Clean catering : a handbook on premises, equipment, and practices for the promotion of hygiene in catering establishments.

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MINISTRY OF HEALTH
SCOTTISH HOME AND HEALTH DEPARTMENT

Clean Catering

A Handbook on Hygiene in Catering Establishments

LONDON: HER MAJESTY'S STATIONERY OFFICE

PRICE 7*s.* 6*d.* NET

Clean Food Publicity

Posters and publicity material which can help caterers and other food trade employers to remind their staff of the importance of good and clean catering practices are readily available from a number of sources, some on purchase, others on hire or free of charge.

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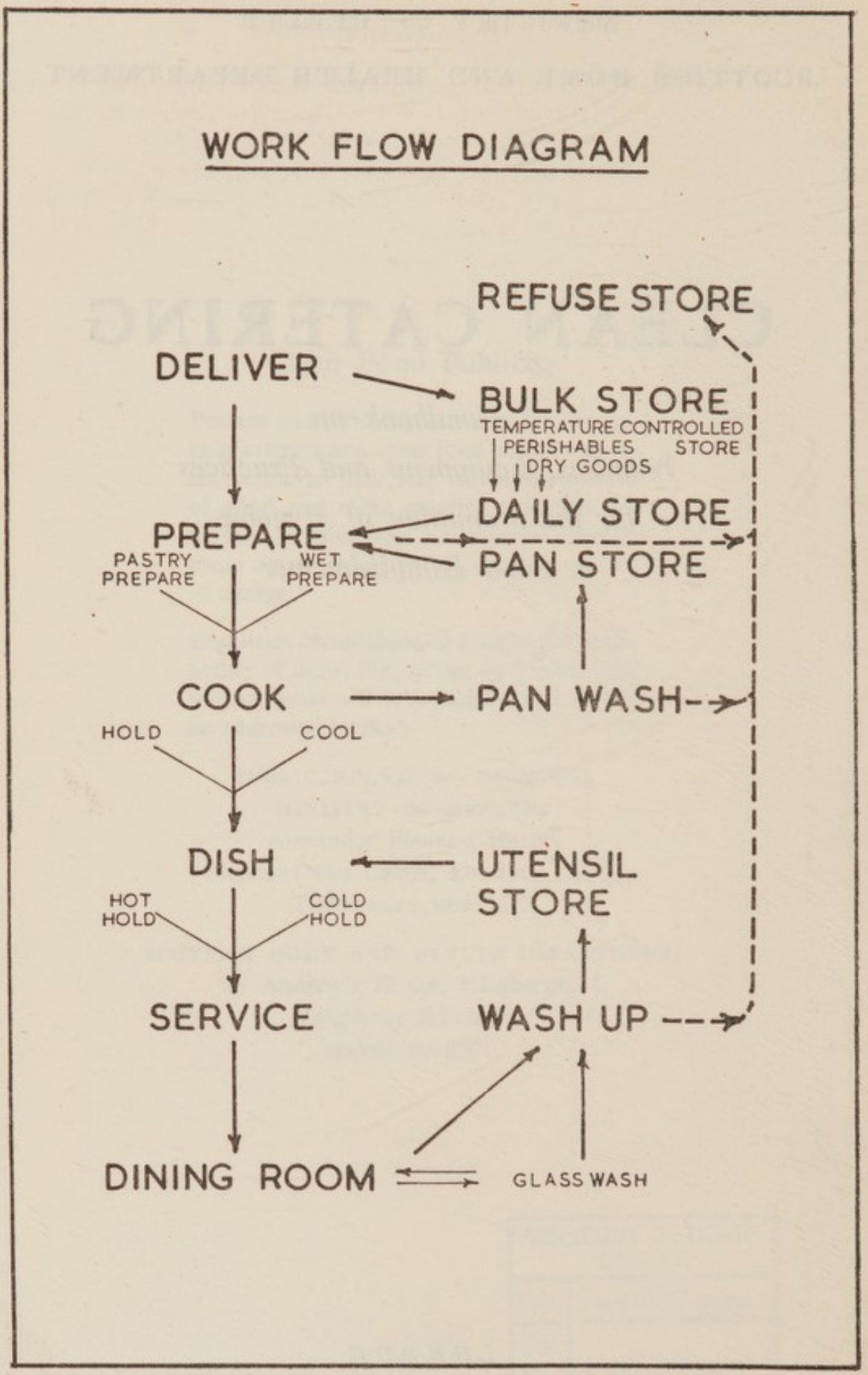

FIGURE 1. Work Flow Diagram

Introduction

Caterers have long known that in their industry cleanliness is of the first importance. This is plain common sense. But during recent years it has become more fully understood *why* cleanliness is so important.

Food must be not only clean but safe. Food that looks clean and does not smell or taste bad may nevertheless be dangerous. Most people to-day know this, but the real nature of the risks and the best way to avoid them are not so widely known. There is therefore an increasing demand for advice and information on food hygiene, and the object of this booklet is to meet this demand.

The caterer's first object must be to run a profitable business. If he does not do this he will soon find that he has no business to run. He has to take into account such factors as the cost of food and equipment, the welfare of his staff, and the difficulties caused by inadequate premises. This booklet deals only with hygiene, but these other factors have not been ignored and most of the suggestions made can be carried out both simply and inexpensively. It cannot be too strongly emphasised, however, that where food hygiene is concerned money spent is money well spent. Experience has shown that good food hygiene is good business.

Most important in maintaining cleanliness and safety is an understanding by all food handlers of simple food hygiene. People who have such an understanding will so conduct themselves that good habits become automatic. In an establishment where everybody does this but where the layout and equipment are not well designed there is less risk to the public than in an establishment which is perfectly planned but where food is handled carelessly. On the other hand well designed premises encourage clean habits and considered layout of well designed equipment enables the clean, quick and orderly preparation of food. In all catering where quantities of food have to be prepared for a variety of menus, ready for service in limited time periods, there is opportunity for infection to spread unless food hygiene is maintained.

To keep food safe a caterer does not need a knowledge of bacteriology but must understand how infection can be avoided. It is not to be expected that all foods will be delivered to the establishment free from bacteria but fortunately most of those found on foods are harmless to man.

The danger lies in those bacteria which can cause food poisoning and the danger is increased if they are present in large numbers or if the food is kept under conditions which allow the bacteria to multiply freely. The greatest danger arises if bacteria are allowed or helped to spread and contaminate other foods through thoughtless food handling or failure to maintain equipment, utensils and the premises themselves in a good state of cleanliness and repair.

Food handlers can unwittingly pass on harmful bacteria from their hair, nose, skin or clothing, and this possibility of contamination underlines the importance of personal cleanliness and the adoption of hygienic practices by every member of the catering staff. Open cuts and sores on the skin usually harbour dangerous bacteria and some persons may even be "carriers" of harmful germs even though they are apparently quite fit and well. Bacteria can be transmitted to food by birds, animals and insects and particularly by flies.

In a favourable environment germs multiply very quickly ; for this they need nourishment, moisture and warmth. Meat and meat products are the foods most commonly associated with food poisoning but other items such as custards, trifles and gravies are also ideal for the growth of contaminating organisms. Refrigeration will retard the increase but will not kill the bacteria. Whilst the temperatures reached in most cooking processes will kill them, slow cooling at normal kitchen temperatures again offers the opportunity of contamination and encourages the rapid increase in the number of germs present in the food.

The first essential therefore is to prevent contamination. There are a few kinds of germs which leave in contaminated food a poison which resists heat and such food cannot readily be made safe. The second essential is to prevent any germs present from multiplying. After cooking therefore all food not consumed hot should be cooled rapidly to below 50°F. (10°C.). Normally good catering practices will help to prevent contamination and possible multiplication of bacteria while maintaining the quality and palatability of the food. Foremost of these is the sensible provision and use of the hot plate, larder, refrigerator and deep freeze. All catering establishments, whatever their size, should have adequate controlled temperature storage, and this should be a prime consideration in designing the layout and working order of the business.

This booklet aims at presenting practical advice toward good design, lay out and personal practice. It does not set out to interpret the law. The suggestions are offered as being useful to all caterers who have the cause of clean and safe food at heart.

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DRAWINGS

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Drawings and diagram by
Mr. William Cue, M.A.P.H.I., Stepney M.B.C.
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Chapter I

PREMISES

Section A

LOCATION AND SURROUNDINGS

Some catering establishments are not ideally located for the proper practice of food hygiene and their proprietors now find that measures to protect their food are practicable but expensive. Anyone proposing to set up a new business will naturally examine possible sites primarily from the point of view of the amount of the rent and other overheads, the cost of conversion or equipping, and the number of potential customers ; but considerations of hygiene should not be overlooked. Adequate lighting, ventilation and water supply should be regarded as essential.

The immediate neighbourhood should be examined for the presence of noxious trades and practices ; from the point of view of hygiene an unpleasant smell is not so important as whether the air is charged with smoke or other dirty particles, or whether the surroundings contain potential or actual breeding-grounds for rats, mice, flies or harmful insects.

If prospective premises form part of a large building, the location of the water supply and other common services should be examined ; and it should be ascertained whether the sanitary conveniences and wash basins to be used by the staff are conveniently sited and adequate in number. Attention should be given to the facilities for handling and storing foodstuffs and to the routes by which the food would reach the establishment and the refuse would be removed. The inward route, at least, should be under the caterer's own control ; dark and potentially dirty passages and alleyways should be avoided. Refuse should not have to be carried through the kitchen or dining rooms. Premises which have the shortest routes for bringing in food and taking out garbage are to be preferred.

Underground kitchens present special difficulties. It is important that their windows should not open on to areas or forecourts so narrow that dirt or noxious matter could be kicked, thrown, dropped or blown into uncleanable recesses or even on to the food. Underground premises may be liable to flooding and drainage backflow, and they also necessitate special ventilation and lighting. The prevention of infestation is also more difficult. The advice of the local public health department or a consultant should always be sought before taking over such premises.

Premises where food is stored need to be cool and dry. If a caterer is considering setting up in an old building or a building in a remote rural area, it would be worth his while to make certain that the walls have been built with a proper and effective damp proof course. Damp proof courses can be inserted by a technique of cutting out limited horizontal sections of wall and placing damp proof material in the gap. This is possible whatever the wall thickness but obviously increases in price per yard run with the thickness of walling. Vertical damp proof courses can also be used to

Model Layout of Working Premises

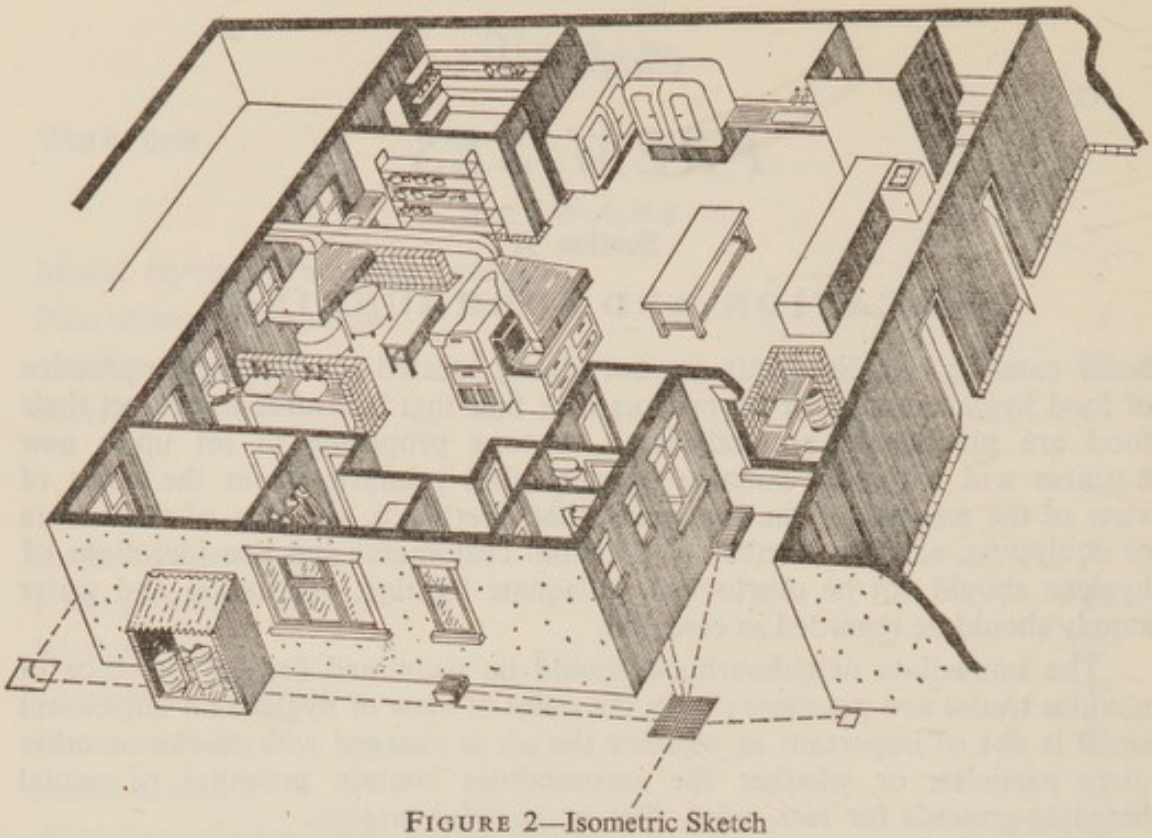

FIGURE 2—Isometric Sketch

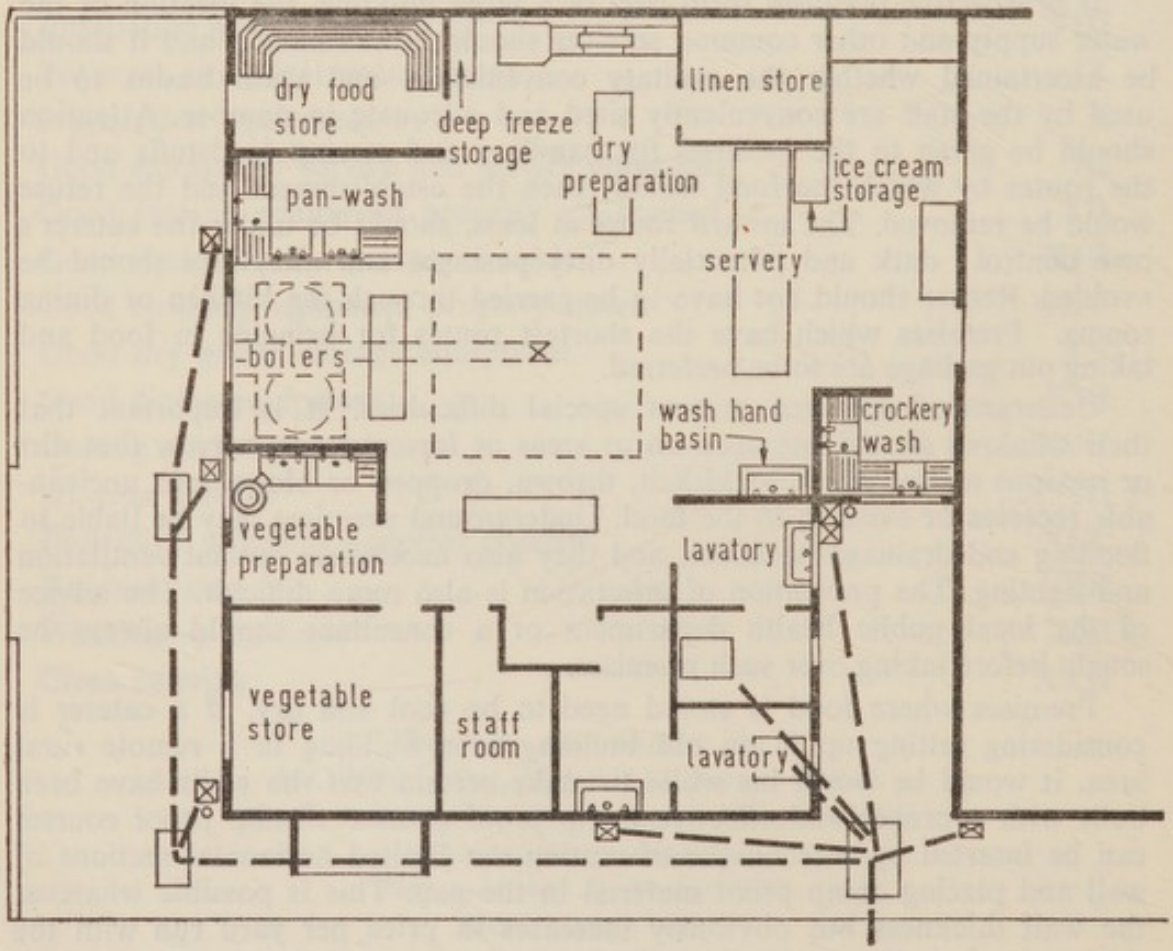

FIGURE 3—Plan

advantage in expert hands and there are now available systems of corrugated lathing which have proved very successful but which add up to half an inch overall to the wall thickness. It should be remembered that ivy and other climbing plants look attractive but tend to retain moisture, and keep walls damp, and to make it easier for insects to find breeding places and enter premises.

Section B

AREA

It is difficult to suggest precise standards of space, since space requirements depend not only on the total number of meals served during a working period and the number of meals served at once when the dining-room is full, but also on the type of meals provided and the number of choices on the menu.

Dining rooms. It is undesirable for customers to be crowded together, since it is essential for the waitress to have clear access to every part of every table, so that dirty dishes and cutlery can be removed promptly and the tables kept clean. The dining-rooms should be large enough for the provision of ample racks for hats and coats, as well as ledges for parcels, books, gloves, etc. Coat hooks should be far enough from the tables to keep coat-tails from overhanging them.

It is suggested that, where the maximum capacity is not more than fifty persons, fifteen square feet of dining space should be allowed for each person ; where the maximum capacity is above fifty, twelve square feet would be sufficient.

Working premises. These should be large enough to allow employees to carry out their work comfortably, without congestion on traffic lines, crowding at work-tables and queueing for the use of sinks ; but they should not be so large as to entail unnecessary walking about. An employee will tend to neglect hygienic practices if they involve additional walking, waiting or working uncomfortably close to a colleague. There must be sufficient table and shelf space to allow used and unused utensils to be kept apart from each other and from food in course of preparation.

The kitchen (including the food preparation and washing up rooms or zones) should occupy a space equal to approximately half the area of the dining-room, but rather more than this is necessary in very small establishments. Every catering establishment should contain a room, used solely as a kitchen, not less than eight feet in height and with a minimum floor area of 100 square feet clear of furniture, fittings, and stored goods. If more than three people are employed in the kitchen, there should be an additional thirty-three square feet of floor area similarly clear for each person above three in number.

Section C

LAY-OUT OF PREMISES

(*a*) General Plan

This booklet does not set out hard-and-fast rules for the lay-out of premises or the arrangement of kitchens. The object in view—hygienic catering—can be achieved with many different kinds of lay-out. Both this section and

Figures 1 and 2 indicate what is considered to be a good hygienic arrangement ; and it is suggested that caterers should study them as recommendations rather than rules. The key-note in a catering establishment should be cleanliness ; and the premises should therefore be planned in whatever manner will make it easy to keep the place clean.

The greater the distance over which food has to be carried, and the more often it has to be handled, the greater the chance of its becoming contaminated. Therefore, the ideal to aim at is to have everything moving forward in orderly progression—from delivery to food preparation, cooking, service and washing-up.

The lay-out should be planned with a clear idea of the purpose of every room. Miscellaneous storerooms and unnecessary passages should be avoided. A good deal could be done to improve many catering establishments if some partition walls were removed and some dark, lumber-littered passages eliminated.

A goods entrance, separate from the customers' entrance, is essential for hygienic planning. The most convenient arrangement is for this goods entrance to open from a *yard,* so situated that delivery vans can pull right up to the door of the building. The yard should have an impervious and even surface, a water standpipe, tap and washing-down hose, raised and covered accommodation for refuse bins and swill bins, and adequate drainage. If solid fuel is used the store should be in the yard and bulk oil fuel should be kept completely separate from any food or utensil store and in accordance with any directions given by fire or safety officers of the local authority.

Close to the goods entrance should be the *vegetable storage room,* which should be cool, dry, well ventilated and large enough to allow for orderly storage. It is convenient for this room to be against the wall of the yard, partly so that the floor can be sloped to enable water used for washing down to drain to a gulley and partly so that it can have an entrance direct from the yard—which will keep some dirt off the rest of the premises. (For storage of vegetables, see page 48. For cleaning, see pages 69-72) The work of vegetable preparation (whether done in a separate room or in a zone of the kitchen) should be carried out close to the vegetable store and close to the yard and refuse bins—so that most of the dirt which usually accompanies raw vegetables does not get further into the premises than is absolutely necessary. There is an increasing tendency to deal in precleaned vegetables and if such are received as goods inward they should be placed separate from uncleaned vegetables in the same store.

Near the entrance should come the *dry food store,* which should be fly-proofed by fixing removable screens over windows and door openings ; in addition, the walls should be treated with residual insecticides as advised on page 24. The room should be dry, well lit and ventilated and at least 7 ft. 6 in. high. If there is no room for both a window and a door opening on to the yard, the door should have a glass panel. This room should be used exclusively as a store and therefore water is not essential, but water for cleaning should be close at hand. Prepacked deep frozen vegetables are also now regularly received into stock and sub zero holding cabinets should be available in the dry food store. These cabinets should be such as comply with British Standard specifications and allow for rotation of stock, be covered

when not in actual service use and have a plainly marked effective loading line above which stock should not be placed.

The kitchen. This should never be used as a thoroughfare to other parts of the building. In some establishments the kitchen is divided into a number of separate rooms and in others the work is done in one large room divided into zones. The second method is illustrated in Figures 1 and 2 partly because it facilitates cleaning, and avoids some handling of the food, and partly because an open kitchen enables the person in charge to keep the whole staff under observation ; but satisfactory arrangements are possible under either system, and a good deal depends on the size and nature of the business, the number of the staff and other factors.

When planning a kitchen, the chief factors to consider should be the flow of work, the nature of the various operations and the positions of windows, doors and drains ; it is more important to make the fullest possible use of natural lighting and the most efficient use of drainage than it is to preserve a symmetrical appearance.

Equipment should be so placed as to allow plenty of room for cleaning. Narrow spaces—for example, between two hot cupboards or between equipment and counter—are very difficult to clean and tend to provide lodgment for food debris and insects. Built-in cupboards and other fixed kitchen units may be necessary for saving space in a small kitchen, but some of the units designed for domestic use have inaccessible cavities and ledges, especially near the floor level, and generally speaking, free-standing equipment is much more hygienic. An island lay-out generally makes for easier cleaning of equipment, but two large pieces of equipment placed back to back may be as difficult to clean as a block placed against the wall. It is, in general, a good plan to have the work-tables against the walls between the sinks and to have the ovens, stoves and mixing machines in the centre of the room. The work-tables should be movable for easy cleaning, cooking stoves and ranges usually require a canopy and an exhaust fan system of ventilation to draw off the fumes. A system of small extract fans which draw steam and odours, from small size short order cooking ranges, over a filter pad and through a concentration of activated carbon particles is now available and has many uses in confined kitchens where cooking is concentrated in a small area.

Wherever possible wet preparing and wet cooking units should be somewhere near an external wall in order to avoid long drainage channels in the kitchen. Ovens and stoves should stand on a good solid foundation, preferably one with a concrete base and a surface which can be easily cleaned. In the dry preparation zone of the kitchen there should be at least one deep double sink with hot and cold running water. The potato peeler should be so placed as to discharge its water into a gulley and should be fitted with an efficient strainer and trap for the waste. Mixing machines, which often have the bowls at knee level, should never be sited opposite doorways where dirt can be blown on to them, but should be efficiently screened. In the kitchen, or in a room off the kitchen, there should be storage space where the small items of equipment should have their individual places when not in use. Pots and pans should be stored on racks or slatted shelves, either upside down or on their sides. Carvers and fish-cutters—which should be reserved for their proper uses and thoroughly washed and

dried after each use—are best kept in wooden sheaths, designed so that they can be easily cleaned.

The chef's larder should be close to the dry preparation zone, and should be cool, dry, shaded and well ventilated. It should be fitted with fly-proof doors, windows and ventilators.

The refrigerator, although reasonably close to the kitchen, should be as far as possible from stoves and other sources of heat. Although the refrigerator is provided with thermal insulation to reduce the inflow of heat, it is economical to stand it in a cool place, where the refrigeration mechanism will have the least work to do. The refrigerator should not be boxed in, as some measure of ventilation is essential to the mechanism.

Modern kitchens, of whatever size, are incomplete without full facilities for temperature controlled storage of foodstuff. These facilities may well be built into one unit for small turnover businesses but should include (*a*) sub zero holding cabinets (*b*) freezer storage at 27°F. to 32°F. (*c*) chill storage at 35°F. to 40°F. and (*d*) cooling store and holdover store at below 50°F.

Washing-up rooms. There should be two washing-up rooms or zones, one for the pan-wash (pot-wash, kitchen utensils, etc.) and one for the washing-up proper (crockery and cutlery used by customers). Pan-washing is a greasy job ; it is very difficult to get rid of all grease from the sinks and surroundings, and the washers themselves cannot avoid getting greasy hands and arms. It is therefore desirable to avoid any chance of the customers' crockery and utensils being washed in the pan-washing sinks, or stacked, before or after washing, with the cooking utensils ; it is also desirable for both the pan-washing and the washing-up to be done away from anywhere where food is being prepared or stored. Sinks used for washing utensils should not be used for the preparation of vegetables, meat or fish, or for hand-washing. For these reasons, the two washing-up places should be separated both from the other parts of the kitchen and from each other ; but, for ease in connecting the water and drainage, it is convenient for them to be fairly close together. One solution to the problem of keeping these places separate yet close together is to place the two sets of sinks on opposite sides of a dwarf wall. Another solution is to put them in small rooms, next door to each other. A third is to mark the separation by gangways.

The crockery store should be readily accessible to both the kitchen and the dining-room. Plates, cups, saucers, dishes, basins and other crockery should be stored in clean, dry, cupboards (or in a separate room), protected from dust, insects and other sources of contamination. If plates are stored in drying racks, the racks should be clean, and the plates should be examined before use to make sure that they are clean. Plate racks should have drip trays underneath, which are either removable for cleaning and clearing of drips or are connected to a draining point. Cups are best stored bottom upwards in wire trays. Stored thus, a cup will be picked up by the base or by the handle ; if stored upright, it will probably be picked up by a finger inside the rim—an unhygienic practice. *Cutlery* should be stored in partitioned drawers or in partitioned covered boxes or trays. There should be sufficient reserves of glass, crockery and cutlery to ensure that where necessary damaged equipment can be promptly replaced and that during the rush hours there is an adequate supply of clean equipment.

The service linen cupboard should be away from the kitchen and close to the dining-room.

The servery should be between the kitchen and the dining-room. There should not be any intervening barriers, cupboards or rooms which would interfere with the forward flow of food from the kitchen to the serving points.

The dining-room. It is important that there should be no risk of the food being contaminated on the way to the dining-room ; the route should therefore be clean and well lit. It is desirable to have two doors to the dining-room, one leading in from the servery zone and one leading out to the washing-up place.

(*b*) Sanitary Accommodation and Cloakrooms

Sanitary accommodation must be provided for the staff and should be provided for customers. It is usually inconvenient for the same accommodation to be used both by staff and customers, except in quite small establishments. In larger establishments it is more satisfactory to combine the staff conveniences in a group with the staff washrooms and cloakrooms. It is important that the sanitary accommodation available to catering workers should be readily accessible. Although no general rule can be laid down, to reach it no worker should have to go more than thirty yards from the room where he is working.

The compartment containing the sanitary convenience should be separated from any working room and from the dining-room by an intervening ventilated space and should be well lit ; this last is most important as otherwise it will not be properly cleaned. There should be separate sanitary accommodation for each sex, with separate approaches. There are no regulations laying down the precise number of sanitary conveniences required for the staff of catering establishments, but the local authority will advise on what is suitable and sufficient in any particular case.

There should be fully equipped wash-hand basins within compartments containing sanitary conveniences or close to them—for example, in the intervening space referred to above. The importance of washing the hands after using the sanitary convenience is stressed on page 37. For the reasons given on page 18 kitchen sinks should not be used for this purpose.

The basic requirements—ready accessibility, good light and proximity to washing facilities—can be fulfilled in many different ways ; only after consideration of all the circumstances can a decision be made on whether the provision in a particular instance is suitable and sufficient.

Where there is no water supply or when a water-carriage sewage-disposal system cannot be used for other reasons—for example, at fairgrounds or at remote tourist centres—some form of chemical closet is needed. Whichever type is used should be fitted with a cover or otherwise constructed so that the contents are protected from flies. Care must be exercised to see that the equipment is kept as clean as possible. It should be situated as far from the kitchen as reasonable, and it should have hand-washing facilities adjacent.

It is never impossible to provide hot water, soap, nail brushes and towels. Caterers would be well advised to consider the installation of wall cabinet roller towels which present each user with a fresh surface or alternatively

paper towels for single use. There are many types of hot air hand dryers available and these are extremely effective provided that they are well placed. Criticisms that hot air dryers do not effectively dry hands have been found to stem mainly from the fact that the user does not hold the hands under the hot air stream for a sufficient time. It has been found that where dryers of this type are used, the placing of a mirror over the equipment, or standing two dryers back to back has removed these criticisms. Where there are many practical installation or positioning difficulties which may lead to neglect to use hand washing facilities consideration could be given to the use of special soaps which contain bactericides, skin creams which leave the hands with an unseen and unfelt coating of chemical sterilants, or barrier creams. Many good types of barrier creams for use in the food industry are described in the British Pharmacopoeia.

