

London slaughter-houses and cow-sheds : a paper read before the Society of Medical Officers of Health, December 18th, 1875 : to which is added a report of the discussion thereon / by T. Orme Dudfield.

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LONDON SLAUGHTER-HOUSES AND COW-SHEDS.

A PAPER READ BEFORE THE SOCIETY OF MEDICAL OFFICERS
OF HEALTH, DECEMBER 18TH, 1875.

TO WHICH IS ADDED

REPORT OF THE DISCUSSION THEREON.



PRESENTED
by the
AUTHOR

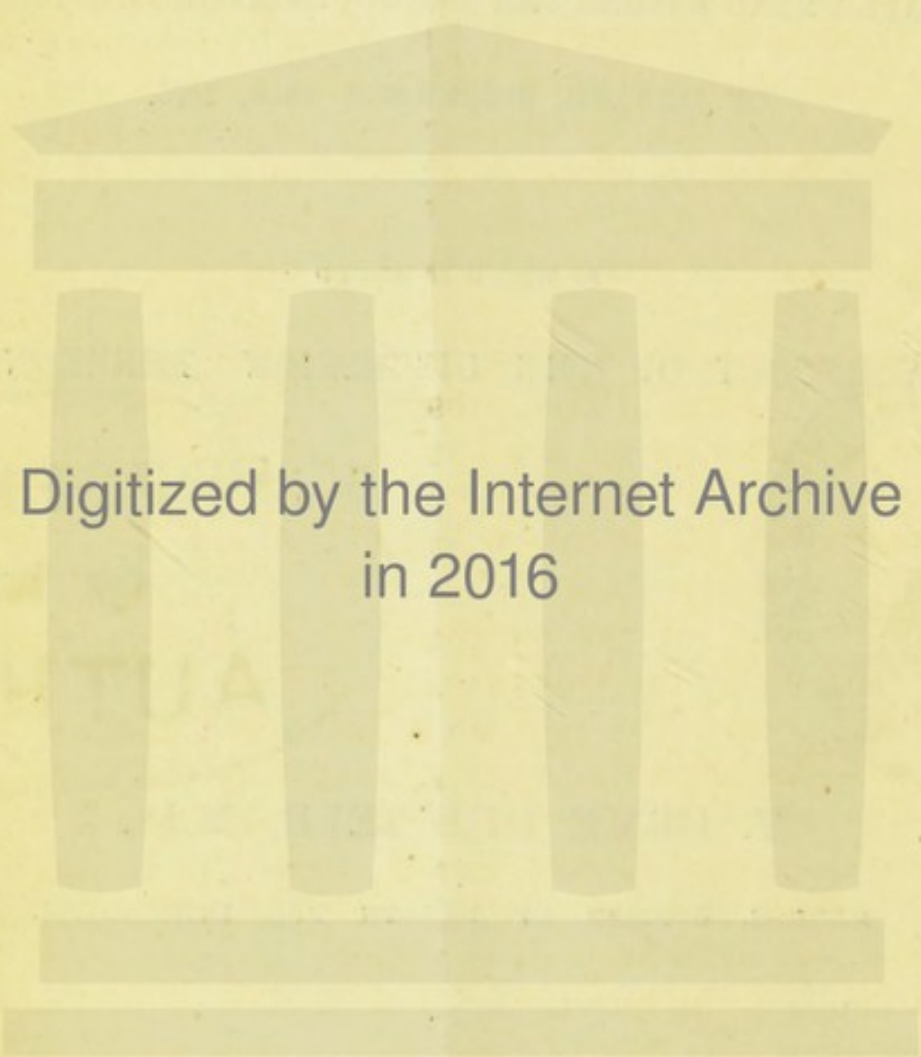
BY

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LONDON SLAUGHTER-HOUSES AND COW-SHEDS.

THAT the labours of the Society of Medical Officers of Health in respect of the slaughter-houses have not been without good effect, and that through the operation of the bye-laws many improvements have been effected in those establishments, will, I think, be admitted on all sides. I may say, therefore, in a word, that the principal object of the present paper is to stimulate the society to take up the subject of cow-sheds, with a view to a similar and not less needed reform. The present being, however, the first opportunity we shall have had of reviewing our position under the bye-laws, I have thought a brief reference to the subject would be not unwelcome. At this early date I need do little more than remind you of the surprise and disappointment occasioned by the Government Bill of 1874. Introduced toward the end of a lethargic session, and hurried through its principal stages in the Commons before we could procure a copy; retrograde in its provisions, and almost forced upon the country by the leaders of a party in the zenith of political power, there was little hope of successful opposition to the principle of the measure. The society did what was possible for its amendment, and a few more or less useful modifications were secured. The main feature of the Act carries out the recommendation of the Commons' Select Committee of 1873, that the trade, *inter alia*, of a slaughterer of cattle should be brought under regulation by precise and stringent bye-laws; and it devolved upon the Metropolitan Board of Works as the "Local Authority" for the metropolis (the city only excepted) to frame these bye-laws.

