



REPORT  
OF THE  
HOTEL SANITATION  
COMMITTEE  
1951

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# HOTEL SANITATION COMMITTEE 1951

## CHAPTER I

### Introductory

#### Constitution of the Committee

The Government constituted a Committee in G.O. Ms. No. 3476, Health, dated 5th October 1950, consisting of the Director of Public Health, the Sanitary Engineer to Government, the Director of Industries and Commerce, the Director, King Institute, Guindy, the Deputy Director of Public Health, the Health Officer, Corporation of Madras and the Government Food Analyst, to go into the question of sanitation of hotels and catering establishments and to make recommendations for improving the existing conditions therein. In their subsequent orders, the Government appointed the Joint Director of Industries and Commerce as a member in the place of the Director of Industries and Commerce, and also nominated additional members, viz., the Executive Engineer (Public Health), North Madras Division, and the Nutrition Officer of the Office of the Director of Public Health, the latter two acting as Secretary and Joint Secretary of the Committee.

#### Terms of reference

2. The terms of reference to the Committee run as follows :—

“To consider the state of cleanliness and sanitation in hotels, mobile and other canteens and places of public resort generally and to make recommendations for—

(1) the removal of defects and deficiencies, and

(2) the revision of existing by-laws and rules of municipalities and local bodies framed under the various enactments applicable, with a view to secure adequate standards of cleanliness, sanitation, health and quality generally, and particularly in the sale and consumption of edibles in those places.”

The Committee was requested to submit its report within a period of three months. The time-limit was subsequently extended by Government till the 31st August 1951.

### **The Committee's Proceedings**

3. The Committee met on ten occasions for exchanging ideas and discussing details of the problem, examining witnesses, and deciding on the recommendations to be made. In addition the Committee made several visits of inspection to various types of catering establishments in the City—hotels, restaurants, industrial canteens, students' hostels, ice-cream parlours, aerated water factories, bakeries and mobile canteens. The touring officers of the Committee also carried out inspection of similar establishments in the mufassal towns during their tours. Reports of inspection on the hygiene of similar catering establishments from Municipal Health Officers of representative municipal towns, on a specific questionnaire drawn up for the purpose, were also obtained for the benefit of the Committee.

Based on its preliminary examination of the entire range of the problem, the Committee drew up a comprehensive questionnaire to cover all aspects of hygiene and health problems of the catering industry [Appendix I (a)]. The questionnaire was issued to as many as 163 persons and institutions representing the catering industry—employees' association, students' hostels, students' organizations, the Central Tea Board, the Coffee Board, the Indian Medical Association, social workers, voluntary women's organizations like the Guild of Service and the Women's State Food Council, and representative public men, M.L.A.s and M.L.C.s, the Chief Medical Officer, Madras and Southern Mahratta Railway, and retired Government officials connected with public health. Replies were received from 74 of the invitees and the information furnished by them was considered by the Committee.

In addition the Director, King Institute, made surprise visits to representative catering establishments in the City and examined bacteriologically samples of wash-water and utensils before and after their cleansing and reported his findings thereon.

The Nutrition Officer also examined at random a few hotel employees medically with a view to ascertaining the degree of prevalence of illness likely to lead to food infections. Samples of the customary food preparations sold in local hotels were also analysed for their nutritive value at the Nutrition Laboratory of the Public Health Department, Madras.

The Government Food Analyst in his turn furnished a report to the Committee dealing with the quality of certain common food preparations sold in catering establishments.

Besides a critical study of the data gathered as above, the Committee also took the opportunity to interview selected witnesses—public men, representatives of catering industry, of wardens of students' hostels, of the Indian Medical Association and of the

women's organizations, etc., for tendering evidence before the Committee and for amplifying their views previously furnished on the questionnaire issued to them [Appendix I (b)].

The Consulting Architect to Government furnished type-designs of model canteens based on the suggestions of the Committee and also participated in the work of the Committee at the several stages.

While reviewing the details, the Committee also took into account recent literature on the subject, especially the "Report of the Catering Trade Working Party" on "Hygiene in Catering Establishments," Ministry of Food, London, "Ordinance and Code regulating Eating and Drinking Establishments" of the United States Public Health Service, "Canteens in Industry" of the Industrial Welfare Society, London, and "Canteen Planning and Tea Service" of the Indian Tea Market Expansion Board, Calcutta.

#### **The comprehensive nature of the problem**

4. The Committee at this stage desires to refer to the comprehensive nature of the problem and the restricted scope of the terms of reference in the Government Order which precludes a detailed survey of all aspects of this major question. The food industry has several facets. Aspects of the food problem like production at the source, processing, preservation and storage, and distribution before the food reaches the catering establishment for final preparation are vast subjects by themselves and did not come within the Committee's terms of reference. Adulteration, sophistication and misbranding form another important aspect, which was not gone into by the Committee, as the Government are already seized of this problem and are considering necessary legislation in this behalf. The much wider and important subject of nutrition and dietetics did not also fall within the scope of the Committee's work. Having regard to the specific scope of the terms of reference the Committee confined itself to dealing with the hygiene and health problems of the food catering industry, and suggesting remedial measures to improve existing conditions.

The catering industry admittedly plays a vital role in the socio-economic life of the community. The trade is indisputably a lucrative one. Under present conditions it offers an inviting scope for all and sundry to ply the trade without the necessary qualifications, equipment or training therefor. Nevertheless, public opinion has not yet sufficiently crystallized itself about the manner in which these catering establishments should be regulated and run so that they could be made to serve the needs of the public without hazards to health.

The Committee has given due consideration to all these factors in examining the problem and framing its recommendations.

## CHAPTER II

### A Survey of Existing Conditions

#### The size of the catering industry

5. There has been a phenomenal expansion in the catering trade within recent time. Even in small towns, hotels and restaurants have sprung up in considerable numbers and have been attracting large sections of not only the local urban population, but also suburban populations of the neighbourhood in an increasing measure. There is a growing trend for the population to resort to these establishments not only for light refreshments but also for lunches and dinners. It has been roughly estimated that the percentage of resident population in towns which resort to catering establishments for lunches or dinners ranges from 10 to 25 per cent, while in the case of non-resident travelling public it is put at over 75 per cent. As far as light refreshments are concerned, the percentage of the population in the major towns who resort to catering establishments may safely be put at 90 per cent of the office, professional and business population.

It is reported that in Madras City alone there are about 2,700 licensed catering establishments. The number of such establishments in municipal and urban units is also on a similar scale, though correct statistics in this behalf are not readily available. From the representative figures obtained in the case of a few municipal towns it would appear that the numbers of such catering establishments do not bear any definite proportion to the population and there are large variations due to local demands and requirements.

#### Diverse types of eating places

6. The catering establishments vary from the luxurious to the threadbare, from those which go a long way in satisfying minimum hygienic standards to those which fall far short of even the most elementary requirements of sanitation. It is obvious therefore that very varying standards have to be applied to the different types of establishments.

The Committee wishes to refer to one important fact the significance of which is not perhaps fully appreciated. Apart from the hotels and restaurants run in permanent premises there are innumerable wayside stalls offering for sale 'appams', 'iddilis', etc., and street hawkers vending tea, ice-cream, and a variety of snacks, at places of public resort such as theatres, cinemas and the like. It is a common sight to find roadside wooden bunks meant for selling pan, cigarettes and other odds and ends put up a lean

to shanty and run a brisk trade in tea and snacks to the labour classes. Situated as they are, those improvised shanties cannot provide for even the minimum of sanitary requirements for preparation and service of clean and safe food. It needs no emphasis that they are a menace to public health.

Nevertheless, the Committee had to take note of the fact that these wayside stalls and street hawkers are at present catering to the needs of a very large section of the labour population at prices within their means. It may not be expedient to pursue stringent measures calculated to close down all such eating places without at the same time ensuring the provision of substitute catering establishments which would continue to serve the needs of the poorer classes with clean and hygienic food at their level of economy.

### **A prosperous industry**

7. The Committee endeavoured to appraise the volume of business transacted by the catering establishments in a few instances. The figures collected from the Commercial Tax Department in respect of the Madras City indicate that the more prosperous of the establishments have daily gross receipts, of the order of Rs. 1,000. The evidence tendered before the Committee, however, puts this figure as ranging between Rs. 1,500 and Rs. 2,500. The Committee also gathered the impression from the evidence tendered that it is not uncommon in the catering establishments to split up the meal, excluding the extras and specials served from the taxable receipts. In regard to the middle-class catering establishments the daily gross earnings are estimated to range between Rs. 300 and Rs. 750. The Committee felt handicapped, while collecting data on this subject by the paucity of definite and reliable statistics.

There was a consensus of opinion among the witnesses examined by the Committee that catering is a very lucrative business and that the percentage of profits may safely be estimated at 25 per cent of the gross sales. Even here it is at best an approximate estimate for want of details.

### **Control over the industry essential for public health**

8. It is clear from all accounts that the catering industry is a flourishing one assuring very attractive profits to the owner. In view of the large sections of the population and the ever-growing number of customers resorting to these restaurants for snacks, lunches and dinners the Committee wishes to emphasize the imperative need for controlling and effectively ensuring the sanitation and hygiene of these establishments to safeguard public health.

The basic public health requirement is that the food consumed or sold from the catering establishments is not a source of infection to the consumer. The food should be clean and not only produced under hygienic conditions but be safe and free from disease-causing organisms.

The common food infections are the enteric (typhoid and para-typhoid), dysentery (bacillary and amoebic) and Salmonella infections. 'Food poisoning' is commonly due to exo-toxins of staphylococcus (aureus), rarely to toxins of Cl. botulinum or occasionally to chemical poisons such as alkaloids, copper, lead, arsenic and cadmium. Since typhoid fever alone is notifiable, statistics of 'food infections' and 'food poisoning' of the types referred to are not easily available. It is common knowledge, however, that considerable morbidity results from food infections and food poisoning. Mild diarrhoea and sore-throat resulting from consumption of such foods as ice-cream or ice-fruit infected with staphylo or streptococcus are a fairly common experience.

### **Existing defects and deficiencies surveyed**

9. A critical study of the prevailing conditions in catering establishments was undertaken by the Committee to examine the major defects and deficiencies which militate against sound canons of hygiene. As a result of the inspection of various types of catering establishments the Committee proceeds to make the following observations.

### **Unsuitable buildings**

10. The outstanding defect in most of the establishments is the obvious unsuitability of the premises in which they are housed. There are very few instances where catering establishments are located in buildings constructed specifically for such purpose. Most of the catering establishments are located in buildings constructed for other purposes, such as residential buildings, shops or godowns. In improvising such buildings to suit the needs of the catering industry, the proprietor allots the best part of the available accommodation to the 'dining hall' and 'display places'.

### **Unsatisfactory kitchen layout**

11. The kitchen and wash-up, the store and preparation rooms are located in any available nook and corner of the premises, in utter disregard of their importance in the preparation and service of clean and hygienic food. The kitchen is the 'workshop' of the catering industry, and needs to be given the key place in the whole premises, and the layout should be such as to admit of a smooth and orderly flow of business. But the proprietor invariably relegates the kitchen portion to the backyard and the less satisfactory portion of the premises, obviously because the kitchen part of it is the least seen by the customers and could be assigned the worst place with impunity. The Committee during its inspections was invariably greeted by the smoke and fumes hovering within the kitchen in most of the establishments. The kitchen room is almost without exception dark and dingy, ill-ventilated and ill-lighted. Open hearths radiate heat and make the kitchen extremely uncomfortable. The smoke in the kitchen leaves a grimy coat on the



walls. Coal and fuel are piled up in one corner of the kitchen itself. Food scraps and vegetable peelings are found scattered all over. It is little wonder therefore that the kitchen is found to be the worst part of the whole establishment.

The cooks who have to prepare food in such kitchens are the hardest hit. The abnormal conditions of heat and smoke prevailing in the kitchen make cooking literally a 'sweated job', undermining the health of the cooks. In a majority of the establishments visited by the Committee, the need for allotting exclusive accommodation for the store, preparation and wash-up rooms was not appreciated by the management. As a rule preparation and other preliminary operations are crowded near about the cooking range itself, making the whole place messy.

Even in the few instances where the management have made attempts to provide separate accommodation for the store and preparation rooms, most unsuitable corners of the premises have been pressed into service for the purpose. Store rooms are ill-ventilated and natural light seldom penetrates into them. Food stores are often exposed in open tins without proper covers giving access to vermin and rodents. Separate storage for (1) cereals, grains and dhalls and (2) perishables does not exist in a large majority of the restaurants. No refrigeration facilities on a scale commensurate with the volume of trade carried out on the premises are found in any of the establishments inspected.

Likewise, food preparation rooms, where provided separately from the kitchen proper, were dark and ill-ventilated. It is not surprising therefore that complaints are commonly heard that insects, sand and grit all get admixed with food in the grinding room as also the kitchen.

### **Primitive wash-up arrangements**

12. About the wash-up rooms, the less said the better. They do not exist at all in many of the establishments. The arrangements made for preliminary cleansing, rinsing and bactericidal treatment of utensils are perfunctory. Even though the appurtenances and equipment for 'boiled water' are installed, they are seldom used in actual practice; where they are used, the water is not hot enough for effective sterilization. The plates, cups and glasses, after a perfunctory immersion in water not sufficiently hot, are cleaned with a napkin or hand towel, a 'multi-purpose' cleaning cloth, soiled and dirty. In many instances utensils without preliminary scraping of food debris are washed in the same wash tub without necessary change of water, the wash water in consequence assuming the character of dilute sewage in bacteriological content. The Committee invites special attention to the report of one of its members, the Director, King Institute, on the "Bacteriological assay of the present status of the dish-washing procedures adopted in the City hotels" (Appendix II). His report

brings out prominently the prevailing unhygienic and dangerous practices in utensil-cleansing adopted in the diverse types of hotels in the City. The large cooking vessels are scrubbed with earth, sand and dirt picked up from the most insanitary places in an attempt to clean the outer surface.

### **Dining halls**

13. The furniture provided usually consists of tables and chairs, benches or stools. Overcrowding of the seating is a common feature, even in dining halls of students' hostels. The passageways provided for servers are narrow and there is little room for consumers to move in and out of their seats at the tables. The place swarms with flies. Insecticides like pyrethrum and D.D.T. are seldom used to put down the fly nuisance. Fly-proof spring doors are used only in exceptional cases. The entire furniture, such as it is, is ill-maintained.

Except in certain high class restaurants, there is no special attempt made by the managements to make the place attractive, pleasing and restful by the provision of clean linen and tableware, display of flowers and by subdued colour schemes in dining halls. Inadequate accommodation, equipment and service introduce an element of hurry all round. The time spent in the restaurant instead of being a pleasant and restful experience is turned into a depressing one.

### **Inadequate service equipment**

14. Crockery, cutlery, glass and other tableware are not generally stored under hygienic conditions. Their numbers are inadequate to meet the rush-hour demands. Chipped and cracked plates, cups and glasses, plates and spoons of aluminium corroded and knocked out of shape, are pressed into service. They are difficult to sterilise properly. The use of such tableware has led to the prosecution of the management in other countries. Some of the minor catering establishments use the minimum of brassware or aluminiumware for service equipment and are not much worried about the condition of this equipment so long as they could manage to keep going.

### **Lack of toilet facilities for customers**

15. Facilities do not exist for the customer for toilet and washing prior to partaking of food. Apparently the trade is unaffected whether or not these amenities are provided for him. In industrial canteens where workers come straight from their work place, there is not adequate provision for them to have a wash before sitting for food.

### **Defective water-supply and storage facilities**

16. Almost all establishments make their own arrangements for storing up of water even where they draw their supply from

the protected municipal water-supply system. The storage provided takes different forms, from underground sumps to open jars and vessels without any lids or covers. The safety of the supply as drawn from the municipal system is not only lost by the time the water reaches the consumer, but there is every chance of contamination of the water. Where the municipal supply is intermittent or absent, establishments make their own arrangements to supplement it from any available source nearby and the customer has no protection against water-borne infections as a consequence.

### **Crude drainage arrangements**

17. The existing arrangements for drainage in many of the catering establishments are extremely unsatisfactory. Only in Madras and Madurai is there a proper municipal sewerage system in operation. In most other towns, a satisfactory system of drainage is yet to be installed. The drainage arrangements within the catering establishments in these towns is therefore crude and primitive. The sullage from these establishments, which is of considerable volume, either stagnates in the backyards or overflows into the streets. It is difficult to provide conservancy equipment to deal with this volume of sullage and the evil goes unchecked. The customers who throng such establishments seem to put up with this state of affairs as a necessary evil.

Sanitary conveniences provided for the employees in such establishments are open dry earth latrines, conserved manually, and located in dangerous proximity to the kitchen, and the well in the backyard.

### **Garbage disposal—A problem to local authorities**

18. The accumulation of garbage in these premises throws a strain on the conservancy arrangements of the local authority. Kitchen waste, leaves and food remnants are either dumped in any vacant space or heaped up in dust bins without cover.

### **Lacuna in existing legal provisions**

19. The existing provisions of law for the sanitary control of food catering are dispersed in various Acts, viz., the Madras City Municipal, the Madras District Municipalities and the Madras District Boards Acts, the Madras Village Panchayats, the Madras Public Health and the Madras Prevention of Adulteration Acts and the by-laws and rules issued under the above Acts. The Factories Act, 1948, and the Madras Shops and Establishments Act, 1947, mainly deal with hours of employment of labour, weekly and other holidays, prevention of accidents, wages, running of food canteens for industrial labour, etc., in effect with "Labour Welfare" in general. Sections 249 and 193 of the Madras District Municipalities and Madras District Boards Acts require licence for eating and drinking establishments in municipal and district board areas and yearly

renewal of licence is provided for. Under section 279 of the Madras City Municipal Act separate provision exists for the licensing of catering establishments, quite apart from the provisions relating to other licensable trades. Whereas an appeal lies against the orders of refusal of licence of a catering establishment by the executive authority to the municipal council or the district board as the case may be under the Madras District Municipalities and the Madras District Boards Acts, no such appeal lies against the orders of the Commissioner of the Madras Corporation under the Madras City Municipal Act. Sections 258 and 259 to 270 of the Madras District Municipalities Act give powers of control over milk trade, markets, etc. Specific provisions also exist for the inspection of places for the preparation, sale or hawking of food for taking further action in case of noxious or unwholesome food under sections 271 to 277 of the Madras District Municipalities Act. Similar provisions exist in the Madras City Municipal Act. These powers in regard to control of milk trade, seizure of unwholesome food, destruction of perishable food and production of food or utensils before a magistrate are lacking in the Madras District Boards Act. Provisions relating to food control under sections 108 to 115 of the Madras Public Health Act and the rules framed thereunder are not adequate for the prevention and control of 'food infections' and 'food poisoning' resulting from improper and unhygienic upkeep and maintenance of eating and drinking establishments.

