must be taken to ensure that the proceedings are commenced under the proper section. In that case Collins, in answer to a request of Lane, who was the inspector under the Food and Drugs Act for the County of Surrey, gave him skim-milk, which was found by the analyst to be deficient in butter-fat to the extent of 60 per cent. An information was laid under the 6th section, alleging that Collins had sold the milk to the prejudice of the purchaser, which was not of the nature, substance, and quality demanded. One of the Metropolitan police magistrates, before whom the case came, refused to convict on the ground that Collins had committed no offence within the 6th section, inasmuch as Lane had asked for milk and got milk, but milk which had been skimmed, and this decision was upheld on appeal. Clearly the proceedings should have been taken under section 9, which provides that "no person shall, with intent that the same may be sold in its altered state without notice, extract from any article of food any part of it, so as to affect injuriously its quality, substance, or nature, and no person shall sell any article so altered without making disclosure of the alteration."

In the case of Pain *v.* Boughtwood, 24 Q.B.D. 354, it is worthy of mention as a decision that a person selling the altered article can be convicted under this section, although at the time that he sold it he did not know of the alteration. In that case (also a milk case) no evidence was given that the person selling the milk had knowledge of the alteration. The respondent, and his daughter who had sold the milk gave evidence that they had no knowledge of the alteration in the milk. The magistrate was of opinion, that as Section 9 contemplated disclosure by the seller of the alteration of any article of food, it was necessary to prove knowledge by the defendant or his agent of such alteration, and he therefore dismissed the summons. But on appeal the case was remitted. Justice Charles said: "I think that this case is concluded by Betts *v.* Armstead, though but for that decision I should have entertained some doubt on the case before us." Justice Grantham in the course of his judgment, said Section 9 "is aimed, first, at any person who, with intent that the same may be sold in its altered state, without notice abstracts from any article of food or any part of it, so as to affect injuriously its quality, substance or nature; and secondly, at the person who sells the article so altered without making disclosure of the alteration. But for the provisions of the second part of the section the first part would be useless as a protection to the public. The Legislature, however, saw that the provisions of the second part might have serious consequences to the person who sold the article so altered, and by Section 25 the seller is given the power of protecting and exonerating himself by obtaining a written warranty from the person who has supplied the article to him. In the present case the respondent ought to have provided himself with a written warranty, and then he could have handed it to the inspector, who could have thereupon proceeded against the

person who had actually committed the fraud. If that course is not taken the Legislature assumes that the seller has been a party to what has been done. Every precaution is taken in the statute to enable a person honestly selling an article without knowledge of the alteration to defend himself against a charge made under Section 9."

Where a person therefore has innocently sold an article in an altered state within the 9th section, he is nevertheless guilty of an offence, and liable to conviction unless he has a written warranty within the meaning of the 25th section.

A difficulty often arises as to what document amounts to a written warranty. In Rook *v.* Hopley, 3 Ex. D. 209, the warranty by means of which the defendant sought to discharge himself from the prosecution was an invoice containing a mere description of the article as lard No. 1, and it held that a note or invoice was insufficient, and did not amount to a warranty, but was merely a description. An invoice not amounting in law to a warranty is only available as a defence in margarine prosecutions, and apparently the actual words of the warranty need not be set out, provided its terms are distinctly stated (see Section 20, Sale of Food and Drugs Act, 1899).

In Harris *v.* May, 12 Q.B.D. 97, the defendant produced an agreement which he contended was a written warranty within the meaning of the section. The agreement purported to be a contract for the supply of milk between a farmer and the defendant, under which the farmer agreed to sell the defendant 86 imperial gallons of new and pure milk each and every day. No separate invoice or warranty was given with each lot of milk as it was delivered, and the magistrate before whom the case came decided, that the agreement was a contract for the sale of milk, but not a warranty within the meaning of Section 25,

and convicted the defendant. On the appeal the conviction was affirmed. Lord Chief Justice Coleridge in giving judgment said, "the enacting part here is plain; if a written warranty can be produced and the article identified this will be a defence. But I think this means that if a seller wishes to be safe he must be able to get a written warranty in respect of the "specific" article sold. Here then was nothing of the kind. All that appeared was that a contract had been made, and no doubt there was a general obligation to send new and pure milk every day, but that is not a written warranty and no defence under the statute."

The case of the Farmers Company *v.* Stevenson (54 J.P. 708) shows how such a contract for the supply of milk can be utilized so as to amount to a warranty. There was in this case a contract for the daily supply of genuine new milk of the best quality with all its cream on, by which the vendor warranted each supply of milk to be pure, genuine and unadulterated, and attached to the churn which contained the milk, part of which was taken for analysis, was a label bearing the words, "warranted genuine new milk with all its cream on." It was held that the contract and the label together constituted a written warranty within the meaning of the section.

Proceedings for giving a false warranty in respect of an article of food cannot be taken, under Section 20, Subsection 5, of the Sale of Food and Drugs Act, 1899, before a court having jurisdiction in the place where the article in question was purchased for analysis, if the warranty was not given within the jurisdiction of that court, unless it was given to the person from whom the article referred to was purchased for analysis (Manners *v.* Tyler, Div. Ct. (1902), 1 K.B. 901). Legal proceedings under the above section, against the original vendor of an article of food or drug, must be commenced within six calendar months

from date of the giving of the false warranty. (Whitaker *v.* Pomfret, Bros., (Div. Ct. (1902), 1 K.B. 661).

Under Section 6 of the principal Act, it has been held that an inspector purchasing samples of a food or drug for the purpose of analysis could "not" be prejudiced by the sale. Section 3 of the Amendment Act, 1979, provides that such a plea is no defence, and the words nature, substance and quality are made disjunctive.

An inspector may, under Section 3 of the Amendment Act, take samples of milk at the PLACE OF DELIVERY, for the purpose of submitting it to the analyst in all respects as if he had purchased it from the seller as provided under Section 13 of the principal Act. By Section 14 of the Sale of Food and Drugs Act, 1899, samples of *every* article of food may be taken in course of delivery, but, except as regards milk, only upon the request or with the consent of the purchaser or consignee.

In procuring samples of milk in the street, the officer should obtain the sample when the dealer is stopping at any house for the purpose of delivering the milk to a customer, or while the milk is in course of delivery at a railway station or terminus to which the consignor has contracted to deliver the same, but not while the milk is in course of transit.

The power conferred upon an inspector under Section 3 of the Sale of Food and Drugs Act (Amendment) Act, 1879, to procure at the place of delivery a sample of milk in course of delivery to the purchaser in pursuance of a contract of sale cannot be exercised by an inspector outside the district for which he is appointed. (McNair *v.* Cave, Div. Ct. (1903), 1 K.B. 24).

Section 10 of the Act of 1899, provides that in the case of a sample of milk taken, or margarine, or margarine cheese forwarded by public conveyance, the person taking the sample shall forward by registered parcel or otherwise,

a portion of the sample marked and sealed or fastened up, to the consignor, if his name and address appear on the can or package containing the article sampled.

The question as to place of delivery has been decided in the case of Filshie *v.* Evington (1892), 2 Q.B. 200. There the appellant, who lived at Castle Dorrington, contracted with a dairy company for the sale to them of the milk from his dairy, to be delivered at London, or at such other station as the purchasers should from time to time appoint, the carriage of the milk from Castle Dorrington to be paid by the purchasers. The purchasers appointed Hull as a station for delivery of the milk under the contract. Immediately on its arrival at Hull—and before possession was taken of it by the purchasers—a sample was taken by an inspector, which on analysis was found to be adulterated by the addition of water. It was held that, notwithstanding the provision for payment of the carriage by the purchasers, Hull was the place of delivery of the milk to the purchasers within the meaning of the section.

As to what shall be done with the sample when taken, the case of Rouch *v.* Hall, 44 L.T., N.S. 183, decided that, when proceeding under Section 3 of the Amending Act, it is not necessary to notify the seller that the article is taken for analysis or to deliver any portion to the seller or his agent; and Rolfe *v.* Thompson (1892) 2 Q.B., 196, decided the words, "shall submit the same to be analysed," did not mean that he was bound to submit the whole of the sample taken by him. And it was also decided that Section 15 of the Act of 1875 is so dependent on Section 14 that it does not apply. Part of what the inspector took is a sample of the milk just as much as the whole of what he took is a sample. Then again, Fecitt *v.* Walsh (1891) 2 Q.B., 304, decides that if samples are taken from several cans proceedings can be taken in respect of each sample which turns out to be adulterated.

Section 19 of the Sale of Food and Drugs Act, 1899, amends Section 10 of the Act of 1879, by requiring all prosecutions in respect of any article of food or drug purchased for test purposes, to be instituted before the expiration of twenty-eight days from the time of purchase, whilst the summons shall not be made returnable under fourteen days from the day on which it is *served*, and the summons must be accompanied by a copy of the Public Analyst's Certificate.

In the case of McQueen *v.* Jackson, Div. Ct. (1903), 2 K.B., 162, it was held, that fourteen clear days must elapse between the date of service of the summons and that of return.

When the officer has obtained the sample, and divided it into three parts, as required by the principal Act, he must despatch one part to the Public Analyst for analysis, and in due course he will receive his certificate. If the certificate is in the form set forth in the schedule to the Act (see p. 393), it will, in proceeding against the offender, be *primâ facie* evidence of the facts therein stated; and, if it discloses an offence, an information should be laid against the vendor of the article. But, in the light of some recent decisions, it is very important that he should carefully examine the certificate to see if it is in the form set forth in the schedule. For instance, the inspector must see that the certificate shows whether any change has taken place in the constitution of the article which would interfere with analysis. If this statement is absent the certificate is informal and there can be no conviction.

It is also desirable that the Analyst should not make any observation which is not absolutely required by the form—although if it is a mere matter of opinion, it will not invalidate the certificate. (Bakewell *v.* Davis, L.T., 69, N.S., 832). If the analysis shows that there has been adulteration, it is essential that it should set out the con-

stituent parts of the sample, but this is not necessary except in cases of adulteration.

Again, in an analysis of spirits it is essential that the certificate should state how many degrees the sample is under proof. For instance, in the case of a sample of whisky, it is not sufficient to say that it is adulterated with an excess of water of 13 per cent. over and above what is allowed by Act of Parliament. The certificate is too vague, as it does not show that the Analyst knows that, by Section 6 of the Act of 1879, whisky may be 25 per cent. under proof. (Newby *v.* Sims, 58 J.P., 263).

These cases show that every attempt at originality in the drafting of the certificate should be discouraged, and that the form in the schedule should be followed most carefully and closely (see Fortune *v.* Anson (1896) 1 Q.B., 202).

Form of Public Analyst's Certificate.

To

I, the undersigned, public analyst for the
do hereby certify that I received on the day of
19 from a sample of
for analysis (which then weighed) and have analysed the same, and declare the result of my analysis to be as follows:—

I am of opinion that the same is a sample of genuine

or

I am of opinion that the said sample contained the parts as under, or the percentages of foreign ingredients as under

Observations

As witness my hand this day of

A. B.,

at

As the inspector is often in want of information as to the proper quantities to purchase in emergency of such articles, in order to comply with Section 13 of the Act, I have appended a list of articles, with the quantities required for analysis in each case.

Food.

Butter	¾ lb.
Bread	2 ,,
Flour	1 ,,
Oatmeal	1 ,,
Coffee	¾ ,,
Tea	½ ,,
Cocoa	¼ ,,
Lard	¾ ,,
Mustard	¼ ,,
Chicory	½ ,,
Pepper	2 oz.
Vinegar	1 pint.
Spirits	1 ,,
Beer	1 quart.
Milk	1 pint.
Aerated Waters	3 bottles or syphon.

Drugs.

Sweet Spirits of Nitre	4 oz.
Precipitated Sulphur	2 ,,
Citric Acid	4 ,,
Cream of Tartar	2 ,,
Tinctures	4 ,,

Medicines according to prescriptions.

The Local Government Board in a circular dated February 26, 1894, gives the following directions as to the taking of samples under the Sale of Food and Drugs Acts:—

SIR,

I am directed by the Local Government Board to state that they have received from the Commissioners of the Inland Revenue a communication with reference to the portions of samples forwarded to the chemical officers of their department under the 22nd Section of the Sale of Food and Drugs Act, 1875, from which it appears that in some instances the quantities have been so small as to cause difficulties in the operations of analysis; that in others the packing has been defective, and that in certain instances, in the case of perishable articles, there has been what has seemed an unnecessarily long interval between the original purchase and the receipt of the sample at Somerset House.

The insufficiency referred to is doubtless generally due to the smallness of the sample purchased under Section 13 of the Act, but also occasionally to the fact that the parts into which, under Section 14, the sample is divided, are not made equal.

The chemical officers of the Inland Revenue suggest that the following rules should be observed in this matter:—

1. The quantities of the samples purchased under Section 13 should not be less, in the case of milk, than 1 pint, butter ¾ lb., lard ¾ lb., coffee ¾ lb., spirits ¾ pint.

2. The division under Section 14 should be made as nearly equal as possible, so that the portion reserved may be not less than one-third of the whole.

3. The reserved portions of such samples as butter and lard, should, as soon after purchase as possible, be placed without paper (since paper acts as an absorbent), in a dry, wide-mouthed stoppered bottle or in an earthenware jar, securely corked so as to exclude the air.