The task has been accomplished, not without assistance from this society—courteously asked and heartily rendered, and in a spirit of fairness which deserves recognition.

With regard to the conditions on which the "Board" will permit the establishing anew of the business of a slaughterer of cattle, there is much cause for satisfaction. The society's suggestions have been adopted almost literally. And if in the bye-laws somewhat too much consideration has been shown for trade interests, we must remember that the subject was new to the board, and that they have no official sanitary adviser. We may reasonably expect, moreover, that on sufficient cause being shown the board will be not unwilling to exercise the powers they have of repealing, altering, and amending all or any of the bye-laws.

Whether Parliament intended the Local Authority to discharge any administrative function under the Act in connection with the bye-laws must remain a moot question; but as the board have power to oppose the renewal of old licenses, and exclusive power to sanction the establishment of new businesses, it is obvious that they would need assistance. In the city the Local Authority is also the Nuisance Authority, and the sanitary staff are also the executive under the Act. In like manner, the Metropolitan Board of Works at one time contemplated the appointment of the medical officers of health to be their inspectors for the remainder of the metropolis. The committee, however, to whom the subject was referred, decided that there were practical objections to this course, namely, the unequal distribution of the slaughter-houses, and the greater expense their inspection would occasion. The committee, moreover, naively stated that "it is incumbent on the Board to do the work of inspection by their own officers, as their 18th bye-law forbids the occupier making any alteration without their consent." Parenthetically

I may observe that this 18th bye-law is, perhaps, the only objectionable one from our point of view, the statutory authority of the vestries and their officers being expressly reserved in the preamble: that we have cause to regret omissions in the bye-laws will subsequently appear; but to resume. Three officers were appointed by the board in August to inspect the 1,340 slaughter-houses then existing, *plus* all the other "offensive" businesses specified in the Act, so soon as the bye-laws applicable to them shall be confirmed. With these appointments, *per se*, we could have no quarrel; but, unfortunately, the new inspectors commenced their duties under an impression that the control of the slaughter-houses had passed entirely into their hands; a position in which some vestries and medical officers appear to have acquiesced. Thus we have seen the sanitary staff in certain districts practically superseded in the discharge of sanitary duties by officers having no special claim to sanitary knowledge, and without a superior officer possessing the necessary qualifications. The most that could be expected of them, and exactly what has been done, was that they would enforce, so far as they were able, a technical compliance with the letter of the bye-laws.

In some parts of the metropolis, not only has the work of inspection been left to these gentlemen, but the vestries were not even represented at the Licensing Sessions just concluded. In other districts a different course was adopted. Thus, in Kensington—and you will pardon me for taking as an illustration the case with which I am naturally best acquainted—the vestry viewed the slaughter-houses, notices for sanitary amendments were served in the usual way, and in those instances in which the notices were not complied with, the vestry successfully opposed the renewal of the licenses pending the completion of the works ordered to be done.

The vestry objected *in toto* to slaughter-houses having no entrance but through a shop or dwelling house, and asked the justices to visit them; the suggestion was adopted, and the result was a refusal to renew the license in every such instance save one. Notice of appeal has, however, been lodged in respect of one case thus decided. The vestry also opposed in every instance in which the lairage was contained within the slaughter-house itself, upon the technical ground that this arrangement involved a breach of the 4th and the 19th bye-laws, and upon the sanitary ground that the atmosphere of the slaughter-house in which meat is hung to cool and set was polluted by animal excreta; a further objection being raised against the killing of one in the sight of the other animals. My instructions, therefore, were to insist on the provision of distinct and separate lairage in every instance, a subject on which the bye-laws are wholly and unaccountably silent! The justices completely endorsed our views, notwithstanding that the able and courteous solicitor to the Butchers' Protection Association was opposed to me, and that the gentleman who represented the Metropolitan Board of Works had previously disclaimed any intention to oppose the renewal of licenses on the grounds stated, declaring, indeed, that the effect of requiring a separate entrance and separate lairage would be to close nearly one-half the total number of slaughter-houses in the metropolis. The board had, in fact, by their officers passed every one of the slaughter-houses to which we took objection. I am glad, however, to say that no slaughter-house was closed on the lairage question, for when the butchers saw the necessity for giving effect to our requirements they quickly found means to do so. To the statement thus presented, I need only add that the vestry have, within the last few days, taken proceedings with success against four butchers for breaches of the bye-laws, in order to establish clearly my point that the Act

and the bye-laws have made no material change in the position of vestries and their officers with respect to the slaughter-houses. May we not then reasonably expect that the vestries and their officers universally will at once resume their duties of inspection, and of giving effect to the bye-laws, as well as before the justices at the next special sessions for the renewal of licenses?