The provisions of Chapter VII of the Madras Public Health Act in respect of infectious diseases cannot be directly applied to food infections as excepting typhoid, others are not notifiable such as Salmonella infections, and food poisoning by the toxins of Staphylococcus or Botulinum. Model by-laws issued by Government for adoption by local bodies under section 306 (1) of Madras District Municipalities Act and section 202 (7) of the Madras District Boards Act are not adopted universally by local bodies.

In these model by-laws for the control of the hygiene of catering establishments, more stress is laid on the environmental aspects than on the effective control of 'food infections' and 'food poisoning.' The model by-laws are therefore largely obsolete in the context of the modern knowledge of the role of these establishments in the spread of 'food infections' through contamination of foods prepared and sold.

In consequence, except for the collection of licence fees as in other licensable trades, comparatively little hygienic control is being exercised at present in the large majority of local authorities over catering establishments from the point of view of prevention and control of 'food infection' and 'food poisoning.'

## CHAPTER III

### Recommendations—Sanitation of Premises

#### **Imperative need for reform**

20. The Committee in the foregoing paragraphs has attempted a general survey of the existing conditions in the different types of catering establishments and to present a comprehensive picture of the situation. The defects pointed out in the existing set-up could be attributed to various factors. The more prominent of these factors relate to the unsuitability of the building, its layout and structural design, a lack of planning of the component parts of the establishment, the unhygienic practices prevailing in the storage, preparation, cooking and service of food, and the absence of facilities for ensuring the personal hygiene of the food handlers, lack of adequate supply of safe drinking water and suitable arrangements for collection and disposal of sullage and garbage. In addition, the Committee has also examined the legal provisions as they exist, and the lacunae in such provisions for effective enforcement of adequate standards of hygiene and sanitation.

The variety of the catering establishments serving different socio-economic sections of the community has made it rather difficult for the Committee to arrive at optimum hygienic standards for catering establishments. Nevertheless, the Committee feels called upon to prescribe what it considers are minimum standards in this behalf so that the main purpose, viz., safety of public health, is ensured in all types of catering establishments. It may be that some of the better class catering establishments already satisfy the minimum standards indicated in our recommendations. In their case, it is a question of achieving optimum standards.

#### **Building premises—Radical improvements called for**

21. The foremost measure of reform is to ensure the suitability of the building to house the catering establishment. We have described in sufficient detail the defects and deficiencies at present noticed. It is necessary to prepare type designs for buildings suitable for catering establishments of different grades at various cost levels and recommend them as standards for adoption by managements.

Based on the minimum hygienic requirements suggested by the Committee, the Consulting Architect to Government has prepared type designs for canteens catering to a strength of 100, 150 and 250 respectively. The plans of these designs with detailed

**Fuel for cooking:**

24. The ideal fuel is electricity or gas. It may not be possible to secure electrical energy for this purpose in many of the stations and gas supply does not exist. Catering establishments have perforce to resort to solid fuel, coke, coal or wood for a long while to come. It is necessary therefore to design the cooking range, hoods, flues, etc., to suit the particular fuel used.

**Dining halls**

25. The dining hall, is the most frequented part of the restaurant by the customers. It behoves the management therefore to equip and maintain the dining hall satisfactorily and to make it as attractive as possible to the clientele. The structural design of the dining hall should not only ensure adequate accommodation on acceptable standards but also satisfactory ventilation and lighting. The furniture provided should be of the proper type and should be maintained in good repair. The tables should have surfaces which could be cleansed easily. The chairs should be designed for comfortable seating.

The question of accommodation is a very important consideration. It has already been observed by the Committee in the course of its survey that the outstanding evil at present is the overcrowding that obtains in dining halls. Varying standards as regards the scale of accommodation have been laid down suitable to conditions in other countries. This is one of the important standards that has to be determined by the standing expert committee suggested for this purpose.

The proportion of servers to the number of customers to be served has an important bearing on the smoothness and efficiency of catering in an establishment. Here again conditions vary with the type of meals served and other considerations.

The Committee has commented elsewhere on the need for providing adequate tableware and equipment to meet the demands of rush-hour catering. The interior decoration of the dining hall would, in the opinion of the Committee, bear a re-emphasis. The atmosphere of the dining hall should provide a refreshing change for the worker from the environment of his workplace, and should produce on him a pleasing and restful effect. To this end, the provision of spotless linen, clean tableware and subdued lighting and colour schemes, should receive the careful attention of the managements.

**Utensil equipment—Scale of provision**

26. It is desirable that a minimum scale of provision of crockery, cutlery and other tableware should be prescribed to avoid rush cleaning at peak hours. Some of the witnesses who tendered evidence felt that this should be fixed at 50—75 per cent over and

above what is needed to meet the requirements of the 'peak load' of diners. The Committee however feels that 50 per cent would be desirable. This reserve stock should be stored to serve the rush hours and for replacements of chipped, cracked crockery and tableware.

### **Water-supply**

27. The Committee feels that all measures necessary for providing safe drinking-water within the premises of the establishment should be rigorously enforced and any laxity on the part of the management in this regard should be dealt with severely.

Where the establishments can draw their daily supply from a municipal system, adequate storage facilities for storing the water in quantities sufficient to meet the requirements for the day should be provided. Water should not be stored in open vessels. All stored water should be under proper cover and should be drawn off through taps only. Managements should provide such arrangements as would meet the approval of the inspecting authorities for ensuring the safety of stored water at all times. In places where there is no municipal water-supply system available, catering establishments should draw their water-supply from a source approved by the inspecting authorities and must provide adequate arrangements within the premises to store the water under hygienic conditions and to chlorinate the stored water on the premises effectively before use. Alternatively, the water used for drinking within the premises should be boiled and stored in covered containers to prevent contamination. The inspecting authorities should carry out surprise checks to see whether chlorination is adequate and satisfactory and whether the drinking water is kept safe at all times.

### **Drainage arrangements**

28. There should be no difficulty to provide a satisfactory system of drainage for the premises where the sullage and sewage could be discharged into a municipal sewer. Considering that most municipal towns are yet to have any satisfactory system of drainage, open or underground, the Committee is aware that the problem of drainage of catering establishments is a difficult one. Nevertheless, it attaches the greatest importance to this problem. It is essential that catering premises should lay out a satisfactory system of drains so that the entire sullage and wash-water is collected at a specific point wherefrom the quantity could be disposed of satisfactorily. The collected quantity of sullage from the premises should be led on to the nearest public drain if one exists. Where the soil conditions are suitable and the hotel premises has enough land available, the sullage could be disposed of locally by suitable layout of dispersion trench. The provision of cesspools to receive the sullage should be the last resort, as the efficient cleaning of the cesspools is beset with considerable difficulties. The stagnation

of sullage in cesspools and its overflow is liable to create nuisance. In any case, the sullage should not be discharged on to the street front forming pools and puddles.

### **Sanitary conveniences**

29. Wherever it is feasible, the provision of sanitary conveniences with water-borne excreta disposal should be insisted upon, following type designs issued for this purpose by the competent authority.

### **Garbage disposal**

30. Garbage stored on the premises for long in dust-bins without proper cover will form an ideal place where flies swarm and breed. Garbage within the food preparation rooms and food scraps in the wash-up rooms should be collected then and there in proper covered bins and removed away from the premises and kept in temporary covered dust-bins of approved design wherefrom it should be removed by the conservancy staff as frequently as is necessary. The accumulation of garbage either within or without the premises should be avoided.

### **Cheap canteens for the poor**

31. Earlier in this report, the committee has drawn pointed attention to the existence of street hawkers, pavement bunks and shanties selling snacks, tiffins and tea to the poor labour classes. The Commissioner of the Madras Corporation brought to the Committee's notice that all attempts at rounding up these roadside establishments, seizing their equipment and launching prosecutions against them have been of no avail, since new ones spring up as fast as the old ones are liquidated. Having regard to the definite need which they serve, the Committee is of opinion that effective substitute establishments should be installed simultaneously with the closure of the existing units. This will however call for a concerted effort on the part of municipal councils to set up cheap canteens in suitable places which will serve simple food at economic rates to the labour population. The municipal councils will no doubt receive the willing co-operation of women's associations and the catering trade in organizing these canteens.

Already the Women's State Food Councils are running non-cereal food canteens with subsidy from Government to meet this object. It should be possible to expand the activity in order that a number of cheap canteens and a chain of mobile canteens could take the place of roadside eating places.



## CHAPTER IV

### Recommendations—Hygiene of Equipment, Food, Sanitation and Medical Supervision of Personnel

#### **Bactericidal treatment of utensils and sterilization**

32. The Committee is indebted to the Director, King Institute, one of its members for his comprehensive note on the prevailing practices in the cleansing of utensils and his recommendations for their effective cleansing and sterilization. The methods of cleansing recommended and the standards for total bacterial and coliform counts for sterilized utensils suggested by him, may be accepted as the desirable minima for the present. Further work remains to be done on the best and cheapest detergent to be used, with a view to bring down the total colony counts, to 100 per c.c.

The Committee is aware that a number of mechanical dish and utensil washing equipments are available in the market for efficient cleansing and sterilization of utensils. Not one single appliance has been found in use in even the biggest restaurants in Madras City. After a study of the mechanical equipment now available the Committee is of opinion that in the larger catering establishments the installation and use of such mechanical utensil-washing equipment is desirable. Equipment suitable for Indian conditions should be selected after necessary experimental work. The Standing Expert Committee for evolving bacteriological standards suggested later in the report may be entrusted with this work.

The Committee is of the view that no cloth, however clean at the time it is first pressed into service, should be used for cleaning and polishing cups, glasses, plates and spoons once they are sterilized as this gets soiled and is not replaced sufficiently frequently by a new one but that these should be allowed to drain and dry on a drain board prior to storage under hygienic conditions until required for use.

#### **Bacteriological standards for certain food preparations**

33. Though it is desirable that standards for maximum bacterial counts permissible in preparations like ice-cream, ice-cream salads, etc., should be prescribed in the interests of public health, the Committee feels that these preparations should be actually made in the laboratory to determine the maximum permissible total colony and coliform counts when prepared under strict hygienic conditions, before such standards can be suggested. The report

of the Director, King Institute, on the "Result of the bacteriological examinations of samples of ice-cream, collected in the City restaurants" (Appendix III) reveals how grossly these samples are contaminated with the coliforms which indicates the everpresent risk of infection with disease-producing organisms from this source, necessitating stricter control over these food articles.

### **Prevention of the transmission of infection through human carriers**

34. Pre-employment medical examination of the employees has been suggested by all the witnesses and those who submitted answers to the questionnaire. Repeat periodic check-up once a year is also recommended by them. But the Committee had to critically appraise the medical examinations as at present carried out in Madras City, without laboratory aids and assess their utility in revealing human carriers of organisms causing food infection and food poisoning. It is felt that unless the examinations are carried out with the necessary laboratory aids, they are of limited utility in the control of food infections. An employee may have a septic streptococcal sore throat or a septic finger boil with staphylococcal infection which the periodic examination once in a year may fail to reveal.

There is, however, another important aspect of medical examination of the employees to which the Committee would like to draw attention. It has been urged that such routine medical examination will be helpful in detecting venereal diseases and pulmonary tuberculosis, diabetes, cardiovascular disease in early stages. Though these do not directly concern food infection and food poisoning, it has been impressed especially in the evidence tendered by the representatives of the Indian Medical Association, Madras, that such examinations will safeguard the health of the employees which is a very important matter. The Committee therefore feels that from this point of view, periodic yearly medical examination of the employees is desirable.

Sufficient powers under the statute should exist for the Health Officer to take prompt and effective action to carry out the examination of members of the staff or employees of the catering establishment suspected to be the source of any food infection or food poisoning outbreak. He should also have plenary powers to sample the suspected food article, prohibit its sale or to close down a catering establishment to prevent the spread of infection from this source. Under the rules framed under the Madras Public Health Act, the Committee suggests such plenary powers for the Health Officer which will enable him to effectively control food infections. It may be noted in this connexion that even in the United Kingdom and the United States of America, routine examination of food handlers has been abandoned as it is considered that the results achieved in the control of food infection are not

commensurate with the labour involved and money expended. The actual control in this regard is better exercised before discharging a case from a medical institution.

#### **Detection of chronic carriers of enteric and food poisoning organisms**

35. The Committee feels that in the absence of regional laboratories in the State, the attempt to recognize chronic carriers among the employees, however desirable from a public health point of view, is a stupendous if not impossible task. The Committee, however, is of the view that at the time of employment the employee should investigate in detail the past health record of the employer with particular reference to typhoid and paratyphoid fever. In the event of a positive history the applicant should not be entertained till he is medically examined and certified by the Health Officer as fit for employment. Provision in this regard has therefore been incorporated in the rules, suggested later in this report.

The Committee has also examined the rules issued by Government in G.O. No. 1863, P.H., dated 6th May 1940, for the control of enteric fever (typhoid and paratyphoid), especially rule 9 subsequently deleted in G.O. No. 2273, P.H., dated 29th May 1941. This deletion was presumably made in view of the difficulty of keeping an enteric fever convalescent in hospital "till three consecutive examinations of specimens of his faeces and urine do not reveal the presence of organisms of the disease," the specimens for such examination being taken at intervals of not less than 24 hours after the clinical symptoms have subsided—[rule 9 (1) of the Enteric Fever Rules]. The Committee is strongly of opinion that in the interests of safeguarding public health of the State where typhoid and paratyphoid fevers are endemic in the community, the rule should be restored. In cases where a patient turns out to be a chronic carrier on repeated examinations, provision for his discharge from the hospital may be made and the address of the chronic carrier notified to the concerned Health Officer for exercising effective supervision and surveillance over his movements and employment in any capacity involving handling of food.

#### **Bacteriological examinations in the control of utensil cleaning**

36. The Committee is of opinion that bacteriological examination of utensils may not be resorted to as a routine measure. As no regional laboratories exist, it is impracticable to enforce it and the results are not commensurate with labour and cost involved in such examinations; but whenever there is ground for suspicion such examinations should be made. This again emphasises the importance of providing a well-equipped laboratory in each municipality for carrying out bacteriological examinations, essential in tracing sources of infection and controlling outbreaks not only of food infections but also of other communicable diseases in general.

**Inspection and supervision of catering establishments on a uniform basis**

37. The Committee is of the view that there should be uniformity in the inspections carried out by the Sanitary Inspector and the Public Health staff and for this it is desirable to evolve a form of inspection. It favours routine inspection once a quarter in addition to any surprise inspections called for and towards this end the existing Sanitary Inspector staff in municipalities should either be increased or the Sanitary Inspectors should be relieved of their conservancy duties when more time will be available for this work. In Madras City where separate Food Inspectors are appointed for the enforcement of the Madras Prevention of Adulteration Act, this cadre, it is felt, may be increased and augmented to make more specially trained men available for inspection of the catering establishments.

**Standing Expert Committees suggested**

38. The Committee recommends that the Government should constitute a standing expert committee for evolving type-designs of model restaurants, of smokeless and hygienic cooking ranges with built-in hearths, ventilation hoods, and exhaust ventilation of kitchens, cheap and efficient sterilizing equipment (including testing of mechanical dish-washing equipment) and fly and dust-proof display cases, cupboards and other equipment. The Director of Public Health, the Sanitary Engineer to Government, the Consulting Architect and representatives of the Hotels Association, Madras, and one of the mufassal towns may constitute the Committee. Likewise, for assaying the efficacy of detergents, for working out desirable standards of sterilization of the equipment and utensils by bacteriological examination, and for suggesting similar standards for certain foods like ice-creams, ice-cream salads, etc., in increasing demand, another Standing Expert Committee is recommended. The Director of Public Health, the Director, King Institute, the Professor of Bacteriology, Madras Medical College, and the Government Analyst may be the members of this Standing Committee.

## CHAPTER V

### Anomalies in the Licensing of Catering Establishments

**An inadvisable change of control**

39. The licensing of the catering establishments prior to 1948-49 vested with the local bodies. In the licensing, supervising and enforcing of sanitary requirements, the local bodies are assisted

entirely by the Health staff who are trained and equipped for the purpose. Subsequent to 1948-49, however, an important change has been effected in this matter. With the passing of the Factories Act of 1948 it has been interpreted that the preparation of the various articles of food by the catering establishments would be a manufacturing process under the provisions of the Factories Act, and that therefore the licensing of these catering establishments and their control will vest with the Factory Inspectorate in future. The Committee feels that this change-over will have far-reaching repercussions on the hygienic up-keep and efficiency of the catering trade and in the enforcement of health laws. The Committee attaches great importance to this subject and would like to discuss it in some detail.

### **The Factories Act and catering establishments**

40. With the placing of Factories Act of 1948 on the Statute Book and the ruling given by Government of India that the preparation of various articles of food, in large hotels or restaurants would be a manufacturing process, within the meaning of section 2 (K) (i) of the Factories Act of 1948, restaurants employing 20 persons or more, are declared factories under the Act. The Government of Madras in their G.O. No. 2210, Development, dated 22nd April 1949, have since declared that "all provisions of the Act would apply to any place wherein (i) a manufacturing process is carried on without the aid of power or is so ordinarily carried on and (ii) ten or more but less than twenty workers are employed." In effect, this envisages licence of even the medium-sized catering establishments under the Factories Act of 1948. The Government of Madras in Memorandum No. 57002/49-2-E-1, P.H., dated 4th August 1949, however, permitted local bodies to license restaurants employing ten or more workers for 1949-50 under sections 279, 249 and 193 of the Madras City Municipal, Madras District Municipalities and Madras District Boards Acts, respectively: This concession was extended to the year 1950-51 and subsequently in G.O. No. 520, Health, dated 14th February 1951, to three years from 1951. This licence by local bodies is in addition to the licence obtainable under the Factories Act.