4. The bottle used for the reserved portion of milk should be of such capacity that the milk may nearly fill it. (The use of bottles much too large for the quantity is apt to result in such a churning, if the samples are sent by railway, as to cause the separation of the fat).

5. The corks should be new and sound.

The Board requests that the officers by whom samples are obtained for analysis may be instructed to have regard to these rules.

I am also to suggest that the officers referred to should be impressed with the importance of securing the utmost promptitude, both as regards the transmission of samples to the public analyst immediately after purchase, and as regards the subsequent stages of the case where legal proceedings are taken.

I am, SIR, your obedient servant,

HUGH OWEN,

Secretary.

By Section 16 of the Food and Drugs Act, 1899, "Any person who wilfully obstructs or impedes any inspector or other officer in the course of his duties under the Sale of Food and Drugs Acts, or by any gratuity, bribe, promise, or other inducement prevents, or attempts to prevent, the the due execution by such inspector or officer of his duty under those Acts, shall be liable, on summary conviction, for the first offence to a fine not exceeding twenty pounds, for the second offence to a fine not exceeding fifty pounds, and for any subsequent offence to a fine not exceeding one hundred pounds."

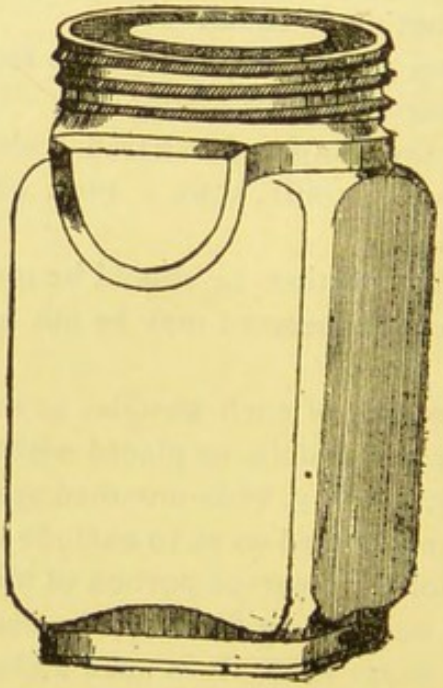

FIG. 84.—Toogood's food sample jar.

Officers employed under the Sale of Food and Drugs Acts should, in addition to a private seal, be supplied with proper vessels for the division of articles.

Wide neck glass jars (square jars by preference should be used, as round jars are a source of much trouble to the officer during the process of sealing up), of varying capacities (2 to 7 oz.) fitted with metal caps, will be found convenient for holding butter, lard, pepper, and like sub-

stances, while strong 7 oz. bottles, properly corked, may be used for milk or other fluids. Toogood's food sample jars (fig. 84) have been specially designed to meet the requirements and suggestions of the Local Government Board in the circular previously referred to. This jar is indented to receive the seal and the metal caps are furnished with cork linings. It is absolutely essential that the vessel used should be scrupulously clean and the same vessel should not be used again for such a purpose, or its condition at the time the sample was taken may be afterwards questioned. Tin is a material which should be avoided, unless wrapped in paper, as gummed labels will not safely adhere to this metal, and these if lost would lead to confusion.

Printed labels properly gummed and numbered are necessary for work of this kind, but there should be nothing on the label, of the sample sent to the Public Analyst, by which the vendor may be recognised:—

FORM OF LABEL.

Borough of

No. of sample
Description of article
Date of purchase

(Inspector).

The inspector should enter all particulars, for his *own* information, in a special pocket book with printed headings, after the purchase has been completed, the division of the sample made, sealed and marked, or numbered.

FORM OF POCKET BOOK.

No. of sample
Name of vendor
Address

Date of purchase
Place of purchase
Date delivered to analyst
Description of article
Price paid
Quantity purchased

Remarks :— (Inspector).

This information is all that the officer requires, should legal proceedings be afterwards taken against any person in respect of a sample of food or drug.

Register of Persons from whom Samples may be purchased.

No.	Name and Address of Vendor.	Nature of sample, and date when purchased.	Nature of sample, and date when purchased.	Nature of sample, and date when purchased.	Nature of sample, and date when purchased.	Nature of sample, and date when purchased.	Nature of sample, and date when purchased.

Form of Register.

No.	Description of article.	Vendor's Name and Address.	Date of Purchase.	Date when sample was delivered to Analyst.	Result of Analysis.

The following information will be found sufficient for the solicitor or other person authorised to appear in any legal proceedings under these Acts:—

Sale of Food and Drugs Acts.

Borough of

19

Instructions for Solicitor.

Description of article purchased
Quantity purchased
Price paid
Date of purchase
Place of purchase
Name of purchaser
By whom served
Name of vendor
Address
Number of sample
Date sample was delivered to analyst
Remarks:—

Signed

(Inspector under Sale of Food and Drugs Acts).

THE FOLLOWING IS A SUMMARY OF THE MARGARINE ACT, 1887.

By this Act, which came into force on January 1, 1888, provision has been made for protecting the public against the sale of Margarine as Butter, and all substances, whether compounds or otherwise, prepared in imitation of Butter, and whether mixed with Butter or not. It is not lawful to sell any such substance except under the name of Margarine, and under the conditions set forth in the Act. Butter is defined by the Act as meaning "the substance usually known as Butter, made exclusively from milk or cream, or both, with or without salt or other preservative, and with or without the addition of colouring matter."

These conditions are that every package, whether open or closed, containing Margarine shall be branded or durably marked "Margarine"

on the bottom, top, and sides in printed capital letters, not less than three-quarters of an inch square; that if Margarine is exposed for sale by retail, there shall be attached to every parcel of it so exposed, and in such a manner as to be clearly visible to the purchaser, a label marked "Margarine" in printed capital letters not less than one and a half inches square; and that every person selling margarine by retail, except in a package duly branded and marked in accordance with the above directions, shall in every case deliver the same to the purchaser in or with a paper wrapper on which "Margarine" is printed in capital letters not less than a quarter of an inch square.

The case of McNair *v.* Horan, which came before the Div. Ct. on July 11, 1904, raised an important point under the Margarine Act, 1887, Sect. 6 of which requires *every* package to be branded or durably marked "Margarine" on the top, bottom, and sides, printed in capital letters.

The respondent had, it was stated, several barrels of margarine from which he supplied customers, taking the margarine from barrels which were not marked.

A metropolitan police magistrate, sitting at Westminster, decided that barrels were not packages within the meaning of the Act, and dismissed the summons. The judges held the magistrate was wrong and sent the case back with directions to convict.

All imported margarine, and all margarine, whether imported or manufactured in this country, whenever forwarded by any public conveyance, is required by the Act to be duly consigned as margarine; and any Medical Officer of Health, Inspector of Nuisances, or police constable authorised under Sect. 15 of the Sale of Food and Drugs Act, 1875, to procure samples for analysis, may, if he has any reason to believe that the provisions of the Act are infringed in this behalf, examine and take samples from any package, and ascertain, if necessary, by submitting the same to be analysed, whether an offence has been committed against the Act.

Any officer authorised to take samples under the Sale of Food and Drugs Act, may, without going through the form of purchase provided by that Act, but otherwise acting in all respects in accordance with the provisions of that Act as to dealing with samples, take for the purposes of analysis samples of any butter, or substances purporting to be butter,

which are exposed for sale, and are not marked "Margarine" as provided by the Act, and any such substance not being so marked will be presumed to be exposed for sale as butter.

Every person dealing in margarine who is found guilty of an offence under the Act will be liable on summary conviction for the first offence, to a fine not exceeding £20; for the second offence, to a fine not exceeding £50; and for the third, or any subsequent offence, to a fine not exceeding £100.

Where an employer is charged with an offence against the Act, he shall be entitled upon information duly laid by him, to have any other person whom he charges as the actual offender brought before the Court at the time appointed for hearing the charge; and if, after the commission of the offence has been proved, the employer proves to the satisfaction of the Court that he has used due diligence to enforce the execution of the Act, and that the other person whom he charges had committed the offence in question without his knowledge, consent, or connivance, such other person is to be summarily convicted of the offence, and the employer is to be exempt from any penalty.

Every person, dealing with, selling, or exposing or offering for sale, or having in his possession for the purpose of sale, any quantity of margarine contrary to the provisions of the Act, shall be liable to conviction for an offence under the Act, unless he shows to the satisfaction of the Court before whom he is charged that he purchased the article in question as butter, and with a written warranty or invoice to that effect, that he had no reason to believe at the time when he sold it that the article was other than butter, and that he sold it in the same state as when he purchased it; and in such case he is to be discharged from the prosecution, but to be liable to pay the costs incurred by the prosecutor, unless he has given due notice to him that he will rely on the above defence.

The above summary must be read in conjunction with the Sale of Food and Drugs Act, 1899, but the following Circulars, issued by the Board of Agriculture, fully explain its most important provisions.

WHITEHALL,
November, 1899.

SIR,

I am directed by the Board of Agriculture to draw your attention to the provisions of Sections 2 and 3 of the Sale of Food and Drugs Act, 1899 (62 & 63 Vict. ch. 51), which will come into operation on January 1, 1900.

This Act should be read in connection with the existing statutes which it amends and supplements, viz., the Sale of Food and Drugs Act, 1875 (38 & 39 Vict. ch. 63), the Sale of Food and Drugs Act (Amendment) Act, 1879 (42 & 43 Vict. ch. 30), and the Margarine Act, 1887 (50 & 51 Vict. ch. 29). These three statutes, together with the new Act itself, are in the new Act and in this circular referred to as the Sale of Food and Drugs Acts.

Under Section 2 (1) of the new Act the Board of Agriculture may, in relation to any matter appearing to the Board to affect the general interests of agriculture in the United Kingdom, direct an officer of the Board to procure for analysis samples of any article of food, and thereupon the powers and provisions of the Sale of Food and Drugs Acts with respect to the procuring of samples will be applicable, subject to certain modifications. The Act provides (Section 26) that, for the purposes of the Sale of Food and Drugs Acts, the expression "food" shall include every article used for food or drink by man, other than drugs or water, and any article which ordinarily enters into or is used in the composition or preparation of human food; and shall also include flavouring matters and condiments.

One part of any sample procured by an officer of the Board is, in accordance with Section 14 of the Sale of Food and Drugs Act, 1875, as amended by Section 13 of the new Act, to be submitted by him for analysis to the public analyst [Section 2 (1) (a)]; but the fee for the analysis is payable to the analyst by the local authority of the place where the sample is procured [Section 2 (1) (b)]. The Act [Section 2 (2)] provides that the Board are to communicate the result of the analysis of any such sample to the local authority, and that thereupon there shall be the like duty and power on the part of the local authority to cause proceedings to be taken as if the local authority had caused the analysis to be made.

It is important to observe that the Act [Section 3 (1)] makes it the duty of every local authority entrusted with the execution of the laws relating to the sale of food and drugs to appoint a public analyst, and to put in force from time to time, as occasion may arise, the powers with which they are invested, so as to provide proper securities for the sale of food and drugs in a pure and genuine condition, and in particular to direct their officers to take samples for analysis. This provision is followed by an enactment [Section 3 (2)] under which, if the Board, after communication with a local authority, are of opinion that the local authority have failed to execute or enforce any of the provisions of the Sale of Food and Drugs Acts in relation to any article of food, and that their failure affects the general interests of agriculture in the United

Kingdom, the Board may, by order, empower one of their officers to execute and enforce those provisions, or to procure the execution and enforcement thereof, in relation to any article of food mentioned in the order.

The expenses incurred by the Board or their officer under any such order are to be treated as expenses incurred by the local authority in the execution of the said Acts, and are to be paid by the local authority to the Board on demand, or in default the Board may recover the amount of the expenses with costs from the local authority [Section 3 (3)].

The Board would be glad if you would take steps to bring under the notice of your local authority the foregoing summary of sections 2 and 3 of the new Act, and they will be glad to furnish copies of this circular for distribution amongst the members of your local authority and the officers concerned, upon being informed of the number you require. The Board will, in a subsequent letter, explain their views as to the lines upon which they would propose to exercise the very important powers and duties conferred and imposed upon them by the sections in question.

I am, Sir,

Your obedient servant,

T. H. ELLIOTT,

Secretary.

WHITEHALL,

November, 1899.

SIR,

I am directed by the Board of Agriculture to draw your attention to certain provisions contained in Sections 5, 6, 7, and 8, of the Sale of Food and Drugs Act, 1899 (62 and 63 Vict. ch. 51), which extends and amends the provisions of the Margarine Act, 1887 (50 and 51 Vict. ch. 29), and which will come into operation on the 1st January, 1900.

By Section 5 of the new Act, the provisions of the Margarine Act, 1887, as amended by the new Act, are extended to "margarine-cheese," which expression is defined by Section 25 of the Act as meaning "any substance, whether compound or otherwise, which is prepared in imitation of cheese, and which contains fat not derived from milk." The effect of Section 5 is that no such substance can be lawfully dealt in, exposed for sale, or sold, except under the name of "margarine-cheese," and under the conditions set forth in Section 6 of the Margarine Act, 1887, with respect to margarine, *mutatis mutandis*; and the Section

further requires that all margarine-cheese sold or dealt in otherwise than by retail, shall either be enclosed in packages marked in accordance with the Margarine Act, 1887 (as amended by Section 6 of the new Act), or shall be itself conspicuously branded with the words "margarine cheese."

By Section 6 of the new Act, the brand or mark required under the Margarine Act, 1887, or the new Act, to be placed on any package containing margarine or margarine-cheese must be on the package itself and not solely on a label, ticket, or other thing attached thereto.