Section D

CONSTRUCTIONAL DETAILS

(*a*) Floors

Working quarters. Floors in the working quarters of catering establishments have to stand a good deal of traffic as well as the weight of equipment and are liable to have water and grease spilt on them. The essential requirements are that they should be even and impervious, without cracks or open joints; smooth but not slippery; hard wearing, and capable of being easily cleaned. The junctions with the walls should be coved for ease in cleaning. They should slope evenly towards the drainage outlets. A sufficient slope is a fall of one inch in every ten feet, from the highest point to the discharging point. If the floors are so large and the work done is of such a nature that hoses or electric floor washers will be used for cleaning, a trapped gully is essential. All floors must be kept clean and in good condition.

Among the most suitable material for floors are terrazo, granolithic chips and kiln-fired quarry tiles. These should always be laid by experts in order to ensure the necessary fall and the preservation of an even surface. A properly laid terrazo or granolithic chip floor will stand wear and tear for a long time. When laid by inexperienced workmen, it is liable to crack, and thus to develop an uneven surface, pitted with dust-traps. Granolithic chips should be bedded in concrete and brought to a smooth surface like terrazo.

Quarry tiles are made in several qualities; broadly speaking, the harder tiles are less absorbent but more slippery, and the softer tiles are more absorbent and less easy to keep clean. Tiles are now available with a slightly abrasive surface which prevents their becoming slippery. Light-coloured tiles are to be recommended because they look attractive, reflect light, and show up dirt. Quarry tiles are laid in cement, and it is important that the joints between the tiles should be complete and permanent. If these joints are not well made water will seep into them and will eventually find its way under the tiles; the tiles will then begin to lift and the floor will need repair. When properly laid, quarry tiles form an impervious, hard-wearing surface which can be readily cleaned but which is not damaged by any of the cleaning material used in canteens and kitchens. A well laid quarry tile floor may outlast the rest of the building.

A floor with large tiles, having fewer joints, is easier to keep clean than one with small tiles ; but large tiles, if broken, are more difficult to replace than small ones. A patterned floor of very small tiles is unlikely to be satisfactory ; it is difficult to lay small tiles to an entirely even surface ; the large number of joints increase the chances of dust-traps forming and hinder cleaning ; and the tiles tend to bulge and crack under pressure from the weight of free-standing equipment.

Ordinary concrete floors have the great disadvantage of being dusty and difficult to clean ; and the surfaces do not always stand up to continual scrubbing with cleansing agents. The surface disintegrates and cannot readily be patched ; the only effective repair is to cut out and relay a whole section of the floor. There are oil-based and sodium silicate preparations on the market which are said to render concrete floors dustproof, and these may be used with some success in premises where very little water or grease is spilt, but it is doubtful if they would be effective in busy kitchens. If concrete floors must be used they should be surface-treated with sodium silicate or dust preventative.

Magnesite composition floors absorb grease and water. Asphalt surfaces are liable to be spoilt by grease and oil and should accordingly not be cleaned with oil, spirits or turpentine. There are some asphaltic coverings which are grease-proof, durable under ordinary circumstances and easily cleaned, but they tend to crumble into holes under the weight of heavy free-standing equipment. The same applies to floors of pitch mastic.

A surface of good cork linoleum or rubber above a tightly fitting hard-wood floor laid on to direct foundations (that is, with no air-space between the floor and its bedding), set in bitumen on a cement base, will withstand frequent careful scrubbing and mopping and will last for years if looked after in the manner it deserves. Ordinary printed linoleum should not be used as it wears very quickly and soon develops holes.

A wooden floor planed to a level surface could, in small establishments, be used as the base for polyvinyl chloride thermo-plastic tiles or sheets laid with the manufacturers' bonding material. These materials are durable and will stand up to any wear except where there are zones of extreme changes of temperature. They have the advantage that if they crack or break with wear single tiles can be removed by applying hot flatirons to the individual broken tile which becomes pliable, can be lifted and replaced. PVC thermoplastic tiles or sheet are excellent for use in making a cove joint between floors and wall base.

Uncovered hard wooden floors are satisfactory if they are efficiently laid with tight joints and properly maintained. When first laid they should not be polished but should be wiped several times with a solution of equal parts of linseed oil and vinegar. Afterwards they could be treated with one of the many floor sealing compounds now available and they will then stand any necessary scrubbing.

Soft-wood floors are unsuitable for the working parts of catering establishments ; they will not withstand for long either the weight of the equipment or the constant traffic and cleaning which is essential in a kitchen. Such floors should never be laid down in new premises, and if they exist in premises which are being adapted, they should be taken up and replaced with something more suitable ; in general, the matter can be summed up by saying that

the best type of flooring is one which offers a complete unbroken surface. If this is not available, any jointed floor should have the joints most carefully made.

Dining rooms. The type of floor and floor covering must be largely dictated by the class of trade but here, in general, thermoplastic tiles are among the most suitable materials. Rubber tiles and sheet secured with adhesive, or good quality cork lino also give good service. Carpets and mats are laid in many establishments and it is important that these should be laid on a good floor surface and not used to cover poor flooring. Carpets and mats must be thoroughly and regularly cleaned by vacuum or shampoo methods.

(*b*) Walls

The essential requirements are that the walls should be substantial, durable, smooth, impervious and washable. In order to prevent the accumulation of unnoticed dirt and to provide agreeable surroundings for the staff, they should be light-coloured. For ease in cleaning they should be rounded at the junctions with walls and ceilings. In the working premises the walls should be as free as posible from ledges, projections or ornamentations, all of which collect dust and make it more difficult to keep the premises clean ; in the dining-rooms some ornament may be permissible, but tastes and practical considerations alike favour simplicity.

Walls which are intended primarily as partitions and which carry little or no weight can be constructed with ready made light metal prefabricated sections now widely available. An economical method of partitioning is based on a wooden frame faced with carefully jointed plaster board, plastic faced impervious hardboard or one of the adhesive wall cover material which have been developed in recent years. Matt surface hardboard can be the base for small ceramic tiles which cover limited areas and which are held in position by special purpose designed adhesives usually sold with the ceramics. Stainless metal sheet can also be used to cover a wooden frame but if this is done the sheet should conform to British Standard 1470: 1955.NS4, NS5 and NS6. Unalloyed aluminium anodised in accordance with British Standard 1615: 1958 has also given good results where some "wet" work is carried out. Partitions of this type should be single skinned and not hollow.

Particularly suitable where alterations are intended to be semi-permanent or where changes are contemplated after a study of the most efficient work flow zoning are partition panels of compressed laminated plasticised faced sheet covering a honey-comb core. This is erected by running the panels into metal chase railways screwed to the ceiling and into similar metal chase holders on end walls and floors. Good partitions can also be erected from breeze blocks tiled or faced, foamed concrete, glassfibre with hardboard facing and various self standing plaster boards of suitable thickness between ¾ inch and two inches.

Such partition walls as are described above can be finished to a fine, hard, clean surface which will take all the normal wall finishes and is easily cleaned. They will support electric light fittings, but they are not suitable for bearing equipment which weighs more than a few pounds or which exerts any pull on the wall.

The best finish for walls in kitchens and wet preparation rooms is still well jointed 6in. by 6in. ceramic tiles. Ceramic tiles for use with special adhesives and fine grouting are now available in that size and in 4¼in. by 4¼in.

These are very suitable if the joints are well grouted. Stainless steel tiles have now been developed and these are particularly suitable as covering for limited areas of excess water and grease such as splash backs for heavy duty sinks or walls immediately behind meat preparation tables and work benches.

Tiles on walls, just as on floors, should be set evenly with strong impervious joints, so as to present as level and as easily cleaned a surface as possible. If only the lower part of the wall is tiled, tiling should reach to a height of at least five feet and should be coved at the top—that is to say finished with a tile rounded on the edge. Walls which are not tiled should be finished in plaster. Walls in catering establishments should never be lime-washed, since lime-washed walls will not stand frequent cleaning. There are several kinds of distemper. Washable oil-bound distempers are available in varying qualities. Only the best can be considered truly washable but these will not withstand regular washing unless they are left to harden for about six weeks after application. Even then it may be difficult to remove absorbed grease without destroying the film. The first coat of distemper on new work is unlikely to flake but any attempt to build up thicker coats will lead to flaking. Non-washable distempers are not suitable for the walls of catering establishments because they cannot be cleaned, and rub off easily.

When kitchens with distempered walls are being redecorated, any grease marks on the walls should be heavily wiped over with turpentine to remove the grease on the top layer of the plaster, and the fouled area should then be painted over with good quality aluminium paint or knotting before redecoration is begun. If this is not done the grease marks will quickly work through the new distemper and spoil the redecoration.

There are now available wall finishes such as cold glazers, plastic paints and emulsion paints which are quick drying. Emulsion paints can be applied direct over matt painted or distempered surfaces which are themselves adhering soundly. They cannot be properly applied direct over gloss finished surfaces without first rubbing down with sand or glass paper or other roughening of the surfaces. They are particularly successful when used as a first decoration on new work as they are just sufficiently permeable to allow residual moisture to escape. A plastic finish can be successfully applied direct by brush or spray to fair faced concrete, fair faced brickwork, expanded plastic and similar modern partition forming surfaces, plaster and cement. They can be applied directly to wood, stone or galvanised iron. This type of finish can also be applied directly over painted or distempered surfaces without greasiness or saponification developing afterwards. They do not crack or discolour and they withstand water and frequent scrubbing with acid solutions ; they are equally resistant to alkalis.

Wallpaper should not be used on any walls in rooms in which food is prepared. It tends to peel off in a steamy atmosphere. It is not really practicable to keep papered kitchen walls clean. Some limited use could be made of glazed papers in dry situations.

Paint, which can be cleaned easily, is suitable for the walls of the dry food store or the dining-room, but not for the kitchen, since steam condenses on a painted surface.

Behind and above sinks, washbasins, etc., walls should have a smooth, hard, impervious and washable surface or a suitable fitting that can be easily cleaned. Similarly walls behind stoves, ovens and grills should be protected from excessive heat and grease and steam of normal working. Ex-

amples of such protection are enamelled splash plates and flush fitted sunk tiled squares. Extra hard cement brought to a fine surface may be used but this is subject to crazing. Squares of lino or lancaster cloth are valueless for this purpose. Plastic tiles are now being marketed and may be used for this purpose in cool places but they are likely to lose their gloss surface under even light abrasive cleaning.

Glass panels for walls are now available, but so far they have been used mainly for decorative purposes. They are, however, suitable for wall areas which are liable to become particularly dirty (for example, above sinks) and which need frequent hard cleaning.

Sheets of plastic, some of them self-adhesive, and laminated plastics are now available in a wide range for use as wall finishes.

(*c*) Ceilings

The ceiling is an important part of the room and it must be kept clean and in good repair—free from cracks and flaking.

The essential requirements are that the ceiling should not harbour dirt, should be easily cleaned and should absorb moisture. This last is most important in kitchens and wet preparation rooms, where there is always a danger of food being contaminated by moisture dripping from non-absorbent ceilings.

The most suitable ceiling for the working parts of catering establishments is plaster with a smooth continuous lower surface. Ceilings of plaster board or other forms of sheeting are equally effective provided that the joints are well and carefully made. If this is not the case these ceilings can have the disadvantage that dust collects in the joints or against the wooden or metal strips which cover them. The working parts of catering establishments should be free of cornices and decorations and there should be a coving at the junction of the ceiling and the walls.

The ceilings of kitchens and rooms where there is likely to be much steam should be insulated, for example, with fibre glass, or glass wool packed between the joists. Such insulated ceilings can be finished with hard gloss paint. Canopies whether metal, glass or rigid polyvinyl chloride, together with ventilators at ceiling level should also be used to prevent the drift of steam to other rooms and to further reduce condensation. Metal canopies are liable to rust. There are several ways of combating this (*a*) by using galvanised sheet steel ; (*b*) by treating before erection, other metals with Angus Smith or similar suitable bitumastic corrosion resisting compounds ; or (*c*) by using only sheet metal which has been treated with paint applied in the factory. The Building Research Station recommends that where Angus Smith solution is used there should be a top cover of stoved paint or an epoxy paint. If these ceilings are not insulated they should be constructed of an absorbent material such as plaster and finished with a soft non-washable distemper. Absorbent colour washes of this kind should be washed off and renewed about once every six months.

Building Research Station Digest No. 58 gives more information about the problems of surface finishes and condensation and is worthy of study.

(*d*) Doors, Stairs, Windows and Lifts

All joinery in the working premises, including door and window surrounds and fittings, and banister posts and rails, should be of simple design and

finished to a hard gloss surface. It is preferable for door and window surrounds to be flush with the wall, but whether they are flush or not, the important thing is that the joints between the walls and surrounds, and any joints in the surrounds themselves, should be tight. Moulding, panelling and other ornamentation in such fittings collect dust and add to cleaning costs without providing any compensating advantages. Where tiles are met by woodwork, plaster or concrete, the joint between the tiles and the other material can be effectively sealed by a line of the cement used for setting the tiles.

Internal doors should be self-closing and fitted with easily wiped finger plates or metal kick plates at the bottom. Full-swing doors are liable to cause collisions. If the doors to and from the dining rooms are full-swing doors, they should either have transparent glass at eye level or else be strictly reserved for one-way traffic. Sliding doors are an advantage in places where doors are required to be kept open for any length of time, but the slots are liable to become dirty.

The size and placing of *windows* should be related to their purpose, and consideration should therefore be given to what this is to be. For ventilation they can be employed only with discrimination, and this aspect of their use is discussed in the next section. It is prudent to make the utmost possible use of windows for lighting, but windows cannot be relied on entirely. If internal window sills are specifically designed for and used as shelves they should be tiled or painted. If not, they should be splayed at an angle to prevent their use as shelves.

Windows should be so sited that they can be cleaned both inside and outside without difficulty; and they should be cleaned on both sides at least once a week.

Service lifts are usually made of wood and are not easy to clean since the wood soaks up spilled liquids. It is worth while to line the wooden walls and shelves with plastic sheets or some similar covering. The walls of the lift shaft should be smooth and should be painted or distempered whether they can be seen or not. The insides and tops of lifts should be cleaned carefully every day. The haulage apparatus and the lift shaft should be cleaned thoroughly once a week. In this cleaning particular care should be taken to remove any food particles which may have fallen down the shaft. Such particles attract vermin. There should be ready means of access for cleaning the lift shaft. During cleaning a lookout should be kept for signs of rats and mice, which can readily get in through lifts. The lift doors should be kept tightly shut at both ends when the lift is not in use, particularly at night. In addition, the top outer surface of the lift cage should be brushed free of dust at least twice weekly.

The lift should never be used as a food-preparation table or as a temporary food store. It should be divided horizontally into compartments so that soup, fish, main course, sweets, beverages, etc., travel separately, with liquid courses on the lower shelves. The attendant at each end should be provided with clean cloths to wipe up any spilled food immediately. These cloths should never be used for any other purpose and should be kept in a bowl of sterilizing solution when not in use.

Large lifts. When kitchens are situated above the ground floor, lifts used for bringing food up to the kitchen or for taking refuse away should not be

used for other traffic. If, however, this cannot be avoided, food should not be carried along with other goods or passengers unless it is in closed containers: and if the same lift has to be used for both food and refuse it should be thoroughly cleaned both immediately after it has been used for refuse and immediately before it is used again for food. All lifts in which food or refuse is carried should be kept very clean.

(*e*) Ventilation

Adequate ventilation is essential in a kitchen. A hot, close and steamy atmosphere is not only unpleasant to work in, but also tends to promote the multiplication of dangerous germs in such " open " foodstuffs as soups, custards and made-up meat dishes. What is required, therefore, is a current of air sufficient to keep the room cool and to remove fumes and steam. The general flow should be either across the kitchen, or (where that is not possible) down the kitchen and away from the dining-room ; and the system should be so arranged as to leave no pockets of stagnant air.

Kitchens differ so greatly in size, shape, height, situation, lay-out and equipment that it is impossible to provide in this booklet anything more than a statement of the general principles of ventilating them. The problem of ventilation is essentially an individual one which can be solved only on the site; and any caterer who is taking over new premises, or who wishes to improve the ventilation of his present premises, should call in an expert to make an examination and offer advice.

Natural ventilation is attractive because it is cheap. In many establishments it is quite satisfactory ; but it is not entirely costless, and it has some disadvantages which it is worth while to examine in detail.

Windows provide good natural ventilation only in certain kinds of weather, and only then if they are properly sited and if their opening is adjusted carefully according to the needs of the room as a whole and not erratically according to the whims of people who happen to be working near them. Window ventilation tends to be too boisterous in windy weather, unbearable in cold weather and ineffective in very hot weather ; electric fans are therefore necessary to replace it in winter and to supplement it in summer. For proper ventilation, windows should be carefully sited in relation to the shafts of service lifts, the doors of ovens, and the room doors—particularly the service doors communicating with the dining room, which will be constantly opening and shutting at rush hours. This is often very difficult, and is sometimes impossible to arrange in adapted premises where the position of equipment has been dictated by the size and shape of the rooms and the positions of windows cannot be altered. Windows used for ventilation need to be insect-proof, since open windows afford an entrance to dust, dirt, flies and other insects. Unnetted open windows are particularly unsuitable for basement kitchens. In some situations, louvres or air-bricks are more suitable than windows, but they have size limitations ; and no form of natural ventilation can entirely keep out noxious odours and fumes from neighbouring undertakings. Despite these handicaps, a fair amount of use can be made of natural ventilation when the premises are above the ground floor ; but in ground floor, and especially in basement kitchens some form of artificial (mechanical) ventilation may be either necessary or, at least, desirable.

Artificial ventilation can be adapted to premises of any shape or size, and regulated according to the needs of the hour. The special problems arising from the presence of cooking apparatus make it advantageous for the ventilation of a kitchen to be self-contained and separate from that of the rest of the building.

In its simplest form artificial ventilation consists of an injector fan, fitted with a filter which excludes impure air, and an extractor fan at the other end of the room. It is desirable, but not essential, for the fans to be thermostatically controlled. Additional ventilation, particularly useful where there are fixed windows, can be obtained by the installation of " flange " type ventilators. High rooms are easier to ventilate than rooms with low ceilings. The vent outlets and inlets should be as high as possible on the walls. The inlet should not be near the coal chute, refuse dump, sanitary conveniences or any dirty or dusty places. If the fresh air inlets are inadequate in number or size the premises may become uncomfortably hot. The vent pipes in the kitchen should be fixed away from the walls so that they can be cleaned all round, and they should be painted to protect them from rust.

Although condensation on walls and ceilings can be reduced by the use of open-textured materials and finishes, the principal aim should be to remove fumes and steam from the kitchen at the point of emission. It is desirable that special cooking apparatus (e.g., steamers, fish or potato fryers, grillers, ovens) should be fitted, wherever possible, with hoods to draw off the fumes, steam and intense heat. It is sometimes less costly particularly where there is no general system of mechanical ventilation, to place cooking and washing-up apparatus against an outer wall so that the fumes can be extracted naturally. If this is done, the vent bends should not be acute and the outlet should be protected against the entry of foreign matter. If the kitchen is not on the top floor, outlet vents may have to be routed to the top of the building to avoid causing a nuisance to other tenants.

In large basement kitchens, a lattice gate to the kitchen entrance may ensure a flow of air throughout the kitchen after working hours, but a lattice gate is undesirable where the outside air is dirty or where there are cats which may get through into the kitchen.

Both the vegetable store and the dry food store need to be systematically ventilated. The best way to keep these rooms airy and sweet is to have a ventilating brick at window level—9″ × 6″ for a room of about 900 cubic feet, 9″ × 9″ for a room between 900 and 2,000 cubic feet. For rooms of greater size expert advice should be sought from a ventilation engineer.

(f) Lighting and Lighting Equipment

Good lighting is essential in the kitchen and in all parts of the premises used for food storage and food preparation. This is required, not only in order that the workers can see clearly what they are doing, but also in order that dirt shall be evident and promptly cleared away. It is not sufficient for the premises to be generally light. There should be no gloomy corners or passages to collect unseen dirt. In most establishments, therefore, artificial lighting will be required to supplement natural lighting even during the daytime, but careful planning will reduce the expense of this to a minimum.

Light-coloured walls and ceilings reflect light and thus increase the amount of illumination ; and, if the window area is equal to at least one-fifth of the floor area, most parts of the room will have daylight at some time of the day.

If sinks and food preparation tables are placed near or under windows, natural lighting will normally be sufficient at these points during the day. Lights should be placed so that the light spreads evenly and neither casts shadows nor shines in the eyes of the workers. A number of small points of illumination usually produce less glare than one large point. There should be lights in cold stores and food stores; lights so placed as to give a clear view into the interiors of ovens and refrigerators and on to the working parts of machines; lights over sinks and food preparation tables; and perhaps also a movable spotlight to illuminate corners and spaces behind pillars and fixed equipment.

Fluorescent lighting is particularly suitable for kitchens, dining-rooms and places where a light is required continuously for a long time; it provides a spread, shadowless light and produces very little glare. Although expensive to put in, it is cheap to run, and this system is usually found to be economical.

If ordinary electric light bulbs are used, they should be enclosed in white, translucent globes which completely cover the bulbs.

All electrical apparatus needs regular cleaning; otherwise it harbours dirt and dust. Electric wires should be in conduits which should either be chased into the wall or ceiling or so placed that they can be cleaned behind and do not harbour insects and dirt. The exposed parts of the apparatus in the kitchen—switches, bulb-holders, etc.—are necessarily subject to a wet steamy atmosphere and they should be made of plastic.

Since the air in a kitchen may be very moist, it is desirable for the fuse box to be fixed in some accessible place outside the kitchen. Incidentally, it is a good idea to have fuse boxes fitted in duplicate, so that, if a fuse breaks, the supply can be switched over to the second box whilst the first fuse is being repaired.

Lighting systems should be examined and planned by a lighting engineer. The caterer who wishes to consider this matter for himself, however, should know that illumination, as measured by an illumination meter, can be expressed either in terms of foot-candle power, foot lamberts or lumens per square foot. Foot candles or foot lamberts relate to the brightness of a surface or the amount of light reflected from it, whereas lumens per square foot relate to the amount of light falling on a surface; but for this purpose all these units may be assumed to be equivalent to one another. No legal standards are laid down for the lighting of catering establishments in this country, but a guide to the values of illumination for various types of work can be given. 10-15 lumens per square foot should provide adequate illumination for cutting operations, mixing, blending, cleaning and confectionery-making. For work requiring closer examination of the materials or produce, a value of from 20-25 lumens per square foot is recommended. It is not possible to say generally how many watts are required to give these values because so many factors have to be taken into consideration. If, however, professional advice is not available the following equivalents give a rough guide to the wattage required. One watt per square foot will produce an illumination of approximately 3½ lumens per square foot from an ordinary lamp or approximately 15 lumens per square foot from fluorescent lighting.

No general rule can be given for determining the probable lighting load allowance, but for average lighting conditions an allowance of 1-4 watts per square foot of area is usually ample. For obtaining the capacities and

number of ways for fuse boards, not more than 6 amperes or more than 10 points should be connected to any final sub-circuit.

(g) Water Supply and Hot Water Apparatus

Ample and immediately available supplies of both hot and cold running water are essential. Where the establishment occupies part of a building, it is desirable for it to have its own independent hot water supply. All water used for food preparation and cooking, for drinking, for washing-up, and for cleaning utensils and surfaces with which food or utensils may come in contact, should be public supply main water. Rain water, river water, well water and water from other non-purified sources should be used only for such outdoor purposes as washing down yards and swilling out dust-bins, except on the advice of the local health department.

It is not advisable to economise over water taps and piping. All sinks, wash-hand basins and other fixed receptacles should receive their water supplies direct from taps appropriately placed. For internal piping copper is best ; and, where the course of the piping is not dictated either by the existing mains and tanks or by the siting of sinks and other appliances, it is worth while to give some thought to its arrangement. Pipes tend to collect dust, and horizontal or sloping overhead pipes are not only difficult to clean but may also accumulate moisture which drips on to the food. Whenever possible, pipes should either be run outside the kitchen (for example, under the floor or above the ceiling) or else they should be chased into the wall. When they must come into the open, they should for preference run vertically rather than horizontally, bringing the water straight down to the tap from the overhead pipes or straight up from the supply beneath the floor. In any case, they should be held at least two or three inches away from the wall by pipe clips, so that they can be cleaned all round and do not create crevices in which insects or vermin may breed. If cold service pipes have to be run at high level, they should be lagged to prevent condensation and the dripping which results.

Hot water pipes should be lagged to conserve heat and so reduce the consumption of fuel. The methods of lagging pipes and storage tanks is important, as cases have occurred of mice burrowing into soft lagging and nesting in it. Pipes should be protected with a fine wire mesh to prevent this and the lagging round tanks should be enclosed with materials which cannot be gnawed.

Storage tanks. It is customary for water storage tanks to be situated in the roof, where they are liable to become contaminated and where they are difficult to examine and to clean. From the point of view of hygiene it would be better if they were more accessible, but the paramount consideration here is necessarily the pressure of the supply. They should therefore be kept covered, examined regularly and cleaned out at least once every six months.

Hot water. Many water heating systems produce water which, although hotter than the 110°-120°F. which is about the most that normal human hands can stand, is never as hot as the 170°F. necessary for the proper sterilising rinse of crockery, cutlery and utensils. Such systems are satisfactory enough in smaller establishments which can carry out the sterilizing by steam or by water heated as required for sterilisation purposes. Larger establishments which have a constant demand for washing-up water at 170°F. should be careful to ensure that their systems can provide water at 170°F. whenever

required; this, of course, can be arranged without raising the temperature of the whole water supply to that level. Since the demand for hot water in catering establishments remains more or less constant throughout the year, the water heating system should be independent of the room heating system.

Drinking water. The dining-room should have a tap supplying cold drinking water for customers. Any taps served by water which is *not* fit for drinking should be clearly marked to that effect.

Wash-basins. Catering workers should be encouraged to wash their hands both after visiting the sanitary convenience and whenever necessary during the course of work. They should not use the kitchen sinks for this purpose as this may infect the sinks with germs which can later find their way on to food. Moreover, the sinks will usually not be free at the time when hands need to be washed. Accordingly, wash-hand basins with hot and cold water laid on, and with good lighting overhead, should be provided in or adjoining the kitchen, and also in immediate proximity to the sanitary conveniences. In a kitchen in which at most ten people are employed, one wash-hand basin in the kitchen would be sufficient; in a large kitchen, the ideal arrangement is to have one wash-hand basin for each section (*e.g.*, meat, fish, pastry and so on). (See also pages 7, 8, 35 to 37)

Sinks

Sinks and draining boards should have a smooth, hard, even surface and are best constructed of porcelain-finished fireclay, non-corrosive metal (for example stainless steel), vitreous enamel or plastic, with one-piece tops welded to the sinks. Porcelain sinks are satisfactory if in good repair; but wooden sinks and draining-boards harbour germs in the cracks and joints. It is sometimes argued that sinks made of teak are less liable than other sinks to cause breakages; a thin-walled stainless steel sink is as good as a wooden sink in this respect—and is infinitely more hygienic. Aluminium sinks scratch easily, are not robust and are more difficult to keep clean.

Sinks used for washing-up should be small enough to ensure frequent replenishing with hot water but large enough to take the largest dishes comfortably. For washing pots and pans galvanised iron sinks are suitable.

It is desirable to have the sink fitted with a spray hose for washing down the sink and draining-boards, and with a removable strainer in the waste-pipe for trapping crumbs, tea-leaves, etc. A built-in but removable refuse container is also an advantage.

Waste pipe traps are now being made of a plastic material which is proof against acids and hot water. These are hygienic, because the interior is so smooth that there are no cracks or crevices to harbour dirt, and they are superior to the usual lead trap, particularly where choking through misuse is common, because they are very easily fitted, cleaned and removed.

The number of sinks required will necessarily depend largely on the number and variety of the meals served. In general, it may be said that the vegetable preparation rooms will require at least two long deep sinks so that salad vegetables can be prepared separately from root or green vegetables for cooking. Fish should never be washed in the same sink as vegetables, and a separate sink should therefore be reserved for fish. The meat preparation room also needs a separate sink. All these sinks should have hot and cold water laid on.

Washing-up (if done by hand) requires at least four sinks—two for the pan-wash and two for the crockery and cutlery. (Washing-up is considered in detail on pages 61 to 68.)

Drains

Drains should be adequate to remove all waste water without risk of flooding. Normal sized house drains are 4″ in diameter. These are large enough to deal with a considerable flow of drainage and may be suitable for some catering establishments; but as certain types of equipment (e.g. cookers, potato-peelers, service counter equipment, cold stores) as well as sinks and dish-washing machines, require drainage it is possible that some catering establishments will need 6″ drain pipes. All drainage, wherever installed, is subject to inspection and approval by the local authority, and the public health inspector must be consulted if it is thought that any alterations may be desirable.

Grease traps are valuable because they prevent grease from congealing in the drain pipes. The grease tray should be removed regularly and washed out.

Many establishments have channelling covered with steel grids round the grease-producing areas. The tops of these grids and the channels themselves are likely to become muck-traps unless they are very regularly cleaned. They are difficult to clean. Drainage should be adequate to remove all waste water without risk of flooding or pooling at gully traps and Figure 4 shows how channelling can be dispensed with. Where channels are absolutely necessary they should be sited in positions where grids are unnecessary.

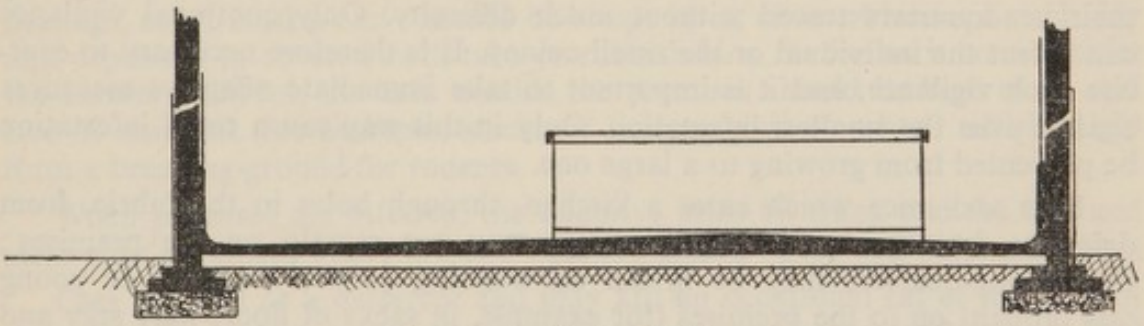

FIGURE 4—Cambered Floors

Remote establishments. Wholesome water piped to indoor taps is not available in some villages, hamlets and isolated buildings in the country, and there are many small and remote catering establishments where the cost of installing a piped supply would be unwarranted by the amount of trade. Special precautions should be taken to see that the water consumed by the customers is wholesome: water used in cooking, pastry-making and preparing cold drinks should be boiled before use ; the receptacles used for carrying and storing water should be scrupulously clean, covered to prevent contamination by insects or air-borne refuse, and frequently inspected; the water used for washing-up and for cleaning cooking utensils and surfaces should be purified by the addition of a suitable chemical. The advice of the local health department should be sought on these and other measures appropriate to the particular circumstances.