This has created an anomalous position. The catering establishments are now being licensed by three different agencies by virtue of three different Acts, viz., the local bodies under Madras City Municipal, Madras District Municipalities or Madras District Boards Acts, the Labour department under the Factories Act and the Police department under the Madras City Police Act.

### **A retrograde step**

41. The Committee would like to emphasise that the placing of the supervisory control of catering establishments under any authority other than the Health staff of the local bodies would be a retrograde step. The Committee is aware that licensing under

the Madras City Police Act is called for in the interest of law and order. Likewise, licensing under the Factories Act may be justified in so far as the question of labour welfare is concerned. But control over catering establishments embraces other important aspects of the hygienic up-keep of these establishments and a strict supervision over catering with a view to prevent danger to public health. These functions can be discharged only by the trained and qualified Public Health personnel already available with the local bodies, under the central control and direction of the Director of Public Health of the State. To relegate these functions as subsidiary activities of the Factories Inspectorate or any similar agency would be to put public health in jeopardy.

Obviously such a contingency cannot be contemplated with equanimity. It may be argued that Health Officers and Assistant Health Officers are ex-officio Factory Inspectors under the Factories Act and hence even though the authority for licensing is taken away from the local body, the Health Officers can continue to exercise supervision over these establishments. *Prima facie* such a proposition is not workable. The Health Officer by himself cannot exercise all the check and supervision necessary over the hundreds of catering establishments in each urban town by virtue of his being an ex-officio Factory Inspector, without the help of the Public Health Subordinate staff in the station. But this staff can have no right of access to the catering establishments under the Factories Act and it is only the Health Officer or his assistant who could act in his individual capacity as a Factory Inspector.

The Factories Inspectorate staff are obviously unsuited to the task of supervising the hygiene of catering establishments. They lack the background of public health training and experience quite essential for an efficient discharge of this important function. The available number of officers under the Factories Inspectorate is too small for them to exercise any effective supervision over hundreds of catering establishments scattered over their entire jurisdiction. The results of such a change-over can therefore be readily imagined.

#### **Control must vest with the Public Health staff**

42. The Committee sees no reason in support of such a change. Control over catering establishments, even as at present, by the Health department staff under the local bodies, is none too satisfactory because of inadequacy of staff to keep up a constant check. Instead of the Factories Inspectorate staff taking over these additional duties, there is no reason why the Health staff should not be entrusted with the enforcement of the labour welfare provisions of the Factories Act of 1948 in so far as they relate to these establishments.

#### **Scale of licence fees**

43. It was brought to the Committee's notice by witnesses that there is a great justification for increasing the low scales of

power to license and control the catering establishments under the Madras Public Health Act as has been done in the case of 'lodging houses.' This would bring about a uniformity of procedure in the 'licensing,' 'appeal' and other 'control' provisions in Madras City, municipal and local board areas. The Committee accordingly suggests comprehensive amendments to "Chapter XII—Food Control" of the Madras Public Health Act, 1939, furnishing briefly the objects and reasons for the suggested amendments. Rules for the upkeep and maintenance of catering establishments under the appropriate sections of the Madras Public Health Act are also proposed.

### **Objects and reasons for the amendments to Madras Public Health Act and the rules thereunder suggested**

46. In the Madras Public Health Act under 'Food control' no direct provisions exist for the prevention and control of food infections and food poisoning conveyed through the improper and unhygienic upkeep and maintenance of eating and drinking or catering establishments.

The provisions of "Chapter VII—Infectious Diseases," cannot be directly applied to some of the food infections like Salmonella Staphylococcal infections and food intoxications, like Botulism which are not directly transmissible from man to man.

When separate provisions exist in the Madras Public Health Act for the control of lodging houses to prevent and control the incidence and spread of communicable diseases, the necessity for similar provisions for the control of eating and drinking establishments which play a more direct role in such spread becomes obvious.

These eating and drinking establishments are at present licensed in municipalities, district board areas and panchayats under section 249, section 193 and section 91 of Madras District Municipalities Act and Madras District Boards Act and Madras Village Panchayats Act respectively. In the Madras City Municipal Act, separate provision for licensing these establishments exists under section 279. Similar provision does not exist under Madras District Municipalities Act or Madras District Boards Act other than the provision for licensable trades in general. Model by-laws, under section <sup>306 (1) of Madras District Municipalities Act</sup> <sub>202 (7) of Madras District Boards Act</sub>, have been drafted and communicated to local bodies for adoption. Only a few local bodies have adopted these. In framing these model by-laws more stress was laid on the control of the environmental aspect of the premises than on the control of food infections and food poisoning and these model by-laws are therefore largely obsolete in view of the modern knowledge on the importance of these establishments as sources for the spread of food infections through contamination of foods prepared and sold. Excepting the collection of fees, comparatively little effective control is being

exercised over these trades from the point of view of preventing and controlling the incidence and spread of food infections and intoxications (food poisoning).

In view of the above it is considered that the Chapter XII on 'food control' in the Madras Public Health Act should be thoroughly revised introducing new sections required for direct control of the eating and drinking establishments, the existing sections being retained wherever these are not in conflict with the amendments suggested.

#### **Amendments suggested**

47. New sections numbered 108 to 110 are introduced. The existing sections 108 to 110 have in consequence been renumbered 111 to 113.

*Section 108.*—The power to license eating and drinking establishments has been taken under Madras Public Health Act (instead of as at present under Madras District Municipalities, District Boards, Madras Village Panchayats and Madras City Municipal Acts). This is necessary in the interests of efficient enforcement.

*Section 109* prescribes the authority and procedure for the issue of licence and for renewal or cancellation of the subsisting licence. Under section 109 (1) (i) (a) it has been provided that the executive authority shall issue the licence only after the Health Officer has inspected the premises and recommended the licence or renewal of licence.

*Section 110* empowering Government to make rules for the control of eating and drinking establishments is suggested, despite the existing section 128 (1) and (2) giving general powers for framing such rules to carry out any provisions of the Act, as provision has to be made for imprisonment on the lines of the provision under section 81 read with section 129 (1) of the Madras Public Health Act for infringement of rules for the control of infectious diseases.

*Section 115 (1).*—Same as section 112 of Madras Public Health Act.

*Section 115 (2).*—This is a new provision. Existing section 112 of Madras Public Health Act simply empowers the Health Officer to inspect and does not provide for sampling of foods or the removal of utensils for purposes of necessary laboratory examination. This has been provided for under section 115 (2). Provision has also been made for the Health Officer condemning and forbidding the sale of any food or drink which is found unwholesome (after such laboratory examination).

*Sections 116, 117, 118 and 119* are adaptations of sections 274 277 of the Madras District Municipalities Act (and similar provisions under the Madras City Municipal Act) which empower Health Officers to seize food articles and utensils and produce them in



court for condemnation and destruction, etc. These powers are absolutely necessary in rural areas especially as these do not exist under the Madras District Boards Act at all.

*Section 120 (1) is similar to section 113 (1) of the Madras Public Health Act.—120 (2) is a new addition which is absolutely necessary for the control and prevention of food infections and food-poisoning outbreaks where an eating and drinking establishment is suspected to be the source.*

Rules for the upkeep and maintenance of eating and drinking establishments and for prevention and control of food infections and food poisoning in such establishments have been drafted under section 110 (new addition) and sub-section (1) and clause (a) of sub-section (2) of section 128 of the Madras Public Health Act. (This latter section has to be renumbered appropriately to make room for the additional sections suggested under "Food Control.")

To bring out the purpose and the objects and reasons for the amendments and rules suggested, appropriate marginal headings have been put in and these are self-explanatory.

#### Draft sections as amended

#### CHAPTER XII—FOOD CONTROL (MADRAS PUBLIC HEALTH ACT).

48. *Section 108.*—No person shall, without or otherwise than in conformity with the terms of a licence granted by the executive authority in this behalf, keep any eating, drinking or catering establishment, hotel, teashop, coffee house, cafe, restaurant, refreshment room, mobile canteen, itinerant stall, or any place where the public are admitted for the consumption of any food or drink or any place where food is sold or prepared for sale.

*Section 109.*—(1) The executive authority on receiving from any person an application for licence or for renewal of licence for keeping an eating, drinking or catering establishment, in a premises or in a mobile van or vehicle, and on payment by him of such fee, as may be prescribed for the purpose shall issue a licence in respect of the building or van or vehicle named in the application or renew the licence in respect thereof and issue to him a certificate of licence or renewal of licence :

Provided that the executive authority

(a) shall not license the premises for an eating, drinking or catering establishment in the name of the applicant until the Health Officer has inspected the premises or the mobile van or vehicle named in the application and has recommended such licence or renewal of licence.

(b) May refuse to licence or to renew the licence of an applicant if he is satisfied :

that the premises or mobile van or vehicle is not suitable for use as an eating, drinking or catering establishment or it does not satisfy the minimum sanitation requirements for such establishments.

(2) The licence or renewal of the licence of an eating, drinking or catering establishment shall expire at the end of the year for which it is granted unless for special reasons the executive authority, on the advice of the Health Officer, considers that it should expire at an earlier date, when it shall expire at such earlier date which shall be specified in the certificate or licence or renewal of licence.

(3) The executive authority may at any time cancel or suspend any licence granted under sub-section (1) if he is of opinion that the premises covered thereby are not kept in conformity with the conditions of such licence or with provisions of rules made under section 110 and section 128 of the Madras Public Health Act relating to such premises whether or not the licensee is prosecuted under this Act.

(4) If the executive authority refuses to grant or renew or suspends the licence under this section, he shall deliver to the applicant a statement in writing of the grounds on which his application is refused.

*Section 110.*—(1) The Government shall have power to make rules

(a) for fixing the minimum sanitation requirements for different types of eating, drinking or catering establishments including itinerant and mobile restaurants;

(b) for preventing food infections and food poisoning spread through food infected in the eating, drinking or catering establishments;

(c) with respect to taking precautions when food infection or food poisoning outbreaks due to consumption of food are suspected; and

(d) generally for effective control over preparation, storage and distribution of food through eating and drinking establishments.

(2) In making a rule under this section, the Government may provide that a breach of such rule shall be punishable with imprisonment which may extend to three months or with fine or with both.

(Retain sections 108 to 111 of Madras Public Health Act renumbered as sections 111 to 114. Reference to 108 in the subsequent section being read as 111.)

*Section 115 (same as section 112 of Madras Public Health Act).*—

(1) The Health Officer or any person duly authorized by him may, without notice, enter any place at any time, by day or night, where any article of food is being manufactured, prepared, exposed, or stored for sale, and inspect such article and any utensil or vessel used for manufacturing, preparing or containing the same.

(2) Samples of any article of food or drink or any vessel or utensil, in which such articles of food are contained, may be taken and examined by the Health Officer by bacteriological, protozoological or chemical examination as often as may be necessary for the detection of unwholesomeness. The Health Officer may condemn and forbid the sale of any food or drink which is unwholesome.

(3) Whoever obstructs the Health Officer or person duly authorized by him in the discharge of his duties under this section shall be punishable with fine which may extend to one hundred rupees.

*Section 116 (similar to section 274 of Madras District Municipalities Act).*—If any article intended for food or drink appears to the Health Officer to be unfit for human consumption or is unwholesome or the utensil used in manufacturing, preparing or containing such article appears to be of such kind or in such state as to render the article unwholesome or noxious, he may seize or carry away or secure such article or utensil or vessel in order that the same may be dealt with as hereinafter provided.

*Section 117 (similar to section 275 of Madras District Municipalities Act).*—No person shall remove or in any way interfere with an article secured under the past preceding section.

*Section 118 (similar to section 276 of Madras District Municipalities Act).*—(1) When any article of food is seized under section 116, it may with the consent of the owner or person in whose possession it was found be forthwith destroyed in such manner as to prevent its being used for human food or exposed for sale and if the article is perishable without such consent.

(2) Any expenses incurred in destroying any article under sub-section (1) shall be paid by the owner or person in whose possession it was at the time of seizure.

*Section 119 (similar to section 277 of Madras District Municipalities Act).*—(1) Articles of food, utensils, vessels, etc., seized under section 116 and not destroyed under section 118 shall, as soon as possible, be produced before a magistrate.

(2) Whether or not complaint is laid before a magistrate of any offence under the Indian Penal Code or under this Act, it appears to the magistrate on taking such evidence as he thinks necessary that any such article is unwholesome or noxious or any such utensil or vessel is of such kind or in such state, as is described in section 117 he may order the same

(a) to be forfeited to the local authority ;

(b) to be destroyed at the charge of the owner or any person in whose possession it was at the time of seizure, in such manner as to prevent the same being again exposed or hawked about for sale or used for human food or for the manufacture or preparation or for containing any such article as aforesaid.

*Section 120 [same as section 113 (1) of Madras Public Health Act].*—The Health Officer may at any time medically examine any person engaged in selling, or in manufacturing or preparing for sale, or in any manner whatsoever handling any article of food intended for sale.

*Section 120 [replace section 113 (2) by this].*—When a suspicion arises as to the possibility of transmission of infection from any

employee of the eating, drinking or catering establishment, the Health Officer may require any or all of the following measures :—

(i) the immediate exclusion of the employee from all eating and drinking or catering establishments ;

(ii) the immediate closing of the establishment concerned until no further danger of disease outbreak exists in the opinion of the Health Officer ;

(iii) adequate medical examination of the employee and of his associates with such bacteriological, protozoological, etc., laboratory examinations as may be indicated.

(Retain sections 114 and 115 of the Madras Public Health Act renumbered as 121 and 122.)

**Rules for the keeping (upkeep) and maintenance of eating, drinking or catering establishments and for prevention and control of food infections and food-poisoning in such establishments under section 110 and sub-section (i) and clause (a) of sub-section (2) of section 128 of Madras Public Health Act**

**Definitions.**

49. (1) For the purpose of these rules—

(a) Eating, drinking or catering establishments shall include restaurant, hotel, coffee shop, cafe, tea shop, refreshment room, aerated water or soda stall, ice cream, ice fruit stall, milk bar, mobile canteen, itinerant restaurant or stall and all other eating or drinking establishments as well as kitchens or other places in which food or drink is prepared for sale elsewhere ;

(b) *Employee* shall mean any person who handles food or drink during preparation or serving or who comes in contact with any eating or cooking utensils or who is employed in a room in which food or drink is prepared or served ;

(c) *Utensils* shall include any kitchenware, tableware, glassware, cutlery, utensils, containers or other equipment with which food or drink comes in contact, during storage, preparation or serving ;

(d) *Proprietor* includes owner, occupier or manager of the eating and drinking establishment or any other person, society or union having the management or control thereof.

(2) No licence or renewal of licence under section 108 shall be granted by the executive authority unless on the recommendation of the Health Officer and unless the premises or mobile van or vehicle or itinerant restaurant satisfies the following minimum requirements.

Minimum sanitation requirements for licensing of eating, drinking or catering establishments.

Working premises.

(3) The building shall accommodate at least a dining hall, kitchen, store room, preparation room and washing places separately for workers and for utensils.

(4) The building shall be soundly constructed and all the walls and roof shall be of suitable heat-resisting materials and shall be water-proof.

(5) The premises and fixtures shall be so constructed and fitted that all parts of both premises and fixtures are capable of being readily cleansed.

(6) The floors shall be free from cracks without open joints, The floors. impervious, non-slip and capable of being easily washed down and should slope evenly towards the drainage outlet.

(7) The walls shall be substantial, durable, smooth, impervious and washable and of light colour and maintained in sound repair.

(8) The walls of all rooms in which food or drink is prepared or utensils are washed shall have a smooth washable surface up to a height of 4 feet from the floor, the level reached by splash or spray during cleansing.

(9) Ceilings shall be clean, dust proof, non-leaky and free Ceilings. from cracks.

(10) The doors and windows of dining halls shall if so required by the Health Officer be of fly-proof construction and shall allow adequate ventilation. Exhaust ventilation may be required in such cases. Where fly-proofing is not provided, adequate measures shall be taken against fly nuisance.

(11) The floor area of the dining hall, excluding the area Dining hall. occupied by the service counter, and any furniture except tables, and chairs, shall be not less than 10 square feet per diner. Sufficient tables, chairs, benches shall be available for the number of diners accommodated wherever furniture is required or provided for customers. The surfaces of every table, or board on which refreshments are served shall be of marble, or polished stone or slab or similar non-absorbent impervious material and without open cracks.

(12) The kitchen shall be sufficiently spacious and should be Kitchen. of a size in proportion to the number catered for. Four square feet per diner shall be considered the minimum and 6 square feet as desirable. The Health Officer may, in his discretion, suitably relax the rule.

Adequate and satisfactory ventilation of the kitchen shall be the special concern of the establishment. Ventilated hoods or adequate alternative means for the removal of steam, fumes, smells, intense heat from the cooking range or stoves, smoke from fuel used, by exhaust fans or otherwise, shall be provided in addition to natural ventilation devices whenever so required by the Health Officer.

(13) The cleanliness of a catering establishment shall receive continuous and careful supervision by the management. Among other things, the floors must be swept daily, using damping agents, the walls and other surfaces must be kept free from dust and cupboards, drawers, glass cases, almirahs and other fixtures shall be

kept scrupulously clean and free from anything not used in food preparation. The floors of food preparation rooms shall be washed as frequently as necessary at least once daily.

(14) All premises shall be maintained in sound repair and every precaution taken against infestation from vermin.

Drainage.

(15) The premises should be effectively drained and all gullies provided should be trapped to the satisfaction of the Health Officer.

Water-supply.

(16) (a) An adequate supply of wholesome water piped to taps over sinks and lavatory basins and other fixed receptacles shall be provided ;

(b) in areas where no piped protected water is available, water from a source approved by the Health Officer shall be stored under hygienic conditions and made available.

Hot water.

(17) Apparatus to provide boiling water or hot water up to at least 170° F for all requisite purposes should be installed on the premises.

Lighting.

(18) All parts of the premises used for food preparation should be adequately lit, preferably both by natural light and by artificial light to the satisfaction of the Health Officer.