The same Section also amends the provisions of Section 6 of the Margarine Act, 1887, so as in effect to require that every person selling margarine or margarine-cheese by retail, save in a package marked as aforesaid, shall in every case deliver the same to the purchaser "in" a paper wrapper (the words "or with" in Section 6 of the Margarine Act, 1887, having been repealed); it also requires that the words "margarine" or margarine-cheese," as the case may be, shall be printed on the wrapper in capital block letters not less than half an inch long and distinctly legible, and that no other printed matter shall appear on the wrapper.

Section 7 of the new Act requires every occupier of a manufactory of margarine or margarine-cheese, and every wholesale dealer in such substances, to keep a register of consignments sent out therefrom, and empowers officers of the Board to inspect the register, and to enter manufactories of margarine and margarine-cheese and inspect the process of manufacture and take samples for analysis. It also extends the provisions of Section 9 of the Margarine Act, 1887, relating to registration of manufactories of margarine, to any premises wherein the business of a wholesale dealer in margarine or margarine-cheese is carried on, and the registration of a manufactory or other premises must be forthwith notified by the local authority to the Board.

Section 8 of the Act provides that it shall be unlawful to manufacture, sell, expose for sale, or import any margarine, *the fat of which* contains more than ten per cent. of butter fat; that every person who manufactures, sells, exposes for sale, or imports any margarine which contains more than that percentage, shall be guilty of an offence under the Margarine Act, 1887, and that any defence which would be a defence under Section 7 of that Act shall be a defence under Section 8 of the new Act, and the provisions of the former section shall apply accordingly.

Section 8, however, is not to apply to any margarine manufactured or imported in fulfilment of any contract made before the 20th day of July, 1899.

The Board would be glad if you would take steps to bring before your

local authority the foregoing summary of the provisions of Sections 5, 6, 7, and 8 of the new Act, and they will be glad to forward you additional copies of this circular for distribution amongst the members of your local authority and the officers concerned, upon being informed of the number you require.

I am, Sir,

Your obedient servant,

T. H. ELLIOTT,

Secretary.

WHITEHALL,

November, 1899.

SIR,

I am directed by the Board of Agriculture to draw your attention to the following provisions of the Sale of Food and Drugs Act, 1899 (62 and 63 Vict. ch. 51), which will come into operation on the 1st January, 1900.

This Act should be read in connection with the existing statutes which it amends and supplements, viz., the Sale of Food and Drugs Act, 1875 (38 and 39 Vict., ch. 63) the Sale of Food and Drugs Act (Amendment) Act, 1879 (42 and 43 Vict., ch. 30), and the Margarine Act, 1887 (50 and 51 Vict., ch. 29). These three statutes, together with the new Act itself, are in the new Act and in this circular referred to as the Sale of Food and Drugs Acts.

Sale of Milk in a Public Place.

Section 9 of the new Act requires every person who, himself or by his servant, in any highway or place of public resort sells milk or cream from a vehicle or from a can or other receptacle to have his name and address conspicuously inscribed on the vehicle or receptacle, under a penalty not exceeding two pounds.

Labelling of Condensed, Separated, or Skimmed Milk.

Section 11 of the new Act provides that every tin or other receptacle containing condensed, separated, or skimmed milk shall bear a label clearly visible to the purchaser on which the words "machine-skimmed milk," or "skimmed milk," as the case may require, are printed in large and legible type, and that if any person sells or exposes or offers for sale

condensed, separated, or skimmed milk in contravention of the section, he shall be liable on summary conviction to a fine not exceeding ten pounds.

Notice of Mixtures.

With regard to notice of mixtures, it is provided by Section 12 of the new Act that the label referred to in Section 8 of the Sale of Food and Drugs Act, 1875, shall not be deemed to be distinctly and legibly written or printed within the meaning of that Section unless it is so written or printed that the notice of mixture given by the label is not obscured by other matter on the label; but this provision does not apply to the use of any registered trade mark, or of any label which has been continuously in use for at least seven years before the commencement of the new Act.

Articles sold in Tins or Packets.

Section 18 of the new Act provides that notwithstanding anything in Section 17 of the Sale of Food and Drugs Act, 1875, where any article of food or drug is exposed for sale in an unopened tin or packet duly labelled, no person shall be required to sell it except in the unopened tin or packet in which it is contained.

Division of Samples.

The effect of Section 13 of the new Act is to modify Section 14 of the Sale of Food and Drugs Act, 1875, so that the person purchasing any article with the intention of submitting the same to analysis must divide the article into three parts, and must, if required, deliver one of the parts to the seller or his agent. The division of the sample is therefore obligatory, whether the seller requires it or not, and, on the other hand, the delivery of a part to the seller is not obligatory, unless he requires it.

Samples taken in Course of Delivery.

By Section 10 of the new Act, the person who takes a sample of milk in course of delivery (see Section 3 of the Sale of Food and Drugs Act (Amendment) Act, 1879), or of margarine or margarine-cheese forwarded by a public conveyance (see Section 8 of the Margarine Act, 1887, and Section 5 of the new Act), is required to forward a portion of the sample marked, and sealed, or fastened up, to the consignor, if his name and address appear on the can or package containing the article sampled.

Section 14 of the new Act extends the provisions of Sections 3 and 4 of the Sale of Food and Drugs Act (Amendment) Act, 1879, which relate to the taking of samples of milk in course of delivery, to every other article of food; but no samples are to be taken under the Section except upon the request or with the consent of the purchaser or consignee.

Obstruction of Officer.

Section 16 of the new Act imposes fines not exceeding £20, £50, and £100 respectively for first, second, and subsequent offences on any person who wilfully obstructs or impedes any inspector or other officer in the course of his duties under the Sale of Food and Drugs Acts, or by any gratuity, bribe, promise, or other inducement prevents, or attempts to prevent, the due execution by such inspector or officer of his duty under those Acts.

Penalties.

Section 17 of the new Act deals with penalties and is important. It is as follows:—

"17.—(1) Where, under any provision of the Sale of Food and Drugs Act, 1875, a person guilty of an offence is liable to a fine which may extend to twenty pounds as a maximum, he shall be liable for a second offence under the same provision to a fine not exceeding fifty pounds, and for any subsequent offence to a fine not exceeding one hundred pounds.

"(2) Where, under any provision of the Sale of Food and Drugs Acts, a person guilty of an offence is liable to a fine exceeding fifty pounds, and the offence, in the opinion of the court, was committed by the personal act, default, or culpable negligence of the person accused, that person shall be liable (if the court is of opinion that a fine will not meet the circumstances of the case) to imprisonment, with or without, hard labour, for a period not exceeding three months."

Sub-section (1) of the above Section appears to apply to offences under Sections 6, 7, and 9 of the Act of 1875, and offences under the second and fourth paragraphs of Section 27 of the same Act. (The third paragraph of Section 27 is repealed by the new Act and replaced by Section 20 (6) thereof).

Sub-section (2) appears to apply to third and subsequent offences under the above-mentioned provisions of the Act of 1875 (as amended by Sub-section (1) of Section 17 of the new Act), and also to third and subsequent offences under the Margarine Act, 1887 (as extended by

Sections 5 and 6 of the new Act), or under Sections 1, 8, 16, and 20 (6) of the new Act.

Procedure.

Section 19 of the new Act deals with procedure and replaces (with some modifications) Section 10 of the Sale of Food and Drugs Act Amendment) Act, 1879, which Section is repealed by the present Act. It is as follows:—

"19.—(1) When any article of food or drug has been purchased from any person for test purposes, any prosecution under the Sale of Food and Drugs Acts in respect of the sale thereof, notwithstanding anything contained in Section 20 of the Sale of Food and Drugs Act, 1875, shall not be instituted after the expiration of twenty-eight days from the time of the purchase.

"(2) In any prosecution under the Sale of Food and Drugs Acts the summons shall state particulars of the offence or offences alleged, and also the name of the prosecutor, and shall not be made returnable in less time than fourteen days from the day on which it is served, and there must be served therewith a copy of any analyst's certificate obtained on behalf of the prosecutor."

It is to be observed that Sub-section (1) of the above Section applies only to prosecutions in respect of sales; it does not apply, *e.g.*, to prosecutions for the giving of a false warranty (see Cook *v.* White (1896) 1 Q.B. 284; 65 L.J.M.C. 46, where this point was decided with reference to Section 10 of the Act of 1879). It is to be noted also that the Sub-section is not limited (as was Section 10 of the Act of 1879) to perishable articles.

In Sub-section (2), which applies to all prosecutions under the Sale of Food and Drugs Acts, the extension to fourteen days of the period of seven days specified in Section 10 of the Act of 1879 for the return of the summons should be noted, and also the provision as to service of a copy of the analyst's certificate.

Use of Warranty or Invoice as a Defence.

The important provisions, embodied in Section 20 of the new Act, relating to the use of a warranty or invoice as a defence, call for particular attention, and should be read in conjunction with Section 25 of the Sale of Food and Drugs Act, 1875, and Section 7 of the Margarine Act, 1887.

Section 20 (1) provides that a warranty or invoice shall not be avail-

able as a defence to any proceeding under the Sale of Food and Drugs Acts unless the defendant has, within seven days after service of the summons, sent to the purchaser a copy of such warranty or invoice with a written notice stating that he intends to rely on the warranty or invoice, and specifying the name and address of the person from whom he received it, and has also sent a like notice of his intention to such person.

The person by whom such warranty or invoice is alleged to have been given is entitled to appear at the hearing and to give evidence, and the court may, if it thinks fit, adjourn the hearing to enable him to do so. Section 20 (2).

A warranty or invoice given by a person resident outside the United Kingdom will not be available as a defence, unless the defendant proves that he had taken reasonable steps to ascertain, and did in fact believe in, the accuracy of the statement contained in the warranty or invoice. Section 20 (3).

Where the defendant is a servant of the person who purchased the article under a warranty or invoice he is, subject to the provisions of Section 20 (1) of the new Act, entitled to rely on Section 25 of the Sale of Food and Drugs Act, 1875, and Section 7 of the Margarine Act, 1887, provided that he further proves that he had no reason to believe that the article was otherwise than that demanded by the prosecutor. Section 20 (4).

It should be noted that the word "invoice" is introduced in these provisions with reference to cases in which Section 7 of the Margarine Act, 1887, applies, and that the new Act does not make a mere invoice available by way of defence in any other case.

Proceedings for False Warranty.

Prosecutions for the giving of false warranties will probably be facilitated by the provision that, where the defendant in a prosecution under the Sale of Food and Drugs Acts has been discharged under the provisions of Section 25 of the Sale of Food and Drugs Act, 1875, as amended by the new Act, any proceedings under the Sale of Food and Drugs Acts for giving the warranty relied on by the defendant in such prosecution, may be taken as well before a court having jurisdiction in the place where the article of food or drug to which the warranty relates was purchased for analysis as before a court having jurisdiction in the place where the warranty was given. Section 20 (5).

It is to be observed that this provision applies only where the seller of the article has been prosecuted and been discharged as above mentioned.

Every person who, in respect of an article of food or drug sold by him as principal or agent, gives to the purchaser a false warranty in writing, is liable on summary conviction, for the first, second and subsequent offences, to fines not exceeding twenty pounds, fifty pounds, and one hundred pounds respectively, unless he proves to the satisfaction of the court that when he gave the warranty he had reason to believe that the statements or descriptions contained therein were true. Section 20 (6).

This modifies the law as laid down in the case of Derbyshire *v.* Houliston (1897) 1 Q.B. 772; 66 L.J.Q.B. 569, where it was held, under Section 27 of the Act of 1875, that it was necessary for the prosecution to prove that the defendant knew or had reason to believe that the warranty was false.

Reference to Government Analyst.

Section 21 of the new Act modifies Section 22 of the Sale of Food and Drugs Act, 1875, by providing that, on the request of either party, the justices or court shall cause an article of food or drug to be sent to the Commissioners of Inland Revenue for analysis, and may, if they think fit, do so without any such request.

Production by Defendant of Analyst's Certificate.

Section 22 of the new Act is an extension of Section 21 of the Sale of Food and Drugs Act, 1875, and makes the production by the defendant of a certificate of analysis by the public analyst in the prescribed form sufficient evidence of the facts therein stated, unless the prosecutor requires that the analyst be called as a witness.

A copy of every such certificate must, however, be sent to the prosecutor at least three clear days before the return day, and if it be not so sent, the court may, if it thinks fit, adjourn the hearing on such terms as may seem proper. Section 22 (2).

Definition of "Food."

The new Act provides (Section 26) that for the purposes of the Sale of Food and Drugs Acts the expression "food" shall include every article used for food or drink by man, other than drugs or water, and any article which ordinarily enters into or is used in the composition or preparation of human food; and shall also include flavouring matters and condiments.

The Board would be glad if you would take steps to bring before your Local Authority the foregoing summary of the provisions of

Section 9 to 22 of the Act, and they will be glad to forward you additional copies of this circular for distribution amongst the members of your Local Authority and the officers concerned, upon being informed of the number you require.

I am, Sir,

Your obedient Servant,

T. H. ELLIOTT,

Secretary.

WHITEHALL,

December, 1899.

SIR,

The Board of Agriculture have already, in their Circular Letters issued in November last, A. $\frac{82\text{-}4}{C}$, drawn the attention of Local Authorities to the provisions of the Sale of Food and Drugs Act, 1899, and I am now directed to submit, for the consideration of your Local Authority, the following further observations as to the exercise of the powers and duties conferred and imposed upon Local Authorities and the Board themselves by the Act in question.