(*h*) Rats, Mice and Insects

Measures for the protection of a catering establishment against rodents and insects are important because they considerably reduce the chances of food becoming infected and avoid the waste of food; they save the caterer both trouble and money.

Rats and Mice

Rats and mice are dangerous sources of infection to man, and their presence should not be tolerated. Bacteriological investigation has shown that these animals are carriers of some of the food-poisoning germs ; it is possible, therefore, that any surface they touch may become contaminated.

The size of the rodent problem varies greatly from establishment to establishment, since it depends largely on the nature of the premises and the nature of the surroundings. It may well be that defence against invasion will have to be conducted outside the premises. In this, the co-operation of neighbours and the resources of the local authority should be enlisted.

Local Authorities are empowered under the Prevention of Damage by Pests Act, 1949, to require owners and occupiers of premises to carry out treatments against rats and mice. This requirement does not prevent owners or occupiers of catering premises from carrying out treatments against these pests themselves or from employing a commercial firm to undertake the work.

Large-scale attack by rats or mice, whether from inside or outside the premises, is often easier to defeat than that of a few casual invaders, because when rats or mice are present in force they can be promptly detected and their headquarters traced without much difficulty. Only continual vigilance can defeat the individual or the small colony. It is therefore necessary to exercise such vigilance, and it is important to take immediate offensive measures against even the smallest infestation. Only in this way can a small infestation be prevented from growing to a large one.

Rats and mice which enter a kitchen, through holes in the fabric, from defective drains, or through doorways, may not remain on the premises ; their living-quarters may be in the surrounding property. Mice or young rats brought on to the premises (for example, in sacks of flour) may stay and breed. Constant and careful watch must be maintained for indications of either kind of intrusion. All staff (and particularly the cleaners) should be instructed to report immediately any signs they may notice in the course of their normal work ; and it should also be the duty of a responsible person to make a systematic and regular examination of all those parts of the premises which do not come under frequent observation. This inspection should take in warm and dark corners, passages, stairs and the cupboards below them, meter cupboards, the shafts of service lifts, floor spaces beneath shelving and behind piles of stock in the food store, lofts and crevices or openings in walls and ceilings where pipes enter. It should extend outside the building, over the whole area under the control of the establishment, to include, out-buildings, waste ground and other possible breeding places. The signs to look for are: droppings, smears, holes and scrapes, runways, gnawing marks, grease marks on skirting-boards, footmarks in dust or moist earth and damage to food and food containers.

Whether the premises are infested or not defensive measures should always be in operation. If they are infested, offensive measures should be added. Defensive measures should be aimed at rendering entry difficult and at reducing the attractiveness of the premises. The building should be kept in sound repair and all holes and other possible points of entry sealed up; if rats still get in, the drains should be examined.

If necessary a smoke test should be applied to the drains which may reveal the position of escape holes. If the drains are faulty if may be necessary to relay the defective sections and at the same time faulty or broken manhole covers, fresh air inlet grids and defective sanitary fittings should be replaced.

Floor drainage channels passing through outside walls should have cast iron grids fixed to the openings but where possible such openings should be done away with by inserting a trapped gully in the channel and this should be connected to the drains.

Under the Public Health Act 1961 disused drains have to be sealed to the satisfaction of the Local Authority and this requirement should prevent rats from leaving the sewers by way of drains no longer required.

Rats and mice thrive where dirt is plentiful, where food and drink are accessible and where there are undisturbed places in which to sleep and breed; therefore, the premises should be kept clean and all food protected. Food should not be left out over night but should be kept in receptacles with tightly-fitting covers. Stocks of food, particularly when contained in sacks or bags, should not be left undisturbed for any length of time, but should be shifted, examined and re-stacked at least once a month. Empty containers, particularly biscuit-tins, should be cleaned out thoroughly before they are put aside for collection or re-use. Food scraps, crumbs and food refuse—peelings, cores, husks, etc.—should be swept up at close of business each day and deposited in covered swill-tubs or rubbish-bins. So far as it comes under the caterer's control, the area outside the premises should be kept clean and free of material (for example, stacks of timber, piles of refuse) which might form a breeding-ground for rodents.

When premises are infested, the offensive must be taken and the rats and mice must be killed. There are two effective killers—poisoned baits and traps.

Cats may act as a deterrent and may kill an occasional rat or mouse, but they cannot control large numbers. Cats need to be controlled and kept healthy, otherwise they may become a more potent hazard as salmonella voiders than the rodents they are intended to keep down. Broadly speaking domestic animals such as cats and dogs should not be found in catering establishments which are free of infestations, remove the sources of rodent infestation and then keep out all domestic animals.

Against *rats* in relatively small numbers traps are satisfactory. Traps should be placed close to a wall or stack on the rats' runway. Poison is the best method for killing rats, where there are large numbers. Care and skill is needed to select the right places for putting the bait—these are in holes or on runways where uneaten bait can be recovered and there is no danger of foodstuffs or utensils becoming contaminated.

The usual method of control is by using warfarin which should be placed in a number of small heaps in protected containers on the runs between the rodents' normal living quarters and their feeding places.

Warfarin is a blood anticoagulant, and rodents continue to feed until they have eaten enough to kill them ; it is important therefore to continue baiting until no more is eaten.

The following bait mixtures are recommended for use. For common rats a final concentration of warfarin in the bait should be 0·005% or 1 part of No. 1 warfarin master mix (0·1%) added to 19 parts of bait base, such as medium oatmeal. For ship rats and mice a final concentration of warfarin in the bait should be 0·025% for 1 part of No. 5 warfarin master mix (0·5%) added to 19 parts of similar bait base.

Further information on the use of the poison in a selection of bait bases is given in Advisory Leaflet No. 516—Control of Farm Rats and Mice by Warfarin.

If acute poisons are used, such as zinc phosphide or arsenic, it will be necessary to lay unpoisoned bait for a few nights to accustom rats to feeding before the poison bait is laid. This is unnecessary with warfarin.

Mice are generally more sporadic feeders than rats and are, therefore, more difficult to kill. Infestations by mice cannot be effectively tackled until good stock care and protection is practised. As many goods as possible should be in containers which prevent mice from gaining access to the food and regular and thorough inspection made of other stocks to find any traces of infestation before the mice establish their hiding places.

Rodent poisons are dangerous to human beings. If supplies of poisons are kept on the premises, they should be clearly labelled as poison and kept away from human food. In no circumstances should a white powder (which can be mistaken for baking powder) or virus preparation be used on food premises. Some forms of virus are themselves active cultures of the food poisoning organisms. Arsenious oxide and antu, which are white powders, are mixed with distinguishing dyestuffs when used as rodent poisons. Warfarin is also sold ready mixed with a dye-stuff.

The rodent operator must be familiar with the safety precautions mentioned on page 20 of Bulletin No. 181—"Control of Rats and Mice" and the warning contained in Advisory Leaflet No. 516, before using any poison for rodent control.

Rodent Proofing

Catering premises shall be proofed against the entry of rodents after carrying out any poison treatments because if the rat and mouse holes are filled and the normal runs disturbed any subsequent poison treatments may be ineffective.

The best materials should be used for proofing to be effective and cement, aggregate and expanded metal etc. should comply with the appropriate British Standards Specification.

When proofing a building the outside should be secured first. External doors should have 12" high 20 gauge metal plates across the bottom with similar protection on the exposed faces of the door frames.

Holes through walls and at the side of pipes or cables above and below ground should be filled in with brickwork or concrete and holes through concrete floors should also be filled with concrete.

Airbricks and ventilators, if they have openings in excess of ¼" should be protected with ¼" expanded metal dipped in asphaltum paint during manufacture.

Down pipes and any horizontal heating or other pipes connecting buildings should be fitted with rat guards and rainwater and ventilator pipes should have wire balloon guards fitted at the top to prevent rats from getting on to the roof.

Inside buildings as much harbourage as possible should be eliminated: wall tiles, for instance, are better than internal wall linings having cavities at the back and sealed floors do not provide the harbourage that the conventional timber joists and board floors do with the ceiling below.

Cavity walls, hollow partitions and floors, pipe ducts and chases should be constructed to prevent access to the cavities and, in the case of cavity walls, joists, steelwork or pipes should be tightly built in.

The following leaflet gives full particulars and recommended treatments against rodent pests:—

Control of Rats and Mice. Bulletin No. 181—1961. H.M.S.O. Price 4s.

Flies and Other Insects

Insects in catering establishments are objectionable for a number of reasons. Flies, bluebottles, cockroaches, steamflies and ants can carry germs from garbage or excrement to food and so cause food poisoning. Quite apart from this, the mere presence of insects in the premises is repugnant.

The Prevention of Damage by Pests Act, 1949, requires that all occurences of insect and mite infestation in food, food wrappings, storage buildings or transport vehicles must, subject to certain exceptions, be reported to the Ministry of Agriculture, Fisheries and Food or, in Scotland, the Department of Agriculture and Fisheries for Scotland. Both the Ministry and the Department have experts stationed at regional offices who can give advice on the control measures to be adopted.

It is virtually impossible to prevent many insect pests from entering buildings, although if wire mesh screens are provided to open windows, doors and ventilators they will keep out the larger flies, wasps, moths and flying beetles.

Such screens should be 24 mesh per lineal inch, 29 S.W.G. wire and constructed of copper, brass or galvanised steel, preferably in the form of double crimped woven wire cloth.

The wire mesh should be held tightly in a metal or timber frame fitted to the opening with no gaps anywhere in excess of 0·02 of an inch.

In the case of opening windows, the screen should be adapted to allow for opening, and at the same time providing adequate protection, and screens should be fixed with bolts and wing nuts to allow of removal for cleaning. The use of perforated zinc or fine gauze is not recommended, as these materials are easily damaged.

Flies

The commonest flies indoors are the housefly, lesser housefly and latrine fly.

The very small vinegar flies which breed in fermenting and decaying fruit and vegetable matter are sometimes found in large numbers, they are quickly attracted to such materials in larders and present a danger in unrinsed milk containers.

Houseflies tend to breed readily in fermenting decomposing vegetable matter such as catering refuse.

Blowflies attack rotting animal matter and are the most common flies found in dustbins. They may occasionally be found indoors.

Flies develop from egg to adult in a week at midsummer and there can be about 4-6 generations a year.

Flies spread disease and carry the eggs of parasitic worms. They may feed on refuse or dung and then settle on sugar, jam, cheese, meat, bread or milk, infecting the human food with disease organisms. As these foods (except raw meat) are not always cooked before being eaten, the germs can easily enter the human system.

Disease organisms may be spread in several ways; by bits of dirt which may collect on the hairs of the insects and drop off on to the food; by means of excreta (flies habitually void their excreta while feeding); or in the digestive juice which flies pour on to any solid food they may be eating. Because of their importance as disease-carriers it is essential that every effort should be made to exterminate flies.

The most effective way of controlling flies is to prevent breeding but where this is not possible other measures are necessary.

Houseflies and blowflies should be prevented from settling on human food. In areas where flies are numerous it may be necessary to cover windows with wire mesh fly screens and to use hanging bead screens in doorways.

The occasional housefly or blowfly can be conveniently killed by an aerosol spray from a pressurized dispenser. Household sprays, containing pyrethrum and DDT, should not be used where the spray can fall directly on to exposed food.

Vinegar flies should be dealt with by rinsing containers and removing the material in which they are breeding.

About the middle of May all inside walls, ceilings, doors, windows, etc., of premises known to be attractive to flies should be treated with an insecticidal spray that will leave a surface residual film which is poisonous to flies. This film will last for 2-3 months under ordinary conditions so that no respraying is necessary until the beginning of August. It may be necessary to renew the film more frequently near sources of heat such as ovens.

For painted or tiled surfaces a spray containing either DDT (5 per cent) or gamma BHC (lindane) (0·5 per cent) made up in odourless distillate or deodorized kerosene is suitable. The spray should be applied by hand or pneumatic spray machine so as to moisten the surface without causing run-off, particularly to window ledges and other localities where flies are seen to settle.

On porous surfaces, whitewash, brick, concrete etc., water dispersible powders containing DDT or gamma BHC (lindane) mixed with water at the correct dilution should be used. Do not apply insecticide to freshly limewashed surfaces as lime destroys the insecticide.

Areas particularly attractive to flies, e.g., lamp shades, skylights, tiled areas, etc., can be painted with an insecticidal lacquer which is almost invisible, and which remains active for a longer period.

Cockroaches

Cockroaches may be found wherever there is a supply of food, water and warmth. Their objectionable smell, which is most persistent, is passed on to any food or cooking utensils they touch. Even greater reason for concern is the ability of cockroaches to carry disease organisms, particularly those causing food poisoning.

Although it cannot climb tiled or polished vertical surfaces, it can easily climb rough walls.

A thorough inspection of the infested building should be made to assess the extent of the trouble before any insecticide is applied. Unless this is done, isolated pockets of insects may be missed and these will later re-populate the building, with the additional risk of allowing a resistant strain of insect to develop.

Cockroaches are nocturnal in habit and will not usually come out in daylight unless they are disturbed, so a bad infestation may pass unnoticed during the daytime. For this reason it is best to carry out an inspection at night (using a torch rather than normal lighting) but if this is impracticable the insects may be made to show themselves by applying a spray of pyrethrum to possible hiding places. A press-button aerosol dispenser does this conveniently. The spray should be directed at the hiding places for a few seconds at a time. If there are any cockroaches they will show themselves in less than a quarter of a minute. If large numbers are thought to be present care should be taken in case they scatter in all directions and cause alarm.

The usual hiding places include crevices in walls, the backs of drawers and cupboards and warm places such as the space underneath cookers or in the motor compartment of refrigerators. Underground ducts carrying hot pipes are particularly favoured. All these places should be checked thoroughly but the search should not be confined to the rooms in which the insects have been noticed ; they can readily make their way along pipes or through cracks from room to room and an extensive search is essential.

As in the control of other kinds of insects, the maintenance of a high standard of cleanliness will go a long way towards eliminating trouble. The insects are denied a ready source of food if crumbs, food scraps, and grease etc., are regularly removed and their presence is likely to be discovered at an early stage thus enabling control measures to be put in hand before a large population has built up. A satisfactory standard of hygiene is much more easily achieved if the building and equipment are well maintained. Fill in cracks and crevices and repair defects as soon as they are noticed. And when designing or installing machinery take care to construct or site it in such a way as to avoid inaccessible spaces which can never be cleaned. These places form ideal harbourages for cockroaches.

The insecticide now recommended for cockroach control is dieldrin. It is very toxic to cockroaches, chemically stable and maintains its efficacy for long periods. It is however toxic to warm-blooded animals as well as to insects and must be handled with care. It must never be allowed to come in contact with food or surfaces used for the preparation or storage of food.

Several formulations are obtainable to suit various situations. These include oil or emulsion sprays, water dispersible powders, dusting powders and insecticidal lacquers.

In many cases the most convenient formulation is an insecticidal lacquer. This is a varnish-like liquid which can be applied with a paint brush and which quickly sets to a hard transparent coating inconspicuous on wooden or painted surfaces. When it is set the insecticide crystallizes on the surface and any insect walking over it picks up a lethal dose. When the minute crystals are removed by this or other means fresh ones form, and, provided that it is kept clean from dust and grease by an occasional wipe down, the lacquer will maintain its effectiveness for a year or more.

An insecticidal barrier should be made between the insects' hiding places and their food supply. For this purpose it is sufficient to paint bands about 4 in. wide around skirtings, door and window frames, round the legs of tables, entry points of water pipes and electrical conduits etc., and alongside drainage gullies. It is not necessary to treat large surfaces of wall but the under surfaces of kitchen tables and shelving should be treated. As with any form of painting, surfaces should be carefully cleaned before the lacquer is brushed on.

Once the lacquer has set hard it cannot be removed by any of the usual solvents or paint strippers. For this reason:

(i) consider carefully where the bands are to be placed before the work is commenced ;

(ii) avoid splashing the skin or clothing. Not only are the splashes difficult to remove, but when an acid accelerator is used they are also corrosive. Therefore clean off immediately any that do occur ;

(iii) clean paint brushes and other equipment immediately after use. Cleaning solvents are usually supplied by the manufacturers of the lacquers.

Lacquer may be applied to any clean non-porous surface but, as the film is readily permeable to water vapour, it may peel off in damp conditions and lacquer should not be used on surfaces that are constantly wet or very frequently washed down, except as an additional short term measure for the initial control of a large infestation.

As an alternative to lacquer, a spray containing 0·5 per cent dieldrin may be used.

Sprays can be applied as solutions in oil (odourless kerosene) or as emulsions or suspensions in water. Suspensions (water dispersible powder formulations) are best for porous surfaces such as concrete or unpainted brickwork, and solutions or emulsions for non-porous surfaces such as metal or paint work. They can be applied by means of a small hand compression sprayer or by a paint brush using the same banding technique as for the lacquer. The frequency of application will depend on the nature of the surface and on the amount of cleaning it receives, but fortnightly application until the infestation has been eradicted is usually enough.

Very dusty areas which are rarely or never cleaned such as heating ducts, fuel stores, spaces under floor boards, and in inaccessible spots behind fixed equipment, are unsuitable for lacquer or spray treatment. Here a dusting powder containing 0.5 per cent dieldrin should be used. For applying dusts above ground the most convenient types of equipment are the hand blower with a long tube extension or the rotary knapsack dust blower. In confined spaces where these are too cumbersome, some form of compressed air dust blowing equipment may be used.

PLATE I. EXTRACT FANS AND HOOD

PLATE II. POTATO PEELER, PEELING TRAP AND GULLEY

PLATE III. WASHING-UP ARRANGEMENTS SHOWING STEEL SINK FOR UTENSILS, A STERILIZER IN THE CENTRE AND PORCELAIN SINK FOR CROCKERY. THE CANOPY AND EXTRACTOR FAN REMOVES STEAM RISING

PLATE IV. CLOAKROOM FACILITIES

Dieldrin dusting powder, unless it is swept up or covered by a heavy layer of dust, should remain effective for at least six months. This is sufficient to ensure that after the adults and young have been killed, any nymphs or young cockroaches emerging from the egg up to two months later are also killed.

Control measures should be sufficiently extensive and vigorous to exterminate the whole population of cockroaches.

Insects that survive an inadequate treatment become more resistant and transmit their resistance to their progeny, with the result that control becomes progressively more difficult.

It is important to inspect the treated areas from time to time for the next two or three months to see if any insects are still to be found. An occasional survivor does not necessarily indicate resistance, as the insect may have escaped contact with the insecticide. A follow-up treatment with the same insecticide should be given if insects are found and if this is unsuccessful, expert advice should be sought.

Ants

Information about ants and methods of control may be found in Ministry of Agriculture, Fisheries and Food advisory leaflet No. 366, "Ants in the House".

Wasps

Wasps are a nuisance during meals and cooking and may contaminate food.

Wasps' nests should be destroyed wherever possible but this should be done by a specialist. It should be remembered that the use of cyanide preparations for wasp destruction is illegal except under the conditions prescribed by the Hydrogen Cyanide (Fumigation of Buildings) Regulations, 1951.

Bait trapping is effective for use in buildings, but is of doubtful use in the open. Suitable materials are jam, syrup, molasses, fermenting fruit and beer, and the final choice may be made after testing a number of available substances on a small scale. Enough water should be mixed with the chosen material to drown the wasps, and the addition of a wetter or domestic detergent, at about a teaspoonful per gallon of bait, will cause the trapped wasps to sink quickly and make room for more. The bulk preparation should be poured into wide-mouthed jars or tins which are placed where wasps are likely to be active, e.g., windows, ventilators and doorways. The jars should be inspected periodically and the bait renewed when it has deteriorated or become too dry.

Bait-trapping can usefully be supplemented by spraying with a pyrethrum insecticide, particularly where the insects are a nuisance or danger to workpeople. Sprays can be applied either as a fine mist to kill flying insects (which is to be preferred) or as a coarser spray to leave a film on surfaces where the insects settle. If mist spraying is used, food should be screened to prevent dying insects falling into it.

Owners of restaurants and catering establishments can obtain further advice from the local authority Public Health Inspector, but if the problem is a major one they should write to the Regional Pests Officer at the Ministry of Agriculture, Fisheries and Food Regional Office, or to the Infestation Control Laboratory at Tolworth, Surbiton, Surrey.

Literature

The following literature published by Her Majesty's Stationery Office gives full particulars and recommended treatments against insect pests:—

"Houseflies, Blowflies and Cluster Flies". Advisory Leaflet No. 365—1962. H.M.S.O. Price 3d.

"Cockroaches". Advisory Leaflet No. 383—1962. H.M.S.O. Price 3d.

"Ants in the House". Advisory Leaflet No. 366—1960. Price 3d.

"Wasps". Advisory Leaflet No. 451—1961. Price 3d.

"Insect Pests in Food Stores". Advisory Leaflet No. 483—1963. Price 3d.

"Insects Infesting Bacon and Hams". Advisory Leaflet No. 373—1962. Price 3d.

Standard Specification for Fly-proof Screens

A screen to the following specification should prevent the smallest fly in this country from passing through but will not necessarily be proof against all insects.

The screen should be 24 mesh per lineal inch, 29 S.W.G. wire (0·0136″) having an opening not exceeding 0·0281″ constructed of copper, brass or galvanised steel, double crimped woven wire cloth.

It should be held tightly in a metal or timber frame which must be scribed to fit tightly into the opening to be screened leaving no gaps in excess of 0·02″ in the least dimension.

When the screen is used for windows having opening lights it should be fixed either internally or externally according to the direction in which the windows open. Where it is desired to open windows without removing the screen and in the case of centre hung windows which project both internally and externally, a metal or timber hopper filled with wire cloth should be constructed as part of the frame to allow for such opening, but care must be taken to see that there are no gaps in excess of 0·02″.

Fly screens should be fixed with bolts and wing nuts to allow for easy removal for cleaning and to allow the windows to be cleaned.

The construction should be such that when the nuts are tightened any small gaps are closed.

The use of perforated zinc or fine gauze is not recommended as these materials are easily damaged.

If all precautions against rodents and pests fail, the fault may lie with some careless employees, who habitually neglect to shut doors or replace the lids on dust bins and garbage bins. In the battle against kitchen pests, as in all other measures to secure clean food, the health and safety of the customer lie largely in the hands of the staff.

Chapter II

EQUIPMENT

It is not within the scope of this booklet to describe the various items of equipment used in catering establishments or to give instructions in their use. Such information can be readily obtained from the trade press and from the manufacturers. All that this chapter aims to do is to set out the general principles which, from the hygienic point of view, should underlie the purchase, installation and maintenance of equipment.

When buying equipment, the caterer, like every other trader, thinks first of purpose and price; he decides the needs of his business and he then buys equipment which appears to meet those needs and which he believes he can afford. There is such a wide choice of equipment now available and so much knowledgeable salesmanship that the final choice must be made on considerations of hygiene. Within the limits of need and usefulness and competitive price the ease or difficulty of maintaining any equipment in a clean and sanitary condition should be the final deciding factor. The cost of really cleaning a machine cannot be precisely assessed in advance in terms of detergents, sterilants or labour ; but what can be determined, by examining the designs of machines, the materials of which they are made, and the principles on which they operate, is which would be easier to keep clean, and therefore both more hygienic and cheaper in the long run.

From the point of view of food hygiene the best machine to buy is the machine which is not only easy to clean but which can readily be examined to make sure that it is clean. If a machine is difficult to clean, only the most conscientious person will clean it properly; and, if it is complicated in design or construction, even the most conscientious manager will be unable to find the time to examine it thoroughly and frequently in order to satisfy himself that it has been cleaned. No piece of equipment in a kitchen should give the cleaner either the encouragement or the excuse to scimp the operation of cleaning it.

The intending purchaser, therefore, should consider the ease with which a machine can be taken apart, cleaned and reassembled. If all parts which come into contact with food, or which may harbour dirt which could get into food, cannot be got at readily by a kitchen hand of ordinary intelligence and average mechanical ability, the equipment should have no place in a caterer's kitchen. Before purchasing any new piece of equipment the caterer should insist on being provided with precise instructions for dismantling, cleaning and reassembling.

This advice is not, of course, intended to apply to items of equipment (e.g. electric motors and fans) which do not come into contact with food; but it must be remembered that any fixed object in a kitchen may harbour dirt or dust (which may fall or blow into the food), and must therefore be kept clean. Unless motors are completely enclosed (as they are in most refrigerators) they should be of a type that can be cleaned, if not by a kitchen-hand, at least by a mechanic who is regularly and quickly available.

A prospective purchaser of equipment should remember that, from the hygienic point of view, the most efficient design is that which has the greatest areas of unbroken smooth surfaces, avoids ornamentation entirely, and has no unnecessary flange, ridge, projection, screw, serration, bulge, dent, crevice, internal corner or dust trap. It is a good plan for machines which require specialised cleansing to have an instruction plaque setting out the simplest effective routine affixed at operators eye level and for nominated persons to be made responsible for following that routine at known and stated intervals.

To a considerable extent, the design of a machine is dictated by the principles of its construction and operation. All moving and working parts require maintenance; and, if they come into contact with the food, they require meticulous cleaning. Defects in design or construction (or the wearing away of parts) may lead to the addition of lubricating oil to the food—to the secretion of food particles (nourishment for thriving colonies of germs) in the interstices of screws, bolts and washers—and to the flaking into the food of slivers of soft and perhaps harmful metal. Machines incorporating brushes should be so planned that the brushes are automatically and efficiently cleaned during operation. All machines in which a rotating shaft is inserted through a surface with which food or drink comes into contact should have a close-fitting joint between the moving and the stationary surfaces. Rubber gaskets or flanges used for such purposes should all be of BSI 1578 (Milking Cup) standard.

The material used in the construction of equipment deserves consideration. It should be so chosen that the food with which it comes into contact will not be liable to contamination. Enamel should not be used for acid liquids; galvanising is liable to corrode and may possibly contaminate food with zinc. Tinned vessels are satisfactory when the tinning is adequate, but the film may be disturbed by heating or by wear. On the other hand, porcelain enamels (and some stoneware finishes) will withstand scrubbing better than stainless steel will; stainless steel can, however, be washed and swabbed easily and efficiently.

Machinery and fixed equipment should be so sited in the kitchen that not only can it be got at for cleaning but that the adjacent walls and floors can also be easily cleaned. If an article stands on legs, the legs must be long enough, not only to allow a broom to reach underneath, but also to enable the floor to be readily inspected for cleanliness.

All machinery and equipment should be maintained at a high level of efficiency. All mechanical plant (refrigerators, washing-up machines, etc.) should be serviced regularly. A record should be kept of the dates and details of such servicing. Utensils and items of equipment which are chipped, cracked, corroded or otherwise in a condition to harbour dirt or germs should be discarded. They are more costly to maintain than perfect utensils and never repay the cost of the cleaning materials and labour expended to get them clean.

Apart altogether from its cleaning, the ease with which a piece of equipment can be handled or operated has an important indirect bearing on hygiene. Most measures of kitchen hygiene demand a little extra care and trouble from the staff; a tired or exasperated operative will be reluctant to make the

effort. Equipment which is heavy or clumsy, with handles which are hard or stiff to turn, doors which do not open readily, shelves that are uncomfortably high or low—anything which compels constant bending, stretching, or lifting—tends to tire or to annoy and should be avoided.

The interiors of ovens are often difficult to clean. The ideal arrangement is a loose inner oven, which can be removed for cleaning. In default of this, the oven should be fitted with an interior light which comes on when the door is opened so that it is possible to see at a glance whether the interior is clean.

Special arrangements have to be made for fuelling apparatus which burns solid fuel or oil. Whenever possible, the fuelling should be completed before the cooking is begun. If refuelling is necessary during cooking, then the fuel container should be near the oven but should be well covered to prevent contaminating the food. The cleaning out of boilers and the removal of ash should be done outside cooking hours and before the floor is scrubbed. A point to look for in solid fuel appliances is the relation of the stoking door to the entrance for the food; if these are close together the food may become contaminated with fuel-dust.

Work-tables, counters and other furniture should, in general, be of simple design, free of crevices, cracks and corners in which dust may collect. The surface material will depend, to some extent, on the purpose for which it will be used. The main considerations are that the surface should be impervious to liquids and should be capable of being easily and throughly cleaned. Soft wood is unsatisfactory, as it absorbs moisture, is easily scratched and cut, cannot be readily cleaned, and allows the multiplication of germs. Seasoned hardwood provides a good surface for cutting (but any joints should be tight). Much thought needs to be given to operations which involve cutting through foodstuffs. Many such operations do not necessarily mean that the cutting edge actually goes through to the working surface and such operations should therefore not be used as a reason for extending the areas of hardwood in use. New plastic/rubber/nylon cutting surfaces are available which are very suitable for such operations and present surfaces which do not remove the edge from cutting tools, do not mark and are easy to cleanse throughly. Enamelled surfaces, so long as they are not chipped, are good for all purposes except through cuts. Stainless steel of BSI standard quality is similarly universally suitable and especially correct for draining boards. The plastic type resin bonded hardboard surfaces which cannot be scratched by abrasives and which will not show burn or scorch marks are excellent for counters and cafe tables. Marble still remains the best surface for fats and pastry preparation.