Ventilation.

(19) Adequate ventilation should be provided to the satisfaction of the Health Officer.

Cloak room.

(20) Clean and adequate cloak room accommodation, on a scale suitable to the catering establishment should be provided for the staff distinct from and preferably adjacent to the food preparation room and not having direct communication with the dining hall or kitchen. Adequate lockers shall be provided for employees clothing and shall be kept clean. Soiled linens, coats and aprons shall be kept in containers kept for this purpose.

Sanitary conveniences.

(21) There shall be a sufficient number of sanitary conveniences with water-borne excreta disposal of a design approved by the Health Officer, with no direct access to the rooms.

Washing and bathing facilities.

(22) There shall be a sufficient number of wash basins in immediate proximity to sanitary conveniences and elsewhere as may be necessary to meet the needs of the employees, separate accommodation being provided for each sex. All wash basins shall be laid on with hot and cold water and provided with soap, nail brushes and towels to the satisfaction of the Health Officer. A notice pointing out the importance of washing hands after use of sanitary convenience shall be displayed in a prominent place in every convenience.

Bathing facilities for employees, for each sex, while on duty, shall be provided on a scale fixed by the Health Officer (in the case of the eating and drinking and catering establishments run on a modest scale in non-urban environment, the executive authority shall have power to relax the above rule to the extent desirable on the advice of the Health Officer).

(23) Toilet and hand washing facilities shall be provided exclusively for the use of the customers.

(24) All show and display cases, windows, counters, shelves, tables, refrigerating equipment, sinks and other equipment or utensils used in connexion with the operation of the eating and drinking or catering establishment shall be so constructed (made) as to be easily cleaned and shall be kept in good repair. Utensils containing or plated with antimony, cadmium or lead shall not be used. All brass utensils used in cooking shall be properly lined with tin, the tin lining being kept in proper repair. Utensils and equipment.

(25) There shall be provided and maintained sufficient utensils, crockery, cutlery, and any other equipment necessary for the efficient running of the eating and drinking establishment.

(26) There shall be a separate and adequate storage for all utensils and in particular covered racks for crockery, trays for cutlery and suitable shelving for saucepans and small cooking vessels.

(27) There shall be sufficient reserves of glasses, crockery and cutlery to ensure—

(i) the prompt replacement of chipped, cracked or bent equipment.

(ii) that, during rush hours, there is no need to use inadequately cleansed and sterilized equipment.

(28) All equipment including display cases or windows, counters, shelves, tables, refrigerators, stoves, hoods, and sinks shall be kept clean and free from dust, dirt, insects and other contaminating materials. All cloth used by waiters (servers), cooks, and other employees shall be clean.

(29) Adequate equipment for cleansing utensils shall be provided. Where a dish-washing machine is installed it must be efficient and efficiently operated and in particular must provide for the thorough cleansing of utensils and for a subsequent rinse in clean water at such temperature as will obviate the necessity for cloth drying. If no dish-washing machine is used, there shall be at least two sinks (with drain boards attached) and with hot and cold water laid on to each sink. The first sink must be reserved for utensil cleansing and the second sink must be kept clean and *hot enough* to obviate the necessity for cloth drying. Special consideration shall be given to the cleansing of all equipment used in the cooking and conveying meals in bulk. Cleansing.

(30) All eating and drinking utensils, used over and over again in catering (multi-use utensils) shall be thoroughly cleansed and effectively subjected after such usage to a bactericidal process approved by the Health Officer. All such utensils used in the preparation or serving of food shall be thoroughly cleansed and effectively subjected to an approved bactericidal process after each usage and immediately following the day's operation. Drying cloths, if used, shall be clean and shall be used for no other purpose. Bactericidal treatment of utensils and equipment.

(31) Bactericidal treatment of utensils after preliminary cleansing and rinsing shall be secured either by maintaining the temperature of the final rinse water at 170° F or by steaming the utensils in a steam chest or large container.

(32) After bactericidal treatment, the utensils shall be stored in a clean dry place protected from flies, dust and other contamination and shall be handled in such a manner as to prevent contamination.

Care of food  
on the  
premises.

(33) Suitable receptacles shall be provided for all food articles. Separate and adequate storage accommodation shall be provided in properly covered receptacles for dry foods (cereals, pulses, etc.), vegetables and perishables to the satisfaction of the Health Officer.

(34) For the storage of perishable foods, a refrigerator, cold room or ice-box of adequate size, commensurate with the needs and requirements of the eating and drinking establishments as determined by Health Officer shall be provided. (This rule may be relaxed at the discretion of the Health Officer.)

(35) As far as practicable, all food preparation and cooking shall be arranged to allow for a minimum interval before the food is consumed. Left-over food shall not be used again as far as practicable. If it is to be used again, it shall be stored promptly in the refrigerator, cold room or ice-box.

(36) All foods used for display and sale must be protected in fly-proof, dust proof show cases, or shall be protected by suitable wrappings or covers, approved by the Health Officer.

(37) The proprietor or manager of an eating and drinking establishment shall take all practical steps, as approved by Health Officer, to prevent or to get rid of infestation and to prevent contamination of food from rats, mice, flies, cockroaches and other vermin. Covered receptacles of impervious material for refuse, food scraps and the like must be provided and the refuse and garbage removed from the premises at least once daily to the satisfaction of the Health Officer.

Measures to  
prevent the  
infection of  
food from  
employees.

(38) Every applicant for employment in the eating and drinking establishment shall be informed before engaging his or her services, the possible risk of food infection from previous attacks of typhoid or paratyphoid fever (enteric fever) and shall be asked if he or she has previously suffered from any one of these diseases. If he or she has so suffered, particulars shall be reported to the Health Officer and the applicant shall not be engaged until approval of the Health Officer has been given.

(39) No person who is suffering from a discharging wound, sores on hands or arms, discharging ears or who is suffering from attacks of diarrhoea or vomiting shall take part in the handling, preparation or serving of food in the establishment.



(40) Members of the staff of the establishment shall report the proprietor or manager if they are suffering from any of the conditions specified in rule 39 above or from any other illness.

(41) The proprietor or manager of the eating and drinking establishment shall take all reasonable steps to become aware of existence among his staff of any of the conditions specified in 39 above.

(42) The proprietor (or manager) of the eating and drinking establishment, as soon as he becomes aware that any member of staff is suffering from any of the above-specified conditions, shall not permit such person to handle food, until he or (she) is no longer suffering from the condition in question or permission has been given by the Health Officer.

(43) In the case of other illnesses, if there is doubt whether an employee should continue to work, the employee should be referred to the Health Officer pending resumption of work.

(44) Manual handling of food by hotel employees shall be restricted as far as practicable.

(45) Smoking, snuffing, chewing tobacco, while preparing or serving food shall be prohibited.

(46) A high standard of personal cleanliness on the part of employees shall be maintained. Uniforms, overalls, cloths or head covers for the employees shall be provided and these shall be kept washed and changed sufficiently frequently.

(47) Animals shall be excluded from rooms where food is being prepared or served and at no time shall animals have access to food in the establishment.

(48) *Special rules for mobile vans and movable eating and drinking establishments.*—(a) The name and address of the person whose name the establishment is licensed shall be displayed conspicuously on the van or the stall.

(b) The van or stall shall be adequately lit if used at night.

(c) The van or stall and its equipment shall be kept clean in a proper state of repair. Cupboards, drawers and other fixtures shall be kept scrupulously clean and free from anything unnecessary for the conduct of the business.

(d) The internal walls of the van or stall shall be kept clean, free from vermin.

(e) All food shall be covered as far as practicable or shall be adequately screened.

(f) A supply of wholesome water, both hot and cold, adequate for needs shall be available.

(g) There shall be available a supply of clean towels and paper for the use of the person or persons operating the van or the stall.

(h) There shall be available adequate washing up arrangements as follows:—

The cleansing of crockery and other utensils shall take place in two separate sinks or in a sink having two compartments

one of which shall be reserved for bactericidal treatment of utensils. Bactericidal treatment of utensils can be carried out either by water at a temperature of not less than 170°F or by steam or as a temporary measure by the efficient employment of an approved suitable bactericidal agent.

(i) The executive authority shall have power to restrict the operation of the mobile or movable eating and drinking establishments to a particular specified territory.

(49) Whoever—

(a) obstructs the executive authority, Health Officer or any officer or servant of Government or local authority, in the discharge of his duties under these rules or

(b) contravenes any provision of these rules, or

(c) disobeys or fails to comply with any given order or requisition made in pursuance of these rules, shall be punishable with imprisonment, which may extend to three months or with fine which may extend to one hundred rupees or with both. In the case of continuing breach, he or she shall be punishable with fine which may extend to thirty rupees, for every day during which the breach continues after conviction for the first breach.

NOTE.—(1) Under Schedules I and II of Madras Public Health Act the new sections 108 and 117 should be included and penalties for infringement put in,

(2) In view of the new additions, the numbering of all sections in the existing Madras Public Health Act from section 108 onwards has to be altered.

### **Inspection of students' hostels and hospital kitchens suggested**

50. The Committee feels that though at present students' hostels and hospital kitchens do not come under the licensing provisions of the local bodies, it is necessary to empower the Public Health staff of local bodies concerned to make periodic inspections and advise the authorities on the hygiene of the establishments.

## **CHAPTER VII**

### **Influence of Public Opinion on Catering Standards**

#### **The catering trade and the public**

51. Food is perhaps the most important single factor, in the maintenance of health and food catering therefore occupies a very important place in the health organization of the community. The tendency of the public to resort increasingly to catering establishments for some meal or other and the progressively increasing role of the catering trade, have been commented upon in the report and suggestions have been made for improving the conditions in the establishments, their proper equipment and hygienic control. It has however to be pointed out that mere physical conditions

equipment will not by themselves be adequate to secure hygienic catering free from risks of infection to consumers arising from food unless there is a livelier appreciation of the importance of the various requirements of the rules intended to prevent and control food infections on the part of the food handlers and the managements of catering establishments. Nor is this all. The Government, the local authorities and the State have each their part to play in the different aspects of control of the trade.

#### **Training and education of food-handlers—Responsibilities of catering trade**

Unless the hotel employees and members of the staff of the catering trade realize the hygienic implications of the measures prescribed for sterilizing utensils, the proper handling of service equipment and preventing their contamination, and the necessity for keeping their premises clean at all times no appreciable improvement can be effected in the catering trade. The committee therefore places in the forefront of its recommendations that a course of training in the hygiene of the catering establishments for the employees and managers of the catering establishments should be instituted in the first instance in Madras and to be followed in due course in mufassal towns. Outlines of a course of training for the food-handlers has been drawn up and published (Appendix IV).

The catering trade has a definite responsibility to co-operate in organizing courses of training for its employees and to initiate the starting of 'Information Centres' intended to act as clearing houses of information to aid managements in regard to the structure and layout of premises, equipment and all that appertains to smooth, efficient and hygienic catering.

#### **Public opinion a force and a sanction**

Unless the public learn to demand better standards of catering and of the hygiene of such establishments, it is not likely that any lasting improvement could be secured by mere legislation. The ultimate sanction after all is public opinion and public demand. To send informed public opinion and an intelligent appreciation of the risks involved in faulty practices in the trade are required. Appropriate measures designed to educate the public in these matters should be undertaken as a co-operative measure by voluntary organizations, the catering trade, local authorities and State managements utilizing therefor all available modern publicity facilities.

#### **Responsibilities of the local authorities**

The hygienic control of the catering industry is primarily the responsibility of the local authorities and their staff. The provisions of the Madras Public Health Act and the rules thereunder framed by the Committee are intended to help local authorities in efficiently discharging their responsibilities in this matter. It is

for the local authorities to ensure uniform standards of inspection by the employment of sufficient staff, adequately trained. The licensing of the catering trade, should on no account be understood merely as a means to derive a certain amount of income but as a serious responsibility for the proper enforcement of hygienic standards to prevent and control ill-health and disease emanating from catering establishments. A conscientious, regular and unfailing enforcement of the requirements of law will go a long way in improving the standards of catering in the various local areas.

The local authorities in association with the catering trade should endeavour to set up model establishments to serve on an incentive for private enterprise to adopt similar standards.

### **Obligations of the State**

55. It is the overall function of the State not only to lay down proper standards by undertaking the necessary legislative enactments but also to encourage in all possible ways the local authorities and the catering industry in their efforts to secure better and more hygienic standards of catering in the State by assisting in all training, education and publicity.

## **CHAPTER VIII**

### **Summary of Main Recommendations**

#### **Appreciations**

56. The Committee wishes to place on record its appreciation of the co-operation and assistance received from the witnesses in submitting answers to the questionnaire and tendering evidence before the Committee. The Committee is indebted to the United States Information Service, British Information Service and representatives of the Central Tea Board and the Indian Tea Market Expansion Board for their invaluable assistance. The Committee's thanks are particularly due to Mr. W. Newlands, the Catering Director of the Tea Bureau, London, who has furnished valuable information as a result of his vast experience of the catering trade in the United Kingdom. Mr. K. Venkatachari and Mr. W. H. Barrett, local representatives of the Tea Board have readily co-operated with the Committee. It is also of interest to note that the Tea Board is not only prepared to offer its expert advice to the catering trade but also to start a model centre at Madras. The press has rendered helpful publicity and comment on the work of the Committee at various stages. The Members of the Committee have on all occasions co-operated fully in carrying out the tasks allotted. The Director, King Institute, has submitted a note of special value

and the Consulting Architect to Government was good enough to assist the Committee by submitting tentative type-designs. The Committee also wishes to thank Sri S. Rajagopalan, Sanitary Engineer to Government, and Dr. D. Subba Rao, Nutrition Officer and Joint Secretary, for the trouble they have taken in preparing the draft report.

### Summary of main recommendations

57. (i) The catering establishments should be licensed under the Madras Public Health Act. Appropriate and comprehensive amendments to the existing Chapter XII—Food Control, and rules thereunder have been suggested.

(ii) Model restaurants in each town should be built by municipal councils and farmed out to catering establishments. This will have considerable educative value in stimulating private enterprise to enter this field.

(iii) Constitution of permanent standing committees has been recommended for

(a) evolving designs of model restaurants, standards of accommodation, equipment, lighting, ventilation—in particular the lay-out of kitchens, and the designing of suitable cooking ranges and sterilizing and dish-washing equipment;

(b) working out desirable standards for appraisal of the sterilization of equipment and utensils by bacteriological examination; and

(c) suggesting bacteriological standards for certain foods, like ice-creams, ice-cream salads, etc.

(iv) The licensing of catering establishment employing ten or more employees per day should be primarily the responsibility of local authorities, with a view to safeguard public health.

(v) Scale of licence fees should be based on gross sales.

(vi) For education of the food-handlers and the management in the hygienic upkeep of catering establishments, a course of training has been suggested.

(vii) A recommendation is made for inauguration of "Information Centres" by municipal councils and City Corporation in association with the catering trade.

T. LAKSHMINARAYANA (*Chairman*).

Y. S. NARAYANA RAO.

S. RAJAGOPALAN.

K. S. VISWANATHAN.

S. NARAYANA IYER.

S. E. D. MASILAMANI.

P. GOVINDA MENON.

G. R. SUBRAMANYA IYER (*Secretary*).

D. SUBBA RAO, *Joint Secretary*.

## APPENDIX I (a)

## Questionnaire for prescribing sanitation standards for eating and drinking establishments—Madras State

## EXTENT OF THE PROBLEM.

- 1 Are there not trends in recent years for large numbers of the public, especially in towns, to resort to restaurants (hotels, coffee-shops, soda fountains, industrial and mobile canteens, quick-meal counters) not only for refreshments (tiffins, snacks and drinks) but also for dinners and luncheons ?
- 2 (a) What percentage of the urban population of different socio-economic status (rich, upper and lower middle classes and the poor) resort to restaurants for meals, dinners, luncheons and refreshments, respectively ?  
(b) Out of the people who resort to restaurants, what will be the percentage of the non-resident public (i.e., travellers) ?
- 3 What is your estimate of the turnover of business of the trade in the large, medium and small-sized restaurants in cities and towns ?
- 4 Considering the increasing role of restaurants in catering food to a large section of the population, is it not necessary in your view to fix minimum sanitation standards for eating and drinking establishments to prevent food-borne infections and to safeguard the health of the population ?
- 5 Do you suggest that type-designs of restaurants should be prepared and issued incorporating the minimum standard requirements ?
- 6 (a) Do you consider that the restaurants satisfying the most important minimum sanitation requirements, should be graded at the time of licensing, the grading once given being subject to revision, unless sanitation conditions are maintained at the same level ?  
(b) Will not a system of grading of the restaurants as above and placarding of the grading prominently on the premises, help both the establishment and the public, the former in improving the sanitation conditions to attain the highest grade and the latter in selecting the restaurants

- maintained at desirable sanitation standards for their patronage ?
- 7 Are you satisfied with the frequency of inspections by the Health department ? If not, how often during the year do you think every licensed restaurant should be inspected ?
- 8 (a) If you think that it is desirable to inspect each establishment, say, at least twice a year, do you think the present Inspectorial staff of the Health department is sufficient ?
- (b) Would you suggest special squads for surprise checks in addition to the routine inspections ?
- (c) What scale of Sanitary Inspectors do you suggest as Inspectorial staff—one Sanitary Inspector for how many establishments on the average ?
- 9 Will it not lead to efficiency all round, if a form of inspection is prescribed, detailing the sanitary conditions prevailing, as compared with minimum requirements—and the form filled in and one copy featured prominently in the restaurant for the benefit of the public and the restaurant management without prejudice to further action by the Health department on the inspection report ?

#### SANITARY REQUIREMENTS.

##### (a) Floors.

- 10 Do you not think that the floors of all rooms in which food or drink is stored, prepared or served, or in which utensils are washed, should have a smooth washable surface ?
- 11 What materials would you suggest for such flooring ?

##### (b) Walls.

- 12 Similarly, do you suggest that walls in all rooms mentioned in question 10 above should have a smooth washable surface especially in 'wash up' rooms where utensils are cleaned and subjected to bactericidal treatment, such smooth washable surfaces extending to a level reached by splash or spray, say  $5\frac{1}{2}$  feet ?
- 13 What materials do you suggest for the above ? If you suggest painting the walls, what type and colour of paints do you suggest and how frequently should the re-painting be done.