Chief among the suggestions which this society made on the request of the Local Authority were those relating to the entrance and lairage; and although no direct reference is made to these points in the bye-laws, I have sufficiently shown that the bye-laws admit of a construction being put upon them that is favourable to our views, and at the least the justices should be asked to take the same view of any case as already has been taken in the Kensington division of Middlesex. It must be borne in mind that the justices have no means of procuring evidence for themselves, and are entirely dependent upon information that may be supplied by medical officers of health. In illustration of this point I may mention that, at the Kensington special Sessions, the licenses in the other parishes comprised in the division had previously been granted without opposition, though many of the slaughter-houses were open to objection from our standpoint on the double score of entrance and lairage; and it was a cause of considerable soreness to the butchers of Kensington that they were called on to do works not required of their fellow tradesmen in Chelsea, Fulham, Hammersmith, &c. Not only, therefore, would I urge on medical officers the duty of advising their vestries to apply for separate entrance and lairage, but it would be well if this society would again press their views on the attention of the Local Authority. The adoption of those views would have the effect of reducing the number of slaughter-houses in the manner foreseen and recommended by the Parlia-

mentary Select Committee, namely, by closing those which shall be found faulty and objectionable.

The results of the Licensing Sessions at Kensington are these:—48 slaughter-houses were licensed in October, 1874; now there are only 32. In 5 cases the license was refused by the justices, and in 11 others no application was made in October last for renewal, the proprietors being either unable or unwilling to comply with the bye-laws. The reduction in the number of private slaughter-houses throughout the metropolis must have been upon nearly the same scale. Thirteen hundred and forty licenses were in force from October, 1874, and as many premises were inspected by direction of the Metropolitan Board of Works; but the number of licenses now held probably does not exceed 1,050. It will be interesting to learn—as doubtless we soon shall—the grounds on which nearly 300 slaughter-houses have been closed; but I do not imagine that merely sanitary objections take a leading place. Technical compliance with the bye-laws is not impossible in what we should deem a bad slaughter-house, and some fairly good ones may have been closed on account of non-compliance with regulations that are of small importance in a sanitary point of view. In some instances the license has been withheld because the slaughter-house was made the thoroughfare to a stable or a cow-shed, and in very many instances the presence of a sausage machine in the slaughter-house was held to be a fatal objection. To object to the making by hand power of sausages in a slaughter-house, and at the same time to tolerate the use of the place as a lair, is inconsistent, and shows an imperfect appreciation of vital points, which it should be our duty to correct.

I now ask your attention to some of the features in regard to which the bye-laws may be, in my opinion, amended with advantage. I have already

referred to the questions of separate entrance and separate lairage, and stated how these may be obtained through the justices; but I am sure you will agree with me that they should be required by the regulations. The Local Authority for the city of London is entirely with us in this matter, and I have no doubt of the coincidence of the Metropolitan Board in the principle. Few things can be more objectionable than the driving of terrified animals through shops or dwellings, and subsequently bringing out by the same way the residual products of slaughtering. The lairs should not be used as stables—this would involve the substitution of “premises” for “slaughter-house” in the 4th bye-law—and they should be sanitarily complete, as it is in some instances “absolutely necessary” (*vide* bye-law 1) to keep the beasts two or three days, or even longer, before killing them. It should be forbidden to use lairs and stables as hanging sheds for meat—the distinct prohibition is far from being unnecessary! In respect of paving, I am satisfied of the necessity of a jointless floor—asphalte is the proper material. I am aware of the objection that may be made on the score of slipperiness, but this difficulty can be overcome, if in no other way, by such arrangements as Mr. Darbyshire has introduced in the public abattoir at Manchester. If, however, asphalt be not employed, flagstones should be laid on concrete with a proper slope, and jointed in cement with the utmost nicety. At present the paving is usually more or less defective in all these particulars, the stones being frequently found to be cracked, the joints imperfect, and the slope anything but satisfactory—blood passing into the crevices and there putrefying and giving out ill odours, and sometimes yielding a horrible stench when the stones are lifted for repair.

Then, as to drainage, I would abolish all direct communication between the common sewer

and the interior of the slaughter-house, for not only may the gully be abused as an easy mode of disposing of excreta and blood, but foul gases certainly escape into the slaughter-house to the injury of the meat. This evil, which should be reduced as much as may be by ventilation of the drains, is aggravated by the too common use of the bell-trap—about the last contrivance that should be deemed under bye-law 16 an “appropriate” trap, and one that should never be tolerated without a locked grating, and even then the bell should be made irremovable. The society’s attention might be beneficially turned to the invention or selection of an appropriate trap, and a sealed pattern should be deposited at the office of the Local Authority. In any event, however, the grating must be fastened with lock and key, for the safe custody of which the master butcher should be made responsible.