The bottom shelves of counters should be at least twelve inches above the floor, so that the floor can be swept underneath. Large work-tables which are too heavy to be lifted easily should be fitted with wheels or castors so that they can be moved when the floor is cleaned.

Utensils and tools. Suggestions about receptacles or utensils for particular foods are made on pages 44 to 59. In general, it should be stated that, with few exceptions, all utensils and small items of equipment which touch food or drink should have a hard impervious surface which is not easily worn away or corroded and should be free of breaks, cracks or open seams. Their design

should be such as to make them easy to clean; they should not have crevices or corners in which food may lodge; and they should not be used unless they *are* clean. Utensils containing or plated with cadmium or lead ought not to be used.

Temperature controlled storage. The actual needs of the business in relation to temperature controlled storage requires to be properly studied and provision made for deep freeze storage, that is at ranges down to 14°F (−10°C), cold storage at 25-30°F (−5 to 0°C), chill storage at 35°F to 37° F (2 to 3°C), and cool storage below 50°F (10°C). It is not possible to have one piece of equipment to cover all these ranges but caterers will find that deep freeze cabinets are a vital need where " short order " meals are needed and that the greatest problems will arise in maintaining a storage area at temperatures between 40°F and 50°F (4° to 10°C).

The use of deep freeze foods will probably necessitate the use of thawing areas and/or thaw/cook ovens which cook by microwave electricity.

" Short " or " called " order equipment. New development in combination cookers for meals cooked immediately after the customer has given the order have increased the popularity of this type of catering. Provided that the storage of the foods after preparation and before cooking is correct, this method has many advantages from the viewpoints of hygiene and management. The normal combination in " called order " equipment is a hot closet and grill and griddle units, boiling rings, toasters, bain marie, deep fat fryer and chip scuttle. Such combinations need direct filter ventilation hoods connected to an artificial air extract system working at high velocity. The grease filters will not work if the air extract is not of sufficient velocity and fumes will not be removed from the cooking area and fat deposits will appear on the external surfaces to drip back in periods of rest. It is vital that the working surfaces should be of stainless steel of high quality and that all these surfaces should be effectively and regularly cleaned.

Advance Preparation

For many years food poisoning troubles have been traced to foods made up in advance and reheated for service. The demands and the economics of full menu catering for large numbers of people make prior preparation and cooking an absolute necessity if service in these conditions is to be effected in a proper time convenient to the customer and the caterer. The fault does not lie with work done in advance but with ineffective and careless storage of foods between preparation and service. Short term prior preparation of meats and similar dishes demands the use of a hot plate. The good caterer ensures that the hot plate is kept at temperatures well above blood heat but not too high to spoil the taste or appearance of the meal. The best temperature is between 150°F and 175°F. This means the overall temperature of the hot plate or holding cupboard. Similarly foods which are not intended for hot service should be held at temperatures below 50°F. The time of holding at either of these temperatures is very dependent on the type of food being dealt with but normally the rule is that no foods ready for meal service should be held in hot plates or hot cupboards for more than 45 minutes and no foods should be left at storage below 50°F. for longer than 12 hours without consideration whether they need lower specific temperatures for specific foods.

The fact has been recognised that prior preparation is quite safe as long as the foods have been carefully and hygienically prepared and they have been correctly stored free from risk of contamination and at correct temperatures until required for service.

There is now a wide range of storage equipment which has been specifically designed to provide correct controlled storage temperatures and the caterer knowing his general type of trade will be advised to give this matter deep thought and to purchase equipment which will make his overall meal planning and kitchen work more subject to exact control. Large scale and industrial and institutional catering systems are now being designed to a pattern which turns the kitchen into a true production factory with meals being prepared and set for service in advance then deep frozen and stored in deep freeze chests until required for service. When required, the meals, or some specific individual parts of meals, are withdrawn from the holding chambers and effectively and quickly reheated and served. There is no inherent hygienic hazard in planning kitchen work and carrying it out in advance. The hazard is in improper or inefficient storage of the ready foods. This prior preparation cannot be considered as a catering possibility without the correct storage and holding equipment.

This method with the correct equipment will undoubtedly increase in popularity and use for large scale set time catering but the meal cooked at order will still remain as the essence of good catering. The expenditure of catering knowledge and culinary skill on such meals only to have them spoiled and made into a health hazard by poor storage equipment must be avoided.

Maintenance Equipment

Under this heading it is proper to stress the fact that food machinery and food premises need continued and effective cleaning and maintenance. The best detergents and sterilizers are therefore essential items of equipment. there is as much need for good cleaning down as there is for good washing up and the best cleaning is done where there is a cleaning plan and routine and where sufficient shelf and work bench space is provided. This provision of work bench space is necessary to reduce the possibility of food and utensils being put down out of hand after one process is complete and before the next process starts. What is meant is easily understood when one considers preparation of menu items such as pastry-covered pies, decorated trifles etc. There must be a place for this work and there must be a rule that the place is cleaned immediately before the actual work is done. Thus detergents, sterilizers and cleaning utensils are essential equipment. Detergents remove grease and dirt and loosen soiling materials on utensils. Sterilants or sterilizing agents kill off bacterial contamination. Much of the good work of chemical sterilants is turned to nothing by wrong use of cloths to give a final polish to the utensil or article of crockery or work place. Such cloths, should they be considered absolutely necessary, should themselves be kept immersed in an active sterilant solution and wrung dry just before use.

Chapter III

PRACTICES

Section A

WELFARE AND CONDUCT OF STAFF

Food poisoning does not just happen. It is always caused, and the cause is nearly always the act of negligence of a human being. Therefore, the greatest single factor in the serving of clean food in a catering establishment is the mental attitude of the people working there. Carefully planned lay-out and well designed equipment will do a great deal to reduce the dangers, but ultimately it is the human factor which counts for most, and the right mental attitude is most easily developed and maintained in good surroundings.

It is therefore essential that both managements and staffs should appreciate the importance of their function in the community and should be thoroughly imbued with the principles of food hygiene. There is a legal obligation to practise cleanliness attaching alike to the cooks and kitchen hands who prepare the food, to the waiters and waitresses who serve it, and to the washers-up and cleaners; and there is equally an obligation on the managements to provide their staffs with the facilities for practising food hygiene and the encouragement to use them. All persons engaged in the industry should attend such courses on food hygiene as are available, and should qualify and train themselves in hygienic practices until these become automatic. Training courses in food hygiene leading to examinations for proficiency certificates are conducted by local authorities on behalf of both the Royal Society for the Promotion of Health (90, Buckingham Palace Rd:, London, S.W.1) and The Royal Institute of Public Health and Hygiene (28, Portland Place, London, W.1) prospective students should make enquiries at the public health department at the local town hall or council offices.

To a very large extent cleanliness results from habit. Some people cannot work in a dirty place or with dirty tools, and they will be clean, without instruction, because it is their nature to be clean. Such people—and only such people—should be employed in the catering industry. It is however, inevitable that in an industry which is so large and so diverse, and which necessarily employs a good deal of casual or short-term labour, there will be a fairly large number of people who are not naturally uncomfortable in dirty surroundings and who will consequently carry out hygienic practices only because they have been instructed to do so. With such people the practice of hygiene calls for extra effort. It is the duty of managements to do all they can to encourage their staffs to take that extra trouble. The efficient lay-out of the premises—so that the workers are neither over-crowded nor compelled to carry food or utensils over long distances—proper ventilation, the provision of stools or chairs for cooks or kitchen hands engaged on tasks which can be performed sitting down, the siting of wash-hand basins close to the working points—all these tend to lessen fatigue, to produce an atmosphere free of hurry and strain, and therefore to encourage care and cleanliness.

Seats

Much of the work in the catering industry entails standing, but many food preparation jobs which are traditionally done standing could be done equally well sitting, and all catering workers have occasional opportunities in the course of their work when they could reasonably sit down. Caterers are recommended to provide seats for their staff, even when there is no legal obligation. There is nothing morally wrong in sitting to work and no virtue in standing for the sake of standing—though some employers, and employees, think there is. A tired worker will be disinclined to take the trouble that cleanliness requires; sitting down saves fatigue, lessens nerve-strain and increases resistance to illness.

It is worth while to give some thought to the type of seat. Since it is undesirable to clutter up a kitchen with furniture, folding wall seats, swing-out seats or stools which can be pushed under work tables when not in use, have much to recommend them; but when people are sitting for some time, back rests and foot rests add considerably to their comfort. The height of the seat in relation to the working surface is also important.

Staff Cloakrooms

All catering workers, and particularly cooks and those who prepare and serve food, should be clean in body, clothes and habits, taking a pride in the smartness of their personal appearance. Such smartness can only be expected however, if proper facilities are provided for changing clothes and for storing outdoor clothes during the day and working clothes at night. Clothes and other personal possessions should not be kept in the kitchen, either regularly or occasionally. The ideal arrangement is a staff cloak-room, distinct from but preferably adjacent to the food preparation rooms, containing the sanitary conveniences and wash-basins and also individual lockers for clothes and other personal articles. Where both sexes are employed—and particularly where waiters or waitresses have to change into uniform—there should be separate changing rooms for each sex.

Clothes lockers are desirable because most people prefer to keep their outdoor clothes within sight of their work places, unless they are satisfied that there is no risk of theft. A type of clothes locker used in some establishments, and much to be recommended, has lattice-work sides and front enabling wet out-door clothes to be dried by the normal ventilation of the room ; it also has a shelf for handbags, hats, shoes, newspapers, books, parcels and other personal possessions.

A desirable standard for wash-hand basins would be not less than one for every ten employees, and it is important that hot water should be laid on.

Towels for common use are undesirable and no such towel should be in use. Personal towels provided, should be changed at least three times a week. In larger establishments hot-air dryers or encased roller towels with a fresh section for each user or individual paper towels, may be more economical than individual cloth towels; and liquid soap will be found to be a convenient and, in some respects, economical alternative to tablet soap. Another form of soap suitable for communal washing places is sold as a semi-liquid, with the same consistency as toothpaste, and delivered to the washer through a nozzle from a bulk container. Nail-brushes are essential and should be kept thoroughly clean.

A useful adjunct to a staff rest or first aid room is an automatic gas or electric toilet and hospital incinerator which quickly and completely destroys soiled sanitary towels, surgical dressings, etc.

Provision should be made for staff meals but, in default of a separate dining room, the nature of the provision must vary with the circumstances. The staff should certainly not have to eat in the kitchen, and it usually considered undesirable for staff to eat in the public dining rooms when the public is present. The nature, location and furnishing of the staff rest rooms must determine whether they can be used for staff meals.

Protective Clothing

Protective clothing should always be worn while at work, and, since its purpose is as much to protect the food as to save wear on the clothes of the worker, it should be changed and washed frequently. For washing-up and for such vegetable preparation as potato peeling rubber aprons are desirable. Cooks and those engaged on preparing and serving food should have white or light coloured overalls, large enough to ensure that the food will not come into contact with any clothes worn underneath.

Waiters should wear washable jackets and waitresses should wear light-coloured, washable dresses or overalls. Nylon overalls have the advantages that they can be washed at close of work, dried overnight, and need no ironing.

It is customary for cooks to wear white caps, but it does not appear to be generally realised that the cap is intended to protect the food from contamination by the hair as well as to protect the hair and scalp from the effects of steamy heat, fat vapours and flour. All cooks and persons engaged on food preparation should wear a washable head-covering so adjusted as to prevent hairs from falling into the food. A fine mesh turban type muslin hair-covering can be both attractive and hygienic. Hair should never be combed or tidied in a room where food is being prepared.

Footwear

It is important to pay attention to footwear. People who are constantly on their feet need to learn how to stand and walk with minimum fatigue; for this they should wear comfortable and good shoes or boots which permit the body weight to be distributed, which support the arch and ankle, and which protect the foot from casual bruising against furniture or from falling trays or utensils. Moderate or flat heels are usually most suitable; sandals do not give sufficient support for hard wear. Certainly no shoes should be worn after the heel has twisted over.

Germs and the Hands

The health of catering workers is dealt with in the next section, and here the concern is only with people who are in good health. Even healthy people carry around with them—principally in the nose, throat, skin, bowels and bladder—some germs of the types which can be responsible for food poisoning and other diseases. Food handlers must therefore take every precaution to ensure that such germs are not passed on to the food. An obvious precaution is not to cough or sneeze over food, and not to shake a handkerchief near it. A less obvious precaution—but one in which catering workers should train themselves—is to avoid touching the lips or nose. Nose-rubbing and finger-licking are objectionable at any time, and wiping the hands on the apron should be avoided.

The principal danger, of course, comes from the hands. All catering workers must realise that in their hands lie the health and well-being of the customers ; and they should endeavour to train themselves to the point at which they habitually shrink from touching food with their hands—touching it only by a conscious effort of will-power when it cannot be avoided. It is an advantage also if they can acquire a feeling of acute discomfort whenever their hand are unwashed. In most catering establishments there is a good deal of unnecessary handling of food although a certain amount of handling is unavoidable. A cook is a craftsman, and food preparation is a craft in which some processes can only properly be performed by skilful fingers. It is therefore imperative that these fingers, and also the hands and forearms, should be meticulously clean. Nails should be kept short, well trimmed, and clean; dress rings and wrist-watches should not be worn at work. Food handlers should wash their hands and wrists (and, for some tasks, the forearms also) each time they enter the food preparation room or kitchen, and also frequently during the course of their work—particularly if they should happen to touch something unconnected with the job on hand. Use plenty of hot water and soap and scrub with a nail brush. Disinfectants are unnecessary.

The most important single rule of food hygiene for all catering workers is: always wash your hands after visiting the sanitary convenience. This should be regarded by everyone as a necessary and well-mannered social custom. If this simple rule were universally followed, there would be a remarkable decrease in the spread of intestinal infections. Managements should encourage their staffs to obey it by providing fully-equipped wash-hand basins close to the conveniences and placing " Wash your hands " notices prominently in the conveniences as required by the Food Hygiene Regulations Toilet paper is porous, and germs tend to lurk under finger nails; therefore this essential handwashing may not be fully effective without the aid of hot water and a nail-brush. Frequent inspection should ensure that soap, nail-brushes and suitable drying facilities are available and that the notices are in position.

Posters on this and other aspects of food hygiene could, with advantage, be put up in suitable places in the working parts of catering establishments; if put up in kitchens, they should be pasted so firmly to the walls that they will not provide hiding places for dirt and insects.

Some managements carry out inspections at irregular intervals in order to make sure that hands are being kept clean; there is, however, a tendency for such supervision to be resented, and those who need it are probably unsatisfactory in other ways.

Smoking whilst preparing food is likely to lead to the contamination of the food and for this reason is prohibited by the Food Hygiene Regulations. The danger here is largely an indirect one: smokers frequently (and often unconsciously) touch their lips in the act of smoking, and they are prone to cough. By either method they can transfer germs to food. The cigarette-end which finds it way into food is also dangerous, since it will have been in contact with the smoker's mouth. Therefore the caterer should post in " food rooms " "NO SMOKING" notices warning the staff that smoking is against the law. Unauthorised persons should not be allowed in kitchens or other places where food is being prepared; and members of the staff should be discouraged from

standing about in the kitchens when they are off duty and in their ordinary clothes. These people may still be smokers and if they light up those on duty may be tempted to smoke as well.

Customers are not prohibited by law from smoking in food shops and catering establishments, but restrictions applied by managements requesting customers not to smoke can reduce the temptation of staff to smoke, reduce the risk of fire or burn damage, and reduce the burden and expense of cleaning the premises. If staff have reason to remain on the premises after working hours they should go to the rest room.

Use of premises for other purposes. The working premises of catering establishments should not be used for other purposes, even after hours; they ought to be entirely separate from any residential quarters in the same building, and they certainly should not be used for domestic washing or drying of clothes. The Food Hygiene Regulations prohibit their use as a sleeping place.

Animals. Since live animals and birds often carry dangerous germs, they should be excluded from rooms where food is being prepared, cooked or served, and if they are allowed in at any other time, they should not have the slightest chance of access to any food stored there. No animal or bird, domestic or otherwise, should be allowed to eat or drink from plates or any other vessels in which food is or may be prepared or served for human consumption.

Indiscriminate use of equipment. Catering workers should be strongly discouraged from using utensils and equipment for purposes other than those for which they are intended. There should be sufficient equipment to make it unnecessary for any article to be used for more than one purpose; for example, saucepans used for cooking food should not be used for boiling out dish-cloths; mops and dish-cloths should not be used for general cleaning; floor mops should not be rinsed in kitchen sinks.

Section B

HEALTH OF STAFF

Purely medical matters are outside the scope of this booklet, but the health of the catering worker is important to the customer because a sick worker may be a source of infection to food, and being unfit, is less likely to take proper care in handling food. Those whose medical history makes their presence in the food trades a possible menace to public health should seek their livelihood elsewhere, and the caterer should take all reasonable steps to ensure that he does not employ them. Staff should not be engaged for handling food unless they appear likely to maintain a satisfactory standard of hygiene.

People suffering from an infectious disease ought not to be working in catering establishments. The chance of this happening is not very great; the principal danger comes from people who are as yet in the early stages of illness or who are not ill at all but are carriers of harmful germs which may seriously contaminate food or utensils. Persons who have suffered from typhoid, paratyphoid, dysentery or food poisoning may continue to carry the germs of these diseases and therefore should not work in the catering industry unless they have been declared free from infection. Applicants should be asked

whether they have suffered from typhoid or paratyphoid fever or if they have ever, to their knowledge, been carriers of one of these diseases. The Medical Officer of Health of the local authority should be consulted before anyone is engaged who has answered this question positively.

But this is not enough. Mankind is subject to many ailments which depress but which do not incapacitate, and most people consider that it is unnecessary, and indeed unreasonable, to stay away from work if they are suffering from one of them. But the special responsibilities of the catering worker make it necessary for him to take up a somewhat different attitude. Certainly no person who is suffering from a discharging wound, sores on the hands or arms or any skin infection, discharging ears, or from attacks of diarrhoea or vomiting should be handling food which other people will eat or handling utensils which other people will use in eating. The management should explain the danger of communicable infection to the staff and insist on reasonable precautions.

A caterer cannot always tell from his own observation that an employee is unfit to be handling food, and he should ask his staff to report bowel disorders, digestive upsets and skin infections and any such employee should not be allowed to handle food before medical advice has been taken on the precautions which may be necessary. The degree of candour necessary for the full protection of the public is more readily obtained if such confidences can be made either to a welfare officer or to a reliable person of the same sex as the employee. To send a worker home or to transfer him temporarily to another job disorganises routine and may raise other problems, but the caterer must face them, because he has a very special responsibility to the public which he must not neglect.

Catering workers should be particular about their teeth and gums, since an unhealthy mouth will harbour many germs which are readily transferred to the hands and thence to food or to a utensil; twice a year is not too often to visit a dentist for a routine examination.

Section C

ENGAGEMENT OF STAFF AND ALLOCATION OF DUTIES

When engaging staff who claim to have some experience in the catering industry, a caterer would find it worth while to ascertain what knowledge they have of food hygiene. Anyone who has worked in the industry for any length of time and who does not possess some knowledge of the principles and practices of food hygiene is unlikely to be a satisfactory employee from the hygiene point of view or, indeed, from most other points of view.

When advertising for managers or senior staff, it would be desirable to include knowledge of the principles of food hygiene amongst the qualifications required. The subject of personal and kitchen hygiene is included in the syllabuses of many of the catering courses being offered, and short courses specifically related to hygiene for food handlers might be arranged by local education authorities and colleges in any area where a strong demand for such courses exists and makes itself felt.

From the point of view of hygiene, as well as that of general efficiency, it is desirable to have duties allocated precisely among the staff. It should be the responsibility of a designated individual to examine all food delivered to the

establishment and to take appropriate action if it is unsuitable for its intended purpose. The washing and putting away of utensils and the cleaning of equipment and premises are duties which must be clearly assigned to individuals; there must never be the slightest doubt as to whose duty it is to clean each item. There must, moreover, be a system of understudying to ensure that cleaning is carried out in the absence of the person primarily responsible; and a system of supervision of the whole.

Section D

ACCIDENTS AND THEIR PREVENTION

The motto of this section is: "I didn't think—"

A section on the prevention of accidents is appropriate to a booklet on food hygiene for three reasons:

firstly, minor accidents result in cuts and abrasions which may be a source of infection to the food;

secondly, major accidents result in absences and thus upset routine; and this may lead to the temporary neglect of such hygienic precautions as the proper cleaning of utensils and equipment;

thirdly, workers in an establishment where the lay-out and equipment have been designed to be as accident-proof as possible will not have to concentrate all their attention on avoiding accidents and will be able to spare time and thought for the claims of hygiene.

All food premises have to provide first-aid kit. Restaurants and canteens attached to department stores and factories usually have the services of a proper first-aid room with a full-time staff, but most caterers will find a carefully stocked first-aid box or cupboard sufficient. At least one trained first-aider should be available whenever staff are on duty in the kitchen. The most convenient place for the first-aid outfit is usually the staff rest-room or cloakroom; the names of the trained first-aiders on the staff should be posted up nearby.

Any accidental cut or scald should be immediately covered with a protective water-proof plaster; otherwise, the place may become infected and the infecting organisms transferred to communal towels, kitchen utensils, equipment, or direct to food in course of preparation. Incidentally, first-aiders should wash their hands after treating even slight injuries.

Many accidents occur because people are excited or in a hurry. The difference between quick, skilful craftsmanship and hasty, careless bungling is usually obvious in its results. Catering workers should never be in too much of a hurry to do their job in the proper way. Sometimes, of course, an operative has to work hurriedly because the kitchen—perhaps only temporarily—is under-staffed ; but hurry and excitement frequently arise as a result of poor lay-out, bad ventilation, unsafe flooring, inadequate or remote sanitary accommodations, overcrowding, and neglect (perhaps involuntary) by the management to plan and equip the kitchen efficiently. Hurry also arises because the work has not been planned. Cooks should work to a time-table.

Almost all accidents in kitchens are caused by human action, or lack of action, and could have been avoided by the exercise of care or foresight. Not everybody is suited to be a catering worker. Some unfortunate people are accident prone, but others have accidents thrust on them. The scatter-brained person who is for ever putting obstructions on the floor for other people to fall over should seek employment in a circus rather than a kitchen.

The majority of accidents in kitchens can be classified under three headings: falls and collisions; burns and scalds; cuts and abrasions.

Falls and collisions sometimes occur as a result of insufficient lighting or faulty lay-out. Floors should not be uneven or slippery; doors should be self-closing, with transparent glazing at eye level; steps should be wide and shallow; ramps or slopes are preferable to single steps; there should be no blind or narrow corners at traffic lines; open floor channels should not be sited where operatives are likely to have to stand. For some accidents under this heading, the victims or their colleagues are themselves to blame; such accidents arise because passages and traffic lines have not been kept clear of obstructions, because spilt food or liquid has not been wiped up and a slippery patch has developed, because an extempore erection of boxes has been used instead of a ladder, to reach a high cupboard. Falls also result from climbing a ladder without a free hand to grasp the guard rail and from wearing shoes with slippery soles or very high heels. Another cause of falls, for which the management is usually to blame, is the loose, broken or missing gully grid.

The kind of wound usually produced by falls and collisions is also produced by banging the head against an open cupboard door, by bending to pick something off the floor and hitting the head on a shelf or table when rising, and by dropping heavy objects on the feet.

Burns and scalds may arise from accidental fires. All cooking appliances should be stood on non-combustible bases. Such bases should be not less than two inches thick and should extend not less than two inches beyond the planes of the sides of the appliance. If this is not possible, the appliances should be so designed as to prevent the floor temperature reaching 150°F. Where combustible material is within nine inches of cooking apparatus or vents connected to them, provision should be made to keep the temperature of such material below 150°F. when the appliances are maintained at their maximum working temperature.

The premises should have efficient and accessible fire-fighting equipment.

Scalds often result from steam escaping through defective valves and joints, and scalded feet are often caused by loose cocks to tea urns or boiling pans. If the condenser pipes of wet steam ovens are not kept free, water accumulates in the oven, and the cook who opens the door and looks in is scalded in the face. Experienced cooks usually stand behind the door when they open the oven. Experienced cooks, moreover, use dry cloths to handle hot utensils; wet or damp cloths transmit the heat and may cause burns.

Cooks occasionally scald themselves by touching the hot top of the stove, or by overturning a vessel full of boiling liquid, but this type of accident most commonly occurs not to the cook but to someone who has no business to be near the stove. Hot fat causes many fires and a considerable number of burns. If the deep-fat frying pan is more than about two-thirds full it may spill out on to the range, and if hot fat is mixed with cold liquid it will splutter dangerously.

Cuts and abrasions sometimes result from unfenced machinery or from machinery which is badly sited—too close to other equipment or to traffic lines. Many of the machines used in catering kitchens, however, are of such a nature that their knives and blades cannot be completely protected without rendering them ineffective for their purpose ; and accidents resulting from the

negligent use of mincing, mixing, slicing, bread-cutting and bacon-cutting machines are very common. It is a duty of the responsible person in a kitchen to take all possible steps to prevent accidents and to impress on the workers the need for care in using kitchen machinery and equipment. Even so, many accidents result from carelessness and from failure to obey the manufacturer's instructions ; many a kitchen hand has paid a finger as the price of his contempt for the dangers of a machine he was over-familiar with; and many surprised operatives have wounded themselves by meddling with machines they did not understand.

It is sound practice to restrict the use of particular machines to certain skilled operators and to make them responsible for seeing that the machines are kept clean and in proper running order. When a machine is available to everyone, it becomes the responsibility of no one; and machines which are not cared for, like unloved children, are liable to turn savage. Certainly, no one should be allowed to use a machine which has dangerous potentialities until both its working and the safety precautions have been fully explained and understood. If the manfacturer supplies a printed card of instructions, that should be hung close to the machine.

Each make of machine has its own peculiarities, and this booklet cannot describe all the accidents which may happen with each type. Examples of accident-producing practices are; operating a slicing machine without adjusting the safety devices or without sheltering behind the safety guards; changing the beaters on a mixing machine without switching off the motor; and feeding or attempting to free a mincing machine with the fingers.

Butchers sometimes cut themselves badly by resting the free hand in the striking area of the cleaver, or by not keeping the hand behind the knife when attempting to cut up meat which is insufficiently thawed and therefore slippery.

An energetic attempt to force a saw may cause it to jump and tear the hand used for steadying the carcase; a tough crust in a pile of sandwiches may lead to a similar kind of accident. It is safer to place the index finger of the free hand on the back of the blade.

Carvers cut themselves by using a fork or steel without a guard, or by dropping the knife and grabbing it by the blade. They cut other people by gesturing with the hand that holds the knife or by walking about with the point of the knife held outwards.

Washers-up cut themselves by grasping knife blades in soapy water, and the dryers-up cut themselves by picking up assorted handfuls of cutlery from the draining board. Impatient people who open tins with knives often cut themselves when the knife slips; and if they open a tin with a cleaver they leave jagged edges to cut someone else. There is a good deal to be said for putting the tin opener back in its place after use or for using a type which is permanently secured to the wall.

Not only knives need careful handling, forks too, can cause damage or injury.

Cuts or abrasions sometimes result from cracking glassware or broken crockery—even from picking it up after a fall ; and some very ugly and painful jags in the hand can be obtained by impetuous efforts to open wired packing cases.

PLATE V. HAND WASHING FACILITIES IN KITCHEN OF RESTRICTED SIZE

PLATE VI. GOOD PLACING OF PARTITION WALL

PLATE VII. ABSORBENT PLASTER BOARD SQUARE CEILING. NOTE ALSO CEILING VENTS

PLATE VIII. VENTILATION HOOD OVER FRYING RANGE

PLATE IX. GALVANISED IRON POT WASH SINKS WITH RACKS

PLATE X. GOOD PREPARATION EQUIPMENT WELL POSITIONED

PLATE XI. GOOD STORAGE FOR SERVICE AND SERVICE EQUIPMENT

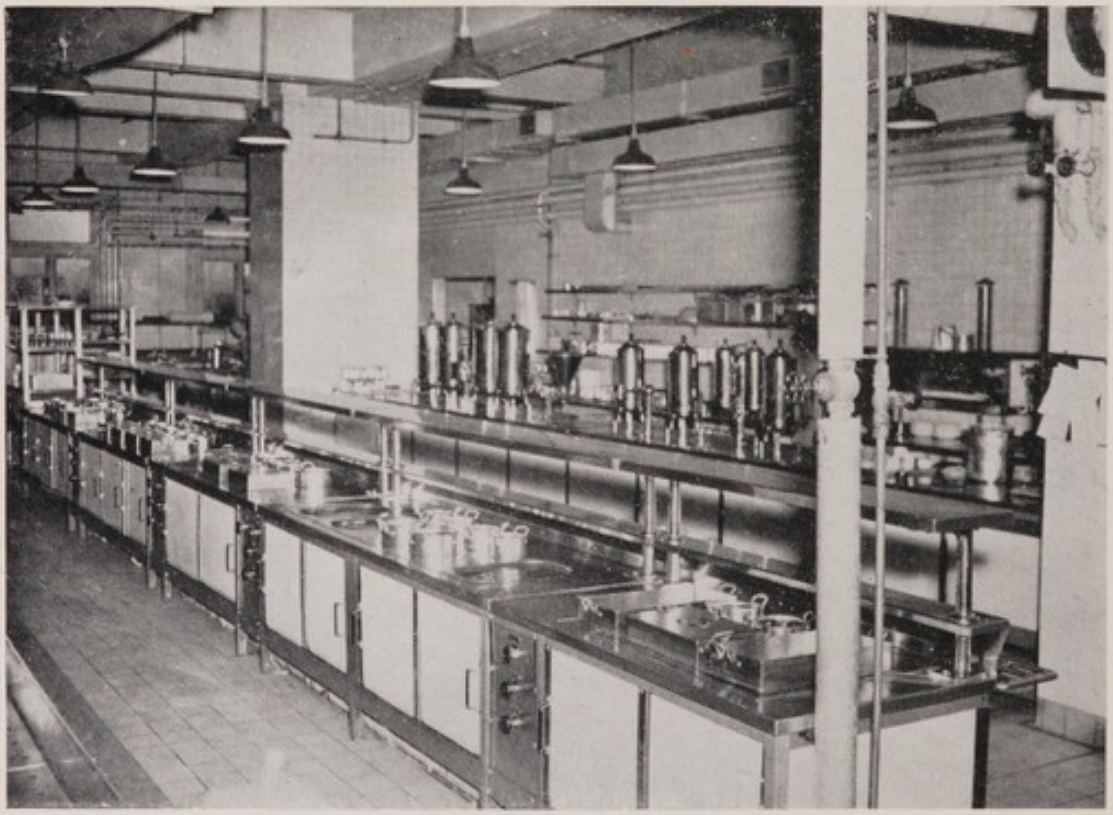

PLATE XII. GOOD SERVICE EQUIPMENT PROPERLY MAINTAINED

Section E

STORAGE OF FOOD AND USE OF THE REFRIGERATOR

The golden rule for storing food is: keep it clean; keep it cool; keep it covered.