##### (c) Doors and windows.

- 14 As flies prevail in the large majority of our restaurants, apart from taking vigorous action to prevent breeding of flies, the killing of flies with D.D.T., do you think it is practicable in

our country to enforce that all openings into the outer air should be effectively screened (say with 16 mesh wire or plastic cloth) and that doors shall open outwards and be self-closing at least in respect of dining halls and kitchens ?

(d) *Kitchen lay-out*

(i) Stores.

- 15 Do you not think that there should be a store room adjoining but separate from the kitchen, having separate sections for storing (a) dry foods (cereals, pulses, etc.), (b) vegetables, (c) perishables (meat, fish, eggs and milk) ?
- 16 Do you recommend refrigeration for the perishables ?
- 17 What type of shelves and cupboards do you recommend for storage of the above foods to prevent contamination by dust, flies, roaches, rats and other vermin ?

(ii) Preparation room.

- 18 Do you suggest 'preparation' rooms separate from kitchens ?
- 19 Do you think that separate sections should be earmarked for preparing flour including grinding for vegetable and for meat and fish preparations ?
- 20 In place of the stone-grinders that are commonly used for preparing flour preparations do you suggest that mechanical devices should be adopted to prevent or reduce manual handling to a minimum ? Have you any suggestions for mechanising the process ?

(e) *Cooking.*

- 21 What type of fuel do you suggest generally for cooking under Indian conditions ?  
 (1) Solid fuel (wood, coal, coke or charcoal) or  
 (2) liquid fuel (kerosene, crude or waste oil) or  
 (3) gas (or)  
 (4) electricity.
- 22 What type of flues and ventilation hoods do you suggest ?
- 23 Do you think that separate sections of cooking range should be assigned to 'boiling', 'steaming', 'grilling', frying and 'baking' ?
- 24 Do you consider that special ventilation arrangements are necessary for the kitchens ? If so, what suggestions have you ?



*'Wash up' room.*

- 25 Do you think there should be a separate 'wash up' room, with equipment for pre-rinsing, and bactericidal treatment of utensils with running water under pressure close to but separate from the kitchen ?
- 26 What should be the size of the store-room, preparation room, kitchen according to the types of food served and the numbers catered to ?

*(a) Halls.*

- 27 What type of furniture do you suggest for service and seating accommodation ?
- 28 If tables and chairs or benches (with back rests) are in use, what floor space would you suggest for each individual so that there is no overcrowding ?
- 29 If you suggest squatting on wooden planks for dinners and luncheons, what suggestions would you make for ensuring a clean floor surface for service ?
- 30 Do you not think that separate wash places for the dinners should be provided with sinks and running water, soap and towels ?

*(b) Lighting.*

- 31 Do you not think that standards for proper lighting should be prescribed, especially for rooms in which food and drink are prepared and utensils washed ? Have you any suggestions ?

*(c) Ventilation.*

- 32 To ensure that the employees working in the kitchen carry out their work under comfortable working conditions, what type of ventilation do you suggest. Cross ventilation by windows, roof and ceiling ventilators, artificial ventilation, for example, fans including exhaust fans ?
- 33 Do you suggest any 'Comfort' standards ?

*(d) Sanitary conveniences for employees.*

- 34 In view of the importance of personal hygiene of the employees in the prevention of contamination and infection of food preparations and spread of dangerous infections, do you suggest that separate adequate water-closet accommodation should be provided for the employees at a place effectively detached from the kitchen ?

- 35 If water borne excreta disposal is not possible, do you suggest a completely fly-proof type of privy well removed but easily accessible from the restaurant and if so, what design do you think should be adopted ?

(e) *Washing and Bathing facilities for employees.*

- 36 In view of the prevailing habits in the use of sanitary conveniences do you not think that it is absolutely necessary to provide, close to but separate from the sanitary conveniences, separate sinks with running water, soap and towels (not common towels) for the use of employees immediately after the use of the toilet, so that they do not contaminate food with their unclean hands ?
- 37 Do you think separate facilities for bathing should be provided for the employees? If so, on what scale ?

*Accommodation for employees.*

- 37 a) Would you suggest there should be a separate 'Cloak room' for workers wherein their clothes and wearing apparel can be kept in separate lockers, while engaged in work in restaurants ?

(f) *Water-supply.*

- 38 Would you suggest that for maintaining adequate sanitation standards running water hot and cold under pressure should be easily available to rooms in which food is prepared or utensils are washed ?
- 39 For provision of running hot water under pressure in the 'wash up' room do you consider installation of water boilers of adequate size to be worked on solid fuel, gas or electricity as feasible ?
- 40 If no protected piped water under pressure is available what alternative sources of water-supply would you suggest ?

(g) *Drinking water.*

- 41 What methods of purification, storage and draw off, would you recommend? What arrangements would you suggest for providing drinking water ?

(h) *Utensils and equipments.*

- 42 What materials do you suggest for utensils used for cooking and service ?
- 43 Do you not agree that they should be of smooth and non-corrodable material and are not tinned or lined with materials like lead, cadmium, etc., which can cause injury to health ?

- 44 Should not the use of enamelware which have lost their enamel and use of china glassware which are cracked or chipped be prohibited ?
- 45 Do you not think that the inside tinning of vessels needs constant checking to ensure that the tinned surfaces are not corroded and that they are in good repair ?
- 46 Would you suggest any scale of service equipment (table-ware, crockery, etc.)? If so, what standards will you lay down for the different classes of hotels, etc., keeping in view the number of persons to be catered for ?
- 47 What types and designs of 'display' cases, window counters, shelves, tables, etc., do you suggest for display of cooked foods ?

*(i) Cleaning and bactericidal treatment of utensils and equipment.*

- 48 In view of the prevailing practice of perfunctory cleaning of utensils, and considering the part played by unclean utensils in the spread of communicable diseases, do you not suggest that standards should be prescribed for cleaning and bactericidal treatment of the utensils and equipment ?
- 49 Do you not think that all multi-use eating and drinking vessels (repeatedly used for cooking and catering) should be thoroughly cleaned and effectively subjected to an approved bactericidal process after each usage ?
- 50 Do you suggest that careful scraping of the vessels to remove food debris and pre-rinsing followed by the use of a detergent, like soap and a final bactericidal process, should be prescribed as minimum standards ?
- 51 Do you consider that a three compartment sink or vat for carrying out the above three stages in cleaning is necessary ?
- 52 What type of bactericidal treatment do you suggest ? Boiling water, using wire-baskets for dipping the utensils ? or treatment in chlorine baths with adequate available chlorine or with any other bactericidal agent ?
- 53 Do you suggest any mechanical automatic type of dishwashing, at least for the bigger restaurant establishments ? If so, have you any suggestions to make ?
- 54 Do you recommend frequent check of the cleanliness of utensils used for service, by bacteriological examination ? Would you suggest any standards ?

*Storage and handling of utensils and equipment after cleaning and bactericidal treatment.*

- 55 What methods do you suggest for drying the utensils (tableware, crockery, etc.) with minimum manual handling prior to storage ?

*Disposal of wastes.*

- 56 What improvements do you suggest in the existing practices with regard to disposal of solid and liquid wastes ?
- 57 What type of equipment for temporary storage, for garbage and refuse, do you suggest and how often should they be removed outside the premises ?

*Storage, display and serving of food and drink.*

- 58 As the cooked foods have to be protected from dust, flies, vermin, unnecessary handling, drop-let infection and other contamination by food handlers and servers, what type of storage, display and service of cooked foods do you recommend? Do you not suggest that as far as practicable, manual contact with all food and drink in service should be avoided ?
- 59 Do you not think that the cleanliness of the employee should be ensured by insisting on his keeping his hands clean at all times, prohibiting him from chewing, expectorating, or using tobacco in any form while in rooms where food is prepared or served ?
- 60 Would you insist on the use of clean uniforms or aprons, and of hair nets or head bands for employees while handling food ?
- 61 Do you suggest that all food handlers should be educated by talks and demonstrations how meticulous they should be in their personal hygiene ; what part, their manual contact with food plays in the spread of food-borne diseases ? Would you suggest a course of training for food-handlers ?

*Refrigerators.*

- 62 Do you recommend that for preventing spoilage and spread of infection from readily perishable food preparations—cream filled and custard filled preparations, milk and milk product preparations, egg, meat and fish preparations—refrigeration facilities should be available ?

*Wholesomeness of food and drink.*

- 63 Would you suggest that the quality of food and drink be maintained by frequent sampling and analysis ?
- 64 Do you suggest grading of perishable foods like ice creams, jelly creams, milk product preparations, cream, custard filled pastries, by bacteriological examination ?
- 65 Would you suggest that the Health Officer should have plenary powers to destroy perishable foods which do not conform to the minimum standards fixed ?

*Disease control.*

- 66 Do you suggest that every employee, prior to employment in a restaurant and periodically thereafter, should be medically examined for signs of disease in a communicable form or carrier state ?
- 67 If you suggest this, how often should he be re-examined ?
- 68 Do you consider that this medical examination can be entrusted to private physicians who do not have access to laboratory aids ?
- 69 Do you think that if such medical examination of employees as a routine is to be enforced it is much better carried out by the Health department employing the necessary additional trained personnel for the work and charging fees for the service ? or
- 70 Do you think that the money and time spent on such routine examinations are not commensurate with practical results in the control of communicable diseases, and that detailed examination of suspected food-handlers alone need be carried out ?
- 71 Do you consider that it should be obligatory on the employer and the employee to report promptly if any employee is affected with any disease in a communicable form ?
- 72 When the source of infection is suspected to be a hotel employee, do you recommend that the Health Officer should have plenary powers to enforce immediate exclusion of the employee or immediate closing of the restaurant concerned, as may be found necessary and to insist on adequate medical examination of the employee and his associates with such laboratory examinations as may be indicated in each case ?
- 73 To enforce the above, do you suggest provision of bacteriological units ?

*Legal enforcement of sanitation standards.*

- 74 Do you consider that the issue of a licence at the starting of the trade and annual renewal of the licence, as the best method of enforcing the sanitation standards contemplated ?
- 75 What scales of licence fees do you suggest for different classes of restaurants ?
- 76 Do you suggest that licence fees realized should be utilized primarily for employment of inspectorial staff commensurate with the duties assigned for enforcing the sanitation standards and providing laboratory facilities for the tests wherever feasible ?
- 77 Do you think that the Health Officer should have plenary powers of enforcement to suspend, revoke or cancel a licence, or to de-grade a restaurant (if grading is adopted for restaurants) for serious infringement of sanitary conditions, or for lowering of sanitation standards during the subsistence of the annual licence ?
- 78 Do you agree that an appeal against this order should be only to a court of law ?
- 79 Do you recommend that a separate enactment regulating the drinking and eating establishments should be issued for effectively controlling these establishments, in place of the present provisions of law dispersed in the various Acts—Madras Local Boards, Madras District Municipalities, Madras City Municipal, Madras Public Health and Madras Prevention of Adulteration Acts ?
- 80 Do you suggest that the existing practice of issuing a 'conditional licence' should be discontinued and that a licence or permit to run the trade should be issued only after the minimum sanitation standards are fulfilled ?
- 81 Have you any other helpful suggestions to make not covered by the questionnaire ?

## APPENDIX I (b)

## List of Witnesses examined

- 1 Dr. R. Adishesan, retired Director of Public Health, Madras.
- 2 Sri C. Narasimham, B.A., B.L., Commissioner, Corporation of Madras.
- 3 Dr. E. Somesekhar, Chief Medical Officer, Southern Railway, Madras.
- 4 Sri T. N. S. Raghavachari.

- 5 Mrs. Rajammal Anantaraman.
- 6 Dr. S. Subramaniam, M.L.A.
- 7 Dr. P. S. Sreenivasan, M.L.A.
- 8 Sri R. Suryanarayana Rao, B.A., B.L., M.L.C.
- 9 Sri Ramanatha Ayyar, President, Madras Hotel Proprietors' Association.
- 10 Sri N. P. Goshteswara Ayyar, President, Salem City Hotel Proprietors' Association.
- 11 Sri K. Venkatachari, Central Tea Board, Madras.
- 12 Mr. W. H. Barrett, Central Tea Board, Madras.
- 13 Mr. S. Parthasarathi, Central Tea Board, Madras.
- 14 Warden, Victoria Students' Hostel, Triplicane.
- 15 Warden, University Students' Home, Madras.
- 16 Dr. D. V. Venkappa, Indian Medical Association.
- 17 Dr. C. S. Krishnaswamy, Indian Medical Association.
- 18 Dr. M. R. Bail, Indian Medical Association.
- 19 Dr. A. N. Sivaraman, Indian Medical Association.
- 20 Sri R. Padmanabha Naidu, Deputy Commercial Tax Officer, Madras.
- 21 Representative of "the Hindu."
- 22 Representative of "the Indian Express."
- 23 Representative of "the Dinamani."

## APPENDIX II

### A Bacteriological Assay of the Present Status of Dish Washing Procedures adopted in the City Hotels

(BY THE DIRECTOR, KING INSTITUTE OF PREVENTIVE MEDICINE, GUINDY.)

To ascertain the general hygienic conditions of the utensils such as cups, plates, spoons, tumblers, etc., in daily use in hotel establishments and restaurants and to study the efficiency of the washing methods generally adopted for the cleaning of the used vessels, a special survey of some of the city hotels was carried out at the instance of the Hotel Sanitation Committee appointed by the Government of Madras. For the purpose of collection of samples for bacteriological examination, surprise visits were made to a few selected hotels including both the largescale and the small-scale establishments. As the visits were not pre-announced, the samples collected for examination are representative of the normal working conditions prevalent in the city hotels. The main purpose of the survey was to determine whether the present dish-washing methods were satisfactory from the hygienic point of view and to suggest a programme for the improvement of the methods now in vogue.

Persons who have observed conditions in the hotels and restaurants of our city will readily agree that there is urgent need for radical improvement in the methods adopted by them for washing utensils. The arrangements now existing in some of the small hotels for washing and cleaning of the used cups, etc., are extremely primitive. It is likely that persons

suffering from Streptococcal sore-throat, tuberculosis or syphilis may visit places of public refreshment and thus be a potential source of danger to the community, as the cups, spoons, plates, etc., used by them obviously act as vehicles of infection, if the methods for cleaning them are inadequate and insanitary. It is an observed fact that during the peak rush hours in hotels, there is a by-passing of the washing, cleaning and rinsing operations due to the increased demand for cleaned utensils and the insufficient stock of these available for the purpose.

### Washing and cleaning of used utensils—Methods in vogue

The usual type of washing equipment met with in hotels consists of a sink, containing water in which the used utensils are given a preliminary washing. In some hotels, facilities exist for running water from taps but the quantity available is strictly rationed with the result that the preliminary washing itself is generally unsatisfactory. In many cases, the water-supply is derived from polluted shallow wells or tube wells. Due to defective pressure in the supply mains or the deficient supply of fresh water, considerable economy has necessarily to be practised in the use of water to the grave detriment of effective cleaning. The wash water is not frequently changed with the result that a huge amount of organic food residues from the plates, cups, etc., accumulates in the sink where the preliminary washing takes place.

After the preliminary washing in the sink, the utensils are rinsed in 'clean' water before being re-used. The use of detergents has not come into general vogue. In some large establishments, soap, soda or soapnut powder is used for the purpose of deflocculation and removal of the dirt and food residues adherent to the vessels after the preliminary wash. Some hotels have also made half-hearted attempts to use 'hot' water for the final rinsing before putting the utensils into recirculation but the temperature of the hot water is invariably not adequate to ensure bacterial destruction and the sterilization of the washed cups. A temperature of 40° to 60°C. is all that is aimed at. The plea was put forward that operators in charge of cleaning fight shy and are generally reluctant to use very hot water, even if available, because of the fear that they may harm their hands in the process of washing.

Machine washing equipment, which is in vogue in hotels in foreign countries, has not yet come into use in our country. Manual washing methods are adopted universally. Although machine washing yields superior results, this system may not be practicable of adoption or enforcement here in the near future. Manual washing methods, if carried out properly and with diligence, should however prove equally efficient.

Chemical sterilization by surface active germicidal detergents such as quaternary ammonium compounds, has come into prominence in recent years and may prove suitable for practical application in place of the time-honoured methods using soap, soda, etc. Vessels cleaned with soap, soda, etc., especially when hard well waters are used, show ugly deposits or films on the cleaned surfaces on drying and are no therefore quite satisfactory. Further, their ability to foam or form suds acts as a disadvantage. The new type of detergents (Q.A.C.) when used for washing, has yielded results which are extremely satisfactory from the bacteriological point of view. Besides being highly germicidal, they leave no residual films, odour or taste in the cleaned



utensil. They are non-corrosive and non-toxic in the dilutions used. The only disadvantage is that these compounds do not have such effect on aerobic spore-formers in the dilutions recommended for use, with the result that the plate counts of bacteria on the Q.A.C. treated cups, etc., consist mainly of spores. The presence of a few resistant spores has however no great sanitary significance. It is however known that warm solutions of Q.A.C. compounds have greater germicidal powers than the cold solution. This feature may also be used to practical advantage.

### **Samples and sampling methods**

Samples of 'washing up' water in actual use were taken for bacteriological examination from a few hostels. In addition samples were collected for examination from utensils like plates, spoons, cups, tumblers, glasses, 'davaras,' etc., which had been used, washed and kept ready for re-use by the swab-rinse method to determine the extent and nature of the purification effected by the cleaning methods now adopted.

In the case of cups, a restricted area to the left of the handle was rubbed over with the swab on the assumption that this area was most likely to contain the organisms. For glasses and tumblers, the rim and the inner and outer surfaces near the rim were swabbed. The eating surface was selected for swabbing in the case of plates.