Section 3 (1) of the Act specifically imposes upon the Local Authority the duty of appointing a public analyst and of putting in force from time to time, as occasion may arise, the powers with which they are invested, so as to provide proper securities for the sale of food and drugs in a pure and genuine condition, and in particular the duty of directing officers to take samples for analysis, and the Board trust that by the regular and efficient discharge by the Local Authorities of their statutory obligations in these respects any necessity for the exercise by the Board of the powers conferred upon them by Section 3 (2) and (3) of the Act may be reduced to a minimum.

In this connection, the Board would particularly urge upon Local Authorities the necessity of making effective arrangements for the regular and systematic sampling of articles of food. Hitherto the extent of the work done in this direction in many localities, so far as appears from the number of samples examined in the course of a year, has been quite inadequate, and has failed to give effect to the intentions of Parliament in securing a continuous test of their purity and genuineness. According to the Report of the Local Government Board for 1898-99 (C.—9444), there was 42 English boroughs in none of which were more than 20 samples taken for examination in the course of the whole twelve months of the year 1898, and in many other large centres

of consumption sampling appears to have been effected on so small a scale that it can have had very little influence in checking adulteration, or in protecting honest traders from unscrupulous competition. Too often, also, the operations of the Local Authority appear to have been confined to one or two articles of food, while other kinds equally liable to adulteration have been permitted wholly to escape.

In view of the altered position in which the administration of the law in regard to adulteration has now been placed in consequence of the passing of the Act of 1899, the Board would be glad if your Local Authority would consider whether the number and class of inspectors appointed by them is such as to be fully adequate to meet the requirements of their district, and the Board would, in particular, urge upon your Local Authority the advisability of employing, as sampling officers, a sufficient number of persons who have had experience in the class of work they are required to perform. Inexperienced officers are unable to exercise sufficient discrimination, and inconvenience and waste of labour and energy thereby ensue.

So far as imported articles of food are concerned, the Board will continue to acquaint the Local Authorities concerned with the details of any instances of adulteration which may be reported by the Customs, so that proceedings may be promptly taken, if necessary, by the Local Authority of the district to which the adulterated goods are ultimately consigned and in which it may be presumed that they will be offered for sale.

With a view to enable the Board to afford to Local Authorities any assistance in their power, either by correspondence or by personal conference, in the administration of the provisions of the Sale of Food and Drugs Acts, with respect to those articles of food which are brought under the purview of the Board as affecting the general interests of agriculture, the Lords Commissioners of Her Majesty's Treasury have sanctioned the appointment of additional inspectors who will be happy, if so desired, to confer with your Local Authority as to the manner by which the law may be most efficiently enforced in your district, and in the meantime the Board would be pleased to learn at as early date as may be convenient the result of the consideration by your Local Authority of the terms of their Circular Letters on the subject, and the steps which they are taking to give effect to the extended vigilance in the detection of fraudulent practices required by the Act, which as you are aware, comes into force on the 1st proximo.

I am, Sir,

Your obedient Servant,

T. H. Elliott,

Secretary.

MODEL BY-LAWS OF THE LOCAL GOVERNMENT BOARD UNDER THE PUBLIC HEALTH (LONDON) ACT, 1891.

For the Prevention of Nuisances arising from any Snow, Ice, Salt, Dust, Ashes, Rubbish, Offal, Carrion, Fish, or Filth, or other matter or thing in any Street.

1. The occupier of any premises fronting, adjoining, or abutting on any street *not repairable by the inhabitants at large* shall, as soon as conveniently may be after the cessation of any fall of snow, remove or cause to be removed from the footways and pavements adjoining such premises all snow fallen or accumulated on such footways and pavements in such a manner and with such precautions as will prevent any undue accumulation in any channel or carriageway or upon any paved crossing.

In the case of any premises, the person in occupation of or having the charge, management, or control of the same, or if there is no such person, then any person in occupation of or having the charge, maintenance or control of any part of the premises, and in the case of any premises the whole of which are let to lodgers, the person receiving the rent payable by the tenants or lodgers, either on his own account, or as the agent of another person, shall for the purposes of this by-law be deemed to be the occupier.

2. Every person who shall remove any snow from any premises shall deposit the same in such a manner and with such precautions as to prevent any accumulation thereof in any channel or upon any paved crossing.

If in the process of such removal any snow be deposited upon any footway or pavement, he shall forthwith remove such snow from such footway or pavement.

3. Every person who shall throw any salt upon any snow on the footway of any street shall do so in such quantity and in such manner as effectually to dissolve the whole of such snow, and he shall forthwith effectually remove from the footway the whole of the deposit resulting from the mixture of the salt with the snow. He shall not place any part of such deposit on the carriageway of such street other than any channel at the side of such carriageway, and he shall not remove the same into any such channel unless it is sufficiently liquid to flow along such channel.

No person shall throw any salt upon any snow on the carriageway of any street, unless it shall be practicable forthwith effectually to remove from such carriageway the whole of the deposit resulting from the mixture of the salt with the snow. He shall forthwith effectually remove the whole of such deposit, but he shall not place any part thereof on the footway of such street, nor shall he place any part thereof in the channel at the side of the carriageway, unless it is sufficiently liquid to flow along such channel.

4. The occupier of any premises who shall remove, or cause to be removed any dust, ashes, rubbish, offal, carrion, fish in an offensive condition, or filth or other like matter or thing from his premises, shall for the purpose of such removal in every case use or cause to be used a suitable vessel or receptacle, cart, or carriage properly constructed and furnished with a sufficient covering, so as to prevent the escape of the contents thereof.

If in the process of such removal any person shall slop or spill, or cause or allow to fall upon any footway, pavement, or carriageway, any such dust, ashes, rubbish, offal, carrion, fish in an offensive condition, or filth or other like matter or thing, he shall forthwith remove such dust, ashes, rubbish, offal, carrion, fish, or filth or other matter or thing from the place whereon the same may have been slopped or spilled, or may have fallen, and shall immediately thereafter thoroughly sweep or otherwise thoroughly cleanse such place.

5. Every person who shall lay or cause to be laid in any street any litter or other matter in case of sickness to prevent noise shall lay the same so that it may be evenly distributed over the surface of the part of the street intended to be covered, and shall, when the occasion ceases, remove or cause to be removed from such street the litter or other matter so laid in such street.

For Preventing Nuisances arising from any Offensive Matter running out of any Mannfactory, Brewery, Slaughter House, Knacker's Yard, Butcher's or Fishmonger's Shop, or Dunghill, into any Uncovered Place, whether or not surrounded by a Wall or Fence.

6. The occupier of a manufactory, brewery, slaughter house, knacker's yard, butcher's or fishmonger's shop, or of any premises comprising a dunghill, shall not cause or suffer any offensive matter to run out of such manufactory, brewery, slaughter house, knacker's yard, butcher's or fishmonger's shop, or dunghill, into any uncovered place, whether or not surrounded by a wall or fence so as to be likely to become a nuisance.

For the Prevention of the keeping of Animals on any Premises so as to be a Nuisance or Injurious or Dangerous to Health.

7. The occupier of any premises shall not keep any animal on such premises in such a place or in such a manner as to pollute, or to be likely to pollute any water supplied for use or used, or likely to be used by man for drinking or domestic purposes, or for manufacturing drink for the use of man, or any water used or likely to be used in any dairy.

8. Every occupier of a building or premises wherein or whereon any horse or any other beast of draught or burden, or any cattle or swine may be kept, shall provide, in connection with such building or premises, a suitable receptacle for dung, manure, soil, filth, or other offensive or noxious matter which may, from time to time, be produced in the keeping of such an animal in such building or upon such premises.

He shall cause such receptacle to be constructed so that the bottom or floor thereof shall not, in any case, be lower than the surface of the ground adjoining such receptacle.

He shall also cause such receptable to be constructed in such a manner and of such materials, and to be maintained at all times in such a condition as to prevent any escape of the contents thereof, or any soakage therefrom into the ground or into the wall of any building.

He shall cause such receptacle to be furnished with a suitable cover, and when not required to be open, to be kept properly covered.

He shall likewise provide, in connection with such building or premises, a sufficient drain, constructed in such a manner, and of such materials, and maintained at all times in such a condition, as effectually to convey all urine or liquid filth, or refuse therefrom, into a sewer, or other proper receptacle.

He shall, once at least in every week, remove or cause to be removed from the receptacle provided in accordance with the requirements of this by-law all dung, manure, soil, filth; or other offensive or noxious matter, produced in or upon such building or premises, and deposited in such receptacle.

As to the Paving of Yards and Open Spaces in connection with Dwelling Houses.

9. The owner of every dwelling house in connection with which there is any yard or open space, shall, where it is necessary for the prevention or remedy of insanitary conditions that all or part of such yard or open

space shall be paved, forthwith cause the same to be properly paved with a hard, durable, and impervious pavement, evenly and closely laid upon a sufficient bed of good concrete, and so sloped to a properly constructed channel as effectually to carry off all rain or waste water therefrom.

With respect to the keeping of Water Closets supplied with sufficient Water for their effective Action.

10. The occupier of any premises in or for which any water closet shall be provided, shall cause such water closet to be at all times properly supplied with a sufficient quantity of water for securing its effective action.

Where, however, any water closet is provided for the use of persons occupying two or more separately occupied premises, and there is a person having the care and control of such water closet, the foregoing requirements shall apply to such person.

Penalties.

11. Every person who shall offend against any of the foregoing by-laws shall be liable for every such offence to a penalty of five pounds, and in the case of a continuing offence to a further penalty of forty shillings for each day after written notice of the offence from the Sanitary Authority.

Provided, nevertheless, that the justices or court before whom any complaint may be made or any proceedings may be taken in respect of any such offence may, if they think fit, adjudge the payment as a penalty of any sum less than the full amount of the penalty imposed by this by-law.

For securing the Cleanliness and Freedom from Pollution of Tanks, Cisterns, and other Receptacles used for storing of Water used or likely to be used by Man for Drinking, or Domestic Purposes, or for Manufacturing Drink for the Use of Man.

1. The occupier of any premises on which a tank, cistern, or other receptacle is used for storing of water used or likely to be used by man for drinking or domestic purposes, or for manufacturing drink for the use of man, shall empty and cleanse the same, or cause the same to be emptied and cleansed, once at least in every six months, and at such other times as may be necessary to keep the same in a cleanly state and free from pollution.

He shall cause every such tank, cistern, or other receptacle which is erected outside a building, or which, being erected inside a building, is not placed in a suitable chamber, or otherwise constructed or placed so as to prevent the pollution of the water therein, to be provided with a proper cover, and to be kept at all times properly covered.

Provided that in every case where two or more tenants of any premises are entitled to the use in common of any tank, cistern, or other receptacle used for storing of water used or likely to be used by man for drinking or domestic purposes, or for manufacturing drink for the use of man, the foregoing requirements shall apply to the owner of such premises instead of to any occupier thereof.

Penalties.

2. Every person who shall offend against the foregoing by-law, shall be liable for every such offence to a penalty of five pounds, and in the case of a continuing offence to a further penalty of forty shillings for each day after written notice of the offence from the Sanitary Authority.

BY-LAWS MADE BY THE LONDON COUNTY COUNCIL UNDER THE PUBLIC HEALTH (LONDON) ACT, 1891.

By-Laws under Section 16 (2).

For prescribing the times for the removal or carriage by road or water of any fæcal, or offensive or noxious matter or liquid in or through London, and providing that the carriage or vessel used therefor shall be properly constructed and covered so as to prevent the escape of any such matter or liquid, and so as to prevent any nuisance arising therefrom.

1. Every person who shall remove or carry by road or water in or through London any fæcal or offensive or noxious matter or liquid, whether such matter or liquid shall be in course of removal or carriage from within or without or through London, shall not remove or carry such matter or liquid in or through London, except between the hours of 4 o'clock and 10 o'clock in the forenoon during the months of March, April, May, June, July, August, September, and October, and except between the hours of 6 o'clock in the forenoon and 12 o'clock at noon during the months of November, December, January, and February.

Such person shall use a suitable carriage or vessel properly constructed and furnished with a sufficient covering so as to prevent the escape of any such matter or liquid therefrom, and so as to prevent any nuisance arising therefrom.

Provided that this by-law shall not apply to the carriage of horse dung manure.

As to the Closing and Filling up of Cesspools and Privies.

2. Any person who shall by any works or by any structural alteration of any premises render the further use of a cesspool or privy unnecessary, and the owner of any premises on which shall be situated a disused cesspool or privy, or a cesspool or privy which has become unnecessary, shall completely empty such cesspool or privy of all fæcal or offensive matter which it may contain, and shall completely remove so much of the floor, walls, and roof of such privy or cesspool as can safely be removed, and all pipes and drains leading thereto or therefrom, or connected therewith, and any earth or other material contaminated by such fæcal or offensive matter. He shall completely close and fill up the cesspool with good concrete or with suitable dry clean earth, dry clean brick rubbish, or other dry clean material, and where the walls of such cesspool shall not be completely removed, he shall cover the surface of the space so filled up with earth, rubbish, or material, with a layer of good concrete six inches thick.