The slaughter-house should be open to the roof, and ventilated by louvred lanterns. No inhabited rooms should be permitted over the lairage. The passage of blood, garbage, and manure into the drains should be prohibited—a proposal to this effect was made at the Metropolitan Board, and rejected by a large majority. A definition is needed of what is an “adequate tank or other proper receptacle” for water. The justices of the Kensington division sanctioned the use of wooden vessels without metallic lining; and they did not in every instance require the tank to be placed at the prescribed height above the floor of the slaughter-house. The cistern ought to be of slate or metal, and provided with a warning or overflow pipe, free from any communication through the waste pipe with the drains. Whether the “dressing” of the carcase comes within the operation of “slaughtering,” which may (under bye-law 4) not be carried out in public view, needs definition. Dung-pits should not be allowed near a slaughter-house—the justices endorsed at Kensington my opposition to this too common custom. Every

existing slaughter-house should, as well as any new one, be "provided with all the necessary and approved apparatus and tackle for the slaughtering of cattle." Molestation of an officer in the discharge of his duty should be declared an offence within the meaning of the bye-laws, and, constructively, the use of abusive or intimidating language is molestation. Such practices are, in my own experience, exceedingly rare, but they are not wholly unknown, and should be provided against.

Lastly, I submit that, in any revision of the bye-laws, whatever is necessary should be specified, even at the risk of tediousness, as little as may be being left to the discretion of the justices or the stipendiary magistrates; otherwise, we may look for conflicting decisions, rather than such a uniformity of interpretation and administration of the law as Parliament intended, and as can alone beget due respect for law among the people.

I now pass to the second and more important part of my subject, the cow-sheds. The risks incidental to the private slaughter-house system are mainly dependent on nuisance and on the illicit sale of diseased, unsound, or unwholesome meat. By proper supervision and due observance of bye-laws the risk from nuisance may be reduced to a minimum; and with respect to diseased meat, we may hope the trade is not extensive, as we are still in want of more definite information of the evils resulting from its employment. But when we turn to the question of milk supply, the matter is quite different; and, as we shall see, dangers lurk in every direction. The value and universality of milk as an article of general diet, and as the food *par excellence* of young children, enhances the importance of the subject. My aim and object will be to point out some of the

considerations which, in my judgment, call for intervention of the law, and then to submit a draft code of bye-laws which, in the hands of the council, may be made available for the purpose.

That the construction of many cow-sheds is unsatisfactory may, I think, be taken for granted. The shed is often nothing more than an ordinary stable, with inhabited rooms above it, destitute of anything like a yard. The ventilation is, then, very defective. As was formerly the case in respect of slaughter-houses, so now almost any rickety old building is deemed good enough for a cow-shed. The condition of the sheds is not always satisfactory, for they are sometimes found to be dirty, deep in stale litter, offensive in every sense, close, and crowded; no rule having been laid down on the subject of cubic and floor space. The food is frequently far from nice, consisting largely of brewers' grains and distillers' wash, which quickly sour in hot weather, but, nevertheless, are regarded as an essential element in the diet, while vegetable refuse at all convenient seasons ekes out the supply of hay and mangolds. The water supply is often defective. It is no uncommon thing to find one cistern for the joint use of the cows and of the inhabitants of the rooms over the shed, and this cistern, which is the source of supply to the water-closet, is connected with the drains by means of the waste pipe. Many dairymen are chary of the use of the water, except for cleansing the shed, and for this purpose no special provision is made. They prefer distillers' wash as a drink for the cows, as it is found to increase the supply of milk. With the same object an almost tropical temperature is maintained, and the various succulent foods above enumerated are employed. To all this, let it be understood, there are many exceptions, in sheds of excellent construction and well managed, cows carefully groomed and properly fed, all the conditions of the preservation of health being carefully

attended to. The objectionable sheds are often in the hands of uneducated persons in a small way of business, practically unacquainted with the management of cows, and intent on making as much milk as possible. It is, in fact, one of the evils that there are so many small sheds, which it is well nigh impossible to keep in a satisfactory condition, and the existence of which furnishes a strong argument for bringing the trade under regulation.

A much more powerful reason for this course, however, is the fact that the occurrence of disease in man has been traced to the cow-sheds; to defects in construction or position, or both; to the use of improper food injuriously affecting the milk; to the existence of disease in the animals themselves producing disease in man; and to the prevalence of infectious maladies in the persons of the employés at the cow-shed and in the dairy. I must very briefly refer to each of these points, though it would be a work of supererogation to enlarge on them in this place.

Disease in man, then, may be the consequence of the bad construction and the bad position of a cow-shed. Our president (Dr. Buchanan) was one of the first to draw attention to this fact—so far back as the year 1862. He traced the occurrence of a high rate of mortality in a crowded locality to close contiguity to a cow-shed in the district of St. Giles; the deaths arising from fever, diarrhoea, and acute lung diseases, which follow the zymotic diseases in their distribution, and depend on similar impurity of air. So impressed was he with the conviction that these establishments could not be carried on in close, crowded neighbourhoods without injury to the health of their human residents, that an attempt was made to close them, which failed for want of magisterial support.