Sterile stick swabs made of non-absorbent cotton, moistened in Ringer's solution were used in all cases. Ten to 20 cc. of Ringer's solution were used, depending on the type of container sampled. The inside and outside surface of the cups near the rim or the eating side of the plates was rubbed well with sterile cotton swabs and the rinsings transferred into sterile screw capped bottles. In the case of plates, one-third of the surface area on the eating side was swabbed five times and the swab was rinsed well in 10 cc. of Ringer's solution contained in screw capped vials. The cotton portion of the swab was also left inside the solution by breaking the stick. The procedure was repeated in the reverse direction with another fresh swab, so that the eating plate was swabbed ten times in each case. In the case of tumblers and 'davaras,' 20 cc. or 10 cc. quantities of sterile Ringer's solution were poured into the vessels and the inside surface of the vessel was rubbed well with the cotton swab and the entire rinsings transferred to the sterile bottle. In the case of spoons, the whole area was swabbed five times and the rinse collected for examination. The maximum interval between sampling and the bacteriological examination did not ordinarily exceed about four hours. During this period, the samples were kept chilled in a refrigerator.

### **Bacteriological tests**

The following tests were carried out:—

(1) The bacterial total colony count on nutrient agar at 37°C. after 48 hours' incubation. From the figures obtained with suitable dilutions of the rinses made in Ringer's solution, the total colony count was calculated for the entire utensil surface.

(2) The number of coliform organisms per utensil surface—MacConkey bile salt broth was used for the tests.

(3) Qualitative observations on the type of bacterial flora present in the samples examined and growing on the nutrient agar plates.

**Bacteriology of wash tub water**

Samples of water from the tubs or the basins used for the preliminary washing of the used utensils in the restaurants were collected from eight hotels in the city. The counts obtained in the individual samples are given in Table I.

TABLE I.

*Bacteriological examination of "Wash Tub" water from some hotels in the city.*

Name of hotel.	Total colony count on agar at 37°C. per cc.	Coliform organisms in ? cc.	Remarks.
1 M.C. ..	38,800	0.1 cc. and upwards.	
2 M.C. ..	20,200	0.1 cc. and upwards.	
3 C.L. ..	4,150*	0.1 cc. and upwards.	* The water was freshly drawn.
4 T.L. ..	87,700	0.01 cc. and upwards.	Generally the utensils are not given a final wash in hot water.
5 R.L.H. ..	237,000	0.0001 cc. and upwards.	Generally plates, spoons, etc., are given a final hot water treatment. Tumblers are not given a final treatment in hot water.
6 B.C. ..	6,800*	0.01 cc. and upwards.	* The water was freshly filled.
7 U.K.V. ..	51,000	0.1 cc. and upwards.	
8 D.R. ..	3,720,000	0.0001 cc. and upwards.	

The colony counts on agar at 37°C are generally very high, the lowest figure being 20,200 while the highest figure was 3,720,000 organisms per cc. In two cases, fairly low figures of 4,150 and 6,800 were obtained. In both these cases, it was observed that the wash tubs had been filled with fresh water a very short time before the sample was drawn and so they had not received their usual full load of contamination. As stated already, these tubs are not emptied and re-filled with fresh water at periodical short intervals. It has also to be noted that the water for cleaning is taken from shallow polluted wells in certain cases, which already carries a heavy load of bacterial contamination.

All the samples examined show the presence of coliform organisms in volumes ranging from 0.1 cc. to 0.0001 cc. and upwards. The main types of organisms isolated from these samples consist of streptococcus, staphylococcus, aerobic spores, coliform organisms, both intestinal and soil types and a variety of chromogenic bacteria. Yeasts and

moulds were frequently present. The cleaning of utensils in waters so heavily polluted, will naturally be unsatisfactory and there is a grave potential risk of infection with pathogenic organisms from this source. As the average content of sewage effluents approximates roughly to 100,000 organisms per cc. it is seen that the majority of the dishes are being washed in water bacteriologically equivalent to that of dilute sewage. In any system of dish washing, the first preliminary step must be removal and disposal of the scrapings and the gross food residues from plates, cups, etc., before the ear are rinsed and cleaned thoroughly in clean running water. It is observed that provision for running water is absent in many of the hotels. Provision is also not made for frequent change of the wash water stored in tubs with the result that after about 1 to 2 hours' use during the peak hours, the liquid in the tub looks more like an emulsion with huge amounts of solid matter accumulated at the bottom.

### Recommended method of sanitizing hotel utensils

The minimum facilities for efficient sanitization of utensils should include (1) a three-compartment sink of adequate size with proper draining arrangements, (2) provision for thorough scraping of all dishes and disposal of all the solid food residues, (3) a pre-rinsing arrangement with running water of good quality, (4) suitable, germicidal detergent treatment for sterilization and the removal of fat, etc., from the vessels, (5) adequate hot water facilities and (6) metallic baskets of the proper type for holding the utensils.

After the utensils have been well scraped and washed in running water or water stored in the first compartment of the sink, they should be immersed in a dilute slightly warm solution of any germicidal detergent in the second compartment for a period of about  $\frac{1}{2}$  to 1 minute after which the vessels should be dipped for one minute in hot water kept at a temperature of 80°C (third compartment of the sink). This method of treatment, if carried out properly under intelligent and capable supervision, should ensure satisfactory bacterial purification and thorough cleaning of the used utensils. The glasses and cups should be immersed in the final hot water rinsing bath in such a way as to prevent the formation of air-pockets which will prevent the hot water penetrating and reaching the entire surface of the vessels. Glasses and cups should be placed on their sides and the plates should not be stacked one over the other. The baskets suitable for this purpose should invariably have long handles extending well over the level of water in the sink.

### Experiments on controlled method of cleaning and results

The procedure outlined above was adopted in the case of all samples representing controlled conditions of cleaning. The method has proved quite efficient, as judged by the bacteriological results obtained on experimental washings carried out in the hotels at the time they were visited for sample collection. The particular type of germicidal detergent used was a quaternary ammonium compound called 'Roccal' which is a proprietary product. This was used in a dilution of 1 in 5,000. Any other germicidal detergent should prove equally satisfactory but as 'Roccal' was readily available, this was used in the experiments. Table II (a), (b) and (c) gives the results of the bacteriological examination of plates, tumblers, davaras and spoons used in the hotels

before and after cleaning. The following three sets of samples were collected at the time of each visit, the swab-rinse method being used in all cases—

(1) Swabs from used utensils before being washed.

(2) Swabs from utensils washed by the hotel authorities in the manner usually followed in the premises.

(3) Swabs from utensils washed under controlled conditions, as now recommended.

TABLE II.

*Bacteriological examination of utensils before and after controlled conditions of cleaning.*

Name of hotel.	48 hours total colony count on agar at 37°C. per utensil.			Number of coliform organisms calculated per utensil.		
	Before washing.	As washed by the hotel.	Controlled conditions of cleaning (vide text).	Before washing.	As washed by the hotel.	Controlled conditions of cleaning (vide text).
(a) PLATES.						
1 T.L. number of samples.	3	4	5	3	4	4
Average ..	2,640,000	1,771,000	457	..	..	..
Maximum ..	3,000,000	3,705,000	690	30,000	3,000	Nil
Minimum ..	2,230,000	888,000	135	300	300	Nil
2 R.L.H. number of samples.	4	4	4	4	5	5
Average ..	4,230,000	42,825	164	..	..	..
Maximum ..	6,900,000	68,100	460	300,000	300	Nil
Minimum ..	660,000	21,600	40	300	Nil	Nil
3 B.C. number of samples.	..	1	1	..	1	1
Average ..	..	150,000	120	..	30,000	Nil
Average for all samples examined.	3,245,000	823,000	276	95,000	4,100	Nil
(b) CUPS, TUMBLERS, 'DAVARAS', ETC.						
1 K.I. number of samples.	5	4	4	5	4	4
Average ..	15,184	12,143	140	..	..	..
Maximum ..	21,600	22,320	340	Nil	40	Nil
Minimum ..	5,580	532	40	..	4	..
2 T.L. number of samples.	3	3	5	3	3	7
Average ..	401,066	31,550	459	..	..	..
Maximum ..	620,000	140,000	690	more than 2,000	2,000	Nil
Minimum ..	55,200	58,200	135	4	20	..

*Bacteriological examination of utensils before and after controlled conditions of cleaning—cont.*

Name of hotel.	48 hours colony count on agar at 37° C. per utensil.			Number of coliform organisms calculated per utensil.		
	Before washing.	As washed by the hotel.	Controlled conditions of cleaning (vide text).	Before washing.	As washed by the hotel.	Controlled conditions of cleaning (vide text).
<b>3 R.L.H. number of samples.</b>	<b>5</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>7</b>	<b>7</b>
Average ..	334,880	294,700	165	..	..	..
Maximum ..	More than 1,000,000	Countless.	470	20,000	More than 20,000	Nil
Minimum ..	6,000	52,400	50	Nil	20	..
<b>4 B.C. number of samples.</b>	<b>..</b>	<b>2</b>	<b>2</b>	<b>..</b>	<b>2</b>	<b>2</b>
Average ..	..	1,110,000	40	..	2,000	Nil
Maximum ..	..	1,234,000	40	..	2,000	Nil
Minimum ..	..	986,000	40	..	2,000	Nil
<b>Average for all samples examined.</b>	<b>227,200</b>	<b>290,800</b>	<b>231</b>	<b>1,690</b>	<b>2,380</b>	<b>..</b>
<b>(c) SPOONS.</b>						
<b>1 T.L. number of samples.</b>	<b>3</b>	<b>1</b>	<b>5</b>	<b>3</b>	<b>1</b>	<b>6</b>
Average ..	40,000	42,700	34	43	10	Nil
Maximum ..	60,000	..	50	100	10	Nil
Minimum ..	10,000	..	20	10	10	Nil
<b>2 R.L.H. Number of samples.</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>..</b>
Average ..	220,000	1,666	150	1,000	Nil	Nil
Maximum ..	Countless.	2,520	200	1,000	Nil	Nil
Minimum ..	220,000	800	40	1,000	Nil	Nil
<b>Average for all samples examined.</b>	<b>85,000</b>	<b>11,900</b>	<b>59</b>	<b>426</b>	<b>3</b>	<b>..</b>

**Comments on the results**

A critical examination of the bacteriological findings indicates that—

(1) The colony count on agar at 37° C is very high in the case of unwashed plates, the average number of organisms ranging from 2 to 4 millions per plate. The counts were appreciably lower in the case of cups and tumblers, which are generally used for serving coffee or tea. These are generally served hot and this factor might account for the lower colony counts obtained from them. The used spoons generally carry a heavier load of pollution than the cups and tumblers

(2) The methods adopted in hotels at present for washing the used utensils do not reduce the bacterial flora in them to any appreciable degree. On the other hand, appreciable increase in the counts was

noticed in samples collected from certain hotels. This is probably attributable to the poor bacterial quality of the water in the wash tub. The high counts indicate faulty technique of dish washing.

(3) When the utensils are washed in the manner suggested, i.e., a preliminary thorough rinse in clean water after scraping off the solid residues, followed by immersion in a germicidal detergent solution for half a minute and a final hot water treatment for half a minute at a temperature of about 80°C, the improvement effected in the hygienic and bacterial quality of the washed utensils, as judged by the colony count on agar at 37°C, is impressive. The average counts for plates, cups and spoons range from 20 to 690; nearly 84 per cent of the samples gave a count lower than 500. The majority of the organisms on plates washed under the experimental conditions referred to above consisted of spores which had survived the Q.A.C. treatment.

(4) The results obtained are still more satisfactory when the coliform counts are taken into consideration. While the unwashed utensils and those washed under the now prevalent conditions invariably contain coliform organisms in varying amounts, the utensils washed under controlled conditions always showed the absence of coliform organisms, indicating that the cleaning had been particularly effective. The absence of coliform organisms naturally presupposes, the absence of pathogens also in the utensils washed in this manner.

(5) The standard prescribed in America is a total colony count of 100 organisms per cleaned utensil. Although this was obtained in some cases in our series, the counts were higher than the 'standard' figure in many cases. An upper limit of 500 organisms per utensil may therefore reasonably be permitted and is capable of easy achievement by the method recommended. In 32 out of 34 samples tested, the total count was less than 500 colonies per utensil.

(6) The total absence of coliform organisms in washed utensils kept ready for service should be insisted upon, as the majority of the dishes are now being washed in water containing coliforms to the extent normally present in samples of heavily polluted water. The coliform group of organisms was absent in 100 per cent of the samples collected and examined, from utensils washed in the manner recommended.

(7) The suggested treatment may not be helpful in getting rid of spore forming and heat resistant organisms entirely. These, when present, do not have the same degree of sanitary significance as the presence of the susceptible groups referred to above. The low colony count and the absence of coliform organisms in the cleansed utensils will generally ensure the desired degree of safety from pathogens.

### Summary

(1) The report indicates that the present method of dish washing and sanitization of hotel utensils calls for radical improvement.

(2) The results of the bacteriological examination of a few samples of the 'washing up' water and unwashed and washed cups and of utensils washed under controlled experimental conditions are furnished.

(3) A method for washing and cleaning of hotel utensils employing cheap equipment suited to local conditions is suggested for adoption in all city hotel establishments.

## APPENDIX III

## Results of the Bacteriological Examination of Samples of Ice-Cream collected from City Restaurants

(BY THE DIRECTOR, KING INSTITUTE OF PREVENTIVE MEDICINE, GUINDY.)

The manufacture and sale of ice-cream in the City of Madras have shown a marked increase during recent years. Many new cafes, restaurants and ice-cream parlours have sprung up in different parts of the city and most of them prepare and sell ice-cream both in the streets and in their premises. The methods of manufacture of ice-cream have not been standardized and no bacterial standards of purity have been laid down as regards ice-cream sold in the City. Work carried out in Calcutta has shown that with ordinary precautions, ice-cream could be prepared which conforms to the following standards:—

*Class A.*—No coliform organisms in volumes less than 0.1 c.c. and total colony count less than 100,000 per c.c.

*Class B.*—No coliforms in volumes less than 0.01 c.c. and colony count less than 200,000 per c.c.

Since intestinal infections are widely prevalent, it is necessary to assess the extent of bacterial pollution in samples of ice-cream ordinarily sold in the City of Madras with a view to improving the methods of manufacture under suitable hygienic conditions.

Samples of ice-cream from 8 city hotels and ice-cream parlours were drawn for bacteriological examination at the Institute. The results of the examination are given in table below:—

*Bacteriological examination of samples of ice-cream collected from a few city hotels and ice-cream parlours.*

Number and name of hotel.	Total colony count on agar at 37° C. 48 hrs. incubation.	Coliform organisms in 1 c.c.	Remarks.
1 N.E.S.F. ..	2.4 million.	0.0001 and upwards.	
2 P.P. ..	92,500	0.1 c.c. and upwards.	
3 I.C.P. ..	250,000	0.0001 c.c. and upwards.	<i>Organisms isolated—Staphylococcus Coagulase + organisms isolated.</i>
4 C.L. ..	35,000	0.001 c.c. and upwards.	
B.C. ..	38,000	0.01 c.c. and upwards.	

Number and name of hotel.	Total colony count on agar at 37° C. 48 hrs. incubation.	Coliform organisms in ? c.cs.	Remarks.
6 U.K.V. ..	1,240,000	0·00001 c.c. and upwards.	
7 D.R. ..	64,000	0·001 c.c. and upwards.	
8 C.C. ..	194,000	0·1 c.c. and upwards.	

Of the 8 samples examined, 4, i.e., nearly 50 per cent show a colony count less than 100,000 per c.c. Two samples show a colony count as high as 1·2 and 2·4 millions. The coliform counts were very high in all the samples examined, only one sample showing the coliform index falling within the limits prescribed by the Calcutta workers.

In most of the samples, coliforms are present in volumes ranging from 0·01 to 0·00001 c.c. *Staphylococcus* organisms (coagulase positive) were isolated from some samples.

The figures obtained indicate that the hygienic quality of samples of ice-cream manufactured in the City restaurants falls far short of accepted standards.

An ice-cream cup kept ready for serving fruit salad in one of the City hotel establishments was also examined and found to show heavy bacterial pollution. These cups are not given a thorough wash in hot water before they are brought into service again. The particular sample tested showed a colony count on agar at 37°C. exceeding 100,000 indicating that the cup had not been cleaned properly before use.

## APPENDIX IV

### Hygiene of Catering Establishments

#### FOOD-HANDLER'S TRAINING COURSE.

- 1 Food sources : animal and vegetable.  
Food and how it reaches the market and the catering trade.  
Food production and food inspection.
- 2 Food spoilage : Methods of food preservation and food processing.
- 3 Food contamination—Food infection.  
Common diseases of man conveyed through food—Detailed modes of contamination at the catering establishments—Diseases likely to be caused by such contamination.
- 4 Measures to prevent contamination of food at the catering establishment—in storage, preparation, cooking, display, handling and service.  
Pest control.



- 
- 5 Utensils—Their role in the spread of food infections.  
Utensil 'sterilization'—Different methods and their efficacy.
  - 6 Safe water-supply, efficient drainage and prompt garbage disposal and their importance in the hygiene of the catering establishment.
  - 7 Personal hygiene of the food-handler and the consumer and its role in the prevention of food infections.
  - 8 Common illnesses among the employees which should be immediately reported to the employer ; significance of such reporting.
  - 9 Minimum hygienic requirements of catering establishments and their significance—Obligations of the employee and the employer.  
All lectures on the above subjects will be accompanied by demonstrations covering a period of 2 hours daily, Cinema films, pictures and posters will be utilized to illustrate the lecture demonstrations.  
Visits to and inspections of diverse types of catering establishments and their working : Visits on six days.  
The course will cover 15 days—inclusive of field training outlined above.