The proper storage of food in a catering establishment calls for systematic and unremitting care on the part of both managment and staff.

For the point of view of food hygiene, it is, of course, better not to keep any considerable stock of food, unless proper provision is made for it and for its supervision. It is better that food should remain, until use, in the possession of people whose business it is to hold large stocks in good condition. Almost all catering establishments do, in fact, keep some stocks of food, and many of them store bulk supplies for weeks or months. Such long storage, whether in large or small quantities, renders periodical inspection and turnover of the goods, and regular cleaning of the storeroms, imperative. Appropriate storage should be provided for all food, and the management should insist that it is properly used. Access to food stores should be restricted. No food should be kept in the kitchen, or in the larder, apart from what is required for use during the day; and the manager, in his regular tour of inspection, should see that this rule is being observed.

The Dry Food Store

The siting, construction and lay-out of the dry food store is rarely given the consideration it deserves. It is important that this room should be dry, well lit, well ventilated, vermin-proof and clean; and various means for attaining this are described on pages 4, 8-16, 20-28, 69-74.

Cupboards and cupboard shelving should be of simple design, without dust-collecting ornamentation and unnecessary ledges or panels. If the sides fit tight to the wall, a cupboard is better without a back. The doors of cupboards should be so designed as to enable the whole of the shelves to be clearly visible and accessible for cleaning when the doors are open.

The fixing and arranging of free shelving is a matter that can only be decided when due regard has been paid to the foodstuffs to be stored, but there are general principles which should always apply. Shelves should be constructed for their precise purpose and should not be ready-made or casually planned lengths put up in some empty space on the general idea that a few shelves will come in useful. They should be so fixed that they can be easily taken down and re-erected, in order that regular and thorough cleaning can be the rule rather than one spring clean or one major operation every few months. They should be narrow enough to enable all the goods on them to be easily accessible.

Wide wooden shelves should not be made of planks which are joined, tongued and grooved, but of $2'' \times \frac{1}{2}''$ slats, laid with a clearance of $1\frac{1}{2}''$ to $2''$ between each. The slat nearest the wall should have a small return board fixed on edge to form a lip which will prevent goods falling behind the shelves. The back of this lip should be at least $2''$ from the wall in order to leave room for cleaning the wall.

Where shelves on two walls meet at a corner, the corner should be rounded or locked in to avoid an uncleanable dust trap (Figure 5).

Unless the store room is exceptionally well lit, it is undesirable to have shelves above windows. Special shelving—covered with marble, hard stone or tiles—should be set aside for such materials as fat; and one section should be allocated for glass receptacles, which should neither be on the floor where they can be accidentally kicked and smashed nor on a shelf where they are liable to be knocked when other goods are being brought in or out of the store.

No foodstuffs, even when in bins, boxes or cartons, should be stored directly on the floor. Packages standing on the floor hide it from view and allow dirt to collect unsuspected. The bottom shelving should be about 2′ 6″ above the floor—sufficiently high to permit heavy goods to be stored on loose lattice duckboards below. The duckboards themselves should be high enough to allow the air to circulate at floor level and to keep the food at least six inches from the floor.

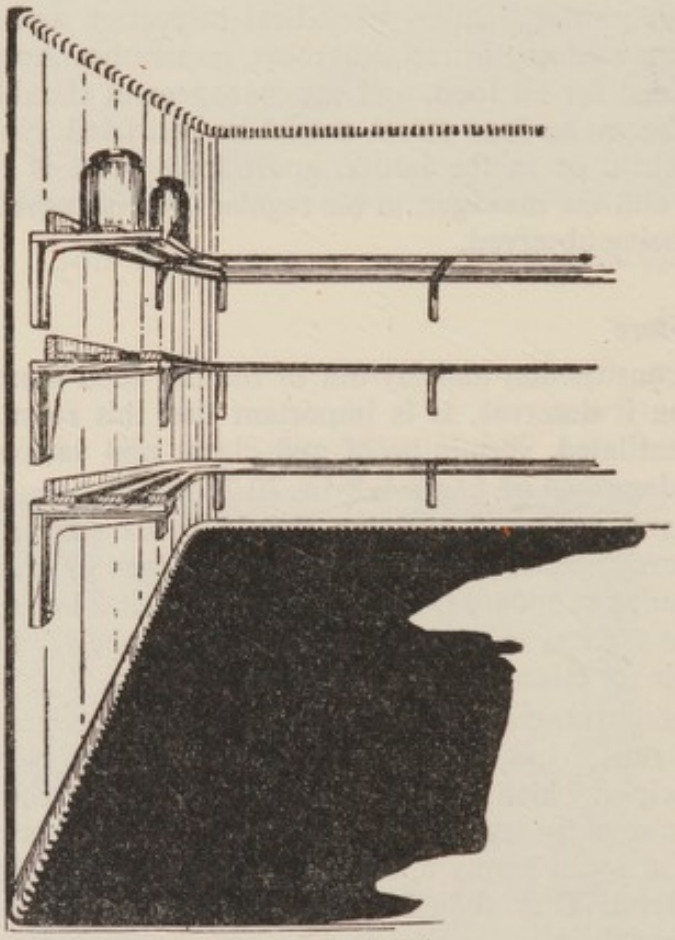

FIGURE 5 Shelving

Containers for Food

The proper storage of food entails the provision of suitable containers. The nature of the food stuff usually determines the nature of the receptacle required, but, in general, the best container—particularly for partially prepared food and for food broken down from bulk—is one with an impervious cover which fits tightly.

All food containers, whether on duckboards or shelves, should stand clear of walls, especially outside walls. They should also be kept scrupulously

clean, and (unless the articles they contain are naturally wet) completely dry, both outside and inside. Damp will destroy the stoutest containers in time, and when damp reaches food it will foster the development of mould. Mildewed, torn, sticky or dirty cartons, dirty, rusty tins or bins, and dirty boxes should, within reason, be discarded; at least, they should never be used without consideration of the nature both of the goods to be stored in them and of the goods to be stored alongside. For example, tinned goods may well be safe in a torn carton; and vegetables, which are usually dirty when they arrive, need not be put in a clean bin. Enamelled and galvanised receptacles which have been chipped on any surface likely to come into contact with food, should be withdrawn from any service in which food for human consumption may be contaminated by either chipping or rust. Such receptacles can, of course, still be used for rubbish, swill or packaged goods. The important thing is to remember that dirt and damp are enemies and that they should be kept as far away as possible. The careful management avoids any action or appearance which may encourage the staff to imagine that dirt is tolerated in the establishment.

Storage and Inspection of Food

Food should be stored in a systematic manner. It is convenient to segregate food which is to be used promptly from food which is to be held for some time, but such grouping must not be allowed to prevent either the regular examination of long-stored food and the frequent cleaning of the wall and floor surfaces it hides, or the usage of supplies in order of priority. Generally speaking, the earliest consignment should be used first, but this is not a hard and fast rule, since quality, condition and fitness for purpose are important considerations ; the main thing is that the rule "First in, first out" should never be broken without good reason. Parcels of food must never be pushed into a corner and forgotten until they draw noisome attention to their presence.

All stocks which are being held for any length of time should be inspected once a week, and it should be the duty of a member of the staff to keep a stock list and to see that each item is ticked off as inspected at the appropriate time. It is useful to incorporate in the list a brief code to indicate condition. The manager should examine this list each week. Should this weekly inspection reveal any damaged goods or containers—for example, a burst bag—any food unfit for consumption should be destroyed immediately, and any fit for use should be promptly rehoused.

Keeping food clean does not mean merely keeping it free from visible dirt, although that is important; it is even more important to keep it in such a way as to prevent the multiplication of germs, since these germs are invisible, and their presence will pass undetected both by the cook and by the customer until, perhaps, the customer becomes ill. Most disease germs multiply best at about body temperature and in a moist atmosphere. Germs which spoil food develop best at room temperatures. High temperatures usually kill both kinds but freezing preserves them in suspended animation. It is for this reason that foodstuffs, in general, should be kept cool and dry; that perishable food should be kept (according to their nature) in the larder (either in closed containers or adequately protected with muslin or wire covers) or in the refrigerator or cold room or deep freeze cabinet. Special precautions should be taken with milk and meat. (See the sections on the use of the refrigerator and the cooling of pre-cooked dishes, pages 50 to 55).

Insect Pests

A number of different insects and mites may be found in dry food stores, among them being the following:—

Warehouse moth, of which the grubs attack a wide variety of food such as chocolate, raw cocoa beans, cereals, cereal products, dried fruit, spices and nuts.

Mill moth, which attacks flour.

Australian spider beetle, of which the grubs feed on almost any food.

Biscuit beetle, of which the grubs attack cereal products, including flour, biscuits and breakfast cereals.

Food mites may appear as a conspicuous growth or brownish dust around the bags or boxes of food. They require a fairly high humidity.

Further information and methods of control may be found in the Ministry of Agriculture, Fisheries and Food Advisory Leaflet No. 483, " Insect Pests in Food Stores ".

Bacon and ham is liable to be attacked by the larder beetle and the maggot known as " cheese skipper".

Further information and methods of control may be found in Ministry of Agriculture, Fisheries and Food Advisory Leaflet No. 373, " Insects Infesting Bacon and Hams ".

Milk and Milk Products

Fresh milk, if received on the day it is to be used, should be stored in a cool room or as least in a cool place. Milk which is to be retained on the premises over night should be put into cold storage, preferably immediately on delivery; for this, some assessment of usage should be made at the time of delivery. Bottles should not be opened until the milk is about to be used. The tops and sides of milk bottles should be wiped with a clean cloth before the caps are removed.

Milk delivered in considerable bulk in bottles calls for adequate storage space and a storage bay should be specifically set aside for this purpose. This bay should not be used for any other food or container storage. It should be the milk store. Caterers who have to store quantities of milk in small areas can consider the possibility of ordering cartoned milk as 1½ pint cartons in crates take up only one third of the space taken up by an equivalent number of pint bottles. In some premises even this storage space is not available and the milk has to be received in bulk churns of 7, 10 or more gallon capacity. This leads to supplies being drawn out by a dipper and preparations should be made to reserve a clean place for the dipper when not in use and the churn lid when removed for dipping. The lip should always be firmly replaced once supplies are drawn. A better plan is to have a plain round rod steel double tripod constructed which will rock forward when empty and allow two internal inclined knobs to engage with the churn handles. When rocked back into place the churn is then lifted free and swings forward to allow supplies to be run off into catering receptacles, thus doing away with the dipper.

Milk powder should not be reconstituted, nor condensed milk diluted, until required for use, and then only in the required quantities. If any has to be stored over night, it should be placed in the cold store in a covered container.

Butter (and other fats, including margarine) should normally be stored in the refrigerator, but small quantities held in the larder for use during the day should be stood (wrapped in greasproof paper) on a marble or stone slab. Cheese keeps best in ventilated storage—for example, a cabinet with perforated metal sides— and should not be stored in the refrigerator. Whole or half cheese, particularly when new, and blue-veined, curd or cream cheese, should be turned over daily, and excessive moisture should be scraped or wiped off. Cheese should not be removed from its binding or wrapping, nor should it be cut, until it is required for use. Cheeses which have been creamed for spreading must be used the same day.

Milk, butter and cheese should be kept away from fruit, fish, oils, pickles and other strong-smelling commodities which may taint them.

Meat and Meat Products

Meat should always be kept in stores capable of being temperature controlled; otherwise harmful germs, that may be in it as a result of contamination during slaughter and transport, will increase. Sawdust on the floor of a meat store is unhygienic and outmoded, it becomes mixed with the dirt and blown or kicked or moved to finally settle on the meat. Trays, washed regularly, and at least once daily, should be used to catch blood drips. If there is too large an area to contemplate drip trays being set or if the floor is in a working area there are special inert floor compounds of a type of Fuller's Earth which can be sprinkled as tiny crystals and which completely and properly replace sawdust and keep floors clean and hygienic. These compounds are based on a type of Fuller's Earth known as Attapulqus Clay and by their economy of spread and their possibility of re-use altogether replace sawdust. Being inert chemicals they do not present a hygiene hazard even if accidentally coming into minor contact with meat.

Manufactured meat products can be a source of danger and should be stored with the utmost care. Raw meats, *e.g.*, sausages, joints, minced meat, should be kept in the refrigerator, the minced meat being spread out ; cooked meats, *e.g.*, brawn, pressed meats, tongue, meat sandwiches and meat pies should be stored at temperatures below 50°F. Only the quantities required for immediate use should be moved to the food preparation room, and these should be served promptly.

Bacon in the piece is a comparatively poor breeding-ground for harmful germs, provided it is kept dry; it should therefore be hung in a cold, dry, unrefrigerated place, protected from dirt and insects by a fine-meshed net covering. Sliced bacon should be wrapped in transparent film and kept below 50°F. It is best stored, for short periods of up to two days, in the part of the refrigerator which gives a temperature of 32°F. to 35°F. Ham should be treated in the same way as meat but it is possible to store whole cured hams as described above for bacon in the piece.

Fish. Fresh fish and thawed frozen fish deteriorate rapidly and should not be held for more than a day or two. They should always be stored in the refrigerator away from other foodstuffs which might be tainted by them—if not in a separate compartment, then in lidded trays used only for fish. Lightly smoked fish such as kippers, finnan haddocks etc. can be left a little longer but nevertheless should likewise be stored in a refrigerator separately or in lidded trays. Frozen fish should be stored at the lowest temperature below 32°F.

available in the refrigerator, but only for a few days at such temperatures as are likely in many cases to be available. For longer periods (weeks) the storage temperature must be not higher than −5°F. Heavily smoked and/or cured fish, such as "red" herrings, salt cod, salt pickled herrings, only need chill storage, say 28° to 35°F. for quite long periods.

Vegetables require ventilation. They should be stored on racks—preferably wire or metal—so arranged that air can circulate freely under and around them. The racks should be high enough off the ground to be not readily accessible to vermin, and it is an advantage if they are against an outside wall. Potatoes and root vegetables should normally be stored in sacks as delivered; but if they have been bagged in wet weather, they may be subject to disease and they should be turned out, aired and examined. The defective ones should be removed at once. Cabbages and similar vegetables should be used the day they are received. If this is impossible, they should be emptied out on to the racks, but new deliveries should not be emptied on top of older ones since this may result in the vegetables at the bottom remaining undisturbed indefinitely. It is for this reason that racks are preferable to wooden bins or to partitioned sections of the vegetable storage room. Stored vegetables should be inspected frequently, and, if they are held for more than a day or two, thoroughly, as decay spreads rapidly.

Fresh fruit should be stored apart from other foodstuffs. Citrus fruit and apples are particularly liable to taint other food. Fruit requires dry, cool and well-ventilated storage, with air circulating all round, above and below. Fruit should be inspected frequently, as mould spreads rapidly on it; any mouldy fruit should be removed to the rubbish bins or swill tubs at once. High stacking of vegetables and fruit should be avoided as this crushes the lower units and renders them liable to mould growth and rapid deterioration.

Canned goods should be stored in a cool, clean, dry place, preferably in their original cartons. The stock should be frequently inspected, and blown, rusty and split cans should be referred to the local public health department without whose sanction the contents should never in any circumstances be used for human food. Some vacuum packed foodstuffs (for example, coffee) often present a blown appearance although the contents are safe for consumption. The containers of all canned goods which include syrup, water or oil should be periodically turned upside down on the shelves. Once the can is opened, the contents should be treated similarly to fresh food of the same kind.

Flour and other cereals. These should preferably be stored in metal containers, protected from rats, mice, insects, damp and casual damage. Such bins should have rounded corners and should be small and light enough for frequent and thorough cleansing, including up-ending for drying. The lids should be tight fitting, preferably hinged and self-closing. The best material for such bins is vitreous enamelware, but this is expensive; the best substitute is galvanised iron, which requires very careful cleaning. There should be sufficient surplus containers for each type of food, so that they can be emptied in rotation, and thoroughly cleaned out and dried each time they are emptied. A scoop should be kept in each container, as these foodstuffs will readily deteriorate if dipped into with damp scoops, or, worse still, with damp hands. A

plastic scoop is best, as metal may damage the enamel of the bin. If considerable stocks of flour are held, it may be necessary to stack the flour in the original sacks. When this is done, the sacks should be on dunnage, and, in order that rodent colonies can be discovered and destroyed, they should be examined once a week and the floor and walls swept.

Sugar and salt should be kept in bins, with a surplus bin and a scoop, as with flour.

Jams should be kept in the storeroom in their original jars. On receipt the jars should be wiped to remove any spillage, as this would attract flies; and, for the same reason, any spillage on the shelves should be wiped up at once.

Jellies, trifles, custards and similar sweets should be made up on the day they are to be served, and kept in a cool place until served. If it is necessary to make them the day before serving, they should be stored in the refrigerator.

Dried egg should be stored in its original container, and the contents of any damaged containers should be regarded with suspicion. Reconstitution should be confined to the quantity required for immediate use. If any has to be retained, even for an hour or so, it should be carefully covered and put in the refrigerator; it should not be retained in reconstituted form over night, even in the refrigerator, for stored reconstituted dried egg used in lightly cooked egg dishes has been responsible for many outbreaks of food poisoning.

Egg liquid in bulk. All utensils used for mixing egg constituents should be thoroughly cleaned and sterilized before being used for any other cooking and catering purpose and storage of these products should be at temperatures below 45°F.

Special process foods. Reference has already been made to quick frozen foods and deep frozen foods. Quick frozen foods are processed by applying low temperatures whilst foods are under vacuum and pressure and most processors state the thawing time needed prior to cooking. Special thawing devices are available for handling bulk goods but normal thawing at ambient or normal overall room temperature is quite acceptable provided the storage space is clean and free from air borne contamination. Deep frozen foods are foods which, having been first refrigerated below 32°F. or 0°C. are then store refrigerated from that state to temperatures of −20°C. or 10-12°F. These, too, need careful thawing in proper work places. A new process known as Accelerated Freeze Drying is now becoming more and more used for some foods, particularly fish. This process is one in which the water content of the natural food is driven off by temperature changes as the food is frozen. The name is absolutely descriptive, this being a quick drying process assisted by low temperatures, the process being carried out in vacuum chambers. The food is left in its natural size and shape but with only minor weight compared to its original weight. Such foods demand extra dry storage but do not need refrigeration and will keep good for years. There must not be any degree of humidity in the store. As this is difficult to achieve the foods will only be properly stored in small air tight packs or containers. They are simply reconstituted by immersion, for periods specified by the processors, in water. It is vital that such water should be clean and in clean utensils.

Use of the Refrigerator

Except where otherwise specified, the word " refrigerator " in this section means a room or a cabinet which will keep foodstuffs at a temperature between 32°F. and 40°F. at all times of the day and in all seasons of the year. The term " cold chamber " is used to denote a " walk-in " food store with mechanical refrigeration maintaining a temperature not exceeding 40°F. (This section does not deal at all with the particular problems of "deep freeze" refrigerators. They are intended for the long storage of meat, fish, poultry, etc., and also for ice-cream up to the moment of sale.)

Almost all catering establishments find a refrigerator essential; but not all catering establishments use their refrigerators wisely. It pays to acquire an understanding of the capabilities of the refrigerator and to use it with system and forethought.

The object of the refrigerator is to keep foodstuffs at a low temperature and thus to arrest the multiplication of germs and to keep the food in good condition. Refrigeration will not keep food indefinitely, nor will it restore food which is in bad condition or kill germs which are already present. Moreover, in most refrigerators air does not circulate freely; and in all refrigerators there is a tendency for the contents to become damp, or at least moist. Refrigeration does not prevent susceptible foodstuffs from becoming contaminated by adjacent strong-smelling foods.

Almost all perishable foods keep better at low temperatures, and some deteriorate rapidly even in moderate warmth; but some require to be kept dry and well ventilated even more than they require to be kept cold. It is clear, therefore, that whereas some foodstuffs ought always to be kept in the refrigerator, others ought never to be put there.

There is a third category: those foodstuffs, mainly canned and bottled goods, which are as contented with normal room temperature as with refrigeration. Such foods should be kept out of the refrigerator in order to save space for the foods which require it.

Meat, poultry, game, fish, shellfish, eggs, prepared meat dishes, gravy, soup, milk, butter, margarine and other fats, cream, custard (and pastry containing cream, custard and synthetic fillings), and cooked food not required for immediate consumption, should always be kept in the refrigerator, priority for space being given to meat, milk, cream, custards, gravies and soups.

Flour, cereals, sugar, salt, bread, cake and pastry ought not to be put in the refrigerator.

The function of the refrigerator is to keep food cool. It should not ordinarily be used to cool hot food, because, if hot food is placed in a refrigerator, the heat from the food causes the temperature to rise; and, if the heat of the food is too great in relation to the size of the refrigerator, the temperature will remain high for a considerable time, the atmosphere will become saturated with water, and the refrigerator will be rendered temporarily ineffective. This is a matter of relative sizes. Small hot joints could, of course, be put into a large refrigerated room.

Cooling cupboards or stores which are mounted on castors and capable of being placed where most convenient are now available. These work on controlled air circulation principles coupled with cooling liquid circulation pipes and coils. They are capable of holding a quantity of cooked and hot foods in

safety until they are reduced to temperatures in the 45°F. to 50°F. range. At this temperature the foods if not then required for service can be removed to the refrigerator.

In order to ensure that the refrigerator is used efficiently and economically, a senior member of the staff should be placed in charge of it and made responsible for deciding what foodstuffs should be admitted and how and where they should be stored as well as for ensuring that the refrigerator is kept clean and in full working order. The refrigerator overseer need not necessarily handle the food; but the number of people with access to the refrigerator should be restricted as much as is convenient. It is potentially dangerous (from a food hygiene point of view) to allow everyone to walk in and out of a cold chamber or to open the door of a refrigerated cabinet, putting food in or taking it out; where this is done, the store is usually packed in an unsystematic way, since irresponsible people will make rearrangements or will put items in inappropriate places. Moreover, the more people who have access to a refrigerator, the more frequently the door is opened and the greater the chance of its being left open by mistake.

The refrigerator overseer should put up outside the door a list of the items which are to be refused admittance and should see that these items are excluded. If the staff get into the habit of putting foodstuffs into the refrigerator unnecessarily—this is often done on the plea that it won't do them any harm—the refrigerator will become crowded, and, even if there remains room for the foods which should be kept cool, there may be insufficient ventilation to keep them in proper condition.

Before the overseer can allocate each kind of food to the most appropriate position in the refrigerator he must know where it is coldest and where the air circulates most effectively. The coldest parts are usually the upper parts and the parts nearest the coils, but it is desirable to consult the manufacturers both on relative coldness and on air circulation. It is particularly necessary to know where to fit shelves and hooks in refrigerated rooms. Most small refrigerators are designed and fitted to accommodate each item of food and drink in the most suitable place, and the shelves and fittings should be used for the purposes for which they are intended. Everything should be so placed that air can circulate freely all round. Broadly speaking, liquids should be placed close to the freezing coils, meat products further away, and eggs and other foodstuffs farthest. The other broad principles to follow in arranging food are: food which is to remain in store a long time should be kept in the coldest part; meat and fish which will shortly be required for cooking should be kept in the less cold part; foodstuffs with strong odours (for example, fresh fish) should be kept as far as possible from foodstuffs which readily absorb taint (for example, butter); fresh fish should be kept in lidded trays; meat and poultry should be hung on hooks, and arranged to obtain the maximum benefit from air circulation; food stuffs in glass or metal containers should be kept in the lower part of the refrigerator, so that the condensation drippings will not affect other foods.

The refrigerator overseer should inspect the food in the refrigerator at least daily, in order to make sure that everything is in good condition. It is useless to refrigerate food which is not in perfect condition; food which is "going off" will continue to deteriorate in the refrigerator and may taint other food there.

Another of the duties of the refrigerator overseer should be to make a regular examination to ensure that it is functioning properly. The interior should be so constructed that condensation and drippings from the contents cannot find their way into the insulation, and the overseer should verify that this is not happening. Water can readily destroy thermal insulating properties, and other drippings can produce very insanitary conditions. Attention should be paid to the door fastening. The temperature should be checked frequently—at least once an hour during working hours when it is recorded externally. If it is not recorded externally, checking should be confined to occasions when the door is opened for some other purpose. If a proper temperature of something under 40°F. is not being maintained, the cause for this should be investigated; if the higher temperature appears to have arisen because the door has been opened too frequently, because it has been left open, or because hot foodstuffs have been introduced, the rules for using the refrigerator should be tightened and more strictly enforced: if there is no apparent cause, the manufacturers should be consulted.

A safeguard against leaving the door of a cold chamber open by mistake is to fix outside a warning red lamp which will light up automatically whenever the door is open; an even more effective device (especially suitable when the door is out of sight of the kitchen) is an audible signal adjusted to sound when the door has remained open for, say, three minutes.

Before it is put into use, a new refrigerator should be washed out with a weak solution of vinegar and soda in order to prevent refrigerator odour tainting the foodstuffs.

A refrigerator should be cleared out and cleaned at regular weekly intervals. The time for cleaning should be fixed when the refrigerator is expected to be comparatively empty, and careful planning may be necessary. The walls should be washed down with warm soapy water (or a weak solution of vinegar and warm water) and the rails and runners should be scrubbed and brushed out. The floors of cold chambers should be scrubbed and mopped, and the gully and trap should be flushed with hot water. Disinfectants should not be used. The fish and meat trays and the walls of fish and meat compartments should be thoroughly cleaned. The top and sides of refrigerated cabinets should be washed as part of the general cleaning of the kitchen.

The cleaning of the inside of the refrigerator should coincide with the defrosting—the removal of the excess ice and snow which forms round the refrigerating coils—which must be carried out periodically in order that the plant may maintain the correct temperature. The frequency with which defrosting is necessary depends on the extent to which the refrigerator is used, on the foodstuffs it contains and on the degree of concentration of water vapour in the surrounding atmosphere. Generally speaking, once a week will be found sufficient for large refrigerators, and small refrigerators need defrosting at least every fourteen days.

Section F

PREPARATION OF FOOD

(including re-heated and made-up dishes)

There is a greater risk of food poisoning and other diseases arising from meals prepared in catering establishments than from meals prepared in private

homes, partly because the preparation of food in bulk provides the opportunity for infection to be widely spread and partly because the practice—much commoner in catering establishments than in private homes—of preparing food some hours before it is to be eaten allows sufficient time for harmless numbers of germs to multiply beyond the danger point.

Meat requires special care. It is liable to pick up dirt during transit from the slaughter-house to the kitchen and should always be washed (and, if necessary, trimmed) before being cooked. Knives, forks, cleavers, etc., used for cutting up meat should not be used for other foods, and separate knives should be reserved for raw meat, cooked meat and tinned meat. Germs from the raw meat may be transferred to the knife used for cutting it. Those that remain on the meat will probably be destroyed when the meat is cooked, but, if the knife is used to cut up corned meat which is eaten without further cooking, germs from the knife may cause food poisoning in whoever eats the corned meat. Cooks who have handled raw meat should wash their hands before touching cooked meats. All cooked meat including corned meat should be sliced and served without being touched by hand.

As much butchery work as possible should be done on worktables with an impervious surface which can be cleaned easily. Such surfaces are quite satisfactory for boning, dicing and similar operations. For work which needs a wooden chopping block a hardwood board can be fixed above or alongside the butcher's table. This board should be of diagonal construction and should be light enough to be removed for cleaning, scraping and rinsing after each period of use.

In " boning-out ", *e.g.*, sirloins, considerable handling and cutting by the butcher is necessary, and when "boned-out" meat is made into a rolled joint there may be heavy contamination at the centre. It is essential, therefore, that such joints should be cut up small and well cooked so that the germs at the centre are killed.

Minced meat. The majority of harmful germs which may be on the outside of meat are distributed throughout the entire mass of meat by mincing, and unless minced meat is cooked at a sufficiently high temperature and for long enough to kill all the germs, the cooking will provide the warmth which will encourage the germs to multiply throughout the whole of the mixture. This activity can make the mince poisonous, or can give rise to discolouration or foul odours. Therefore, it is essential that only enough meat to provide a day's supply should be minced in order that the cooked mince is not allowed to stand overnight. If it is absolutely essential to cook more than one day's supply, the mince should be thoroughly cooked, cooled *rapidly* in small quantities, refrigerated overnight and *thoroughly* re-heated just before serving. Minced meat should always be heated in several small containers rather than one large one and timed while cooking. If root vegetables are added to mince, they must be very carefully cleaned, as the soil organisms they carry are very heat-resisting.

To ensure thorough penetration of heat and quick cooling shallow containers should be preferred to large deep ones for cooking meat.

The skinning of *rabbits* and drawing of poultry should not be done on working surfaces normally used for the preparation of other foodstuffs. If it is

a regular occurrence then a suitable surface should be set aside for that purpose. If it is an occasional occurrence then every care should be taken to make sure that the surface used is really clean before other foodstuffs are prepared on that surface. Immediately after the skinning or drawing is completed the workers should wash their hands and they should not hang uncleaned rabbits or unplucked poultry in a position likely to cause contamination to other foods.