Mr. A. H. Smee, in a recent work on "Milk in Health and Disease," has given some suggestive hints on the causation of disease through the insanitary condition of cow-sheds. He alludes to the power of milk to

absorb offensive gases, and to be injuriously altered by contact with impurities. Such contamination as by sewer gas is not detectable by ordinary methods of chemical analysis, and yet, on distilling at a low temperature some milk that had been exposed to sewer gas, he obtained a distillate that had an offensive smell and an unpleasant taste, and which, being tasted, caused intense headache, and a vigorous, rapid pulse, followed by severe diarrhoea. He adds that "milk exposed to the vapour arising from animal matter undergoing putrid decomposition, and subjected to distillation, was so offensive, and produced results so dangerous to health," that he refrained from making any further investigation. Milk after such exposure putrefies more rapidly than other milk. Granting the accuracy of these observations, further evidence of the necessity of sanitary regulation of cow-sheds and dairies is scarcely wanted.

But milk may become a cause of disease from the nature and the quality of food on which cows are fed. Cases of severe diarrhoea recorded in my last annual report were attributed on sufficient grounds to the use of distillers' wash, probably in bad condition. A member of this society, Dr. W. Price Jones, informs me that he has, again and again, traced disease in young children, diarrhoea especially, to the fact of cows whose milk they partook being fed on grains, probably in a sour or fermenting condition; and he has seen the disease pass rapidly away on the substitution of the milk of cows fed on hay or pasture. Mr. Smee, in the work already cited, illustrates the effect of cows' food on milk. He states that, in one case, where large quantities of oil-cake were given, the milk became useless for the table, rancid oil floating on the surface after boiling. The milk obtained from cows fed on sewage grass went putrid and stank in twenty-four hours, and the butter churned from such milk soon became rancid. It is only right, however, to state that other observers have arrived at

conclusions altogether opposite to those of Mr. Smee, as to the effect of sewage-grown grass upon the milk of cows fed on it.

Again, sickness has been traced to the contamination of milk by the products of disease, the cows themselves being healthy and the secretion normal. Scarlatina is the chief illustration, many distinct outbreaks having been traced to the use of milk. It is probable that the contagium has found its way into the milk-pail in the shape of cuticle from the peeling hands of the milker, or that the secretions of the throat, or the germs floating in the air of infected places, have been deposited or absorbed. Not long ago my attention was drawn to a series of cases of severe throat affection in families supplied from a dairy quite apart from the cow-shed, and it was ascertained that members of the dairyman's family actively engaged in the business had suffered from disease of precisely the same nature.

Enteric fever is another of the diseases that have undoubtedly been spread through the agency of milk, viz., by the addition of water polluted with typhoid excreta.

But again, disease in man may be caused by both ordinary and specific disease in cows. Thus, the milk of cows affected with inflammation of the mammary glands has been found to produce severe and even fatal dysentery, even when diluted with a much larger quantity. Evidence is accumulating as to the power of the milk of cows suffering from foot and mouth disease to cause disease in man. Dr. C. M. Tidy has acquainted me with a group of cases of a carbuncular character, originating in this manner. Aphthous affections of the mouth, and a blistered state of the same mucous membrane, and of the toes and fingers, of a slow and obstinate character, are among the forms of such disease; and yet science is unable to detect any change in the milk, which undergoes no alteration in appearance—

the greater pity!—although the quantity is rapidly and materially diminished.

Not, however, to trouble you with any further illustrations, that might be multiplied and amplified, let me repeat that we have evidence that disease in man may be caused through the agency of milk—1. By insanitary conditions in the cow-shed or in the dairy, viz., by the absorption by the milk of sewer gas, or the products of excremental decomposition. 2. By the pollution of water. 3. By the use of improper or unwholesome food. 4. By disease derived from the employes in the cow-shed or dairy. 5. By disease affecting the cows themselves.

This simple enunciation of the means by which disease may be propagated through, or in connection with, the business of a dairyman, furnishes the clue to the proper subjects of bye-laws. These are—1. The position, construction, and sanitary condition of the sheds, including questions of cubic and floor space, lighting, ventilation, drainage, paving, &c. 2. Everything relating to the health and management of the cows, including quarantine arrangements, the isolation of sick animals, the quality and the storage of the food. 3. The sanitary condition of the dairy and of the vessels used for receiving, storing, and supplying milk. 4. The health of the persons engaged in the conduct of the business.

Before submitting for your consideration a suggestive code of bye-laws, which, for convenience, I have drawn on the model, employing also, when applicable, the phraseology of the slaughter-house regulations, let me observe that if the society be of opinion that this important business should be so regulated, the most feasible way of achieving our object would be to ask the Government to pass a short Act conferring on the Metropolitan Board of Works the same powers in respect of cow-sheds that they already possess in respect of slaughter-houses, unless they should be of opinion that the third section of the Slaughter-

houses Act, 1874, could be so construed as to include the business of a dairyman.