## APPENDIX V

## ANALYSIS OF IDLY.

Sample number.	Source.	Size.	Weight in gram.	Percentage composition.									
				Moisture per 100 Grams.	Protein G per 100 grams.	Fat G per 100 grams.	Carbohydrate G per 100 grams.	Ash per 100 grams.	Calcium G per 100 grams.	Phosphorus G per 100 grams.	Iron mg. per 100 grams.	Calories per 100 grams.	
1	Hotel A ..	.. Diam 9 cm. Thick 2 cm.	62.42	64.60	8.6	0.088	22.82	3.89	0.064	0.160	5.0	129.6	
2	Hotel B ..	.. Diam 10 cm. Thick 2 cm.	67.64	68.0	7.72	0.420	19.55	4.32	0.064	0.162	5.0	115.5	
3	Hotel C ..	.. Diam 9 cm. Thick 1.5 cm.	64.57	66.3	9.5	0.120	19.28	4.80	0.096	0.169	16.7	118.1	
4	Hotel D ..	.. Diam 8 cm. Thick 1.8 cm.	53.84	68.9	9.7	0.160	19.44	4.60	0.064	0.168	11.0	120.9	
5	Hotel E ..	.. Diam 6 cm. Thick 1.5 cm.	36.35	68.0	8.6	0.226	19.85	3.32	0.072	0.186	8.0	118.7	
6	Hotel F ..	.. Diam 9 cm. Thick 2 cm.	84.45	69.8	9.95	0.488	16.90	3.86	0.072	0.145	8.0	114.5	
Average ..	..	.. Diam 8.5 cm. Thick 1.8 cm.	61.54	67.6	9.01	0.250	19.64	4.13	0.072	0.165	6.5	119.5	

NOTE.—Proportion of ingredients, as ascertained from the hotels :—

Roughly—

1 Rice	..	..	..	..	..	..	1 measure (8 ollocks).
2 Blackgram	..	..	..	..	..	..	$\frac{1}{2}$ measure (4 ollocks).
3 Salt.							
4 Water.							

ANALYSIS OF DOSAI.														
1	Hotel A ..	..	Diam 16 cm.	..	69.66	49.00	12.20	11.81	21.21	5.78	0.08	0.355	10.26	243
			Thick 0.5 cm.	..										
2	Hotel B ..	..	Diam 15 cm.	..	57.00	43.50	10.83	9.77	32.23	3.67	0.072	0.344	8.69	264
			Thick 0.5 cm.	..										
3	Hotel C ..	..	Diam 16 cm.	..	66.32	49.70	11.50	5.60	29.60	3.60	0.064	0.250	8.33	219
			Thick 0.5 cm.	..										
	Average ..	..	Diam 15.7 cm.	..	64.33	47.73	11.51	0.06	27.68	4.0	0.072	0.316	0.09	242
			Thick 0.5 cm.	..										
4	Home made 1 ..	..	Diam 16 cm.	..	56.46	60.03	10.75	0.650	24.87	3.70	0.072	0.165	9.10	153
			Thick 0.5 cm.	..										
5	Home made 2 ..	..	Do.	..	60.34	62.40	10.75	0.658	22.59	3.60	0.064	0.161	8.70	143
6	Home made 3 ..	..	Do.	..	57.97	54.80	8.20	3.48	28.87	4.65	0.064	0.159	5.0	183
	Average ..	..		..	58.26	59.08	9.90	1.596	25.44	3.98	0.067	0.162	7.6	159

1. Proportion of ingredients as ascertained from hotels on an average roughly is as follows :—

Rice .. .. . 1 measure (8 ollocks).  
 Blackgram .. .. . ½ measure (4 ollocks).  
 Salt and water.

2. Proportion for home made samples :—

Nos. 1 and 2 same as above.  
 No. 3 Rice 8 ollocks, blackgram 3 ollocks.

ANALYSIS OF PURI.														
1	Hotel A ..	..	Diam 10 cm.	..	19.21	24.20	8.40	16.00	49.66	1.74	0.064	0.212	17.65	382.0
			Thick 0.5 cm.	..										
2	Hotel B ..	..	Diam 10.5 cm.	..	23.05	16.00	7.80	15.074	59.53	1.60	0.048	0.260	11.76	411.72
			Thick 0.5 cm.	..										
3	Hotel C ..	..	Diam 10.5 cm.	..	25.51	26.73	7.32	14.25	49.90	1.80	0.048	0.260	17.65	362.85
			Thick 0.75 cm.	..										
4	Hotel D ..	..	Diam 9 cm.	..	17.56	15.50	8.68	10.71	63.79	1.32	0.064	0.279	17.50	393.52
			Thick 0.5 cm.	..										
	Mean ..	..	Diam 10 cm.	..	21.33	20.61	7.86	14.08	55.72	1.465	0.056	0.252	16.39	387.5
			Thick 0.5 cm.	..										



2	Hotel B ..	..	Diam 4 cm. each ..	56.12 (one plate).	50.5	13.78	25.2	5.42	5.10	0.096	0.200	8.0	305
	<b>Average</b> ..	..	Diam 4 cm. each ..	46.3 (one plate).	50.0	13.78	25.87	4.74	5.37	0.100	0.203	8.0	308

Ingredients—

- 1 Bengal gram dhal powder .. .. 2 ollocks.
- 2 Onions .. .. 5 palams.
- 3 Water (for mixing) .. .. 1 to 1½ cups.
- 4 Oil used for frying.

ANALYSIS OF PLANTAIN BAJJI.

1	Hotel A ..	..	Diam 4 cm. each ..	} 39.25 (one serving).	30.0	10.59	24.20	31.97	3.24	0.096	0.212	12.0	391
		..	Thick 0.5 cm. ..										
		..	As. 2 per serving ..										
2	Hotel B ..	..	Do.	55.113 (one serving).	35.0	8.76	32.90	21.44	2.90	0.080	0.192	9.70	420
	<b>Average</b> ..	..	Diam 4 cm. ..	} 47.18 (per serving).	32.50	9.68	28.05	26.20	3.09	0.088	0.202	10.85	405
		..	Thick 0.5 cm. ..										

Ingredients—

- 1 Bengal gram dhal flour .. .. 2 ollocks.
- 2 Plantain green (chips) .. .. One plantain.
- 3 Oil or ghee for frying.
- 4 Water about 1½ cups.
- 5 Chillies and salt.

ANALYSIS OF POTATO BAJJI.

1	Hotel A ..	..	Diam 4 cm. each ..	} 79.70 (two servings).	55.8	10.27	12.18	17.33	4.42	0.064	0.247	15.0	223
		..	Thick 0.5 cm. ..										
		..	As. 2 per serving ..										

Sample number.	Source.	Size.	Weight in gram.	Percentage composition.								
				Moisture per 100 grams.	Protein G per 100 grams.	Fat G per 100 grams.	Carbohydrate G per 100 grams.	Ash per 100 grams.	Calcium G per 100 grams.	Phosphorus G per 100 grams.	Iron mg. per 100 grams.	Calories per 100 grams.
2	Hotel B .. ..	Diam 4 cm. each .. Thick 0.5 cm. .. As. 2 per serving ..	42.87 (one serving).	57.80	12.46	12.52	12.30	4.92	0.096	0.223	12.5	214
	Average .. ..	Diam 4 cm. .. Thick 0.5 cm. ..	40.83 (per serving).	56.80	11.37	12.35	14.8	4.67	0.080	0.240	13.75	219

## Ingredients—

- 1 Bengalgram dhal flour .. .. 2 ollocks.
- 2 Potato (cut into chips) .. .. 5 palams.
- 3 Fried in oil.
- 4 Water for mixing about 1½ cups.
- 5 Chillies and salt.

## ANALYSIS OF PAGODA.

1	Hotel A .. ..	Diam 1.2 cm. (one serving).	37.47	6.20	12.97	47.20	30.57	3.06	0.064	0.197	16.0	603
2	Hotel B .. ..	Do.	33.11	7.10	8.98	16.30	64.56	3.06	0.104	0.188	13.0	448
3	Hotel C .. ..	Do.	41.39	8.60	11.15	22.41	55.10	2.74	0.080	0.225	13.4	473
4	Hotel D .. ..	Do.	38.28	11.50	11.08	45.48	29.56	2.38	0.064	0.197	11.10	576
	Mean .. ..	Diam 1.2 cm. (one serving).	37.56	8.35	11.05	35.35	44.95	2.81	0.078	0.202	13.35	525

ANALYSIS OF OMAPODI.

1	Hotel A ..	One serving ..	26.06	2.33	14.01	37.10	44.08	2.48	0.104	0.214	28.0	572
2	Hotel B ..	Do. ..	19.71	3.80	14.25	20.74	58.63	2.58	0.104	0.251	25.0	486
3	Hotel C ..	Do. ..	27.23	2.10	12.90	16.82	64.44	3.74	0.080	0.140	24.4	469
4	Hotel D ..	Do. ..	20.71	5.70	12.50	24.78	53.37	3.65	0.064	0.220	11.1	493
	Mean ..	One serving ..	23.93	3.48	13.42	24.86	55.13	3.11	0.088	0.206	22.1	505

Ingredients (as ascertained from the hotels)—

- 1 Raw rice flour .. .. . 1 ollock.
- 2 Bengalgram dhal flour .. .. . 4 ollocks.
- 3 Onum powder .. .. . 1 pinch.
- 4 Common salt .. .. . 4 spoons.
- 5 Water—about 2 ollocks.
- 6 Gingelly oil for frying.

ANALYSIS OF POTATO CHIPS FRIED.

1	Hotel A ..	Diam 2 cm. each (two servings).	27.29	4.70	4.45	43.38	44.76	2.71	0.048	0.116	4.0	592
2	Hotel B ..	Diam 2 cm. each (one serving).	16.71	5.20	3.90	40.82	47.92	2.16	0.032	0.118	4.0	580
3	Hotel C ..	Diam 2 cm. of each chip (two servings).	26.34	7.96	3.03	37.86	47.51	3.64	0.056	0.162	5.0	545
	Mean ..	Diam 2 cm. (one serving).	14.60 (per plate).	5.95	3.80	40.35	46.73	2.84	0.045	0.132	4.3	572

Ingredients—

- 1 Fried potato chips.
- 2 Fried in oil and
- 3 Mixed with curry powder.

ANALYSIS OF MYSORE-PAK.

Sample number.	Source.	Size.	Weight in gram.	Percentage composition.								
				Moisture per 100 grams.	Protein G per 100 grams.	Fat G per 100 grams.	Carbohydrate G per 100 grams.	Ash per gram.	Calcium G per 100 grams.	Phosphorus G per 100 grams.	Iron mg per 100 grams.	Calories per 100 grams.
1	Hotel A ..	4 cm. square 1½ cm. thick (big).	51.82	4.40	4.46	29.38	61.13	0.632	0.020	0.098	10.0	533
2	Hotel B ..	Do.	51.80	4.50	4.20	32.95	57.71	0.640	0.028	0.093	10.0	550
3	Hotel C ..	3 cm. square 1.5 cm. thick (small).	32.30	4.95	3.87	54.66	36.02	0.500	0.034	0.090	10.0	655
4	Hotel D ..	3 cm. square 1.25 cm. thick (small).	20.81	4.58	4.16	46.33	44.46	0.470	0.030	0.090	10.0	616
	Mean ..	3.5 cm. square 1.56 cm. thick	39.18	4.61	4.17	40.83	49.83	0.560	0.028	0.095	10.0	589

Ingredients--

- 1 Bengal gram flour.
- 2 Sugar.
- 3 Ghee or dalda.
- 4 Water.

ANALYSIS OF LADDE.

1	Hotel A ..	Diam 3.5 cm. (round).	37.34	14.85	7.96	29.00	47.30	0.892	0.060	0.0972	10.0	487.6*
2	Hotel B ..	Diam 5 cm. (round).	61.595	10.70	6.50	25.00	56.802	0.908	0.052	0.0864	8.0	484.5†
3	Hotel C ..	Diam 6 cm. (round).	75.68	11.80	8.60	24.38	54.14	1.080	0.072	0.109	7.0	476.7*
4	Hotel D ..	Diam 3.5 cm. (round).	39.22	12.40	6.04	27.00	53.96	0.600	0.048	0.0864	5.0	489.0*



Average .. Diam 4.5 cm. (round).

53.46	12.43	7.28	26.35	53.05	0.870	0.058	0.950	7.80	485.0†
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\* Three annas each.

† Four annas each.

‡ Three annas and three pies each.

Ingredients as ascertained from hotels—

- |                         |    |    |    |    |    |                               |
|-------------------------|----|----|----|----|----|-------------------------------|
| 1 Bengalgram dhal flour | .. | .. | .. | .. | .. | 2 ollocks (made into boondi). |
| 2 Sugar .. ..           | .. | .. | .. | .. | .. | 15 palams.                    |
| 3 Oil or ghee .. ..     | .. | .. | .. | .. | .. | 3 to 4 palams.                |
| 4 Water .. ..           | .. | .. | .. | .. | .. | 1 to 1½ cups.                 |
| 5 Dry grapes.           |    |    |    |    |    |                               |
| 6 Cashewnuts.           |    |    |    |    |    |                               |

ANALYSIS OF JANGRI.

1	Hotel A .. ..	Diam 6 cm. Thick 0.75 cm. (spirals).	..	37.32	20.10	3.58	30.00	45.72	0.600	0.032	0.0658	8.0	472*
2	Hotel B .. ..	Do.	..	38.53	19.50	2.90	24.84	52.20	0.556	0.032	0.101	8.0	460*
3	Hotel C .. ..	Diam 5 cm. Thick 0.5 cm. (spirals).	..	26.90	14.50	3.41	18.44	58.72	0.430	0.028	0.0936	8.0	421†
4	Hotel D .. ..	Do.	..	26.33	10.00	3.63	16.80	69.13	0.444	0.040	0.0930	8.0	450†
	Mean .. ..	Diam 5.5 cm. Thick 0.6 cm. (spirals).	..	30.34	16.00	3.46	22.52	56.44	0.486	0.038	0.0899	8.0	451

\* Three annas each.

† Two and a half annas each.

Ingredients—

- |                    |    |    |    |    |    |            |
|--------------------|----|----|----|----|----|------------|
| 1 Black gram flour | .. | .. | .. | .. | .. | 2 ollocks. |
| 2 Sugar .. ..      | .. | .. | .. | .. | .. | 15 palams. |
| 3 Ghee or dalda    | .. | .. | .. | .. | .. | ½ olock.   |
| 4 Water .. ..      | .. | .. | .. | .. | .. | 1 cup.     |

## HOTEL MEAL No. 1.

- 1 *Source*.—A.L., Madras.
- 2 *Cost*.—0-11-0 (annas eleven) per meal.
- 3 *Items*.—Rice—cooked (raw rice 3 oz.).  
 Sambar (sweet potato and dhal), four oz.  
 Curry (ladies fingers), one plate.  
 Koottu (pumpkin and dhal), one plate.  
 Rasam (one glass or four oz.).  
 Curds (one cup).  
 Ghee (three tea spoons).  
 Pickles (mango), one tea-spoon.  
 Cooked dhal (one plate).
- 4 Total weight of meals as served 1,005 grams.
- 5 Do. dry weight 218 grams.
- 6 Total moisture 78.3 per cent.

## HOTEL MEAL No. 2.

- 1 *Source*.—M.C., Madras.
- 2 *Cost*.—0-8-0 (annas eight) per meal.
- 3 *Items*.—Cooked rice (raw rice three oz.).  
 Chappatis—Two (wheat flour)—Size: diameter 10 cm.; thick 0.5 cm.  
 Sambar (ridgegourd), one cup or four oz. and dhal.  
 Koottu (brinjals and dhal), one plate.  
 Curry (plantain green), one plate.  
 Rasam (one cup), 3.4 oz.  
 Cooked dhal (one plate).  
 Butter milk (one cup), four oz. (roughly).  
 Ghee (two tea spoons).  
 Pickles (mango), one tea-spoon.
- 4 Total weight of meals as served 1,010 grams.
- 5 Dry weight of meals 203 grams.
- 6 Moisture 88.8 per cent.

*Nutrients.*

1	Total proteins	..	..	..	..	..	20.8	gms.
2	fat	..	..	..	..	..	12.95	"
3	carbohydrates	..	..	..	..	..	166.3	"
4	ash or minerals	..	..	..	..	..	13.84	"
5	fibre	..	..	..	..	..	4.14	"
6	calcium	..	..	..	..	..	0.3488	"
7	phosphorus	..	..	..	..	..	0.3314	"
8	iron	..	..	..	..	..	21.8	mgms.
9	calories	..	..	..	..	..	883.	

1	Total proteins	..	..	..	..	..	22.19	gms.
2	fat	..	..	..	..	..	9.78	"
3	carbohydrates	..	..	..	..	..	147.82	"
4	ash (minerals)	..	..	..	..	..	18.25	"
5	fibre	..	..	..	..	..	4.95	"
6	calcium	..	..	..	..	..	0.3857	"
7	phosphorus	..	..	..	..	..	0.3207	"
8	iron	..	..	..	..	..	30.45	mgms.
9	calories	..	..	..	..	..	786.	

## HOTEL MEAL No. 3.

- 1 *Source*.—W.H., Madras.  
 2 *Cost*.—Rs. 1-8-0 per meal (if served at cafe and Rs. 2 if sent by carrier).  
 3 *Items*.—Cooked rice (raw rice, oz.).  
 Sambar (ladies fingers and dhal), 4 oz.  
 Curry—potato and onions, one plate.  
 Curry—cabbage (with coconut and dhal) one plate.  
 Rasam (one cup or roughly 4 oz.).  
 Koottu (brinjal and dhal), one plate.  
 Pappadams fried in oil, two.  
 Chappathis (wheat flour), two.  
 Cooked dhal (one plate).  
 Curd pachadi (one plate.)  
 Curds (one cup).  
 Pickles (lime), one tea-spoon.  
 Ghee (4 tea-spoons).  
 Plantain ripe, one.
- 4 Total weight of meal as served, 1,569 grams.  
 Total, dry weight of meal, 373 grams.  
 Moisture 76.2 per cent.

## HOTEL MEAL No. 4

- 1 *Source*. A.H., Madras.  
 2 *Cost*.—Rs. 1-8-0 (if sent by carrier).  
 Re. 1 (if served at cafe).  
 3 *Items*.—Cooked rice (raw rice, 4 oz.)  
 Sambar (drumsticks and dhal), 4 oz.  
 Rasam (one cup), 4 oz.  
 Chappathis (two) (wheat flour) (size 8 cm. diameter and 0.5 cm. thick).  
 Cooked dhal (one plate).  
 Koottu—greens (one plate).  
 Curd pachadi (one plate)  
 Curry (ladies fingers) (one plate).  
 Curds (one cup roughly).  
 Pickles (mango) (one tea-spoon).  
 Ghee (three tea-spoons).
- 4 Total weight of meal as served, 1,418 grams.  
 Total dry weight of meal 324 grams.  
 Moisture, 77.8 per cent.