For *fish* the best practice is to use a stone slab long enough to fit across the sink used for fish preparation but only two-thirds of the width of the sink. A hardwood block can be placed on the slab for the cutting. The fish can then be prepared on this slab with the tap water running and the waste water flowing into the sink below. Composition perspex/nylon/fibreglass slabs and bone mallets are now available.

Whole egg, whites and yolks are often sold bulked in liquid, frozen or dried form. As a process of pasteurising bulked whole egg liquid has been perfected the risk of contamination by this pasteurised product will be removed provided that subsequent handling is hygienic. Strict hygiene is necessary in using these products in any food premises. Handlers should thoroughly wash their hands and arms before touching other food or clean equipment, equipment with which bulk egg has been in contact requires special care in washing-up and sterilizing.

Pastries and other dishes containing *imitation cream*—an imitation cream itself—require the utmost care. Imitation cream is an excellent breeding-ground for germs, particularly during the warm weather, and it should consequently be used as quickly as possible after it is made up. During any temporary storage it should be kept covered and as cool as possible. Proper nozzles, sterilized before use, should be employed with icing bags; on no account should the operator blow or suck at the nozzle to maintain the flow of icing. (See page 73)

Fresh fruit and vegetables and dried fruit should be thoroughly washed before being cooked and served. Lettuce for salad should be washed and broken up under running water and the washed leaves well drained on a clean draining-board. There should be separate sinks reserved for vegetable preparation.

Food in doubtful condition. If there is any doubt about the condition of an article of food, it should be referred to the chef or the manager for authority either to use it or to remove it to the rubbish or swill bin. Any large quantity considered unfit for use should be reported to the local health department and put on one side away from other foods pending examination by the Public Health Inspector or other qualified officer. Utensils and equipment which have been in contact with food which is so discarded should be specially and thoroughly washed. The staff who have touched this food should wash their hands before doing other work.

Re-heated and Made-up Dishes

The practice of preparing and cooking meat, gravies, sauces, made-up dishes, trifles, custards and so on the day before use is one which should be restricted to the utmost. If such foods are to be re-heated before service, they should be thoroughly heated in order to destroy any germs present. Warming-up may cause the germs to start multiplying and may thus transform a safe dish into an unsafe one. Semi-liquid dishes, such as soups and stews, should be brought

to the boil and allowed to simmer for at least fifteen minutes; solid dishes—joints, rissoles, meat-pies, fish cakes, etc.—should be fully heated. In any case, these pre-prepared dishes, whether liquid or solid, should not be re-heated more than once, that is to say, they should not be heated more than twice in all. It must be remembered that some germs leave traces of poison in the food, and these poisons cannot be removed by heating.

Cooked food which is not used on the day for which it is prepared ought not to be held over for the next day (and certainly not for the third day, or over a week-end). If it is necessary to hold over such food, it should be stored in the refrigerator—after any requisite cooling. It should then be heated thoroughly before it is served. The cook should remember that heat takes a long time to penetrate to the centre of a pie or made-up dish.

It is essential that meat and meat products which have been heated and not consumed at once should be stored in the refrigerator, but they must first be cooled to normal room temperature. Such cooling must be carried out as rapidly as possible, because any harmful germs will be continuing to multiply as long as the meat is warm. Pre-cooked foods ought to be *rapidly* cooled. It is worse than useless to attempt to cool the made-up food in the temperature of the kitchen, since most kitchens are uncomfortably warm. The cooling should be carried out in a work zone or cabinet set apart for the purpose. Such a work zone can, of course, be used for other purposes at other times.

Thorough cooking and thorough cooling take place more rapidly in small portions than in large ones. Therefore, when a cooked joint or made-up dish is to be refrigerated, so that it can be served cold or heated for the next day, it is best to cook it in portions; to cook a large joint and then cut it up for cooling is less effective. If it is impracticable (as it may well be for reasons of space) to cool the food in small portions, then, before it is refrigerated, it should be tested to ensure that it is really cool; it may be that the centre is still hot although the surface is cool. Judgment, based on experience, must be exercised to determine when it is safe to put the food in the refrigerator. Soups and gravies can be cooled quickly and effectively by transferring them from the large deep cooking vessels to small shallow ones.

It is worth while to linger over this problem of the swift cooling and subsequent refrigeration of pre-cooked foods, because it is one of the most important—some experts think the most important—food hygiene problems which confront the caterer. Many caterers find it necessary to prepare made-up dishes the day before they are to be consumed; from the point of view of food hygiene, this is most undesirable, but, for reasons unconnected with food hygiene, it sometimes cannot be avoided. Unfortunately, the dishes which are frequently prepared in advance are precisely those—joints of meat, made-up meat dishes, gravies, custards, trifles, etc.—which are easily contaminated and which provide good material for the multiplication of germs. Many outbreaks of food poisoning which have been investigated have been traced to made-up dishes of this kind which have been allowed to remain warm for long enough for germs to multiply.

(It is a sombre thought that some outbreaks of food poisoning have resulted from meals consumed at weddings. Caterers for weddings and other functions should avoid, as far as possible, the practice of laying out food in advance, which may result in the exposure of the food for some time in a warm atmosphere.)

Section G

DISPLAYING AND SERVING FOOD

If food served to the public in a catering establishment is to prove a cause of food poisoning or other disease, it is probable that it has been contaminated before it reaches the display counter or dining room. Since sufficient time at a suitable temperature is required for the dangerous multiplication of food-poisoning germs, it cannot often happen that food becomes disastrously infected after it reaches the dining-room. But there are unpleasant possibilities, and these are pointed out below.

Dining-rooms

No wise caterer neglects the appearance and condition of his public rooms. Even if, in deference to a need to maintain an impression of simple accoutrements and the greatest possible value of meals, the rooms are plainly furnished, the caterer will be minded to preserve them in a state of cleanliness. It is important that he should not be deterred by any bad habits of customers, and that, as a matter of rigid routine, he should be at pains to clear waste and mess from the tables and floors as the service of meals proceeds.

There are several reasons why it is important that the public rooms should always be maintained in a state of thorough cleanliness throughout the time of service: firstly, the risk of contamination is always present; secondly, a clean dining-room sets an example of cleanliness to the customers; thirdly, many customers—justifiably—tend to regard dirtiness in the dining-room as evidence of dirtiness in the kitchen. Alike for the protection and for the satisfaction of his customers a caterer cannot afford uncleanliness anywhere in his establishment.

Tables should be so constructed that they can be cleaned easily. Some designs which develop cracks and crevices (for example, between glass top and wooden or wicker edges), are dust-traps. The type with a ledge underneath for books, parcels, handbags, etc. helps to keep the table-top clear and is to be recommended. In cafeterias a tray-rack at the end of each table helps to keep the trays from being stood about to get kicked and trodden on.

If table-cloths are used, they should be clean at least once a day and changed more frequently if necessary. A table napkin should not be used a second time until it has been washed. Paper serviettes once used should be destroyed. Cruets, menu-holders, ashtrays and other permanent table furniture should be cleaned daily. Ashtrays should not be cleaned with the serving napkin.

Waiters and Waitresses

Waiters and waitresses should be trained so that they always pick up spoons, knives, forks and cups by the handles, dishes by the rims, and tumblers by the bases. They should be careful to avoid handling crockery and cutlery by the parts which will come into contact with food or touching with their fingers either solid or liquid food being served to customers. They should never wipe or polish crockery or cutlery with the cloth which they use to wipe the table. The waiter's teacloth should be replaced often enough to ensure that the cloth in use is reasonably clean. When laying the table and when bringing food to the table, waiters should examine the cutlery and crockery to

make sure that it is clean, and they should send to the washing-up room any item which is not clean. Food should not be served in utensils which are chipped, cracked or otherwise so damaged as to render cleaning difficult. The practices of rubbing off visible dirt, egg stains, lipstick, etc. with a cloth—or with the finger—or of blowing on to surfaces before polishing them—should not be tolerated. Even more reprehensible is the practice of wiping dirt off food and then serving it.

Clearing Tables

Used dishes and left-over food should be cleared from the tables promptly. Customers should not have to sit down at a table cluttered with the remains of the previous customers' meals. This not only annoys the majority of customers, it encourages the minority—the ones whose habits are dirty—to think that they have come into a dirty place and have no need to conduct themselves decently. Moreover, dirty dishes lying about on the table attract flies.

Clearance of used utensils should be by hand or by tray. Trolleys are slow; they obstruct the gangways; and the sight of the garbage pans on the trolley is frequently offensive to the customers. Trolleys have now been designed and made available which provide covers for scraping bins. These and all other trolleys need to be regularly cleaned and kept out of the dining area as much as possible. Where service depends on trolleys arrangements will have to be made for a trolley park and a trolley wash bay.

Tumblers should be removed from a table as soon as it is vacated, so that the next customer does not make the mistake of thinking that they are clean. Clean tumblers for water should be placed upside down on the table.

The Service of Milk and Ice-Cream

Particular care is required in serving these, since germs multiply freely in them. *Milk*, once drawn from the bulk supply, should not be put back. Fresh milk, if it is received on the day it is to be used, should be stored in a cool room or a cool place. Milk which is to be retained on the premises over night should be put into cold storage as soon as possible after delivery. If the delivery is by bulk churn then supplies for service purposes should not be obtained from the churns by dippers. The churns themselves should be mounted on triangular tipping devices which hold the churns by the handles and allow of easy pouring from bulk into smaller containers. If the milk is received in bottles, it should be kept in the bottles until it is required for use. When milk is served in a jug, the jug should be scrupulously clean. Spoons, scoops, dippers or spatulas used for serving *ice-cream* or other frozen desserts should be carefully stored and handled at all times. If a dipper-well containing a bactericidal chemical is used, the water should be frequently changed—at least every half hour or whenever a new container is broached, whichever is the shorter period.

If a soft serve horizontal freezer barrel ice cream machine is used the following daily cleaning and sterilization routine is essential:—

1. Run off all unsold ice cream and store below 28°F. Fill the hopper with water at at least 110°F. and operate the machine for 10 seconds or fill hopper with clean cold water and operate machine for up to 5 minutes; run off water. Repeat the run through with the addition of approved detergent steriliser.

2. Dismantle removeable parts; wash and brush thoroughly in a similar solution. Wipe over all fixed contact surfaces with a clean sponge or clean cloth which has also been thoroughly immersed in the solution.
3. Reassemble the machine and refill with the approved detergent/sterilizer solution. Prepare for sales operation by running off the standing solution and refilling the hopper with clean cold water. Allow the machine to operate for one minute and then draw off all water.

Consumption off the Premises

When food is sold for consumption off the premises, it should be wrapped in clean paper or put in a clean bag. Unnecessary handling of the food should be avoided, and the seller should never lick a finger to separate sheets of wrapping paper or blow into a paper bag to open it.

Food on Display

Food awaiting service to the customer is normally on display in cafeterias and the quick lunch counters of public houses, and some items of food—chiefly salads, cold collations, rolls, cakes, pastries and sweet courses—are often set out on service counters in restaurants, including indeed some expensive restauants. Whatever the kind of food or the type of establishment, the problem with food on display is basically the same: how to protect it from casual contamination by customers or staff and at the same time keep it readily accessible for quick serving. With coffee-stalls, exhibition ground buffets and snack bars largely open to the street there is an additional danger of contamination from wind-borne dirt.

Cafeterias and Snack Bars

A number of special problems arise in cafeterias and snack bars, where food is normally displayed to customers for their selection and where customers sometimes sit or stand at the counter and eat in close proximity to food awaiting service. Particular care should be taken to protect the food from contamination by customers. The caterer has little control over his customers. He cannot know whether they are carrying infection; he cannot require them to wash their hands before eating; he cannot prevent them from sucking their fingers, patting their dogs, smoking, coughing or sneezing while at his counter; and he may even be afflicted with customers who spit on the floor. For the sake of the customers whose manners are more delicate the caterer should keep the food protected.

Unless the management organises an efficient service for clearing the tables immediately after they are vacated, the tables in cafeterias and snack bars become dirty, untidy and crowded with used utensils and over-flowing ash trays. A high standard of orderliness and cleanliness should be conspicuous on both sides of the counter.

The greatest danger lies in the cafeteria so arranged that the customers file past a counter where hot or warm food is on display; if a customer coughs or sneezes over such food, germs may be sprayed over it, and, if it is not served and eaten promptly, they may multiply to a dangerous concentration. The danger is probably greater where the food is set out on a hot plate in trays or

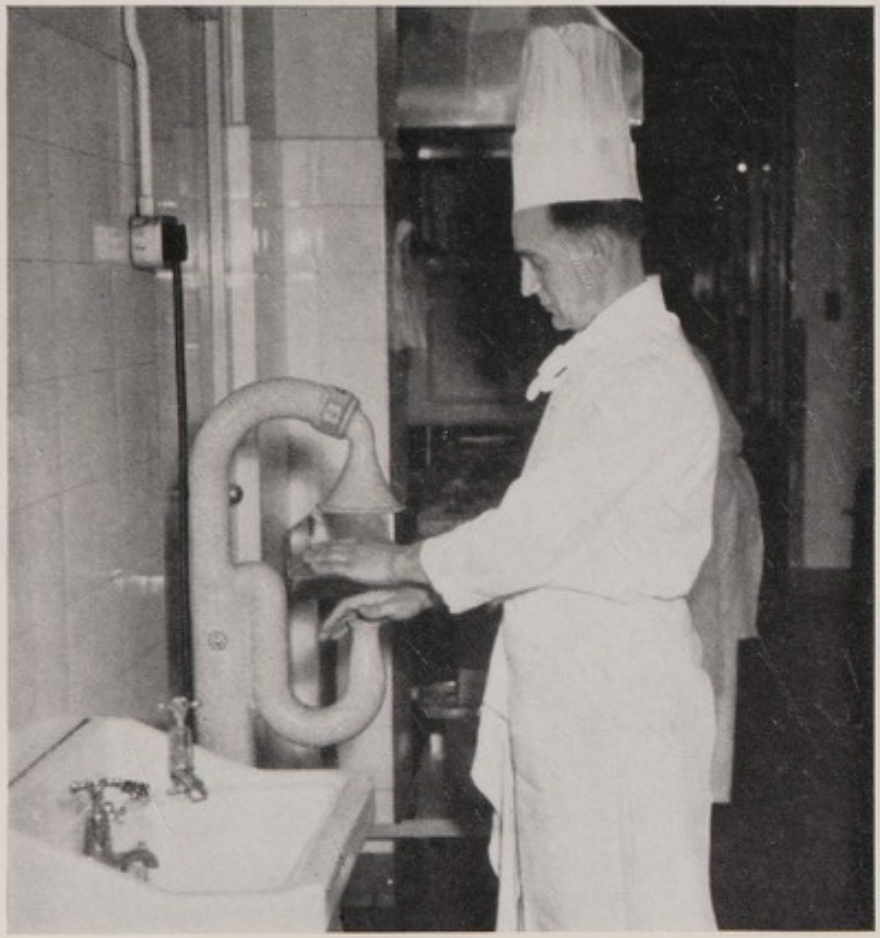

PLATE XIII. GOOD EQUIPMENT FOR PERSONNEL NEEDS

PLATE XIV. GOOD CLEANING EQUIPMENT PROPERLY STORED

PLATE XV. GOOD DRY GOODS STORAGE EQUIPMENT

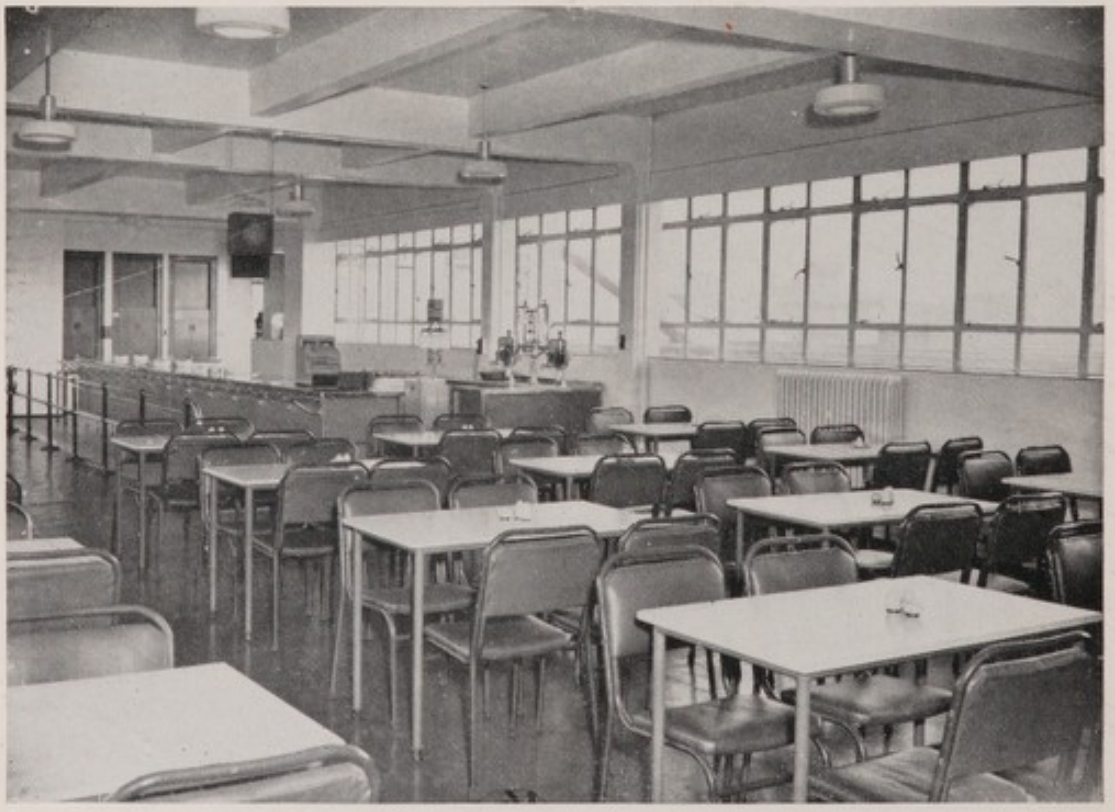

PLATE XVI. GOOD WELL POSITIONED DINING EQUIPMENT

PLATE XVII. GETTING READY FOR WORK

PLATE XVIII. AT YOUR SERVICE

PLATE XIX. PROTECTIVE SCREENING OVER INDIVIDUAL DISHES AT THE SERVICE COUNTER

PLATE XX. RUBBISH AND SWILL BINS ON STAND

bowls and served by an attendant, since some part of it may remain uneaten for a considerable time; but even where the food is already set out on plates, one particular plateful may remain long enough for the person who eventually consumes it to be made ill. There is no doubt that all warm, moist food on display should be protected from the customers. The practice of some customers of pinching or fingering rolls or cakes before making their selection is unpleasant, but it is less dangerous to health because germs do not multiply readily on a hard dry surface; in deciding whether or not to screen the rolls and cakes, the cafeteria manager has to decide whether to please those customers who like to make their own selection by way of trial and error or those customers who prefer their food unfingered. Whether the customers help themselves to rolls and cakes or are served by an assistant, it is worth while to discourage fingering by providing plastic tongs or sharp-pronged forks.

Many of the items sold at snack bars—for example, sandwiches, rolls with fillings, cake, fruit, sweetmeats—are nowadays displayed in transparent wrapping. Where this is done screening is unnecessary. But pre-wrapped food is not necessarily safe food; contaminated food is not rendered safe by artistic packaging. Food that is to be prewrapped should be fresh, and it should be packed hygienically in clean surroundings and touched by hand as little as possible. The wrapping should be perfectly clean. Paper cups or cartons and similar single-service utensils may be found particularly useful for the service of ice-cream, drinks and snacks at sports grounds, exhibitions and other places where it would be difficult to wash-up crockery properly. They should, however, be stored carefully so that they are clean, and they should not be used a second time. Receptacles should be provided for their disposal after use; hygiene is not promoted by the creation of litter.

Whether food on display is covered or not, the counters and fittings should be readily cleanable. Stainless steel, chromium, glass, marble and some plastics are all easy to clean and can be made to look attractive. The manager should make it his business to see that counters and display cabinets are kept clean and pleasant throughout the time of service.

There should be an ample supply of clean swabs so that the assistants can wipe up spillage or smears promptly. The amount of food on display should be restricted so that no items are left exposed to the room atmosphere for an unreasonably long time. Perishable foods should be replaced daily. If fruit is on display, the assistants should be forbidden to breathe on it before polishing it or to use any material or substance except a clean cloth for polishing.

Covers for Food

An occasional risk in the cafeteria system arises from the general practice of collecting the second or sweet course at the same time as the first. The sweet course, originally perhaps warm, may remain on the diner's table, exposed to infection from coughs and sneezes, for long enough—particularly if the diner starts with soup or plays chess during his lunch-hour—to develop undesirable qualities. Some cafeterias provide metal covers for these dishes; these are excellent, both for keeping the food warm and for keeping it clean—provided the covers themselves are clean and kept clean. It is essential that these covers should be taken out of service and re-tinned as soon as they begin to rust.

Kitchens on View

Some cafeterias are so arranged that the customers can see into the kitchen. A lay-out of this kind helps to instil confidence in the minds of customers—provided always that the kitchen is a clean one and the staff are careful to adhere to hygienic practices. It would materially assist to raise the standard of cleanliness in cafeterias if more owners had the courage and the confidence to adopt this policy. Where the kitchen is in view it must be clean. The growing practice among caterers of inviting customers to visit the kitchen is most encouraging to all who have the cause of hygienic catering at heart.

Section H

STORAGE AND DISPOSAL OF SWILL, WASTE AND RUBBISH

Many caterers have arrangements with pig-keepers, poulty-keepers or manufacturers of animal feeding stuffs for the disposal of their kitchen waste and the leavings from plates. The manner of separation of this material from ordinary rubbish, and the precise arrangement for its storage and collection, necessarily depend to some extent on the requirements of the purchaser. Certain general principles apply.

It is important that all swill and rubbish should be removed from the premises promptly and should be stored, pending removal, well away from food, food utensils and the places where food is prepared or served. Swill should be collected daily. In most areas, it is possible to make special arrangements for the frequent removal of trade refuse.

The ideal storage arrangement is for the swill and rubbish to be placed, pending disposal, in bins in a yard close to the back entrance to the premises. The bins should be of metal—galvanised when this is obtainable—stoutly constructed, painted or bitumenised to prevent rust, and with tightly fitting lids preferably with a clip to prevent their blowing off.

Swill bins and rubbish bins attract rats, mice, cats, dogs, birds, flies, bluebottles and other unwanted intruders, and it is therefore important that the lids should always be kept on and that the area around should be kept clean. The yard should have a cold water tap, fitted with a length of hose sufficient to enable the bins, and the yard itself, to be sluiced out.

The rubbish and swill bins should be housed on a concrete platform, about 18″ above the ground (or on iron racks) in a concrete, drained yard. The top of the concrete platform should be slatted to avoid the accumulation of moisture round the base of the bin, and it should be wide enough to enable the bins to be stood about 9″ from the wall. It should be roofed so that the bins are shielded from rain and sun. It is desirable to maintain entirely separate bins for swill and for rubbish—plainly marked—and to have sufficient additional bins to ensure that there will be no overflow if there is any delay in collecting. Bins should be used in rotation. After use they should be rinsed out with warm water and scrubbed with soap, disinfectant and a long-handled brush. If the swill contractor supplies his own swill-bins, he should provide clean bins in exchange for any full ones he takes away.

Grease recovered from the grease-traps of drains from kitchens and washing-up rooms should be kept apart from food and disposed of as inedible fat. Pending disposal it should be stored in a metal receptacle with a tightly

closed lid. Refuse should not be carried through the dining room. Ruthlessly exclude from the kitchen any refuse from other parts of the premises. Kitchen waste should be carried away in covered receptacles.

Consideration should also be given to the piling of kitchen waste and plate-scrapings in transit to the swill bins. Some reasonable compromise must be found between the hygienic necessity of getting this stuff right away from the food at once and the practical fact that it is undesirable for frequent visits to be made to the swill tub by staff engaged in handling food or food utensils. The normal practice of accumulating swill in sink-tidies and swill-bowls is not unsatisfactory, provided these receptacles are not allowed to stand about when full and are washed out in hot water as soon as they are emptied. An alternative is to accumulate the waste in a papier mache carton which can be placed direct into the rubbish bin. This may not suit the arrangements of the swill contractor, although it is plainly a tidy way of disposing of refuse.

An accumulation of the containers in which food is delivered—boxes, cartons, bottles, jars and tins—is undesirable. These should be returned promptly to the manufacturer or disposed of as salvage without delay. If they are kept for re-use in the establishment—not a good practice—care must be exercised. Bottles, jars and tins should be washed out and dried and then stored with their lids or stoppers on, and they should be washed out again before use. Boxes and cartons, if clean, can be used for storing canned goods. Wrapping paper could be used a second time as an outer wrapping, but ought not to be brought into contact with food if it has been used once.

Section I

WASHING-UP

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Most caterers and catering workers realise the importance of washing-up. The thorough cleansing and effective sterilization of the utensils used in the preparation, serving and consumption of food are among the most important of the caterer's obligations to his customers ; yet washing-up is usually regarded as a menial task, suitable only for the least-paid and least-efficient employees; and dirty utensils are often allowed to accumulate (as far as stocks allow) until the end of the day, with the result that washing-up is the final job and getting away early the reward for skimping it. It is wrong for customers of catering establishments and canteens to be served with dirty crockery or cutlery, particularly with cups stained with lipstick or the over-runnings from previous fillings; and it is wrong for customers who object to such utensils to be treated by the serving staff as unreasonably fussy.

Yet there is a real danger that utensils which come into contact either with the mouth or with food may help to spread many diseases besides those commonly included in the term " food poisoning ". This danger is none the less serious because it is not known how many people are made ill in this way.

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parts actually touching the wire) will be exposed to the rinse water. The rinse will be ineffective if plates or saucers are piled one on top of another or if cutlery is merely heaped in the basket. The baskets themselves have handles high enough to reach clear of the water. The sterilizing rinse in the second sink is of clean hot water, without added detergent or chemical, at a temperature of about or not less than 170°F. and the utensils remain in the hot water for a full two minutes. At this temperature care should be taken not to immerse the hands. Rubber gloves are not a protection and may, in fact, increase the injury. The purpose is to raise the temperature of the utensils to that of the water so that they will air-dry almost instantaneously; this object will not be achieved unless they remain in the water for at least two minutes. The temperature of the water is maintained at about 170°F. throughout this operation. As the utensils are already clean, it is not necessary to empty the sink completely when more hot water is added. When the two minutes are up, the baskets are removed from the sink and stood temporarily on a draining board. As soon as the crockery is dry and cool enough to be handled it is stacked and put in a clean place awaiting re-use.

If water substantially hotter than 170°. is used, the time for sterilization of *crockery* can be shortened; for example, if the water is actually boiling, half a minute is long enough. It is not, however, sufficient merely to pour scalding water over the washed utensils, as the water does not remain on the utensils long enough to kill the germs.

A cheap and satisfactory alternative to sterilization in hot water in a second sink is steaming in a closed cauldron or saucepan over a gas-jet or on an electric hot plate. This method is suitable for an establishment where the number of utensils to be sterilized is not large.

To hold water at a desired temperature sinks or tanks can be obtained with a thermostatically-controlled heating unit or with a perforated steam pipe operated by a hand valve which admits live steam at the bottom of the sink.

Drying by cloth cannot be recommended and is, in fact, quite unnecessary for crockery—although it is probably desirable for cutlery. A wet, steamy atmosphere, such as is unavoidable in a washing-up room, is favourable to the multiplication of germs, and drying-cloths pick up germs readily from the hands of the dryers-up, with the result that cloth-drying frequently puts back on the crockery as many germs as have been removed in the washing. Bacterial counts, both in laboratory experiments and under working conditions in catering establishments, demonstrate that drying-cloths are undesirable; if they *are* used, they should be in ample supply. A clean cloth should be taken as soon as the one in use gets wet or at all dirty, and the used cloths, as well as the dish-cloths and mops, should be boiled before re-use. Whether cloths are used or not it is important that crockery should be dry before it is put way. Germs do not multiply on a dry surface.

Machine-Washing of Crockery and Cutlery

There are many good makes of mechanical washers on the market, and there is no doubt that such machines save time and labour. Properly operated, they produce good results. But it must be remembered that a machine is not human and cannot correct the errors of the operator. A washing-up machine is no more efficient than the operator allows it to be.

Efficiency is gained by using soft water. You can find out from the local authority who supplies you with water exactly what degree of hardness per

gallon is normal in your area. If the supply contains more than 7° of hardness then suitable products are available which can be added as well at the detergents normally used which reduce this hardness. These hardness sequestering agents, for example, sodium hexametaphosphate, tetrasodium pyrophosphate, etc. are available under proprietary names. Alternatively a " base exchange " or salt regenerated zeolite type water softener could be installed.

It is important, therefore, that if machines are used, they should be maintained in proper working order and operated efficiently in accordance with the maufacturer's instructions. The operators should be conscientious people who understand, not only the working of the machine, but the reason for each process.

In purchasing a washing-up machine it is important to bear in mind that all sprays, jets, brushes and movable parts should be readily accessible for inspection and cleaning. There are several types—turbulent immercision in a sink, spray (semi- or fully-automatic) and sink with brushes—all of which can produce good results if properly maintained and operated.

In some machines the rinse water is used again for washing; this is usually a defect, since the rinse water inevitably contains some food particles, and neither the correct temperature nor the correct strength of detergent is maintained.

The essential functional requirements of a washing-up machine are that it shall, firstly, cleanse the utensils so that all food particles are removed and the utensils left visibly clean, and, secondly, sterilize the cleaned utensils so that no dangerous germs remain alive on them. For this it is necessary that the racks, sprays, jets, brushes (or whatever are used) should be so arranged that every surface and every edge of every utensil is exposed, for the whole of the necessary time, to the full force of each process. The principle employed—jets of water, water agitation, revolving brushes, etc.—is not so important from the caterer's point of view as the temperature of the water. If the water in the cleansing chamber is not hot enough, the fat in the food residues will not be melted and will remain on the plates. (The temperature of the washing water is thus more important in machine-washing than in washing by hand, since the hand dish washer should notice any particles adhering to a utensil and mop them off.) If the water in the sterilizing chamber is not hot enough, the utensils will not dry quickly and completely.