One word further, by way of anticipating objections. I am quite conscious that it may be found impracticable, however desirable, to apply all the proposed bye-laws to existing cow-sheds, and the code as a whole may become the bye-laws of the dairy of the future. Some means, moreover, must be found of distinguishing between the case of those who are dairymen and nothing else—whether they keep cows or not—and the multitude of persons who add the vending of a little milk to the many other ways by which they strive to obtain an honest livelihood. Matters of detail of this kind may well be left to the Local Authority: it is the function of a society like this to lay down broad principles based on our conceptions of the sanitary necessities of the case and the true interests of the public.

PROPOSED BYE-LAWS.

METROPOLITAN BOARD OF WORKS.*

*Cow-sheds and Dairies (Metropolis) Act, 187- ; or,
Slaughter-houses Metropolis Act, 1874.*

Bye-laws for regulating the conduct of the business of a dairyman—*i.e.*, a person whose business it is to keep cows for the purpose of their milk being used as food for man, or whose exclusive or chief occupation is the vending of milk; the structure of premises

* It will be understood that the Board's name is employed suggestively only, and because to the Board are given the like powers of regulating the conduct of slaughter-houses, and no other existing body exercising a general metropolitan jurisdiction could in the circumstances be made the Local Authority (without the limits of the city of London) for the purposes of the code.

wherein such business may be carried on, and the mode in which application is to be made for sanction to establish such business anew within the limits of the metropolis.

In pursuance of the above Act, by which the Metropolitan Board of Works is constituted the Local Authority for the metropolis, the said Metropolitan Board of Works (for the purposes of these bye-laws called "the board") doth hereby make the following bye-laws; but it is to be understood that nothing in such bye-laws shall in any manner lessen or otherwise affect the statutory powers now vested in the several vestries and district boards (created by the Metropolis Local Management Act), or their officers, in relation to cow-sheds.

Definition of Terms.—Throughout and for the purposes of these bye-laws, "the premises" shall include the cow-shed and all other premises used for the business of a dairyman; "cow-shed" shall mean that portion of the premises wherein cows are stalled or kept; "dairy" shall mean that portion of the premises which is used for the storage and for the vending or sale of milk; "occupier" shall be construed to mean the person owning, renting, or holding, or rated for, premises where the business of a dairyman is carried on; and "dairyman" shall mean any and every person whose business is the keeping of cows for the production of milk, or whose sole or chief business is the vending or sale of milk for food of man.

As to the structure of the premises where the business of a dairyman may be carried on.

1. A cow-shed shall be a detached building, standing in its own yard, and shall be properly lighted and ventilated by louvred sky or side-lights.

2. Every person occupying a cow-shed shall cause the inner walls, doors, and woodwork to be covered

with hard, smooth, impervious materials to the height of at least 5 ft. from the floor.

3. Every person occupying a cow-shed shall cause the same to be well paved with brick on edge on 6 in. of good concrete; the channels and gangway with ironstone bricks, or other impervious material, also laid on 6 in. of good concrete, set with cement, and with a proper slope towards a gully which shall be outside the shed; and shall cause the same to be effectually drained by an adequate drain of glazed pipes communicating with the public sewer; the gully to be trapped by an appropriate trap, according to the sealed pattern deposited at the office of the board, and to be covered with a fixed or locked grating, the bars of which shall be not more than $\frac{3}{8}$ in. apart.

4. Every person occupying a cow-shed shall cause it to be provided with a trough manger, lined with Portland or other hard cement; or half 12 in. glazed stoneware pipes, sloping from each end towards the centre to a plugged or trapped inlet to a branch drain emptying itself below the grating, but upon the trapped inlet of the surface drain.

5. Every occupier of a cow-shed shall cause it to be provided with an adequate slate, or metal, or metallic-lined tank for water, and with an adequate water supply, to be properly covered and provided with an overflow or warning pipe; the tank to be so placed that the bottom shall be not less than 6 ft. above the floor level, with metal piping from the tank conveying water to a tap to be furnished for each end of the channel and for the centre of the trough; or, that every part of the shed may be effectually flushed by a hose connected with the tank, which shall be of a capacity equal to [] gallons for each cow lawfully kept on the premises, and shall have no communication with the drain by means of a waste pipe, and shall be supplied with good and wholesome water, which, when and where practicable,

shall be procured by the occupier from a public water company.

6. Every person occupying a cow-shed shall provide a proper covered place or receptacle outside the shed for the storage of grains, the same to be lined and paved with cement laid on concrete, drained, and to be regularly cleansed so as to avoid any offensive smell.

7. Every person occupying a cow-shed shall provide a proper covered receptacle or place for dung, &c., outside the shed; the bottom thereof to be constructed of flagstones or cement laid on concrete, and to be drained, and the sides to be constructed of flagstones or brick lined with cement.

8. Every person occupying a cow-shed shall cause all needful works and repairs to the premises to be forthwith done and executed as and when the same shall become requisite, and shall not allow any alteration whatsoever to be made in respect of the paving, or draining, or ventilation, or water supply to or in the premises which shall have been licensed, except with the consent of the board, previously obtained in writing.