*Nutrients.*

1	Total proteins	..	..	..	..	..	42.75	grams.
2	" fat	..	..	..	..	..	52.97	"
3	" carbohydrates	..	..	..	..	..	231.60	"
4	" ash (minerals)	..	..	..	..	..	23.50	"
5	" fibres	..	..	..	..	..	18.46	"
6	" calcium	..	..	..	..	..	0.8654	"
7	" phosphorus	..	..	..	..	..	0.8169	"
8	" iron	..	..	..	..	..	46.63	milligrams.
9	" calories	..	..	..	..	..	1,617.	

*Proximate principles derived.*

1	Total proteins	..	..	..	..	..	34.44	grams.
2	" fat	..	..	..	..	..	32.07	"
3	" carbohydrates	..	..	..	..	..	226.3	"
4	" ash (minerals)	..	..	..	..	..	17.82	"
5	" fibres	..	..	..	..	..	13.35	"
6	" calcium	..	..	..	..	..	0.5638	"
7	" phosphorus	..	..	..	..	..	0.7646	"
8	" iron	..	..	..	..	..	32.4	milligrams.
	" calories	..	..	..	..	..	1358	"

ANALYSIS OF HOTEL MEALS.

Number.	Source.	Cost of one meal.	Total dry weight of meal in grams.	Percentage composition (dry weight).										Calories per 100 grams.	Total calories.
				Pro- tein.	Fat.	Carbohydr- ate.	Ash.	Calcium.	Phospho- rus.	Iron mg./ 100 grams.	Fibres.				
		RS, A. P.													
1	A.L., Madras ..	0 11 0	218	9.54	5.94	76.27	6.35	0.160	0.152	10.0	1.90	405	883		
2	M.C., Madras ..	0 8 0	203	10.93	4.82	72.82	8.99	0.190	0.158	15.0	2.44	387	786		
3	W.H., Madras ..	1 8 0	373	11.46	14.20	62.09	6.30	0.232	0.219	12.50	4.95	433	1,617		
4	A.H., Madras..	1 0 0	324	10.63	9.93	69.82	5.50	0.174	0.236	10.0	4.12	419	1,358		

N.B.—Details of items of each meal given separately.

## APPENDIX VI

## Design for a Canteen

(C.A. Nos. 260 and 262/51.)

*General Specifications.*

*Foundations.*—The foundation shall be designed to suit the nature of the soil at site.

*Basement.*—The basement throughout 1 foot 6 inches high and 1 foot  $1\frac{1}{2}$  inches wide shall be of stock brick in cement mortar 1 : 5 similar to M.D.S.S. No. 31-C.

*Filling in.*—The basement shall be filled in with earth or sand and the filling shall be done in layers of 6 inches thickness well watered and rammed complying with M.D.S.S. No. 25.

*Damp-proof course.*—A damp-proof course of cement mortar 1 : 3,  $\frac{1}{2}$ " thick shall be laid at a level just below the under face of the flooring concrete as per M.D.S.S. No. 38, Note (b).

*Superstructure.*—The walls in superstructure 9 inches thick shall be of stock brick in cement mortar 1 : 5 similar to M.D.S.S. No. 31-C.

*Lintels.*—Lintels over doors, windows and openings shall be of reinforced concrete with 0·8 per cent main tensile reinforcement as per M.D.S.S. No. 120.

*R.C. tee beams.*—The beam supporting the roof slab shall be of reinforced concrete tee beams with necessary main tensile and shear reinforcements and the sides finished as per clause 15 of M.D.S.S. No. 30 and white washed two coats.

*Cutstone work.*—Cill stones for door frames and templates under trusses shall be of dressed cutstone in cement mortar 1 : 3 as per M.D.S.S. No. 36-C.

*R.C. templates.*—Templates under tee beams shall be of reinforced concrete moulded monolithically with the rib of the beam as per Chief Engineer's Circular Memorandum No. 1617-Wks./46-C.P., dated 12th March 1946.

*Doors, windows.*—All doors and windows shall be of well-seasoned teakwood free from all defects and in accordance with the sizes and description noted on the drawing constructed and fixed in position as per M.D.S.S. No. 82.

*Roofing.*—The roof throughout except over cafeteria and dining shall be of reinforced concrete roof slab with 0·8 per cent main tensile reinforcement top covered with two courses of flat tiles as per M.D.S.S. No. 46-J and the ceiling finished as per clause 15 of M.D.S.S. No. 30 and white-washed two coats. The roof over cafeteria and dining shall be of asbestos cement corrugated sheets with teakwood or steel trusses and flat asbestos ceiling. The purlins shall be either of teakwood or steel.

*Flooring.*—The floor throughout shall consist of a bed of lean cement concrete 4 inches thick top finished with a layer of  $\frac{3}{4}$  inch thick cement concrete 1 : 3 : 6 using hard blue granite stone jelly of size  $\frac{3}{8}$  inch and below except for cafeteria and dining which shall be coloured red (using

red colour crete cement) and surface rubbed smooth. The flooring for washing shall be thread lined.

*Finishing.*—The interior and exterior faces of walls throughout shall be plastered with cement mortar 1 : 5,  $\frac{1}{2}$  inch thick similar to M.D.S.S. No. 61 and white or colour washed two coats as per M.D.S.S. No. 69 or 70 except the interior faces of walls in bath and W.C. up to a height of 5' 0" from floor level which shall be plastered with cement mortar 1 : 3,  $\frac{1}{2}$  inch thick as per M.D.S.S. No. 61.

The interior faces of walls in cafeteria and dining and kitchen up to 5' 0" from floor level shall be distempered with suitable borders at top. The interior faces of walls in wash up up to 5' 0" from floor level shall be paved with white glazed or with cement mosaic dados with suitable borders at top.

All doors, windows shall be painted with three coats and roof timber scantlings two coats of any approved paint as per M.D.S.S. No. 72.

*Miscellaneous.*—Provision shall be made for the following items also :—

- 1 Brick partition with R.C. stiffeners.
- 2 Steel truss or teakwood king rod truss.
- 3 Fire place and chimney.

*Statement of approximate cost.*

Accommodation 150 persons : C.A. No. 260/51.

	RS.
Cube—92,226 cubic feet.	
Cost at As. 10 per cubic feet .. .. .	57,641
Sanitary and electric fittings at 15 per cent .. .. .	8,646
Unforeseen works and fluctuation in prices of materials .. .. .	5,713
	<hr/>
Total ..	72,000
	<hr/>

Accommodation 100 persons : C.A. No. 262/51.

Cube—61,482 cubic feet.	
Cost at As. 10 per cubic feet .. .. .	38,426
Sanitary and electric fittings at 15 per cent .. .. .	5,764
Unforeseen works and fluctuation in prices of materials .. .. .	3,810
	<hr/>
Total ..	48,000
	<hr/>

M. G. DESAI, B.A., DIP. ARCH. (Lond.), F.R.I.B.A., F.I.I.A.,

*Consulting Architect to Government.*

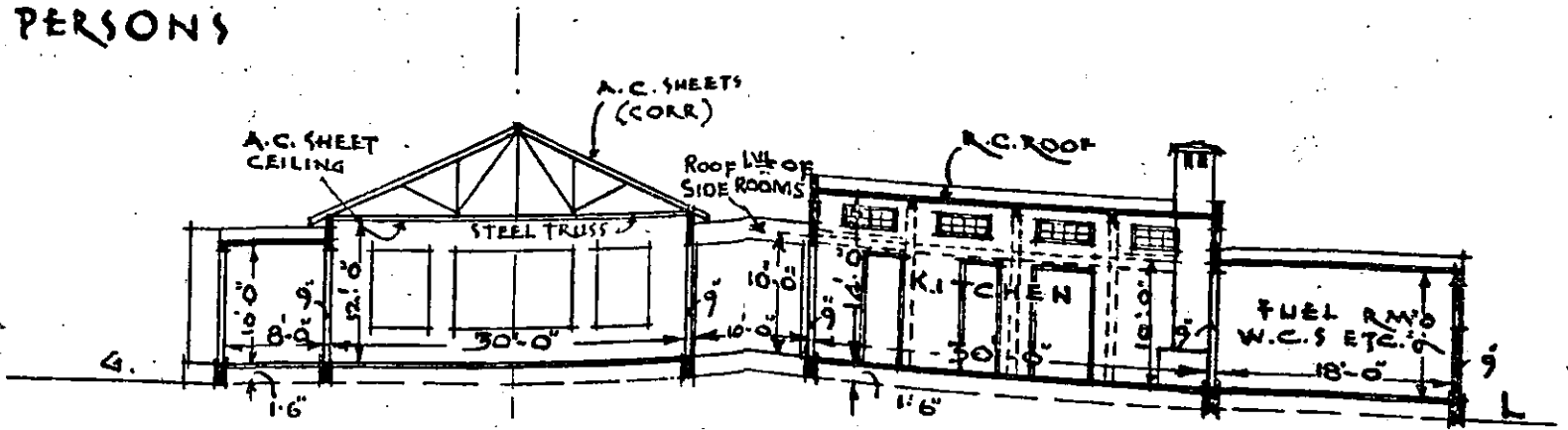
20th August 1951.

# DESIGN FOR A CANTINE

C.A.N. No. 260  
1951

SCALE 1 INCH = 16 FEET.

ACCOMMODATION:  
150 PERSONS



## SECTION

### FLOOR AREAS FOR FOR 150 PERSONS

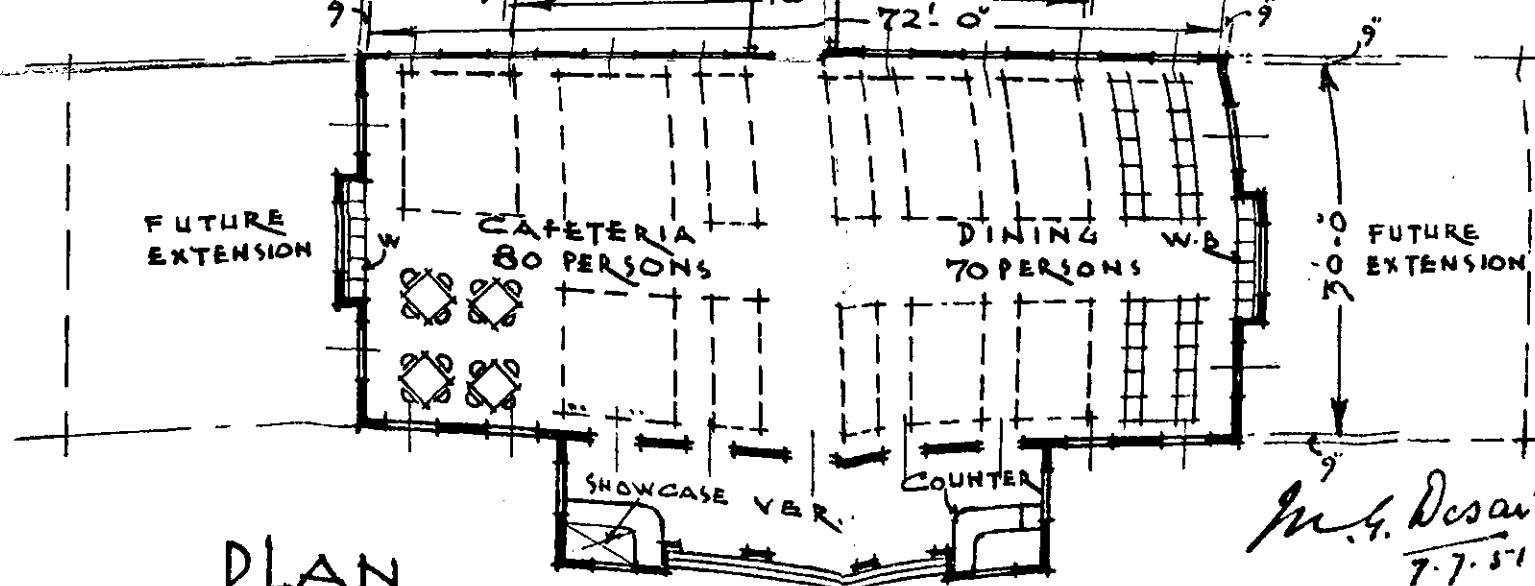
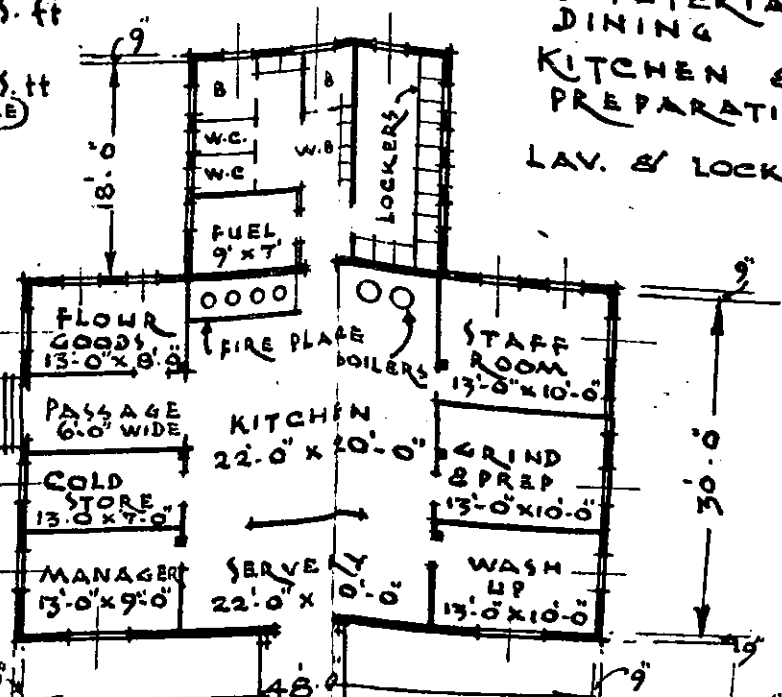
- (A) CAFETERIA & DINING 2160 S. ft
- KITCHEN & PREPARATION 1440 S. ft (PREFERABLE)
- (B) MINIMUM STANDARD 1035
- LAV & LOCKERS FOR (A) OR (B) 400 SFT

### FLOOR AREAS FOR FOR 250 PERSONS

- CAFETERIA & DINING 3600 S. ft.
- KITCHEN & PREPARATION 1440 "
- LAV. & LOCKERS 400 "
- 5440

TOTAL AREA OF (A) AREA 4000 "

TOTAL AREA OF (B) DO. DO. 3595



## PLAN

*M. G. Desai*  
7.7.51

B.A. DIP. ARCH (10N) FRI-BAFILIA  
CONSULTING ARCHITECT  
TO THE GOVT. OF MADRAS

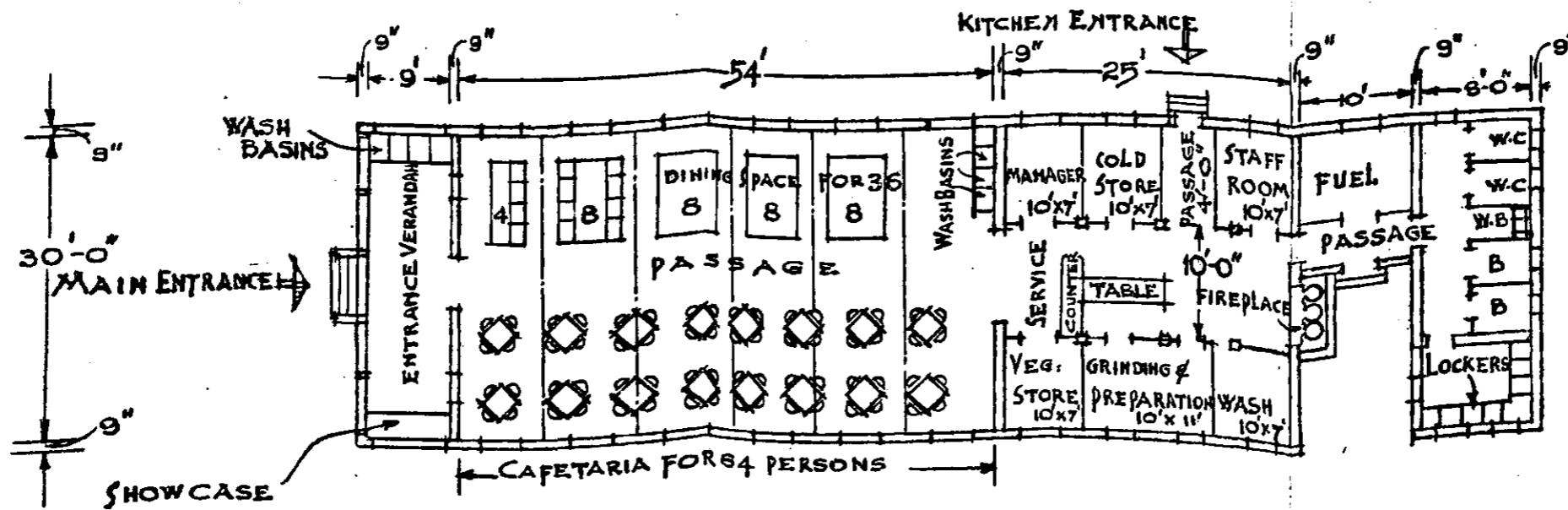
ENTRANCE  
(TO CAFE & DINING HALL)

DRAWN BY: [Signature]  
CHECKED BY: [Signature]

# DESIGN FOR A CANTEEN (ACCOMMODATION: 100 PERSONS) C.A. NO. $\frac{262}{1951}$

SCALE: 1/16 INCH = 1 FOOT

FOR DETAILS OF SECTIONS SEE C.A. NO. 260/1951.



FOR 100 PERSONS  
 FLOOR AREAS  
 DINING & CAFETERIA  
 54' x 30' = 1620 SFT  
 KITCHEN: 750 " "  
 SANITARY BLOCK 240 " "  
 WITH LOCKERS.

2610 " "

*M. G. Deven*

B.A. DIP. ARCH (LON) FR. BA. P.I.I.A.  
 CONSULTING ARCHITECT  
 TO THE GOVT OF MADRAS

DRAWN BY  
 INKED BY  
 CHECKED BY

PLAN.