A detergent dispenser is a useful fitting in a washing-up machine because it implies that the detergent solution will be added to the cleansing water in the correct concentration; but a drying apparatus (except in a glass-washing machine) should be regarded with suspicion, since drying should not be necessary if the water in the sterilizing chamber is hot enough to sterilize. What is important is that thermometers should be fitted to every machine, recording the temperatures of the wash water and the rinse water—and fitted in places where they can be easily read. Thermostatic control of wash and rinse water and any device which tends to defeat either the careless or the deliberate lowering of temperatures or shortening of times is valuable.

The operation of washing-up by machine should be carefully planned and carried out methodically. With most types of machine preliminary scraping is desirable. The smaller the amount of food and dirt that gets into the cleansing chamber the better. If racks or baskets are used, the utensils should be so arranged in them that every piece is fully exposed to both processes. Plates or

saucers should never be piled one on top of another. In machines with an upward jet cups and bowls should be placed upside down and secured against overturning. Knives, forks or spoons should not be allowed to overlap each other. The utensils should be left in the machine for the full length of time stipulated by the manufacturer, and any attempt to "beat the machine" by taking the utensils out in advance of programme should be regarded as dangerous to the health of the customers. The hands that stack the utensils when they emerge from the machine should be clean. The utensils must be allowed to dry completely before they are stacked.

It must not be regarded as certain that every article which has passed through a washing-up machine is necessarily clean. Before the utensils are put away to await use they should be examined individually to ensure that they are dry and clean. Any that get through visibly dirty should be put through the machine again. If more than an occasional item comes out unwashed, the machine is either out of order or is being operated incorrectly, and some investigation is necessary. If the crockery does not dry quickly, it is probable that the rinse water is not hot enough; this may be due to a defect in the machine, but is more likely to be due to tampering by the person in charge of it.

When a kitchen-hand pulls a crockery tray clear of the machine without allowing the full time for the sterilizing rinse, the crockery will probably be stacked before it has dried properly, and if it is stored in a warm atmosphere, the moisture, in evaporating, will leave a brown stain. Such a stain may result from the use of an unsuitable detergent, but more frequently results from the employment of an unsuitable kitchen-hand.

Plastic ware. If plastic ware is used, care should be taken to ensure that it will stand up to the temperatures required for efficient sterilization.

Glassware. It is best to wash glassware by the method described above for crockery, but some glassware may not stand the high temperatures required for sterilization by hot water and chemical sterilization may be necessary. If glass-washing appliances are used, full regard should be had to the instructions of the manufacturers. In some machines the temperature of the water is not high enough to enable the tumblers to dry promptly and, if cloths are used to dry and polish tumblers, the cloths should be clean and dry.

Special crockery utensils. Certain articles, for example, teapots, require special cleansing. Such articles should be given individual attention in order that all surfaces are cleansed and sterilized. Special brushes should be kept for cleaning the spouts of tea pots, coffee pots and other similar utensils.

Silverware should be cleaned from time to time with a good silver polish and a soft cloth. After such cleaning it should be put through the complete washing-up process as if it had been used.

Knife-cleaners. Knives should be thoroughly washed and dried before they are put into a knife-cleaner and they should be carefully wiped afterwards with a clean dry cloth in order to remove any polish which may remain on them.

Detergents

In the first (cleansing) sink a detergent should be added to the water, since water alone is insufficient to cleanse utensils. The most commonly-known

detergent is soap, but soap by itself, in bar or flake form, is now seldom used for washing-up. There are many alkali soap-powders, soapless detergents, soap substitutes and detergent materials of varying utility—all used in a solution of water.

Detergents should be bought with discrimination and it is worth while to give some consideration to the type of detergent most suited to the conditions. The principal circumstances governing the choice of a satisfactory detergent are the hardness of the water, the method of washing-up, the equipment to be used, the type of meals served and the temperature of the water in the cleansing sink. In addition to this the detergent must be added to the water in the appropriate concentration. The use of detergents in concentrations greater than those recommended may lead to irritation of the skin.

In view of the variety of factors and circumstances this booklet cannot give detailed advice, and caterers would do well to consult the local health department as well as makers of washing-up machines.

Briefly, the ideal detergent solution should be free from harmful ingredients and should possess qualities which enable it to wet thoroughly the utensils to be cleansed, to emulsify the fats, dissolve the food materials, break up the particles of dirt and solid matter, to prevent the formation of film and scale, and to be itself readily rinsed off the utensils.

It is probable that no one detergent possesses all these properties in sufficient measure. Soap itself is not entirely satisfactory for washing-up, and in hard water it tends to leave an insoluble deposit on utensils. The soap-alkali mixtures are less affected by hard water, and the soapless detergents not at all. Satisfactory results are not likely to be obtained by mixing detergents. Whatever detergent is used, it is important that it should be used in correct concentration throughout the washing-up process. It is very difficult to maintain a correct concentration if the washer-up is in the habit of pouring in more hot water as the water in the cleansing sink cools. It is best to empty away the whole of the cooling water and to refill the sink with hot water, adding the detergent in measured amount. When cleansing under running water (as in some makes of machine) a detergent dispenser, regulating the amount of detergent solution added, is absolutely necessary.

A detergent is an essential ingredient in the *cleansing* process of washing-up. It must not be regarded as a substitute for the *sterilization* process. Only in exceptional circumstances, where the use of more than one sink is impracticable, for instance when dealing with materials which will not stand the heat required for water sterilization, should the use of a combined bactericidal and detergent preparation replace a separate sterilization process.

Chemical Sterilants

There are now available under proprietary names a number of effective chemical sterilants which are suitable for catering use. Whenever chemicals are used it is both important and economical to follow the manufacturers' directions for use as carefully as possible. If these chemical routines are correctly followed any cloth which may be used in the process of washing and drying up will also become disinfected. The chemically sterilized water used for rinsing is afterwards useful for general washing down (see Advisory Leaflet 422. M.A.F.F. H.M.S.O. 3d.) Combined sterilizer-detergents are also available.

In hard water districts a water-softener is advisable, particularly if washing-up is done by machine. Unless water is softened before it reaches the washing-up machine, the sprays and jets will accumulate heavy chalky deposits which slow up their operation, and the machine has to be stopped frequently for cleaning. If a softener is used, it should be serviced regularly and recharged or regenerated whenever this is required—a matter which will depend on the amount of water used. In this regard the manufacturers' instructions should be carefully followed.

The Pan-Wash

The pots, pans and other cooking vessels should be washed separately from the crockery and cutlery at sinks reserved for this purpose. The pan-wash is usually a greasy job and requires ample supplies of clean, really hot water, capacious sinks, suitably adapted grease traps and drainage. It is worth while to collect the grease at the earliest possible stage, since this saves cleaning at a later stage.

Pan-washing should be done by hand. It will probably be desirable to employ a special detergent, since particular scouring properties will be required. In choosing both the type of detergent and the type of pot-scour (if a scour is used) attention should be paid to the dangers of removing or damaging the surfaces of enamelled, copper or other non-homogeneous cooking vessels. (Such vessels should be discarded when the surface begins to go.) It is, of course, desirable to remove most of the food debris before washing the pans ; for this purpose a swab or rubber scraper is preferable to a metal scraper.

The prompt and efficient cleansing and sterilization of cooking utensils (and of utensils which hold cooked food in bulk, such as vegetable tureens and meat dishes) is equally as important as—if not more important than—that of the utensils used by customers. Hot food is kept in the cooking and serving vessels for a considerably longer time than it normally remains on customers' plates, thus allowing any germs which may be present a considerably longer time to multiply. It is, therefore, essential that all cooking vessels should be cleansed promptly after use, that all particles of food should be removed from them and that they should be sterilized sufficiently to kill any lingering germs before they are used again.

There is a further reason why metal cooking vessels should be washed-up promptly. If they are left unwashed for any length of time, the grease in the food particles will go rancid and impart a rancid odour to the utensil and the moisture will cause rust.

After they have been washed and rinsed pots and pans should be stood on their sides, or upside down on slatted shelves, to dry. Colanders, strainers and sieves should be hung up in an airy place to dry and should not be stored in drawers or cupboards.

Containers Used for Carrying Individual Meals

When meals are conveyed in bulk from the kitchen to a distant service point (for example, to a group of workers), the plate rings used should be thoroughly sterilized by a steam jet under pressure after each use.

Section J

CLEANING OF PREMISES AND EQUIPMENT

Cleanliness is the key to health; and the customers of a catering establishment have the right to expect that a state of thorough cleanliness prevails in the places where their food is prepared. In the earlier chapters of this booklet stress has been laid on the importance of the premises, fittings and equipment being so designed and constructed that cleaning can be readily carried out. The corollary is that they shall be kept clean.

The cleaning of premises and equipment should be carefully planned so that every part of the premises and every item of equipment is attended to regularly, and the routine should be set out in a written programme so that the cleaners will know precisely what is expected of them. Ample time should be allowed for this important side of the work, and the staff concerned should have no excuse for neglecting or scamping it. Each part of the job should be timed to fit in with the general organisation of food preparing and serving in the establishment; nothing should be left to the whim of the cleaner, and there should be no question of a cleaner omitting an item or " getting forward " with the time-table in order to leave early. The manager should himself keep a copy of the programme before him and should satisfy himself that the cleaning is done thoroughly and at the proper time.

Apart from the routine cleaning, it should be the rule to clear up spillages and other accidental messes promptly; this helps to prevent grease spots forming on floors and walls, saves accidents and lightens the work of routine cleaning.

This booklet cannot lay down precise time-tables for cleaning, since the amount and frequency of cleaning necessary depends on a variety of circumstances—the location and immediate surroundings of the premises, the nature of the trade, the lay-out and decoration of the working rooms and the structural materials. The advice which follows will, of course, be adapted by the caterer to his own establishment.

Floors. The floor of the kitchen, food preparation room, washing-up room and dining-room should be cleaned every working day. Particular attention should be given to leaving the floors at the close of the day's business in a sweet clean state which makes possible a clean start to the following day's operations. Attention to this matter helps to prevent infestation as it ensures that no waste will remain to form an attraction to pests. The manner of cleaning must necessarily depend on the surface, but all washable floor surfaces in these rooms should be washed at least once a day, preferably with hot water, soap or other detergent, and a scrubbing-brush, mop or squeegee. This washing should be supplemented by sweeping, as often as necessary, preferably with the aid of damping agents.

All floors of the kinds recommended on pages 8 and 9 for kitchens are capable of being washed and should be washed; but there are many catering establishments where the floors are bad and where, pending repair or relaying, constant washing would only lead to more rapid deterioration. Old wooden floors would be better waxed or polished than washed.

As a general rule, floor cleaning (particularly of a kind which may raise dust) should be carried out when there is no uncovered food in the room; a large kitchen can, however, be cleaned in sections. Before the floors are

scrubbed any duckboards and other movable furniture should be removed in order to provide a clear room; the duckboards should themselves be scrubbed with hot water and a detergent once every working day. For small and medium-sized floors scrubbing with a hand scrubbing-brush and wiping with a floor swab is most efficient; for larger areas it may be necessary to use a long-handled brush and a squeegee. In most instances this floor-washing is best done at the end of the day or at the beginning, long enough before the arrival of the cooking staff (or customers) to enable the floor to dry. Dining-room floors should not be swept while food is being consumed, unless a damping compound is used, the sweeping is done by sections and the section being swept is screened off from the part open to the public.

Floors in pantries, larders, dry food stores and vegetable stores should be swept daily and washed at least once a week. The duckboards forming the lowest shelves should be cleared and moved out so that the floor beneath them can be washed. In most instances more frequent washing than once a week is desirable.

Fixed carpets and matting in dining rooms, passages, and stairways should be brushed or swept every working day, preferably by vacuum cleaner. Loose mats and rugs should be cleaned in a similar manner, and, if they are not vacuum-cleaned daily, they should be taken out into the open and beaten at least once a week. " In situ " carpet cleaning by steam applicator or shampoo is also worthwhile at regular intervals.

Walls, Ceilings and Fixtures in Working Premises

Walls and fixtures should be cleaned frequently—not less than once a week—and their accessible parts should be dusted every working day. The method of wall cleaning must depend on the nature of the surface, but, wherever practicable, the walls should be washed with warm water and a detergent. The ceilings should be brushed or swept, and, when this is done, the dust should be removed from the top sides of girders and piping, from the ledges above windows and doors, from electric lighting and other fittings and from ventilation hoods.

At least once a week the interior surfaces of ventilation hoods should be wiped clean.

In inexperienced or irresponsible hands dusting often consists of shifting dirt from one undesirable resting place to another. It should be impressed upon cleaners that the purpose of their employment is not to flap dust into the air but to expel it from the premises altogether. Frequent and regular cleaning is, of course, the easiest way to keep the place clean. There is no doubt, also, that the quickest and most certain way to collect dirt and take it away is by means of the vacuum cleaner.

Kitchen tables and counters and preparation slabs. All surfaces used for food preparation (including cutting boards and pastry slabs) should be washed at least once a day and, in many cases, more frequently. Wooden and marble surfaces should be scrubbed with scrubbing brush, hot water and a detergent; stainless steel and other metal surfaces should be washed with a hand swab, hot water and a non-scratching detergent. After this washing they should be rinsed in clean water. In addition to this daily washing, the surfaces should be wiped with a clean cloth after each use. Cloths used for wiping down,

swabbing and cleaning should themselves be cleaned either by frequent boiling or by storage in a detergent/steriliser solution. The framework, including the undersides of tables, should be dusted or brushed daily and cleaned thoroughly at least once a month.

Shelves and cupboards. Where these are used for storing food or utensils in constant use, they should be cleared once a week and cleaned; the routine of this cleaning should include the dusting (or sweeping) of the walls, the scrubbing of the upper surfaces of the shelves and the dusting of the under surfaces. Cupboards used for long-term storage (of reserves of linen and crockery, etc.) should be cleared out and cleaned at least once a month.

Meat block. When a new chopping block is cleaned it should be thoroughly scraped and then scrubbed in very hot water containing washing soda in a solution of 4 ozs. to the gallon. As the block wears this cleaning should be prefaced with a hard brushing with a wire brush. Do not leave excess water on the block as this weakens the joints and softens the wood. If salt is rubbed into the surface immediately after the scraping then some absorption of moisture is provided. When the surface becomes very worn and uneven it should be planed to a new surface. If this is impracticable the block should be discarded and replaced. An alternative block cleaning method is to prepare the surface with a scraper or wire brush dipped into a solution of detergent, chemical sterilant and warm water. All surplus liquid must immediately be wiped off with a clean cloth.

Weekly cleaning. To supplement daily routine cleaning it is a good plan to have a thorough cleaning of the working premises once a week on some suitable occasion after the dining-room has closed. The rooms should be cleared in turn of all easily movable articles, and all food should be put away or covered.

The weekly cleaning is a good time to turn out cupboards and drawers, to throw out articles which have no business in a kitchen and to see that misplaced equipment is returned to its rightful place. A regular clearance of this kind prevents the accumulation of rubbish and unnecessary lumber and therefore helps to make cleaning both easier and more effective.

Dining-rooms. Circumstances vary so greatly that it is impossible to give detailed advice here. Chairs and tables should certainly be dusted thoroughly at least once every working day; and, unless table-cloths are used, table tops should be scrubbed or washed daily, and wiped, with a clean cloth, after each customer. Walls, ceilings and fittings, including electrical fittings, should be swept or dusted at least once a week and cleaned more thoroughly at least once a month.

Passages and staircases. In general, passages and staircases used for the transport of food, whether uncooked or in transit to the dining-room, should be regarded, for cleaning purposes, as part of the working premises. Passages and staircases used only by the customers should be regarded as part of the dining-room, but will probably require rather more frequent cleaning. Meter cupboards and other miscellaneous non-food cupboards under stairs and in odd corners should be swept out at least once a week and cleaned more thoroughly at least once a month.

Lavatories, cloakrooms and rest-rooms. These should be kept very clean. In general, the cleaning schedule for the kitchen should apply to these places.

The yard, and any other open space belonging to the catering premises, should be kept clean. The yard should be swept and hosed down at least once every day. The rubbish collected by sweeping should be put into the dustbin before the hosing; on no account should grids or gratings be removed in order to allow rubbish to be washed down the drain—the purpose of the grid is to keep such rubbish out of the drain.

Equipment

Nearly all articles of equipment used in the preparation of food for consumption in a catering establishment can be included in one of three classes:

receptacles in which food is mixed or cooked;

implements with which food is cut, scraped, basted or otherwise treated or handled;

machinery, whether hand or automatic.

The general principle with all equipment is that all surfaces which come in contact with food, or with hands that come into contact with food, should be cleaned after use. Other surfaces should be cleaned at least weekly. New equipment should be cleaned before it is put into use.

The cleaning of most receptacles and implements has already been discussed. All articles which are small enough to be cleansed and sterilized by the two-sink method, either in the normal wash-up or in the pan-wash, should be so treated.

Boilers, coppers and large milk containers should be scoured inside, and then sterilized with scalding water or steam, immediately before use.

The tops, sides and shelves of stoves should be washed daily with hot water and a detergent, and the insides should be thoroughly cleaned—brushed and wiped—once a week.

Tea and coffee urns should be emptied and cleaned out after each day's use; clean, hot water should be poured into the container and the interior surfaces brushed with a long-handled, stiff-bristled urn brush; the water should then be emptied and the brushing repeated with fresh hot water; a third filling of clean hot water should then be put in and left overnight. If the urns are in daily use, they should be cleaned more thoroughly twice, or at least once, a week. For this, the outer jacket should be filled three-quarters full of water and the heat turned on; the container should then be filled three-quarters full of water with an urn-cleaning compound, and left, with the heat full on, for half an hour; the insides of the container and the cover should then be scrubbed with a long-handled, stiff-bristled urn brush and the water drained off. The pipes, taps and fittings should then be brushed, the brushes being run through all tubing. The container should be rinsed and brushed three or four times until the urn is thoroughly clean and free of all foreign flavours.

Savoy bags. It is best to use paper piping bags and to throw them away after use. If cloth bags are used, they should be turned inside out after use and rinsed thoroughly in hot water. Both insides and outsides should then be scrubbed with hot water and a detergent; the bags should then again be thoroughly rinsed in hot water, sterilized in boiling water for three minutes,

wrung out and hung up to dry. The nozzles should be thoroughly scoured in hot water until all grease is removed and then sterilized in boiling water. In the use of imitation cream, the icing of cakes or other decorative work, for instance piping, the end of the savoy bag should never be moistened with the mouth.

Machinery

The extent and nature of the cleaning necessary must depend on the design and purpose of the machine. The instructions of the manufacturers should be followed, but, in general, the rule should be that every machine should receive some cleaning after each day's usage. For the purposes of cleaning, the parts of a machine can be classified under three headings:

parts which come into contact with food;

mechanical parts which do not come into contact with food;

structural or covering members.

All parts which come into contact with food—knives, grinders, platforms on which food rests, interior of bowls—should be cleaned thoroughly after each usage; in many machines these vital parts can be readily detached for washing and sterilizing. At the least, they should be wiped clean of all food particles, washed in hot water and dried. If possible, they should be sterilized.

The cleaning of the mechanism is, in many cases, the work of the maintenance engineer rather than that of the operator; but it must be remembered that the proximity of human food requires that those parts should be kept a good deal cleaner than is necessary for efficient performance. Any dust or dirt which might be blown or dropped on to food or surfaces which may contact food must be promptly removed.

Most of the materials used for the structural or covering members of machines—wood, iron, chromium, aluminium, stainless steel, enamel, tin, heat resistant glass—can be washed with water. Such parts should be dusted or brushed daily, and washed with hot water and soap or suitable detergent at least once a week. After being washed such parts should be thoroughly dried, and those surfaces which lend themselves to polishing should be polished with a clean dry cloth. The choice of a detergent is important, and it may be necessary to use different detergents for different material. Coarse, scratchy scouring powders should not be used on chromium or stainless steel and only the finest scouring powders should be used on enamel or tin. Detergents containing strong alkali should not be used on aluminium. Indeed, for all those structural materials a mild soap is probably the most effective detergent.

Caustic soda, cyanide and other poisonous compounds should not be used for cleaning or polishing any equipment in a catering establishment. It is always dangerous to have poisons near food, and it is safer to use harmless alternatives for cleaning.

Cleaning Utensils

The utensils used for cleaning should themselves be kept clean. Scouring cloths, swabs, dish-cloths and dusters should be boiled in hot water and soap powder after each day's use. If hung out to dry over-night, they will be ready for use next morning.

Scrubbing brushes should be washed in clean hot water and detergent after each day's use, rinsed in clean hot water, rested on the bristles until completely drained and then dried in a warm atmosphere. Mop heads should be washed and rinsed similarly and then hung up to dry.

Scrubbing pails should be rinsed out in hot water after use and stood upside down when not in use; cleaning solution or water should not be left standing in the pail after the cleaning is completed.

Inspection

The efficient catering manager arranges his time-table so that all branches of the establishment and all aspects of the work come under his eye at intervals which, although frequent, are not so regular as to encourage "window-dressing" by the staff. Inspection for cleanliness should be both thorough and comprehensive, and, so far as premises and equipment are concerned, it must necessarily be confined to certain times of the day; so far as hygienic practices are concerned, the catering manager should regard himself as on inspection duty whenever he is on the premises. For premises and equipment, it is desirable to compile an Inspection Routine Chart setting out in detail what is to be examined in each room; and a regular tour of the premises should be made and each item ticked off on the chart. Such a tour should be carried out daily in a small establishment and at least twice a week, in daily instalments, in a larger one. A manager who normally delegates this inspection round to a senior member of the staff should make the round personally at irregular intervals. If the staff consists of carefully-selected, responsible people, the cleanliness inspection should become a pleasure; but it should not for this reason be regarded as an unnecessary formality. It is unfortunately the case that many catering operatives do need strict supervision in matters of food hygiene. In a large establishment such supervision has necessarily to be delegated to senior employees, but the manager should never delegate food hygiene supervision completely.

A FINAL WORD

Catering establishments are of many types, and not all have a ready source of information and advice. It is, therefore, worth while to point out that the public health inspector is available and competent to give the caterer advice on problems of structure, equipment and practices and to assist in staff training schemes. He should be welcomed as a friend and his advice should be freely sought.

PLATE XXI. WASHING-UP BY HAND

PLATE XXII. CLEAN CATERING

STATUTORY INSTRUMENTS

1960 No. 1601

FOOD AND DRUGS

FOOD HYGIENE—ENGLAND AND WALES

The Food Hygiene (General) Regulations, 1960

Made - - - -	*1st September*, 1960
Laid before Parliament	*12th September*, 1960
Coming into Operation	*1st October*, 1960

The Minister of Agriculture, Fisheries and Food and the Minister of Health, acting jointly, in exercise of the powers conferred on them by sections 13 and 123 of the Food and Drugs Act, 1955(a), and of all other powers enabling them in that behalf, hereby make the following regulations after consultation with such organisations as appear to them to be representative of interests substantially affected by the regulations and reference to the Food Hygiene Advisory Council under section 82 of the said Act:—

PART I

PRELIMINARY

Citation and commencement

1.—(1) These regulations may be cited as the Food Hygiene (General) Regulations, 1960, and shall come into operation, save in so far as is otherwise provided by paragraph (2) of this regulation, on the first day of October, 1960.

(2) In their application to ships, these regulations (except regulation 31) shall come into operation on the first day of November, 1961.

Interpretation

2.—(1) In these regulations, unless the context otherwise requires—

" the Act " means the Food and Drugs Act, 1955 ;

" business " includes the undertaking of a canteen, club, school, hospital or institution, whether carried on for profit or not, and any undertaking or activity carried on by a public or local authority ;

" catering business " means a food business consisting wholly or partly of the supply of food for immediate consumption ;

" certificate of exemption " in relation to a food business means a certificate for the time being in force in relation to the business for the purposes of regulation 31 of these regulations ;

" container " includes any basket, pail, tray, package or receptacle of any kind, whether open or closed ;

" contamination" includes contamination by odour ; and " contaminated " shall be construed accordingly ;

" equipment " includes apparatus, furnishings and utensils ;

" fish " means uncooked fish (including cured or smoked fish), and includes uncooked whalemeat ;

" food " means food intended for sale, or sold, for human consumption and includes drink, chewing gum and other products of a like nature and use, and articles

(a) 4 & 5 Eliz. 2. c. 16.

[M.H. 483]

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and substances used as ingredients in the preparation of food or drink or of such products, but does not include—

(*a*) milk, cream or separated milk, other than dried milk and condensed milk :

(*b*) water, live animals or birds ;

(*c*) articles and substances used only as drugs ; or

(*d*) any raw food which has to be subjected to a process of milling or refining for the purpose of rendering it in a state fit for human consumption ;

" food business " has the meaning assigned to it by regulation 3 of these regulations ;

" food premises " means any premises on or from which there is carried on any food business ;

" food room " means any room (being, or being part of, any food premises), or any room or space on a ship, in which any person engages in the handling of food for the purposes of a food business, but does not include—

(*a*) a room used as a sleeping place if the only handling of food which occurs in the room is in the course of serving food there to, or at the request of, any person occupying it as a sleeping place ;

(*b*) a room communicating with a room used as a sleeping place if the only handling of food which occurs in the room is in the course of serving food there to, or at the request of, any person (not being a person carrying on a food business at the premises which include the room or a person employed by him) by whom the room is occupied as a sleeping place ; or

(*c*) a day room in a hospital or in a home for the reception of aged or disabled persons ;

" home-going ship " means a boat or craft plying exclusively in inland waters or engaged exclusively in coastal excursions ; and for the purposes of this definition " coastal excursion " means an excursion lasting not more than one day which starts and ends in Great Britain and does not involve calling at any place outside Great Britain and " inland waters " means any canal, river, lake, navigation or estuary ;

" hospital " means any premises for the reception and treatment of persons suffering from illness (including mental disorder within the meaning of the Mental Health Act, 1959(**a**)), any maternity home and any institution for the reception and treatment of persons during convalescence or of persons requiring medical rehabilitation ;

" local authority " means—

(*a*) as respects the City of London, the Common Council, and as respects a metropolitan borough, the council thereof ;

(*b*) as respects the Inner Temple and Middle Temple, the respective overseers thereof ;

(*c*) as respects any other borough and any urban district or rural district, the council of the borough or district ;

" meat " means the flesh (including edible offal and fat) of animals and birds which is sold or intended for sale for human consumption, and includes bacon and ham and, in regulations 25 and 27 but not elsewhere in the regulations, includes also any other such flesh which has been cooked or otherwise prepared for sale by any similar process ;

" open food " means food not contained in a container of such materials, and so closed, as to exclude the risk of contamination ;

" premises " means a building or part of a building and any forecourt, yard or place of storage used in connection with the building ;

" preparation " in relation to food includes manufacture and any form of treatment ; and " prepared " shall be construed accordingly ;

" sanitary convenience " means a water closet, urinal, earth or chemical closet, privy or similar convenience ;

" ship " means—

(i) a home-going ship, and

(ii) any other boat or craft which is moored in any place,

(a) 7 & 8 Eliz. 2. c. 72.

on or from which there is carried on any catering business or other retail food business ;

"stall" includes any stand, marquee, tent or mobile canteen, and any vehicles, whether movable or not.

(2) In these regulations, unless the context otherwise requires, the handling of food means the carrying out, or assisting in the carrying out, for the purposes of a food business, of any process or operation in the sale of food or in the preparation, transport, storage, packaging, wrapping, exposure for sale, service or delivery of food and includes the cleaning of articles or equipment with which food comes into contact.

(3) For the purposes of these regulations the supply of food otherwise than by sale, at, in or from any place where food is supplied in the course of a business, shall be deemed to be a sale of that food, and references to purchasing and purchasers shall be construed accordingly ; and where in connection with any business in the course of which food is supplied the place where the food is served to the customers is different from the place where the food is consumed, both those places shall be deemed to be places in which food is sold.

(4) In determining for the purposes of these regulations whether any matter involves a risk of contamination to any food, regard shall be had to the extent to which contamination in the respect in question is immaterial because of—

(*a*) the nature of the food ; or

(*b*) the manner in which the food is packed ; or

(*c*) any process to which the food is to be subjected before sale to the consumer, being a process to which food of that nature is normally so subjected.

(5) The Interpretation Act, 1889(**a**), shall apply to the interpretation of these regulations as it applies to the interpretation of an Act of Parliament and as if these regulations and the regulations hereby revoked were Acts of Parliament.

(6) References in these regulations to the provisions of any enactment or regulations shall be construed, unles the context otherwise requires, as references to those provisions as amended by any subsequent enactment or regulations.

Interpretation of "food business"

3.—(1) In these regulations, unless the context otherwise requires, the expression "food business" means, subject to the succeeding provisions of this regulation, any trade or business for the purposes of which any person engages in the handling of food.

(2) The said expression does not include any agricultural activity or (except so far as the handling of food may be involved in the course of a retail business or catering business) so much of any trade or business as consists of the handling of food at, in or upon—

(*a*) any dock, public warehouse or public cold store ; or

(*b*) (except for the purpose of Part VI of these regulations) any premises or place occupied by a carrier of goods for the purposes of his trade or business as such a carrier ; or

(*c*) any slaughterhouse within the meaning of the Slaughterhouses (Hygiene) Regulations, 1958(**b**) ; or

(*d*) any premises or place occupied by a wholesaler of raw vegetables and used exclusively for the purposes of his trade or business as such a wholesaler ; or

(*e*) any premises which—

(i) are used exclusively for the storage of food manufactured and packed by the occupier thereof ; and

(ii) are situated outside the curtilage of the premises used for the manufacture or packing of that food ; and

(iii) are not used for the storage of any open food ; or

(*f*) any ship on which food is handled solely with a view to its consumption by the crew of the ship or by persons permanently resident thereon.

(**a**) 52 & 53 Vict. c. 63. (**b**) S.I. 1958/2168 (1958 I, p. 1182).