3. Every person who shall propose to close or fill up any cesspool or privy shall, before commencing any works for such purpose, give to the Sanitary Authority for the district not less than forty-eight hours' notice in writing, exclusive of Sunday, Good Friday, Christmas Day, or any bank holiday, specifying the hour at which he will commence the closing or filling up of such cesspool or privy, and during the progress of any such work shall afford any officer of the Sanitary Authority free access to the premises for the purpose of inspecting the same.

As to the Removal and Disposal of Refuse, and as to the Duties of the Occupier of any Premises in connection with House Refuse so as to facilitate the removal of it by the Scavengers of the Sanitary Authority.

4. The occupier of any premises who shall remove or cause to be removed any refuse produced upon his premises shall not, in the process of removal, deposit such refuse, or cause or allow such refuse to be deposited upon any footway, pavement, or carriageway.

Provided that this by-law shall not be deemed to prohibit the occupier of any premises from depositing upon the kerbstone or upon the outer edge of the footpath immediately in front of his house, between such hours of the day as the Sanitary Authority shall fix and notify by public announcement in their district, a proper receptacle containing house refuse, other than night soil or filth, to be removed by the Sanitary Authority in accordance with any by-law in that behalf.

5. Every person who shall convey any house, trade or street refuse across or along any footway, pavement, or carriageway shall use a suitable receptacle, cart, carriage, or other means of conveyance properly constructed so as to prevent the escape of the contents thereof, and in the case of offensive refuse so covered as to prevent any nuisance therefrom, and shall adopt such other precautions as may be necessary to prevent any such refuse being slopped or spilled, or from falling in the process of removal upon such footway, pavement or carriageway.

If in the process of such removal any such refuse be slopped or spilled or fall upon such footway, pavement, or carriageway, such person shall forthwith remove such refuse from the place whereon the same may have slopped or spilled, or may have fallen, and shall immediately thereafter thoroughly sweep or otherwise thoroughly cleanse such place.

6. Where a Sanitary Authority arrange for the daily removal of house refuse in their district or any part thereof, the occupier of any premises in such district or part thereof on which any house refuse may from time to time accumulate shall, at such hour of the day as the Sanitary Authority shall fix and notify by public announcement in their district, deposit on the kerbstone or on the outer edge of the footpath immediately in front of the house or in a conveniently accessible position on the premises, as the Sanitary Authority may prescribe by written notice served upon the occupier, a movable receptacle, in which shall be placed, for the purposes of removal by or on behalf of the Sanitary Authority, the house refuse which has accumulated on such premises since the preceding collection by such authority.

The Sanitary Authority shall collect such refuse, or cause the same to be collected, between such hours of the day as they have fixed and notified by public announcement in their district.

7. The Sanitary Authority shall cause to be removed not less frequently than once in every week the house refuse produced on all premises within their district.

8. Where, for the purposes of subsequent removal, any cargo, load, or collection of offensive refuse has been temporarily brought to or deposited in any place within a sanitary district, the owner (whether a Sanitary Authority or any other person) or consignee of such cargo,

load, or collection of refuse, or any person who may have undertaken to deliver the same, or who is in charge of the same, shall not without a reasonable excuse permit or allow or cause such refuse to remain in such place for a longer period than twenty-four hours.

Provided (*a*) that this by-law shall not apply in cases where the place of temporary deposit is distant at least one hundred yards from any street, and is distant at least three hundred yards from any building or premises used wholly or partly for human habitation, or as a school, or as a place of public worship or of public resort or public assembly, or from any building or premises in or on which any person may be employed in any manufacture, trade, or business, or from any public park or other open space dedicated or used for the purposes of recreation, or from any reservoir or stream used for the purposes of domestic water supply; (*b*) that this by-law shall not prohibit the deposit within the prescribed distances, of road slop unmixed with stable manure for any period not exceeding one week, which may be necessary for the separation of water therefrom.

9. Where a Sanitary Authority or some person on their behalf shall remove any offensive refuse from any street or premises within their district, such Sanitary Authority or such person shall properly destroy by fire, or otherwise dispose of such refuse in such manner as to prevent a nuisance.

Provided always that this by-law shall not be deemed to require or permit any Sanitary Authority or person to dispose of or destroy by fire any night soil, swine's dung or cow dung.

10. A Sanitary Authority or any person on their behalf who shall remove any offensive refuse from any street or premises within their district shall not deposit such refuse, otherwise than in the course of removal, at a less distance than three hundred yards from any two or more buildings used wholly or partly for human habitation or from any building used as a school, or as a place of public resort or public assembly, or in which any person may be employed in any manufacture, trade, or business, or from any public park or other open space dedicated or used for the purpose of recreation, or from any reservoir or stream used for the purposes of domestic water supply.

Provided always that this by-law shall not be deemed to prohibit such deposit of such refuse for a period of twenty-four hours, when such refuse is deposited for the purpose of being destroyed by fire, in accordance with any by-law in that behalf.

11. For the purposes of the foregoing by-laws the expression "offensive refuse" means any refuse, whether "house refuse," "trade refuse," or "street refuse," in such a condition as to be or to be liable to become offensive.

Penalties.

12. Every person who shall offend against any of the foregoing by-laws shall be liable for every such offence to a penalty of five pounds, and in the case of a continuing offence to a further penalty of forty shillings for each day after written notice of the offence from the Sanitary Authority. Provided nevertheless that the Court before whom any complaint may be made, or any proceedings may be taken in respect of such offence, may, if the Court think fit, adjudge the payment as a penalty of any sum less than the full amount of the penalty imposed by this by-law.

The seal of the London County Council was hereunto affixed on the 22nd day of June, 1893.

H. De la Hooke,
Clerk of the Council.

Allowed by the Local Government Board this twenty-eighth day of June, 1893.

Henry H. Fowler,
President.

Hugh Owen,
Secretary.

By-Laws Under Section 39 (1).

With respect to Water Closets, Earth Closets, Privies, Ashpits, Cesspools, and Receptacles for Dung, and the proper accessories thereof in connection with Buildings, whether constructed before or after the passing of this Act.

1. Every person who shall hereafter construct a water closet or earth closet in connection with a building, shall construct such water closet or earth closet in such a position that, in the case of a water closet, one of its sides at the least shall be an external wall, and in the case of an earth closet two of its sides at the least shall be external walls, which external wall or walls shall abut immediately upon the street, or upon a yard or garden or open space of not less than one hundred square feet of superficial area, measured horizontally at a point below the level of the floor of such closet. He shall not construct any such water closet so that it is approached directly from any room used for the purpose of human habitation, or used for the manufacture, preparation or storage

of food for man, or used as a factory, workshop, or workplace, nor shall he construct any earth closet so that it can be entered otherwise than from the external air.

He shall construct such water closet so that on any side on which it would abut on a room intended for human habitation, or used for the manufacture, preparation, or storage of food for man, or used as a factory, workshop, or workplace, it shall be enclosed by a solid wall or partition of brick or other materials, extending the entire height from the floor to the ceiling.

He shall provide any such water closet that is approached from the external air with a floor of hard smooth impervious material, having a fall to the door of such water closet of half an inch to the foot.

He shall provide such water closet with proper doors and fastenings.

Provided always that this by-law shall not apply to any water closet constructed below the surface of the ground and approached directly from an area or other open space available for purposes of ventilation, measuring at least forty superficial feet in extent, and having a distance across of not less than five feet, and not covered in otherwise than by a grating or railing.

2. Every person who shall construct a water closet in connection with a building, whether the situation of such water closet be or be not within or partly within such building, and every person who shall construct an earth closet in connection with a building, shall construct in one of the walls of such water closet or earth closet which shall abut upon the public way, yard, garden, or open space, as provided by the preceding by-law, a window of such dimensions that an area of not less than two square feet, which may be the whole or part of such window, shall open directly into the external air.

He shall, in addition to such window, cause such water closet or earth closet to be provided with adequate means of constant ventilation by at least one air-brick built in an external wall of such water closet or earth closet, or by an air shaft, or by some other effectual method or appliance.

3. Every person who shall construct a water closet in connection with a building, shall furnish such water closet with a cistern of adequate capacity for the purpose of flushing, which shall be separate and distinct from any cistern used for drinking purposes and shall be so constructed, fitted, and placed as to admit of the supply of water for use in such water closet so that there shall not be any direct connection between any service pipe upon the premises and any part of the apparatus of such water closet other than such flushing cistern.

Provided always that the foregoing requirements shall be deemed to

be complied with in any case where the apparatus of a water closet is connected for the purpose of flushing with a cistern of adequate capacity, which is used solely for flushing water closets or urinals.

He shall construct or fix the pipe and union connecting such flushing cistern with the pan, basin, or other receptacle with which such water closet may be provided, so that such pipe and union shall not in any part have an internal diameter of less than one inch and a quarter.

He shall furnish such water closet with a suitable apparatus for the effectual application of water to any pan, basin, or other receptacle with which such apparatus may be connected and used, and for the effectual flushing and cleansing of such pan, basin, or other receptacle, and for the prompt and effectual removal therefrom and from the trap connected therewith of any solid or liquid filth which may from time to time be deposited therein.

He shall furnish such water closet with a pan, basin, or other suitable receptacle of non-absorbent material, and of such shape, of such capacity and of such mode of construction as to receive and contain a sufficient quantity of water, and to allow all filth which may from time to time be deposited in such pan, basin, or receptacle, to fall free of the sides thereof and directly into the water received and contained in such pan, basin, or receptacle.

He shall not construct or fix under such pan, basin, or receptacle, any "container" or other similar fitting.

He shall construct or fix immediately beneath or in connection with such pan, basin, or other suitable receptacle, an efficient syphon trap, so constructed that it shall at all times maintain a sufficient water seal between such pan, basin, or other suitable receptacle, and any drain or soil pipe in connection therewith. He shall not construct or fix in or in connection with the water closet apparatus any D-trap or other similar trap.

[NOTE.]—The last paragraph of by-law 3 and the whole of by-law 4 have been repealed by a by-law made by the Council on July 26, 1899, and allowed by the Local Government Board on June 14, 1901, and which is set out in the Drainage by-laws.

5. A person who shall newly fit or fix any apparatus in connection with any existing water closet, shall as regards such apparatus and its connection with any soil pipe or drain, comply with such of the requirements of the foregoing by-laws as would be applicable to the apparatus so fitted or fixed if the water closet were being newly constructed.

6. Every person who shall construct an earth closet in connection

with a building shall furnish such earth closet with a reservoir or receptacle, of suitable construction and of adequate capacity, for dry earth, and he shall construct and fix such reservoir or receptacle in such a manner and in such a position as to admit of ready access to such reservoir or receptacle for the purpose of depositing therein the necessary supply of dry earth.

He shall construct or fix in connection with such reservoir or receptacle suitable means or apparatus for the frequent and effectual application of a sufficient quantity of dry earth to any filth which may from time to time be deposited in any receptacle for filth constructed, fitted, or used, in or in connection with such earth closet.

He shall construct such earth closet so that the contents of such reservoir or receptacle may not at any time be exposed to any rainfall or to the drainage of any waste water or liquid refuse from any premises.

7. Every person who shall construct an earth closet in connection with a building shall construct such earth closet for use in combination with a movable receptacle for filth.

He shall construct such earth closet so as to admit of a movable receptacle for filth, of a capacity not exceeding two cubic feet, being placed and fitted beneath the seat in such a manner and in such a position as may effectually prevent the deposit upon the floor or sides of the space beneath such seat, or elsewhere than in such receptacle, of any filth which may from time to time fall or be cast through the aperture in such seat.

He shall construct such receptacle for filth in such a manner and in such a position as to admit of the frequent and effectual application of a sufficient quantity of dry earth to any filth which may be from time to time deposited in such receptacle for filth, and in such a manner and in such a position as to admit of ready access for the purpose of removing the contents thereof.

He shall also construct such earth closet so that the contents of such receptacle for filth may not at any time be exposed to any rainfall or to the drainage of any waste water or liquid refuse from any premises.

8. Every person who shall construct a privy in connection with a building shall construct such privy at a distance of twenty feet at the least from a dwelling house, or public building, or any building in which any person may be or may be intended to be employed in any manufacture, trade or business.

9. A person who shall construct a privy in connection with a building shall not construct such privy within the distance of one hundred feet from any well, spring, or stream of water used, or likely to be used, by

man for drinking or domestic purposes, or for manufacturing drinks for the use of man, or otherwise in such a position as to render any such water liable to pollution.

10. Each person who shall construct a privy in connection with a building shall construct such privy in such a manner and in such a position as to afford ready means of access to such privy, for the purpose of cleansing such privy and of removing filth therefrom, and in such a manner and in such a position as to admit of all filth being removed from such privy, and from the premises to which such privy may belong, without being carried through any dwelling house, or public building, or any building in which any person may be or may be intended to be employed in any manufacture, trade or business.

11. Every person who shall construct a privy in connection with a building, shall provide such privy with a sufficient opening for ventilation as near to the top as practicable and communicating directly with the external air.

He shall cause the floor of such privy to be flagged or paved with hard tiles or other non-absorbent material, and he shall construct such floor so that it shall be in every part thereof at a height of not less than six inches above the level of the surface of the ground adjoining such privy, and so that such floor shall have a fall or inclination towards the door of such privy of half an inch to the foot.

12. Every person who shall construct a privy in connection with a building shall construct such privy for use in combination with a movable receptable for filth, and shall construct over the whole area of the space immediately beneath the seat of such privy a floor of flagging or asphalte or some suitable composite material, at a height of not less than three inches above the level of the surface of the ground adjoining such privy; and he shall cause the whole extent of each side of such space between the floor and the seat, other than any part that may be occupied by any door or other opening therein, to be constructed of flagging, slate, or good brickwork at least nine inches thick, and rendered in good cement or asphalted.