9. Every person occupying a cow-shed shall allow no privy, cesspool, or stable to be within or to communicate directly with the cow-shed.

10. In the case of any cow-shed now existing or to be hereafter erected, neither the owner nor the occupier shall allow any room or loft to be built over it; and within six months after the date of confirmation of these bye-laws the occupier shall remove or cause to be removed any loft or room that may be over an existing cow-shed.

As to the conduct of the business of a dairyman.

11. The occupier of a cow-shed shall keep in it only such number of cows as shall be specified on his license, and the allowance of space for each cow shall be not less than 800 cubic feet, no height of the

shed in excess of 16 ft. being taken into account in estimating space. The stalls for single cows shall be not less than 4 ft. in width, and a double stall for two cows shall be not less than 7 ft. 6 in. in width ; and the stall partitions shall not extend in front beyond the front line of the manger, and shall leave a clear air-way over the manger.

12. The occupier shall cause the inner walls of any cow-shed, and every part of the premises, to be kept thoroughly clean and in good order and repair at all times ; and shall cause the internal surface of the roof and of the upper portions of the walls to be thoroughly washed with quicklime at least once in every quarter, viz., in the months of January, April, August, and October.

13. The occupier shall cause the cow-shed to be thoroughly flushed and cleansed twice every day, viz., before 9 a.m. and after 5 p.m., and the yard to be cleansed at least once every day.

14. The occupier shall cause all dung manure to be conveyed away daily, in a properly constructed vehicle, before the hour of 8 a.m. daily, or, where not more than four cows are kept, every other day.

15. The occupier shall not allow the cow-shed to be used for any purpose other than that for which it is licensed, and shall not keep nor permit to be kept therein any fowl, or any pig, or horse, or dog, or other animal except cattle.

As to the prevention of disease in cows, and of the contamination of milk.

16. The occupier shall provide a shed, to be called the quarantine shed, effectually separated from the cow-shed, for the reception of cows newly brought on the premises, and shall cause such cows to be kept in quarantine for a period of [] days, or shall have kept the said cows in a quarantine shed or other premises for a like period after purchase before removing them to his own premises.

17. The occupier shall provide a shed, to be called the infirmary, which shall be effectually separated from the cow-shed, for the reception of cows suffering from contagious disease, and such cows shall be placed and kept therein until recovery, death, or removal; and in case the cows prove to be suffering from foot-and-mouth disease, pleuro-pneumonia, or other infectious or contagious disease, the occupier shall give notice thereof, in writing, within twenty-four hours, to the board, and also to the cattle inspector for the district.

18. The occupier shall cause all milk yielded by diseased cows to be immediately poured down the drain communicating with the public sewer.

19. The occupier shall give twenty-four hours' notice to the board of his intention to remove any cow from the shed for the purpose of being slaughtered for the food of man.

20. The occupier shall not allow any person having an infectious disease, or living in a house where such disease exists, to enter the cow-shed or dairy, or in any way to assist in the conduct of the business during the continuance of such disease, or until all danger of the spread of infection shall have ceased, and every infected room and article shall have been disinfected to the satisfaction of a duly qualified medical man, as certified by him in writing.

As to the conduct of the business in the dairy.

21. Every person occupying a dairy shall cause it to be well paved with flagstone, laid on concrete, and set in cement; the inner walls to be covered with hard, smooth, impervious material to the height of 6 ft., and to be always kept clean and in good order and repair.

22. Every person occupying a dairy shall provide it with a sufficient number of tables, of slate, or of wood covered with zinc, for the re-

ception of the vessels containing milk, and shall cause it and them to be thoroughly washed and cleansed every morning and every evening after the milk shall have been sent out. The dairy shall not be below the level of the ground or street; there shall be no drain or other communication with the sewer, nor any water-closet in or contiguous to it, and the dairy shall not be used for any purpose other than that for which it is licensed.

23. Every person occupying a cow-shed or a dairy shall provide for use therein a sufficient number of receptacles made of non-absorbent materials for the reception and storage of milk, and shall cause them at all times to be thoroughly cleansed and purified; and shall cause all milk to be removed without delay from the cow-shed, and shall not add to milk any substance for the purpose of altering its colour.

24. The occupier of a cow-shed shall cause all the cows therein to be curried and cleansed every day, and to be well fed on sound, sweet, and wholesome food, and to be provided with good water at all necessary times.

25. The occupier of a cow-shed or a dairy shall allow any member of the board, in addition to all other persons lawfully entitled to admission, to have free access to every part of the business premises at all reasonable hours.

26. (Penalty clause or clauses.)

As to the mode in which application is to be made for sanction to establish anew the business of a dairyman.

27. Any person who shall make application to the board for sanction to establish anew the business of a dairyman within the jurisdiction of the Metropolitan Board of Works shall furnish with such application a plan of the premises and sections of the building in which it is proposed to carry on such business, drawn to a scale of $\frac{1}{4}$ in. to the foot, and

showing the provision made or to be made for the drainage, lighting, ventilation, and water supply of the same; and shall also furnish a key-plan of the locality, showing the building and streets within 100 yards of the premises, drawn to a scale of 5 ft. to the mile.