(3) In this regulation—

(*a*) "agricultural activity" includes horticulture, fruit growing, dairy farming, the breeding and keeping of livestock, including poultry, and the use of land as market gardens and nursery ground ; and

(*b*) "dock" includes any harbour, moorings, wharf, pier, jetty or other works in or at which food can be shipped or unshipped and any warehouse, transit shed or other premises used in connection therewith for the temporary storage or loading for dispatch of food which is unshipped or to be shipped.

Enforcement

4.—(1) Except as provided in this regulation, each local authority shall enforce and execute the provisions of these regulations in their district.

(2) In relation to any ship each port health authority shall execute and enforce the provisions of these regulations in their district:

Provided that in relation to any home-going ship, which is a ship required by the Merchant Shipping Act, 1894(a), to be surveyed annually, the provisions of these regulations mentioned in the Schedule to these regulations shall be enforced and executed by the port health authority, or, if there is no port health authority, the local authority for the port in which that survey is being, or was last, carried out.

(3) With respect to any home-going ship mentioned in the proviso to the last foregoing paragraph, any local authority or port health authority shall furnish to the authority charged with the enforcement of the provisions mentioned in the Schedule to these regulations in relation to that ship any information in their possession which will be likely to assist that last-mentioned authority in the carrying out of their duties under these regulations.

(4) The person having command or charge of any home-going ship mentioned in the proviso to paragraph (2) of this regulation shall, on being requested to do so, furnish to any authorised officer of a council the name of the authority in whose area the survey mentioned in that proviso is being, or was last, carried out.

PART II

GENERAL REQUIREMENTS

Food business not to be carried on at insanitary premises, etc.

5. No food business shall be carried on in or at any insanitary premises, stall, ship or place or in or at any premises, stall, ship or place the use of which because of the situation, construction or condition thereof exposes food to the risk of contamination.

Cleanliness of equipment, etc.

6.—(1) Articles of equipment with which food comes into contact, or is liable to come into contact, in the course of a food business shall be kept clean and shall be so constructed, be of such materials and be kept in such good order, repair and condition as to—

(*a*) enable them to be thoroughly cleaned ;

(*b*) prevent so far as is reasonably practicable any matter being absorbed by them ; and

(*c*) prevent so far as is reasonably practicable any risk of contamination of the food.

(2) Without prejudice to the provisions of the preceding paragraph, all containers (including returnable containers) intended for containing food in the course of a food business, whether or not they come into contact, or are liable to come into contact, with food, shall so far as is reasonably practicable be protected and kept free from contamination.

(a) 57 & 58 Vict. c. 60.

**Restriction on preparation and packing of food on or about domestic premises*

7.—(1) Except as hereinafter provided, a person carrying on a food business shall not for the purposes of that business give out any food or permit any food to be given out for preparation or packing by another person for reward on or about any domestic premises other than those of the person carrying on the business.

(2) The foregoing paragraph shall not apply in relation to shrimps, prawns or onions which are given out for the purpose of peeling if the premises on or about which the process is to be carried out are registered under section 16 of the Act for the preparation of the food in question and the requirements of paragraphs (3) and (4) of this regulation are compiled with by the person carrying on the food business.

(3) The requirements mentioned in the last foregoing paragraph are that the person carrying on the food business—

(*a*) shall not make any arrangements for the giving out of the food unless he has first—

(i) satisfied himself that the person to whom he proposes that it shall be given out is aware of the requirements mentioned in paragraph (5) of this regulation and is able to comply with them ; and

(ii) given notice of his intention of making the arrangement to the local authority of the area in which the premises on or about which the process is to be carried out are situated ;

(*b*) shall not, if more than three months have elapsed since he satisfied himself as required by sub-paragraph (*a*) of this paragraph, in pursuance of such arrangement give out or permit the giving out of food unless he or some person authorised by him to act on his behalf has within the preceding three months visited the premises on or about which the process is to be carried out and satisfied himself that the person with whom the arrangement was made remains able to comply with the requirements mentioned in paragraph (5) of this regulation.

(4) Where a person carrying on a food business has made any such arrangement, he shall at intervals not greater than six months furnish to each local authority within whose area any premises used in pursuance of the arrangement are situated a list containing the names of all the persons so using premises in the area and the addresses of the premises so used by them.

(5) Any person carrying out any process in pursuance of any such arrangement shall be subject, in addition to the requirements imposed by Part III of these regulations on persons engaged in the handling of food—

(*a*) to the like requirements with respect to articles and equipment used in carrying out the process as are applicable under regulation 6 of these regulations with respect to articles and equipment used in the course of a food business ; and

(*b*) to the like requirements with respect to the premises on or about which the process is carried out as are applicable under regulations 15 and 16 of these regulations with respect to the provision of a water supply and wash hand basins in food premises and under paragraph (1) of regulation 23 of these regulations with respect to a food room.

Part III

Requirements relating to Persons engaged in the handling of Food

Food to be protected from risk of contamination

8. A person who engages in the handling of food shall while so engaged take all such steps as may be reasonably necessary to protect the food from risk of contamination, and in particular (without prejudice to the generality of the foregoing)—

(*a*) shall not so place the food as to involve any risk of contamination ;

(*b*) shall not in or about any forecourt, yard, market or stall place any food lower than eighteen inches from the ground unless it is adequately protected by other means from risk of contamination ;

(*c*) shall comply with the requirements of the next three following regulations.

* Note : The Food Hygiene (General) Regulations, 1962, amend Regulation 7 by making it apply to the peeling of onions undertaken for the purposes of a food business.

Personal cleanliness

9. A person who engages in the handling of food shall while so engaged—

(*a*) keep as clean as may be reasonably practicable all parts of his person which are liable to come into contact with the food ;

(*b*) keep as clean as may be reasonably practicable all parts of his clothing, overclothing or overalls which are liable to come into contact with the food ;

(*c*) keep any open cut or abrasion on any exposed part of his person covered with a suitable waterproof dressing ;

(*d*) refrain from spitting ;

(*e*) refrain from the use of tobacco or any other smoking mixture or snuff while he is handling any open food or is in any food room in which there is open food.

Carrying of food and wrapping, etc., of open food

10. A person who engages in the handling of food shall not while so engaged—

(*a*) carry any food in a vehicle or container along with any article from which there is a risk of contamination of the food, or with any live animal or live poultry, without taking all such precautions as are reasonably practicable to avoid risk of contamination, and in particular (without prejudice to the generality of the foregoing) shall not allow any live animal or live poultry to come into contact with meat or fish ;

(*b*) use for wrapping or containing any open food any paper or other wrapping material or container which is not clean or which is liable to contaminate the food, and in particular (without prejudice to the generality of the foregoing) shall not allow any printed material, other than printed material designed exclusively for wrapping or containing food, to come into contact with any food other than uncooked vegetables.

Persons suffering from certain infections

11.—(1) Subject to the provisions of this regulation, as soon as any person engaged in the handling of food becomes aware that he is suffering from, or is the carrier of, typhoid fever, paratyphoid fever or any other salmonella infection or dysentry or any staphylococcal infection likely to cause food poisoning, he shall forthwith give notice of the fact to the person carrying on the food business who shall immediately after receipt of the notice notify the appropriate medical officer of health accordingly:

Provided that where the person required to give such notice is himself the person carrying on the food business he shall give notice immediately to the appropriate medical officer of health.

(2) For the purposes of this regulation the appropriate medical officer of health is—

(*a*) in the case of a person engaged in the handling of food at or from food premises, the medical officer of health of the district in which the premises are situated; and

(*b*) in any other case either the medical officer of health of the district in which the person to whom the notice relates resides or the medical officer of health of the district in which the food business is situated.

(3) For the purposes of the last foregoing paragraph a food business which is carried on from a ship shall be deemed to be situated in the district or port health district in which the ship is for the time being moored.

Part IV

Requirements Relating to Food Premises and Ships

Soil drainage systems

12.—(1) No fresh air intake of any ventilation pipe included in the soil drainage system of food premises shall be situated in a food room.

(2) Every inlet into any such system situated in any such room shall be trapped.

Cisterns for supplying water to food rooms

13. No cistern for the supply of water to a food room shall supply a sanitary convenience otherwise than through an efficient flushing cistern or some other flushing apparatus equally efficient and suitable for the prevention of contamination of water supplies.

Sanitary conveniences

14.—(1) Every sanitary convenience situated in or upon, or regularly used in connection with, any food premises or ship—

(*a*) shall be kept clean and in efficient order ;

(*b*) shall be so placed that no offensive odours therefrom can penetrate into any food room.

(2) Any room or other place which contains a sanitary convenience shall be suitably and sufficiently lighted and ventilated and shall be kept clean.

(3) No room which contains a sanitary convenience shall be used as a food room.

(4) No food room which communicates directly with a room or other place which contains a sanitary convenience shall be used—

(*a*) for the handling of open food, or

(*b*) for the cleaning of equipment for use in any food business in the course of which open food is handled.

(5) There shall be affixed and maintained in a prominent and suitable position near every sanitary convenience situated in or upon or regularly used in connection with any food premises or ship (being a convenience provided or made regularly available for the use of persons employed in the handling of food on or about the premises or ship) a clearly legible notice requesting users to wash their hands after using the convenience.

Water supply to be provided

15.—(1) Subject to the provisions of any certificate of exemption, a supply of water sufficient in quantity to enable these regulations to be complied with shall be provided and maintained in all food premises and ships.

(2) Any supply of water provided for the said purposes shall—

(*a*) be clean and wholesome ;

(*b*) be constant, if the provision of a constant supply is reasonably practicable and is in accordance with good practice in premises used for business of a similar class or in ships of a similar type.

Wash-hand basins to be provided

16.—(1) Subject to the provisions of any certificate of exemption, in all food premises and ships suitable and sufficient wash-hand basins for the use of all persons engaged in the handling of food on or about those premises or ships shall be provided and maintained in a position conveniently accessible to such persons.

(2) Subject as aforesaid, there shall be provided and maintained for every such wash-hand basin an adequate supply either of hot and cold water or of hot water at a suitably controlled temperature:

Provided that a supply of cold water shall be sufficient at food premises or on ships in which no open food is handled.

(3) At or near every wash-hand basin available for the use of such persons as are mentioned in paragraph (1) of this regulation there shall be provided and maintained for the use of the persons engaged in the handling of food on or about the food premises or ships adequate supplies of soap or other suitable detergent, nail-brushes and clean towels or other suitable drying facilities, which shall be used only for securing the personal cleanliness of such persons.

(4) All wash-hand basins so available shall be kept clean and any traps and connections thereof shall be kept clean and in efficient working order.

First-aid materials to be provided

17. Suitable and sufficient bandages, dressings (including waterproof dressings) and antiseptic for first-aid treatment shall be provided and maintained in all food premises and ships in a readily accessible position for the use of persons engaged in the handling of food on or about those premises or ships.

Accommodation for clothing, etc.

18. Except where adequate provision is made elsewhere than in a food room, suitable and sufficient cupboard or locker accommodation shall, subject to the provisions of any certificate of exemption, be provided and maintained in all food premises and ships, other than food premises or ships in which no open food is handled, for the clothing and footwear not worn during working hours of all persons engaged in the handling of food on or about those premises or ships.

Facilities for washing food and equipment

19.—(1) Subject to the provisions of this regulation—

(*a*) there shall be provided and maintained in all food premises and ships suitable and sufficient sinks or other facilities (not being wash-hand basins available as mentioned in paragraph (3) of regulation 16 of these regulations) for washing food and equipment used in the food business ;

(*b*) there shall be provided and maintained for every such sink or other facility an adequate supply either of hot and cold water or of hot water at a suitably controlled temperature, except that a supply of cold water shall be sufficient—

(i) where the facility consists of apparatus designed for the washing of drinking vessels with a suitable bactericidal agent and is used only for that purpose ; or

(ii) where the sink or other facility is used only for the washing of fish, tripe, animal casings, fruit or vegetables ;

(*c*) all sinks and other facilities available for the said purposes shall be kept clean and in efficient working order ;

(*d*) there shall be provided and maintained for use at all such sinks and other facilities—

(i) adequate supplies of soap or other suitable detergent and of clean cloths ; or

(ii) other adequate and suitable cleaning and drying facilities.

(2) Nothing in paragraph (1) of this regulation shall apply in relation to food premises or ships in which no open food is handled.

(3) Sub-paragraphs (*a*) and (*b*) of paragraph (1) of this regulation shall have effect subject to any certificate of exemption.

Lighting of food rooms

20. Suitable and sufficient means of lighting shall be provided in every food room and every such room shall be suitably and sufficiently lighted.

Ventilation of food rooms

21. Except in the case of a humidity-controlled or temperature-controlled chamber, suitable and sufficient means of ventilation shall be provided in every food room and suitable and sufficient ventilation shall be maintained there.

Food room not to be, or communicate with, a sleeping place

22.—(1) No food room, being, or being part of, any food premises shall be used as a sleeping place ; and no sleeping place shall be used as a food room.

(2) Subject to the provisions of any certificate of exemption, no food room which communicates directly with a sleeping place shall be used for the handling of open food.

Cleanliness and repair, etc., of food rooms

23.—(1) The walls, floors, doors, windows, ceiling, woodwork and all other parts of the structure of every food room shall be kept clean and shall be kept in such good order, repair and condition as to—

(*a*) enable them to be effectively cleaned ; and

(*b*) prevent, so far as is reasonably practicable, any risk of infestation by rats, mice and insects.

(2) Where at any time after the coming into operation of these regulations any works effecting the structure of a food room, other than mere removal of part of the structure, are executed, the structure affected by such work shall after completion of the works be such as to—

(*a*) enable it to be effectively cleaned ; and

(*b*) prevent, so far as is reasonably practicable, any risk of infestation by rats, mice and insects.

Accumulation of refuse, etc.

24. No refuse or filth, whether solid or liquid, shall be deposited or allowed to accumulate in a food room except so far as may be unavoidable for the proper carrying on of the trade or business.

Temperature at which certain foods are to be kept

25.—(1) The provisions of this regulation apply to all food consisting of meat, fish, gravy or imitation cream, or prepared from or containing any of those substances or any egg or milk, but do not apply to—

(*a*) bread, biscuits, cake or pastry by reason only of the use of egg or milk as an ingredient thereof introduced prior to baking ; or

(*b*) chocolate or sugar confectionary ; or

(*c*) ice-cream to which the provisions of any regulations with respect to the heat treatment of ice-cream in force under section 4 of the Act apply ; or

(*d*) food canned, bottled or otherwise preserved in an effectively closed container of metal, glass or other impermeable material, so long as the container remains effectively closed ; or

(*e*) butter, margarine, lard, shortening, cooking fats or beef suet ; or

(*f*) cheese, uncooked bacon, uncooked ham, dry pasta, dry pudding mixes, dry soup mixes or dry mixtures for the preparation of beverages ; or

(*g*) any unskinned rabbits or hares or unplucked game or poultry.

In this paragraph " egg " includes whole egg, yolk or albumen, whether or not the egg, yolk or albumen is dried, frozen or otherwise preserved, and " milk " includes separated or skimmed milk, dried milk, condensed milk and cream.

(2) Subject to the provisions of paragraph (4) of this regulation, food which is brought into any food premises or ship on or from which is carried on a catering business shall, if not already at a temperature of 145°F. or above on the one hand, or below 50°F. on the other hand, be brought to one or other of those temperatures without any avoidable delay after arrival.

(3) Subject to the provisions of paragraph (4) of this regulation, food which has been cooked or partly cooked on any such food premises or ship and food such as is mentioned in paragraph (2) of this regulation shall either be kept at a temperature of not less than 145° F. until it is required for serving for immediate consumption, or if the temperature is brought or allowed to fall to less than 145°F. be cooled to a temperature below 50°F. under hygienic conditions as quickly as is reasonably practicable and thereafter kept at such a temperature until it is required for serving or is further cooked or is reheated for service:

Provided that for the purposes of this paragraph food shall be deemed not to have fallen below a temperature of 145°F. or to have risen to a temperature of 50°F. or above by reason only of its temperature having so fallen or risen in the carrying out of some step in preparation or during transit from one part of the food premises or ship to another, if on the completion of that step or the reaching of that other part it is restored as quickly as is reasonably practicable to a temperature of not less than 145°F or below 50°F. as the case may be.

(4) This regulation shall not apply in relation to—

(*a*) any food which is exposed for sale or which, if the food is brought to any such premises or ship as are mentioned in paragraph (2) of this regulation within four hours before they are open for business, will be exposed for sale upon their being open for that purpose ; or

(*b*) any food which is kept available for the replenishment as it is sold of food of a similar kind which is exposed for sale or will be exposed for sale as aforesaid if the keeping available of such a supply is in accordance with good practice in such premises or ship as aforesaid and the quantity so kept available is not greater than is reasonably necessary.

PART V

REQUIREMENTS RELATING TO STALLS AND VEHICLES

General requirements as to stalls and vehicles

26.—(1) Every stall at or from which there is carried on any food business and every vehicle which is used in the course of a food business for the transport of food shall be kept clean and in such good order, repair and condition as to enable it to be effectively cleaned.

(2) Every such stall shall bear conspicuously the name and address of the person carrying on the business.

(3) Every such stall shall be provided with suitable and sufficient means of lighting and shall be suitably and sufficiently lighted.

(4) Every such vehicle shall be suitably and sufficiently lighted at all times when it is being cleaned.

(5) No such stall or vehicle shall be used as a sleeping place, provided that the driving compartment of any such stall or vehicle may be so used if there is a division effectively separating that compartment from the compartment in which food is carried.

Covering of certain stalls, and receptacles for waste

27.—(1) Every stall at or from which meat or fish is sold or exposed for sale for human consumption—

(*a*) shall (if not in an enclosed and covered market place) be suitably covered over and be screened at the sides and back thereof in such a manner as to prevent any mud, filth or other contaminating substance from being deposited upon any meat or fish thereon ;

(*b*) shall be provided with a sufficient number of suitable covered receptacles for waste trimmings, refuse and rubbish.

(2) Any such receptacle shall be constructed of impervious materials or shall be replaced as often as may be necessary to prevent the accumulation of obnoxious matter, and shall be kept apart from any meat or fish intended for sale.

(3) Every person engaged in the handling of meat or fish at or from any such stall shall place all waste trimmings, refuse and rubbish in the receptacles provided therefor.

Supply of water for stalls

28.—(1) Subject to the provisions of this regulation, there shall be provided and maintained for use in connection with every catering business which is carried on from a stall from which open food is supplied—

(*a*) an adequate supply of clean and wholesome water, being a supply either of hot and cold water or of hot water at a suitably controlled temperature ;

(*b*) adequate supplies of soap or other suitable detergent, nail-brushes and clean towels or other suitable drying facilities which shall be used only for securing the personal cleanliness of persons working at or about the food business ;

(*c*) suitable and sufficient sinks or other facilities for washing food and equipment used in the food business, such sinks and other facilities to be kept clean and in efficient working order and to be provided with adequate supplies of soap and other suitable detergent and of clean cloths or other suitable cleaning or drying facilities.

(2) Nothing in this regulation shall apply in relation to any catering business carried on as aforesaid and consisting exclusively of the preparation and supply of roast chestnuts or hot potatoes.

PART VI

REQUIREMENTS RELATING TO THE TRANSPORT AND CARRYING OF MEAT

Transport of meat

29.—(1) Subject to the provisions of this regulation, the following provisions shall apply as respects all vehicles (other than vehicles used for the transport of meat consisting solely of unskinned rabbits or hares or unplucked game or poultry) used in the course of a food business for the transport of meat, being meat which is open food, that is to say:—

(*a*) except in the case of a closed vehicle, the vehicle shall be covered by canvas or other washable material so arranged as to enclose completely that part of the vehicle in which meat is placed and, so far as is reasonably practicable, the cover shall not be allowed to come into contact with the meat ;

(*b*) the floor shall be impervious or fitted with movable duckboards used in such a manner as to prevent the meat or its wrappings from touching the floor of the vehicle ;

(*c*) any receptacle or duckboard in or on which the meat is placed and any such parts of any slings, implements or other equipment used for the loading or unloading of the meat as come into contact with the meat or its wrappings shall be kept clean and kept in such good order, repair and condition as to enable them to be thoroughly cleaned ;

(*d*) except as provided in paragraph (2) of this regulation, every such vehicle shall be provided with a sufficient number of suitable covered receptacles to contain separately all offal (other than skinned heads, scalded heads and offal that has not been detached from the carcase) transported in the vehicle, which receptacles shall be constructed of impervious materials, kept clean and kept in such good order, repair and condition as to enable them to be thoroughly cleaned ;

(*e*) except as provided in paragraph (2) of this regulation no offal (other than skinned heads, scalded heads and offal that has not been detached from the carcase) shall be transported in any such vehicle otherwise than in the separate receptacles provided therefor:

Provided that sub-paragraph (*a*) and (*b*) of this paragraph shall not apply in relation to the transport of meat on isolated occasions in the course of the business of a carrier if the meat is adequately protected by suitable material from the risk of contamination.

(2) Nothing in this regulation shall require such separate receptacles as aforesaid to be provided or used for the transport of—

(*a*) packaged or wrapped frozen offal so long as such offal remains frozen hard ;

(*b*) giblets of game or poultry which are carried in or attached to the carcase from which they have been removed ;

(*c*) uncleaned tripe, uncleaned stomachs, uncleaned intestines or uncleaned feet in a vehicle in which no meat other than offal of these descriptions is being carried ;

(*d*) unskinned or unscalded heads in a vehicle in which no meat other than offal of these descriptions or uncleaned feet is being carried.

Persons carrying meat to wear overalls etc.

30.—(1) Subject to the provisions of this regulation, every person who in the course of a food business carries meat, being meat which is open food, otherwise than in the course of distribution by a retailer to his customers, shall while so engaged wear a clean and washable overall and, if the meat is liable to come into contact with his neck or head, a clean and washable head covering:

Provided that this regulation shall not apply in relation to the transport of meat by railway undertakers in the course of their business as such, or in relation to the transport of meat in the course of the business of a carrier (other than a railway undertaker) in which the vehicle used for the transport of the meat is not ordinarily used for the transport of meat, if in either case the person carrying the meat takes all such other precautions as are reasonably practicable to prevent the meat coming into contact with any exposed part of his person or with any clothing other than an overall.

(2) Nothing in this regulation shall apply in relation to any such person so long as he is engaged only in the carrying of unskinned rabbits or hares or unplucked game or poultry.

Part VII

Administrative Provisions

Exemption of premises and ships from certain requirements

31.—(1) Where there is in force in relation to any food premises or ship a certificate of the appropriate authority to the effect that compliance with any of the provisions of these regulations specified in paragraph (5) of this regulation cannot reasonably be required with respect to those premises or that ship or any activities carried on therein, those premises or that ship shall be exempt from the provisions mentioned in the certificate.

(2) Such a certificate shall not be granted by the appropriate authority with respect to any food premises or ship unless the authority is satisfied that by reason of restricted accommodation or other special circumstances affecting the premises or ship it is reasonable that such a certificate should be in force with respect thereto.

(3) Any such certificate shall be withdrawn by the authority if at any time they cease to be satisfied as aforesaid.

(4) If the person carrying on a food business on food premises or the owner of a ship is aggrieved by the refusal or withdrawal of such as certificate he may appeal to a magistrates' court and that court may make such order concerning the certificate as appears to the court, having regard to the matters with respect to which the authority are required to be satisfied as aforesaid, to be just and equitable.

(5) The provisions of these regulations referred to in paragraph (1) of this regulation are regulation 15, paragraphs (1) and (2) of regulation 16, regulation 18, sub-paragraphs (*a*) and (*b*) of paragraph (1) of regulation 19 and paragraph (2) of regulation 22.

Issue of certificate

32.—(1) The appropriate authority for the purposes of regulation 31 of these regulations shall be—

(*a*) in relation to food premises, the local authority in whose district the premises are situated ;

(*b*) in relation to any home-going ship which is a ship required by the Merchant Shipping Act, 1894, to be surveyed annually, the port health authority or, if there is no port health authority, the local authority for the port in which that survey is being, or was last, carried out ; and

(*c*) in relation to any other ship, the authority for the time being charged with the enforcement of these regulations as respects that ship.

(2) Section 120 of the Act (which relates to the right to carry on business while an appeal is pending) shall have effect for the purposes of these regulations as if the references therein to refusing or revoking a licence included a reference to refusing or withdrawing a certificate granted for the purpose of these regulations.

Offences

33.—(1) A person engaged in the handling of food shall be guilty of an offence against these regulations if he fails to comply with any provision of these regulations which imposes obligations on a person so engaged.

(2) Except as provided in paragraph (3) of this regulation, a person carrying on a food business shall be guilty of an offence against these regulations if—

(*a*) as respects that food business any provision of these regulations (other than the requirements imposed by regulations 9 and 11 on persons engaged in the handling of food) is contravened ; or

(*b*) he fails to take all reasonable steps to secure the compliance by any person employed by him or under his control with the provisions of regulations 9 and 11 of these regulations.

(3) In relation to a ship, the owner of the ship shall be guilty of an offence if as respects the food business carried on therefrom any provision of the regulations mentioned in the Schedule to these regulations is contravened.

(4) Any person for the time being having the control or management of persons engaged in the handling of food, not being himself a person carrying on a food business, shall be guilty of an offence against these regulations if he fails to take all reasonable steps to secure the compliance by any person under his control or management with any provision of these regulations which imposes obligations on a person engaged in the handling of food.

(5) Any person who is subject to any requirement by virtue of paragraph (5) of regulation 7 of these regulations shall be guilty of an offence against these regulations if he fails to comply with any requirement to which he is so subject.

Penalties

34. Any person guilty of an offence against these regulations shall be liable to a fine not exceeding one hundred pounds or to imprisonment for a term not exceeding three months or to both and, in the case of a continuing offence, to a further fine not exceeding five pounds for each day during which the offence continues after conviction.

Revocation

35. The Food Hygiene Regulations, 1955 to 1957(**a**), and regulations 10, 11 and 12 of the Food and Drugs (Whalemeat) Regulations, 1949(**b**), are hereby revoked:

Provided that, without prejudice to the application of section 38 of the Interpretation Act, 1889 (which relates to the effect of repeals), in so far as any application made, or any resolution passed, or any approval given under any regulation revoked by these regulations, or any proceedings instituted or any other thing done under such regulation could have been made, passed, given, instituted or done under a corresponding provision of these regulations, it shall not be invalidated by these regulations but shall have effect as if it had been made, passed, given, instituted or done under that corresponding provision.

SCHEDULE

Regulations 4 and 33

Provisions relating to structural requirements on ships

In regulation 14 (Sanitary conveniences), so much of paragragraphs (1) and (2) as relates to the placing of sanitary conveniences and to the lighting and ventilation of rooms containing sanitary conveniences.

(a) S.I. 1955/1906, 1956/938, 1984, 1957/2157 (1955 I, p. 918 ; 1956 I, pp. 1012, 1013 ; 1957 I, p. 1018).
(b) S.I. 1949/404 (1949 I, p. 1754).

Regulation 15 (Water supply to be provided).

In regulation 16 (Wash-hand basins to be provided), paragraphs (1) and (2).

Regulation 18 (Accommodation for clothing, etc.).

In regulation 19 (Facilities for washing food and equipment), sub-paragraphs (*a*) and (*b*) of paragraph (1).

Regulation 21 (Ventilation of food rooms).

In regulation 23 (Cleanliness and repair of food rooms), paragraph (2).

In witness whereof the official seal of the Minister of Agriculture, Fisheries and Food is hereunto affixed this first day of September, nineteen hundred and sixty.

(L.S.)

Christopher Soames,
Minister of Agriculture, Fisheries and Food.

Given under the official seal of the Minister of Health this twenty-ninth day of August, ninteen hundred and sixty.

(L.S.)

J. Enoch Powell,
Minister of Health.

EXPLANATORY NOTE

(*This Note is not part of the regulations, but is intended to indicate their general purport.*)

These regulations consolidate and amend the Food Hygiene Regulations, 1955 to 1957, and extend the regulations to food businesses carried on from home-going ships and moored vessels. The other principal changes are:—

(*a*) the extension of the definition of the handling of food to include the cleaning of food utensils and equipment ;

(*b*) the relaxation in certain respects of regulation 25 of the 1955 Regulations, which deals with the temperature at which foods are to be kept on catering premises ;

(*c*) the modification of regulation 29 of the 1955 Regulation to permit the transport of certain types of offal without being put in special containers ;

(*d*) the person carrying on the food business is principally responsible for securing compliance with the regulations, but a manager or foreman is also required to take all reasonable steps to secure compliance by the food handlers under his control.

The regulations lay down requirements in respect of—

(i) the cleanliness of premises, ships, stalls, vehicles, etc., used for the purposes of the food business and of apparatus and equipment used for those purposes ;

(ii) the hygienic handling of food ;

(iii) the cleanliness of persons engaged in the handling of food and of their clothing, and the action to be taken where they suffer from or are the carriers of certain infections liable to cause food poisoning ;

(iv) the construction of premises and ships used for the purposes of a food business and the repair and maintenance of such premises and ships and of stalls, vehicles, etc. ;

(v) sanitary conveniences and the provision of a water supply and washing facilities ;

(vi) the temperatures at which certain foods which are particularly liable to transmit disease are to be kept on catering premises.

The operation of the regulations in relation to ships is postponed until 1st November, 1961, to give time for the carrying out of any structural alterations which may be required by the regulations. The local authorities and port health authorities responsible for the enforcement of the regulations are empowered to give certificates of exemption from certain requirements if, through special circumstances, compliance with the provision concerned cannot reasonably be required. There is an appeal to a magistrates' court against the refusal or withdrawal of a certificate.

NOTE

Similar Regulations applying to Scotland have been made. They are—

The Food Hygiene (Scotland) Regulations, 1959 S.I. 1959 No. 413 (S.16)

The Food Hygiene (Scotland) Amendment Regulations, 1959 S.I. 1959 No. 1153 (S.67)

The Food Hygiene (Scotland) Amendment Regulations, 1961 S.I. 1961 No. 622 (S.38)

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