He shall construct the seat of such privy, the aperture in such seat, and the space beneath such seat, of such dimensions as to admit of a movable receptacle for filth of a capacity not exceeding two cubic feet being placed and fitted beneath such seat in such a manner and in such a position as may effectually prevent a deposit, upon the floor or sides of the space beneath such seat or elsewhere than in such receptacle, of any filth which may from time to time fall or be cast through the aperture in such seat.

He shall construct such privy so that for the purpose of cleansing the

space beneath the seat, or of removing therefrom or placing or fitting therein an appropriate receptacle for filth, there shall be a door or other opening in the back or one of the sides thereof capable of being opened from the outside of the privy, or in any case where such a mode of construction may be impracticable, so that for the purposes aforesaid the whole of the seat of the privy or a sufficient part thereof may be readily moved or adjusted.

13. A person who shall construct a privy in connection with a building shall not cause or suffer any part of the space under the seat of such privy, or any part of any receptacle for filth in or in connection with such privy, to communicate with any drain.

14. Every person who shall intend to construct any water closet, earth closet, or privy, or to fit or fix in or in connection with any water closet, earth closet, or privy, any apparatus or any trap, or soil pipe, shall, before executing any such works, give notice in writing to the clerk of the Sanitary Authority.

15. Every owner of an earth closet or privy existing at the date of the confirmation of these by-laws shall, before the expiration of six months from and after such date of confirmation, cause the same to be reconstructed in such manner that its position, structure and apparatus shall comply with such of the requirements of the foregoing by-laws as are applicable to earth closets or privies newly constructed.

16. When any person shall provide an ashpit in connection with a building, he shall cause the same to consist of one or more movable receptacles sufficient to contain the house refuse which may accumulate during any period not exceeding one week. Each of such receptacles shall be constructed of metal and shall be provided with one or more suitable handles and cover. The capacity of each of such receptacles shall not exceed two cubic feet.

Provided that the requirement as to the size of each of such receptacles shall not apply to any person who shall construct such receptacle or receptacles in connection with any premises to which there is attached as part of the conditions of tenancy the right to dispose of house refuse in an ashpit used in common by the occupiers of several tenancies, but in no case shall such ashpit be of greater capacity than is required to enable it to contain the refuse which may accumulate during any period not exceeding one week.

17. The occupier of any premises who shall use any ashpit shall, it such ashpit consists of a movable receptacle, cause such receptacle to be kept in a covered place, or to be properly covered, so that it shall not be exposed to rainfall, and if such ashpit consists of a fixed receptacle, he shall cause the same to be kept properly covered.

18. Where the Sanitary Authority have arranged for the daily removal of house refuse in their district, or in any part thereof, the owner of any premises in such district or part thereof shall provide an ashpit which shall consist of one or more movable receptacles, sufficient to contain the house refuse which may accumulate during any period not exceeding three days, which the Sanitary Authority may determine, and of which the Sanitary Authority shall give notice by public announcement in their district. Each of such receptacles shall be constructed of metal, and provided with one or more suitable handles and cover. The capacity of each of such receptacles shall not exceed two cubic feet.

Provided always that this by-law shall not apply to the owner of any premises until the expiration of three months after the Sanitary Authority have publicly notified their intention to adopt a system of daily collection of house refuse in that part of their district which comprises such premises.

19. Where any receptacle shall have been provided as an ashpit for any premises in pursuance of any by-law in that behalf, no person shall deposit the house refuse which may accumulate on such premises in any ashpit that does not comply with the requirements of these by-laws.

20. Every person who shall construct a cesspool in connection with a building, shall construct such cesspool at a distance of one hundred feet at the least from a dwelling house, or public building, or any building in which any person may be, or may be intended to be, employed in any manufacture, trade, or business.

21. A person who shall construct a cesspool in connection with a building, shall not construct such cesspool within the distance of one hundred feet from any well, spring, or stream of water.

22. Every person who shall construct a cesspool in connection with a building, shall construct such cesspool in such a manner and in such a position as to afford ready means of access to such cesspool, for the purpose of cleansing such cesspool, and of removing the contents thereof, and in such a manner and in such a position as to admit of the contents of such cesspool being removed therefrom, and from the premises to which such cesspool may belong without being carried through any dwelling house, or public building, or any building in which any person may be, or may be intended to be, employed in any manufacture, trade, or business.

He shall not in any case construct such cesspool so that it shall have, by drain or otherwise, any means of communication with any sewer or any overflow outlet.

23. Every person who shall construct a cesspool in connection with a building, shall construct such cesspool of good brickwork bedded and

grouted in cement, properly rendered inside with cement, and with a backing of at least nine inches of well puddled clay around and beneath such brickwork, and so that such cesspool shall be perfectly watertight.

He shall also cause such cesspool to be arched or otherwise properly covered over, and to be provided with adequate means of ventilation.

24. A person shall not use as a receptacle for dung any receptacle so constructed or placed that one of its sides shall be formed by the wall of any room used for human habitation, or under a dwelling house, factory, workshop on workplace, and he shall not use any receptacle in such a situation that it would be likely to cause a nuisance or become injurious or dangerous to health.

25. Every owner of any existing receptacle for dung shall, before the expiration of six months from the date of the confirmation of these by-laws, and every person who shall construct a receptacle for dung, shall cause such receptacle to be so constructed that its capacity shall not be greater than two cubic yards, and so that the bottom or floor thereof shall not, in any case, be lower than the surface of the ground adjoining such receptacle.

He shall so construct such receptacle that a sufficient part of one of its sides shall be readily removable for the purpose of facilitating cleansing.

He shall also cause such receptacle to be constructed in such a manner and of such materials, and to be maintained at all times in such a condition as to prevent any escape of the contents thereof, or any soakage therefrom into the ground or into the wall of any building.

He shall cause such receptacle to be so constructed that no rain or water can enter therein, and so that it shall be freely ventilated into the external air.

Provided that a person who shall construct a receptacle for dung, the whole of the contents of which are removed not less frequently than every forty-eight hours shall not be required to construct such receptacle so that its capacity shall not be greater than two cubic yards.

And provided that a person who shall construct a receptacle for dung, which shall contain only dung of horses, asses or mules with stable litter, and the whole of the contents of which are removed not less frequently than every forty-eight hours, may, instead of all other requirements of this by-law, construct a metal cage, and shall beneath such metal cage adequately pave the ground at a level not lower than the surrounding ground, and in such a manner and to such an extent as will prevent any soakage into the ground; and if such cage be placed near to or against any building he shall adequately cement the wall of such

building in such a manner and to such an extent as will prevent any soakage from the dung within or upon such receptacle into the wall of such building.

26. The occupier of any premises shall cause every water closet belonging to such premises to be thoroughly cleansed from time to time as often as may be necessary for the purpose of keeping such water closet in a cleanly condition.

The occupier of any premises shall once at least in every week cause every earth closet, privy, and receptacle for dung belonging to such premises to be emptied and thoroughly cleansed.

The occupier of any premises shall once at least in every three months cause every cesspool belonging to such premises to be emptied and thoroughly cleansed.

Provided that were two or more lodgers in a lodging house are entitled to the use in common of any water closet, earth closet, privy, cesspool, or receptacle for dung the landlord shall cause such water closet, earth closet, privy, cesspool, or receptacle for dung to be cleansed and emptied as aforesaid.

The landlord, or owner of any lodging house, shall provide and maintain in connection with such house, water closet, earth closet, or privy accommodation in the proportion of not less than one water closet, earth closet, or privy for every twelve persons.

For the purpose of this by-law a "lodging house" means a house or part of a house which is let in lodgings or occupied by members of more than one family. "Landlord" in relation to a house or part of a house which is let in lodgings, or occupied by members of more than one family, means the person (whatever may be the nature or extent of his interest) by whom or on whose behalf such house or part of a house is let in lodgings or for occupation by members of more than one family, or who for the time being receives or is entitled to receive the profits arising from such letting. "Lodger" in relation to a house or part of a house which is let in lodgings or occupied by members of more than one family, means a person to whom any room or rooms in such house or part of a house may have been let as a lodging or for his use or occupation.

Nothing in this by-law shall extend to any common lodging house.

27. The owner of any premises shall maintain in proper condition of repair every water closet, earth closet, privy, ashpit, cesspool, and receptacle for dung, and the proper accessories thereof belonging to such premises.

Penalties.

28. Every person who shall offend against any of the foregoing by-laws shall be liable for every such offence to a penalty of five pounds, and in the case of a continuing offence to a further penalty of forty shillings for each day after written notice of the offence from the Sanitary Authority. Provided, nevertheless, that the Court before whom any complaint may be made or any proceedings may be taken in respect of any such offence may, if the Court think fit, adjudge the payment as a penalty of any sum less than the full amount of the penalty imposed by this by-law.

The seal of the London County Council was hereunto affixed on the 22nd day of June, 1893.

H. De la Hooke,
Clerk of the Council.

Allowed by the Local Government Board this twenty-eighth day of June, 1893.

Henry H. Fowler,
President.

Hugh Owen, *Secretary.*

DRAINAGE BY-LAWS.

The Metropolis Management Act, 1855, Section 202.

By-laws made by the Council for Regulating the Dimensions, Form and Mode of Construction, and the Keeping, Cleansing and Repairing of the Pipes, Drains and other means of communicating with Sewers and the Traps and Apparatus connected therewith.

1. A person who shall erect a new building and shall cause the subsoil of the site of such building to be drained by means of a drain communicating with any sewer, shall not construct such subsoil drain in such a manner or in such a position as to communicate directly with such sewer, but shall provide a suitable and efficient trap between such subsoil drain and such sewer.

He shall provide a ventilating opening to such trap at a point in the line of such subsoil drain as near as may be practicable to such trap, and communicating directly with the open air.

He shall cause such ventilating opening to be furnished with a suitable grating or other suitable cover for the purpose of preventing any obstruction in or injury to any pipe or drain by the introduction of any substance through such opening. He shall cause such grating or cover to be so constructed and fitted as to secure the free passage of air through such grating or cover by means of a sufficient number of apertures, of which the aggregate extent shall be not less than the sectional area of the pipe or drain to which such grating or cover may be fitted.

He shall cause such subsoil drain between such trap and such sewer to be constructed in manner prescribed by the by-laws in that behalf for a drain used for conveying sewage.

He shall cause such subsoil drain above such trap to be formed of suitable earthenware field pipes properly laid to a suitable fall and to discharge into such trap.

2. A person who shall erect a new building and shall cause any area, forecourt, or paved or unpaved surface within the curtilage of the building to be drained by means of a drain or drains communicating with any sewer shall cause every inlet to such drain or drains to be constructed as a properly trapped gully, and shall cause such drain or drains to be otherwise constructed in manner prescribed by the by-laws in that behalf for a drain used for conveying sewage.

3. Every person who shall erect a new building, and shall provide, in connection with such building, a pipe or channel for the purpose of conveying to any sewer any water that may fall on the roof, shall cause such pipe or channel to discharge in the open air over a properly trapped gully or into such gully above the level of the water in the trap thereof.

He shall not cause any such pipe or channel to be so constructed as to receive into such pipe or channel any solid or liquid matter from any water closet, urinal, slop or other sink, or lavatory.

4. Except in the case of a drain constructed for the drainage of the subsoil of the site of a building, every person who shall erect a new building shall, in the construction of every drain of such building communicating with a sewer, use good sound pipes formed of glazed stoneware, or of cast iron, or of other equally suitable material.

He shall not construct any such drain so as to pass under any building, except in any case where any other mode of construction may be impracticable.

He shall cause every such drain to be of adequate size, and, if constructed or adapted to be used for conveying sewage, to have an internal diameter of not less than four inches.

He shall also cause every such drain, whether or not constructed or adapted to be used for conveying sewage, to be laid on a bed of good concrete not less than six inches thick, and projecting on each side of the drain to an extent at least equal to the external diameter of the drain. He shall also cause such drain to be laid with a suitable fall.

If he shall construct such drain of cast iron jointed with socket joints, he shall cause such joints to be not less than 2½ inches in depth, and to be made with molten lead properly caulked, and he shall also cause the annular space for the lead, in the case of three-inch and four-inch pipes, to be not less than ¼ inch in width, and in the case of five-inch and six-inch pipes, to be not less than ⅜ inch in width. If such drain be jointed with flange joints he shall cause such joints to be securely bolted together with some suitable insertion.

If he shall construct such drain of stoneware, or material other than metal, he shall cause such drain to be jointed with socket joints properly put together with cement or other equally suitable material.

He shall cause every such drain (other than a drain constructed for the drainage of the subsoil of the site of a building) to be so constructed as to be water-tight and to be capable of resisting a pressure of at least two feet head of water.

He shall cause good concrete to be filled in so that it shall extend to the full width of the concrete bed already prescribed in this by-law, and so that such drain shall be embedded to the extent of not less than half its diameter.