Conditions on which the board will consider as to giving sanction to the establishing anew of the business of a dairyman.

(Here will follow such rules as the board may think fit to lay down.)

DISCUSSION.

In the discussion which followed the reading of this paper,

The President, Dr. GEORGE BUCHANAN, after commending the practical method which characterized the paper, said that the desirability was evident of bringing cow-sheds as well as slaughter-houses under effectual control. The only question was, in his view, the extent to which it might be deemed necessary to legislate on the subject.

Dr. STEVENSON, Medical Officer of Health for St. Pancras, spoke of the water supply in cow-sheds as being frequently of the worst possible character, highly charged with ammonia, and laden with organic impurities. Cisterns were often placed underground, and some in an extremely dirty state. Later on he referred to the rapidly fatal effects of milk—in foot and mouth disease—on calves; and he inferred that children could not take such milk with impunity.

Dr. J. W. TRIPE, Medical Officer for Hackney, stated that he had drawn attention in his district to the inconsistency of requiring an impervious flooring

in slaughter-houses, while the wooden doors of those premises, being without zinc covering, were liable to saturation with blood, &c. The Metropolitan Board of Works, admitting the force of the representation, enforced the use of a metallic lining for doors. He was convinced that in every case where the regulations were set at defiance, and gross breach of sanitary provisions was committed, it was imperative on the Authority for the district to oppose the granting of any license for the slaughtering of cattle. The Hackney Board had taken the same kind of objections as were urged at Kensington, namely, to lairs in the slaughter-houses, unless the animals were to be brought into the lairs only just before killing, and he hoped ultimately to succeed in his opposition to this temporary lairage in slaughter-houses. One license was refused because the proprietor kept dogs and the place was filthy. He considered that all dirty slaughter-houses should be opposed. He had long been of opinion that cow-sheds should be subjected to uniform regulations, with especial reference to sanitary requirements. An instance had been named to him of pigs dying through partaking of the milk of cows suffering from foot and mouth disease; a fact which was conclusive as to the injurious effects of allowing such milk to be sold for consumption. He agreed in the necessity of a fixed allowance of cubic and floor space. The magistrates had no power to fix by the license the number of cows to be kept in any shed, but a license might be opposed on the ground of there being too many.

Dr. C. M. TIDY, Medical Officer for Islington, had reason to congratulate the vestry of his parish on the entire riddance, through the labours of Dr. Ballard—in whose footsteps he had trodden in this matter—of underground tanks and wells, to which circumstance was due the supply of water to cow-sheds in the same manner as to dwelling-houses.

The necessity for stringent regulation of such places was demonstrated by the part played by milk in the carrying of disease, and its ready absorption of poison from impure air and other sources. The truth of this position had been tested and established beyond the possibility of doubt. In the case of a bitch with pups strychnine, administered at first in minute and then in gradually increasing quantities, had so poisoned the milk that the pups died, while the mother's health continued quite unaffected. It was remarkable with what ease poisons and medicines could be administered through this fluid, which was a very facile method of propagating disease. He referred, in some detail, to the cases of disease from the use of milk of cows suffering from foot and mouth disease, of which the author of the paper had made mention.

Dr. W. RENDLE concurred in the conclusions of the practical paper read by Dr. Dudfield, and in the tone of the discussion. His former experience as a medical officer of health pointed to the need in slaughter-houses of some better floor material than small cubes, which were peculiarly liable to split, and if the jointing were not perfect, infallibly let blood, &c., down through the cracks, so that on removal of the stones for repairs, a most offensive smell would be encountered. He had endeavoured, in the case of cow-sheds, to give effect to such sanitary requirements as would render them tolerably wholesome; but one of the leading vestrymen, who had a pecuniary interest involved, once expressed surprise that their doctor did not invent some sort of tin vessel that could be fastened under a cow, so as to prevent anything at all falling from the animal to the floor of the shed—a suggestion which he, of course, made no attempt to meet.

In summing up the results of the debate, Dr. DUDFIELD observed that he had drawn up a code of suggestive bye-laws for cow-sheds, upon the details

of which there was a possibility of differing opinions. His aim had been to include everything, rather than omit anything, upon the principle that it was always much easier to strike out than to add. The sense of the several speeches was, on the whole, too favourable to render any reply to criticisms necessary. In the matter of the slaughter-houses, his main purpose had been to show that the legal position of vestries and their officers was not changed by the operation of the new Act, and there was no reason why they should not continue, for the benefit of the public, to perform the same duties as they had discharged before the statute came into force.

Dr. C. M. TIDY proposed, and Dr. STEVENSON seconded, a reference of the code of bye-laws to the council of the society for consideration and report. The motion was unanimously agreed to.

Thanks to Dr. Dudfield for the paper were moved by Dr. BUCHANAN.

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