If he shall construct any such drain of cast iron, the thickness and weight of the pipes in proportion to the diameter thereof shall be as follows :—

Internal Diameter.	Thickness of Metal not less than	Weight per 9 feet length (including socket and beaded spigot and flanges—the socket not less than ⅜ in. thick) not less than
3 in.	5/16 in.	110 lb.
4 ,,	⅜ ,,	160 ,,
5 ,,	⅜ ,,	190 ,,
6 ,,	⅜ ,,	230 ,,

If he shall construct any such drain of stoneware or material other than metal, the thickness of the pipes, and depths of the sockets, and the annular space for the cement in proportion to the diameter shall be as follows:—

Internal Diameter.	Thickness of Pipe, not less than	Depth of Socket, not less than	Annular Space for the Cement, not less than
3 in.	$\frac{1}{2}$ in.	$1\frac{1}{2}$ in.	$\frac{5}{16}$ in.
4 ,,	$\frac{5}{8}$,,	$1\frac{3}{4}$,,	$\frac{5}{16}$,,
5 ,,	$\frac{5}{8}$,,	2 ,,	$\frac{5}{16}$,,
6 ,,	$\frac{5}{8}$,,	2 ,,	$\frac{5}{16}$,,
9 ,,	$\frac{3}{4}$,,	2 ,,	$\frac{7}{8}$,,

Where any such drain (other than a drain constructed for the drainage of the subsoil of the site of a building) passes under a building, he shall cause such part thereof as passes under the building to be laid where practicable in a direct line for the whole distance beneath such building, and to be completely embedded in and covered with good and solid concrete at least six inches thick all round.

Provided that in any case where such drain shall be constructed of iron, he shall not be required to cover such drain with concrete, but unless it be carried above ground and also be carried at least at each joint on adequate piers or other sufficient supports, constructed of iron, stone, brick, or cement concrete, it shall be laid on a bed of good concrete in accordance with the requirements of this by-law relating to drains which do not pass under a building.

He shall, whenever practicable, cause adequate means of access to such drain to be provided at each end of such portion thereof as is beneath such building.

He shall cause all concrete used in connection with any such drain, whether under a building or not, to be composed of clean gravel, hard brick broken small, or other suitable ballast, well mixed with clean sand and good Portland cement in the proportion of two parts of sand, one part of cement, and six parts of other material.

He shall cause every inlet to every such drain, not being an inlet provided in pursuance of the by-law in that behalf as an opening for the ventilation of such drain, to be properly trapped by an efficient trap so

constructed as to be capable of maintaining a sufficient water seal. He shall not construct or fix in or in connection with any such drain, any trap of the kind known as a bell-trap, a dip-trap or a D-trap.

He shall, in every case where any such drain is laid beneath a wall, cause such drain to be protected at the part beneath the wall by means of an arch, flagstone, or iron support, which shall not bear on the drain and shall be of sufficient size and strength to prevent any disturbance of or other injury to such drain.

5. Every person who shall erect a new building shall provide in every main drain or other drain of such building which may immediately communicate with any sewer, a suitable and efficient intercepting trap at a point as distant as may be practicable from such building, and as near as may be practicable to the point at which such drain may be connected with the sewer.

He shall, except in cases where the means of access to be provided in compliance with the preceding by-law shall give adequate means of access to such trap, provide a separate manhole or other separate means of access to such trap for the purpose of cleansing it.

6. A person erecting a new building shall cause every means of access provided in compliance with any of the foregoing provisions of these by-laws to be constructed so as to be water-tight up to the level of the adjoining ground surface or roadway and to be fitted with a suitable manhole cover, and, if placed within a building, to be fitted with an air-tight cover.

7. A person who shall erect a new building shall not construct the several drains of such building communicating with a sewer in such a manner as to form in such drains any right-angled junction, either vertical or horizontal. He shall cause every such branch drain or tributary drain to join another drain obliquely in the direction of the flow of such drain and as near as practicable to the invert thereof.

8. Every person who shall erect a new building shall, for the purpose of securing efficient ventilation of the drains of such building communicating with a sewer, comply with the following requirements :—

(i.) He shall provide at least two untrapped openings to the drains, and in the provision of such openings he shall adopt such of the arrangements hereinafter specified as the circumstances of the case may render the more suitable and effectual.

(*a*) One opening being above and near the level of the surface of the ground adjoining such opening shall communicate with the drains by means of a suitable pipe, shaft or chamber, and shall be situated as near as may be practicable to the trap which,

in pursuance of the by-law in that behalf, shall be provided between the main drain or other drain of the building and the sewer. The point at which such opening communicates with the drain shall also in every case be situated on that side of the trap which is the nearer to the building.

The second opening shall be obtained by carrying up from a point in the drains, as far distant as may be practicable from the point at which the first-mentioned opening shall be situated, a pipe or shaft, vertically, to such a height and in such a position as to afford by means of the open end of such pipe or shaft a safe outlet for foul air.

(*b*) In every case where the foregoing arrangement of the openings to the drains may be impracticable or undesirable, there may be substituted the arrangement hereafter prescribed.

One opening shall be obtained by carrying up from a point, as near as may be practicable to the trap, which, in pursuance of the by-law in that behalf, shall be provided between the main drain or other drain of the building and the sewer, a pipe or shaft, vertically, to such a height and in such a position as to afford by means of the open end of such pipe, a safe outlet for foul air. The point at which such opening communicates with the drain shall also in every case be situated on that side of the trap which is the nearer to the building.

The second opening, being at a point in the drains as far distant as may be practicable from the point at which such last-mentioned pipe or shaft shall be carried up, shall be above and near the level of the surface of the ground adjoining such opening, and shall communicate with the drains by means of a suitable pipe or shaft.

(*c*) If in any case neither of the two preceding arrangements are desirable, then both the first and second openings may be obtained by carrying up from the points referred to in the previous sub-section suitable vertical pipes or shafts to such heights and in such positions that when either acts as an inlet the other may be a safe outlet for foul air.

(ii.) He shall cause every opening provided in accordance with any of the arrangements hereinbefore specified to be furnished with a suitable grating or other suitable cover for the purpose of preventing any obstruction in or injury to any pipe or drain by the introduction of any substance through any such opening. He shall, in every case, cause such grating or cover to be so constructed

and fitted as to secure the free passage of air through such grating or cover by means of a sufficient number of apertures, of which the aggregate extent shall be not less than the sectional area of the pipe or drain to which such grating or cover may be fitted.

(iii.) He shall not, except where unavoidable, cause any bend or angle to be made in any pipe or shaft used in connection with any of the arrangements hereinbefore specified.

(iv.) He shall cause every pipe or shaft which may be used in connection with any of the arrangements hereinbefore specified to have an internal diameter of not less than four inches.

(v.) He shall cause every pipe or shaft used in connection with any of the arrangements hereinbefore specified to be constructed in the same manner and of the same material and weight as if such pipe or shaft were a soil pipe.

(vi.) Provided always, that for the purpose of any of the arrangements hereinbefore specified the soil pipe of any water closet, or the wastepipe of any slop sink constructed or adapted to be used for receiving any solid or liquid excremental filth, in every case where the situation, sectional area, height and mode of construction of such soil pipe or such wastepipe shall be in accordance with the requirements applicable to the pipe or shaft to be carried up from the drains, shall be deemed to provide the necessary opening for ventilation which would otherwise be obtained by means of such last-mentioned pipe or shaft.

Provided also that any such soil pipe or waste pipe shall, where such soil pipe or wastepipe shall have an internal diameter of not less than three and a half inches, and shall in all other respects comply with the requirements as to the position, height and mode of construction of the pipe or shaft to be provided for the ventilation of any drain, be deemed to provide adequate ventilation for any drain having an internal diameter of not more than four inches.

9. A person who shall erect a new building shall not construct any drain of such building communicating with a sewer in such a manner that there shall be within such building any inlet to such drain except such inlet as may be necessary from the apparatus of any water closet, slop sink, or urinal.

10. A person who shall erect a new building shall cause every pipe in such building for carrying off waste water from every lavatory or sink (not being a slop sink or urinal constructed or adapted to be used for

receiving any solid or liquid excremental filth) to a sewer, to be constructed of lead, iron or stoneware, and to be trapped immediately beneath such lavatory or sink by an efficient syphon trap, which shall be constructed of lead, iron, or stoneware, with adequate means for inspection and cleansing, and which shall be ventilated into the external air whenever such ventilation may be necessary to preserve the seal of such trap.

He shall not construct or fix in or in connection with such waste pipe, lavatory, or sink, any trap of the kind known as a bell-trap, a dip-trap, or a D-trap.

He shall cause every pipe in such building for carrying off waste water to a sewer to be taken through an external wall of such building, and to discharge in the open air over a properly trapped gully or into such a gully above the level of the water in the trap thereof, or over a channel leading to such a gully.

11. Any person who shall provide a soil pipe in connection with a new building for the purpose of conveying to a sewer any solid or liquid excremental filth or shall for that purpose construct a soil pipe in connection with an existing building, shall, whenever practicable, cause such soil pipe to be situated outside such building, and shall construct such soil pipe in drawn lead or of heavy cast iron. Provided that in any case where it shall be necessary to construct such soil pipe within such building, he shall construct such soil pipe in drawn lead with proper wiped plumbers' joints, and so as to be easily accessible.

He shall construct such soil pipe, whether inside or outside the building, so that its weight, if the pipe be of lead, and its thickness and weight, if the pipe be of iron, in proportion to its length and internal diameter, shall be:—

Diameter.	Lead.	Iron.	
	Weight per 10 feet length, not less than	Thickness of Metal, not less than	Weight per 6 feet length (including socket and beaded spigot or flanges —the socket not to be less than $\frac{1}{4}$ in. thick) not less than
$3\frac{1}{2}$ in.	65 lb.	$\frac{3}{16}$ in.	48 lb.
4 ,,	74 ,,	$\frac{3}{16}$,,	54 ,,
5 ,,	92 ,,	$\frac{1}{4}$,,	69 ,,
6 ,,	110 ,,	$\frac{1}{4}$,,	84 ,,

If he shall construct such soil pipe of cast iron with socket joints, he shall cause such joints to be not less than $2\frac{1}{2}$ inches in depth and to be made with molten lead properly caulked, and he shall also cause the annular space for the lead, in the case of $3\frac{1}{2}$ inch and 4 inch pipes, to be not less than $\frac{1}{4}$ inch in width, and, in the case of 5 inch and 6 inch pipes, to be not less than $\frac{3}{8}$ inch in width. If he shall construct such soil pipe with flange joints he shall cause such joints to be securely bolted together with some suitable insertion.

He shall construct such soil pipe, whether inside or outside the building, so that it shall not be connected with any rain water pipe or with the waste of any bath, or of any sink other than that which is provided for the reception of urine or other excremental filth, and he shall construct such soil pipe so that there shall not be any trap in such soil pipe or between the soil pipe and any drain with which it is connected.

He shall cause such soil pipe, whether inside or outside the building, to be circular and to have an internal diameter of not less than $3\frac{1}{2}$ inches, and to be continued upwards without diminution of its diameter, and (except where unavoidable) without any bend or angle being formed in such soil pipe, to such a height and in such a position as to afford by means of the open end of such soil pipe a safe outlet for foul air.

12. Any person who shall connect a lead soil pipe, wastepipe, ventilating pipe, or trap with an iron pipe or drain communicating with a sewer, shall insert between such lead soil pipe, wastepipe, ventilating pipe, or trap, and such iron pipe or drain, a flanged thimble of copper, brass, or other suitable alloy, and shall connect such lead soil pipe, waste pipe, ventilating pipe, or trap with such thimble by means of a wiped or overcast metallic joint, and shall connect such thimble with such iron pipe or drain by means of a joint made with molten lead, properly caulked; provided always that it shall be sufficient if he shall connect the lead soil pipe, wastepipe, ventilating pipe, or trap with the iron pipe or drain in an equally suitable and efficient manner.

13. Any person who shall connect a stoneware or semi-vitrified ware trap or pipe with a lead soil pipe, wastepipe, or trap communicating with a sewer, shall insert between such stoneware or semi-vitrified ware trap or pipe and such lead soil pipe, wastepipe, or trap, a socket of copper, brass, or other suitable alloy, and shall insert such stoneware or semi-vitrified ware trap or pipe into such socket, making the joint with Portland cement, and shall connect such socket with the lead soil pipe, wastepipe, or trap, by means of a wiped or overcast metallic joint; provided always that it shall be sufficient if he shall connect the stone-

ware or semi-vitrified ware trap or pipe with the lead soil pipe, waste-pipe or trap, in an equally suitable and efficient manner.

14. Any person who shall connect a lead soil pipe, wastepipe, ventilating pipe, or trap, with a stoneware or semi-vitrified ware pipe or drain communicating with a sewer, shall insert between such lead soil pipe, wastepipe, ventilating pipe, or trap, and such stoneware or semi-vitrified pipe or drain, a flanged thimble of copper, brass, or other suitable alloy, and shall connect such lead soil pipe, wastepipe, ventilating pipe, or trap, with such thimble, by means of a wiped or overcast metallic joint, and shall insert the flanged end of such thimble into a socket on such stoneware or semi-vitrified ware pipe or drain, making the joint with Portland cement; provided always that it shall be sufficient if he shall connect the lead soil pipe, wastepipe, ventilating pipe or trap with the stoneware or semi-vitrified ware pipe or drain in an equally suitable and efficient manner.

15. Any person who shall connect an iron soil pipe, wastepipe, ventilating pipe, or trap with a stoneware or semi-vitrified ware pipe or drain communicating with a sewer, shall insert the beaded spigot end of such iron soil pipe, wastepipe, ventilating pipe, or trap into a socket on such stoneware or semi-vitrified ware pipe or drain, making the joint with Portland cement; provided always that it shall be sufficient if he shall connect the iron soil pipe, wastepipe, ventilating pipe or trap with the stoneware or semi-vitrified ware pipe or drain in an equally suitable and efficient manner.

16. Any person who shall connect a stoneware or semi-vitrified ware trap or pipe with an iron soil pipe, wastepipe, trap or drain communicating with a sewer, shall insert into such stoneware or semi-vitrified ware trap or pipe into a socket on such iron soil pipe, wastepipe, trap or drain, making the joint with Portland cement; provided always that it shall be sufficient if he shall connect the stoneware or semi-vitrified ware trap or pipe with the iron soil pipe, wastepipe, trap or drain in an equally suitable and efficient manner.

17. Any person who shall construct any water closet, the soil pipe of which shall communicate with any sewer and shall be in connection with any other water closet, shall cause the trap of every such water closet to be ventilated into the open air at a point as high as the top of the soil pipe, or into the soil pipe at a point above the highest water closet connected with such soil pipe, and so that the ventilating pipe shall have in all parts an internal diameter of not less than two inches and shall be connected with the arm of the soil pipe or the trap at a

point not less than three and not more than twelve inches from the highest part of the trap and on that side of the water seal which is nearest to the soil pipe. He shall cause the joint between the ventilating pipe and the arm of the soil pipe or the trap to be made in the direction of the flow.

He shall construct such ventilating pipe in drawn lead or heavy cast iron. Provided that in any case where it shall be necessary to construct such ventilating pipe within a building he shall construct such ventilating pipe in drawn lead.

He shall construct such ventilating pipe, whether inside or outside a building, so that if the pipe be of lead its weight shall not be less than 45 lbs. per 12 feet length, and if the pipe be of iron its thickness shall not be less than $\frac{3}{16}$ inch and its weight not less than 25 lbs. per 6 feet length.

He shall in all cases cause the joints in and the connections to such ventilating pipe to be made in the same manner as if such ventilating pipe were a soil pipe.

18. A person who shall erect a new building, and shall construct in connection with such building a slop sink or urinal constructed or adapted to be used for receiving any solid or liquid excremental filth for conveyance to any sewer, shall construct or fix immediately beneath such slop sink or urinal an efficient syphon trap, so constructed as to be capable of maintaining a sufficient water seal between such slop sink or urinal and any drain, soil pipe or wastepipe in connection therewith. He shall not construct or fix in or in connection with such slop sink or urinal any trap of the kind known as a bell-trap, a dip-trap or a D-trap.

He shall as regards the ventilation of the trap of such slop sink or urinal, and the construction of the wastepipe of such slop sink or urinal, comply with all the requirements of the preceding by-laws which are applicable to the ventilation of the trap of a water closet and the construction of a soil pipe, always provided that the internal diameter of the wastepipe of any such slop sink or urinal shall not be less than 3 inches, and where the internal diameter of such wastepipe is 3 inches the weight of such pipe for every 10 feet of length shall, if such wastepipe be constructed of lead, be not less than 60 lbs., and if such wastepipe be constructed of cast iron the weight of such pipe for every 6 feet of length shall be not less than 40 lbs.

19. The owner of any building shall as respects such building at all times maintain in a proper state of repair all pipes, drains and other means of communicating with sewers, and the traps and apparatus connected therewith.

20. Every person who shall offend against any of the foregoing by-laws shall be liable for every such offence to a penalty of two pounds, and in the case of a continuing offence to a further penalty of twenty shillings for each day after written notice of the offence given in accordance with Section 202 of the Metropolis Management Act, 1855.

21. These by-laws shall, so far as practicable, apply to any person who shall construct or reconstruct any pipe or drain or other means of communicating with sewers, or any trap or apparatus connected therewith, so far as he shall effect any such works in any building erected before the confirmation of these by-laws, as if the same were being constructed in a building newly erected.

22. In these by-laws the word "person" includes any body of persons whether corporate or unincorporate.

23. These by-laws shall not extend to the City of London.

The foregoing by-laws were made by the London County Council on the 30th day of October, 1900, and were submitted to and confirmed at a subsequent meeting of the Council, held on the 6th day of November, 1900, and the common seal of the Council was hereunto affixed on the 7th day of November, 1900.

G. L. GOMME.
Clerk of the Council.

Approved by the Local Government Board this 14th day of June, 1901.

S. B. PROVIS.
Secretary.
Acting on behalf of the said Board under the Authority of their General Order dated the 26th day of May, 1877.

BY-LAWS AS TO DRAIN PLANS MADE BY THE LONDON COUNTY COUNCIL.

UNDER THE METROPOLIS MANAGEMENT ACT, 1855, SECTION 202, AND THE METROPOLIS MANAGEMENT ACTS AMENDMENT (BY-LAWS) ACT, 1899.

Requiring Persons about to Construct, Reconstruct, or Alter the Pipes, Drains or other means of communicating with Sewers, or the Traps and Apparatus connected therewith, to deposit with the Sanitary Authority of the District such Plans, Sections, and particulars of the proposed Construction, Reconstruction, or Alteration as may be necessary for the purpose of ascertaining whether such Construction, Reconstruction, or Alteration is in Accordance with the Statutory Provisions relative thereto, and with the By-laws made under Section 202 of the Metropolis Management Act, 1855.

Construction of a Drainage System as a Whole.

1. (1) Every person who, in the provision of a drainage system as a whole, is about to construct the pipes, drains, or other means of communicating with a sewer, or the traps and apparatus connected therewith, shall deposit in duplicate with the sanitary authority of the district, at their office, such plans, sections, and particulars of the proposed construction as may be necessary for the purpose of enabling such authority to ascertain whether such construction is in accordance with the statutory provisions relative thereto, and with the by-laws made under Section 202 of the Metropolis Management Act, 1855.

(2) He shall cause such duplicate plans and sections to be clearly and indelibly made on a durable material to a scale (except in the case of block plans) of not less than one inch to every sixteen feet, and shall, amongst other things, show thereon every floor of any building in connection with which such pipes or drains are to be used, and the position, form, levels and arrangement of the several parts of such building, including the roof thereof, and the size and position of every drain, manhole, gully, soil pipe, wastepipe, ventilating pipe, and rain water pipe, and of any drain passing under such building, and the position of every bath, water closet apparatus, slop sink, urinal, lavatory basin or apparatus, sink (not being a slop sink), and trap in connection with the foregoing.

(3) He shall also show thereon the positions of all windows and other

openings into the building, and the height and position of all chimneys belonging to the building within a distance of twenty feet from the open end of a soil pipe or ventilating pipe.

(4) He shall at the same time deposit in duplicate with the sanitary authority of the district, at their office, a detailed description in writing of the intended mode of constructing, jointing and fixing any such drain, manhole, gully, pipe, bath, water closet apparatus, sink, urinal, lavatory basin or apparatus, or trap.

(5) He shall at the same time deposit in duplicate with the sanitary authority of the district, at their office, a block plan of the premises upon which any such building is to be situated, or any such work is to be carried out (drawn to a scale of not less than one inch to every twenty-two feet), and he shall show thereon :—

(*a*) The block plan of such building.

(*b*) The position of the whole of the buildings on the premises, and so much of the properties adjoining thereto as may be affected by the proposed work.

(*c*) The names of the streets or thoroughfares immediately adjoining the premises, and the number or designation of the premises.

(*d*) The difference of the level between the lowest floor of such building and the adjoining pavement.

(*e*) The level of any yard, area, or ground, or open space belonging to such premises.

(*f*) The lines, size, depth and inclination of the proposed drainage, and so far as can be ascertained without opening the ground, the lines, size, depth, and inclination of the existing drainage, the surface drains (if any), and if such proposed or existing drainage be in connection with a building the arrangements for the ventilation of the drains—the existing pipes and drains and the proposed pipes and drains to be distinctively indicated by different colours.

(*g*) The position and form of every existing or proposed manhole or access chamber, gully, junction, bend, intercepting trap, or any connection with a sewer.

(*h*) The points of the compass.

Provided, nevertheless, that it shall not be necessary to deposit a block plan in any case where the plans, sections and particulars deposited in accordance with the first paragraph of this by-law clearly show the particulars hereinbefore required to be shown on a block plan.

(6) The plans, sections, particulars and detailed descriptions hereinbefore mentioned shall be so deposited 15 days at least before the work is proposed to be commenced, and, in the case where a building is to be erected, before commencing the erection of such building.

Addition to, partial construction, entire or partial reconstruction, or alteration of, a drainage system.

2. Every person who shall make any addition to, partially construct, entirely or partially reconstruct, or alter any pipes, drains, or other means of communicating with a sewer, or the traps and apparatus connected therewith, shall be deemed to have satisfied the foregoing by-law No. 1, if he shall cause a deposit to be made (in the manner therein provided) of only such plans, sections, and particulars of the proposed addition, partial construction, entire or partial reconstruction or alteration as may be necessary for the purpose of enabling such authority to ascertain whether such addition, partial construction, entire or partial reconstruction or alteration is in accordance with the statutory provisions relative thereto, and with any by-laws made under section 202 of the Metropolis Management Act, 1855, and, if in any case plans and sections have been previously deposited in conformity with the foregoing by-law No. 1, it shall be sufficient for him to give in writing with the deposit the date of the previous deposit, and to show the new work on the plans and sections to be deposited, and only so much of the existing work as will enable the sanitary authority to see the relative positions of the new and old work.

Provided that this by-law shall not be deemed to require the deposit of any plans, sections or particulars in the case of any repair which does involve the alteration or the entire reconstruction of any pipe, drain, or other means of communicating with sewers or the traps and apparatus connected therewith.

Alterations of drains in cases of urgency.

3. (1) In any case in which an alteration of the drains must be carried out at once, every person who is about to carry out such alteration shall, in lieu of depositing the plans, sections, and particulars referred to in these by-laws, forthwith send to the sanitary authority of the district a notice in writing of any such proposed alteration.

(2) He shall also within two weeks of the commencement of such alteration make the deposits required by these laws.

Penalty.

4. Every person who shall offend against any of the foregoing by-laws shall be liable for every such offence to a penalty of two pounds, and in

the case of a continuing offence to a further penalty of twenty shillings for each day after written notice of the offence given in accordance with section 202 of the Metropolis Management Act, 1855.

Definition of "person."

5. In these by-laws the word "person" includes any body of persons whether corporate or unincorporate.

Exemption of City.

6. These by-laws shall not extend to the City of London.

THE SUPERANNUATION ALLOWANCES (MET.) ACT, 1866.

SECTION 1.—The vestry of any parish and district board of any district or other parochial body within the Metropolis, and also the Metropolitan Board of Works "may," at their discretion, grant to any officer in their respective services, including the chairman of the Metropolitan Board of Works, who shall become incapable of discharging the duties of his office with efficiency by reason of permanent infirmity of mind or body, or of old age, upon his resigning or otherwise ceasing to hold office, an annual allowance "not exceeding in any case two-thirds" of his then salary, regard being had to the scale of allowances hereinafter contained, and shall charge such allowance to the fund or funds to which such salary would have been charged if he had continued in his office; provided always that nothing in this Act contained shall affect the powers contained in the two hundred and thirteenth section of the "Metropolis Management Act, 1855."

SECTION 2.—This allowance shall be payable to or in trust for such officer only, and shall not be assignable for nor chargeable with his debts or other liabilities without the consent in writing of the Vestry, District Board, Metropolitan Board of Works, or other parochial body.

SECTION 3.—No officer shall be entitled to such allowance on the ground of old age who shall not have completed the full age of sixty years.

SECTION 4.—Subject to the provisions herein contained, the allowance to be granted after the commencement of this Act to persons who shall have served in an established capacity as officers as aforesaid, whether their remuneration be computed by weekly wages, poundage,

or percentage on collection of rates, or annual salary, shall be as follows, that is to say:—To any person who shall have served ten years and upwards, and under eleven years, an annual allowance of ten-sixtieths of the salary and emoluments of his office.

And in like manner an addition of one-sixtieth in respect of each additional year for such service until the completion of a period of service of forty years, when the annual allowance of forty-sixtieths may be granted; and no addition shall be made in respect of any service beyond forty years; but in computing the time of an officer's service any period during which such officer shall have been in the service of a Vestry, Board of Trustees, or other parochial board of the "same parish," superseded by the "Metropolis Management Act, 1855" or of any parish comprised in the district board granting such allowance, shall be included.

SECTION 5.—When for the due and efficient discharge of the duties of any office professional or other peculiar qualifications not ordinarily to be acquired in the Vestry or Board's service are required, and any person having such qualifications shall have been or may be appointed thereto beyond the age of thirty years, any Vestry or Board may, by order direct that when any person now holding or who may hereafter be appointed to such office shall retire from their service, a number of years, not exceeding ten, to be specified in the said order, shall in computing the amount of superannuation allowance which may be granted to him under this Act, be added to the number of years during which he may have actually served.

SECTION 6.—Any Vestry or Board or other parochial body may grant any person who is compelled to quit their service by reason of severe bodily injury occasioned, without his own default, in the discharge of his public duty, or from infirmity of mind or body, before the completion of the period which would entitle him to superannuation allowance, a gratuity not exceeding three months' pay for every two years of service.

SECTION 7.—No grant shall be made without one month's previous notice to be specially given in writing to every member of the Vestry or District Board, of the proposal to make such grant, and the time when it shall be brought forward.

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