[Report of the Medical Officer of Health for Port of London].

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CORPORATION OF LONDON

PORT HEALTH AUTHORITY

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH

To 31st DECEMBER, 1965

To be presented, 15th December, 1966

CONSTITUTION AND JURISDICTION

The governing body of the City of London, the Corporation of London, was originally constituted the Sanitary Authority of the Port of London by Section 20 of the Public Health Act, 1872. The cost of administration was met from the Corporation's private funds for close on fifty years, when it became rate (and grant) aided. By the Public Health (London) Act, 1936, the term "Port Sanitary" was changed to "Port Health", and the Port Health district is further defined by that Act as the "Port of London as established for the purposes of the law relating to the Customs of the United Kingdom" and by the Public Health Act, 1936 as "the Port as established for the purposes of the enactments relating to the Customs". The Public Health (London) Act 1936 was repealed by the London Government Act 1963 but Section 89 (1) of that Act defined the Port of London as "the Port of that name established for the purposes of the enactments relating to customs or excise.

In accordance with the provisions of the London Port Health Authority Order 1965 made under Section 41 (1) of the London Government Act 1963 the Corporation of London shall have jurisdiction as Port Health Authority –

(a) as respects functions, rights and liabilities of a local authority under the enactments mentioned in Part I of Schedule I of the Order over all waters within the Port and over such part of the district of any riparian authority as comprises the whole of any wharf and of the area within the gates of any dock and the buildings thereon respectively, forming part of or abutting upon the Port.

(b) as respects any other functions, rights and liabilities assigned to them, within the Port (The Port of London established for the purposes of the enactments relating to customs or excise.)

The limits of the Port of London for the purposes of the enactments relating to customs or excise were originally defined by a Treasury Minute dated 1st August, 1883. They commence at high water mark in the River Thames at Teddington Lock, in the County of Surrey, and extend down both sides of the said River Thames to an imaginary straight line drawn from the Pilot mark at the entrance of Havengore Creek in the County of Essex, to the Land's End at Warden Point, in the Isle of Sheppey, in the County of Kent, such point being the north-western limit of the Port of Faversham, and extend up and include both sides of the River Medway to an imaginary straight line drawn from the south-east point of land westward of Coalmouth Creek, thence across the said River Medway to the western-most point of the piece of land which forms the eastern side of Stangate Creek, or, in other words, the north-west point of Fleet Marsh and thence in a southerly direction to Iwade Church in the said County of Kent, and thence in a north-easterly direction to Elmley Chapel in the said Isle of Sheppey, a supposed direct line from Elmley Chapel to Iwade Church, being the western limit of the Port of Faversham, and the said Port of London includes the Islands of Havengore Creek aforesaid, called Potton and Rushley Islands, and so much of the said Creek and Watercourses as extends from it to the town of Rochford, and also includes all other Islands, Rivers, Streams, Creeks, Waters, Watercourses, Channels, Harbours, Docks and places within the before-mentioned limits contained.

Following upon the extension of the area of jurisdiction of the Port of London Authority by the Port of London Authority (Extension of Seaward Limit) Act 1964 the area of jurisdiction of the Corporation of London as Port Health Authority was similarly amended by Section 31 of the City of London (Various Powers) Act 1965 which added at the end of the definition of "Port of London" in Section 89 (1) of the London Government Act 1963 the following words:

"together with all such waters between the seaward limit of the Port as so established and imaginary straight lines drawn from latitude 51° 37' 00" north, longitude 00° 57' 19" east (Foulness Point in the County of Essex) to latitude 51° 46' 05" north, longitude 01° 20' 32" east (Gunfleet Old Lighthouse) and thence to latitude 51° 26' 36" north, longitude 01° 25' 30" east and thence to latitude 51° 24' 55" north, longitude 00° 54' 21' east (Warden Point in the County of Kent) as are for the time being within the territorial waters of Her Majesty's dominions."

The Port of London Authority with which the Port Health Authority works in close co-operation was established as the administrative body of the Port of London including the docks and tideway of the River Thames, by Act of Parliament in 1909.

To:

THE RIGHT HONOURABLE THE LORD MAYOR, ALDERMEN AND COMMONERS
OF THE CORPORATION OF LONDON.

My Lord Mayor and Gentlemen,

I have the honour to submit as Medical Officer of Health for the Port of London my Annual Report for the year ending 31st December, 1965.

A letter from the Secretary, Ministry of Health, dated November 1963 indicated that the Medical Officer of Health should prepare his Annual Report in accordance with Form Port 20. Paragraph 5 of this Form requires that, so far as Sections I, V, VI, VIII, XIV, XV and XVI are concerned, information which has been given in an earlier year and has not since changed need not be repeated each year but only changes occurring during the year. A recapitulation of all information however is required quinquennially from the year 1955 and this Report has therefore been prepared accordingly.

The area within which the Corporation of London may exercise jurisdiction as the port health authority for the port of London, as defined in section 89 (1) of the London Government Act 1963, was, under the City of London (Various Powers) Act 1965, extended approximately 22 miles from the previous seaward limit to coincide with the limits of the Port of London Authority as set out in the Port of London (Consolidation) Act 1920 and amended by the Port of London (Extension of Seaward Limit) Act 1964.

Finally, I wish to record appreciation of the collaboration and assistance rendered by Her Majesty's Customs, the Pilots, the Immigration Officers, the Port of London Authority, the Shipping Federation, the staffs of Shipping Companies and Merchants, the staffs of the Central Public Health Laboratory, the "Dreadnought" Seamen's Hospital and St. Andrew's Hospital, the Public Analyst, the Emergency Bed Service, the Regional Hospital Boards and Hospital Management Committees concerned, and all those who have so generously and willingly helped in every aspect of port health work throughout the year, particularly the Chairman, Members and staff of the Port and City of London Health Committee.

I have the honour to be, Gentlemen,
Your Obedient Servant,
W.G. SWANN, M.D., B.Sc.,
Medical Officer of Health,
Port and City of London.

SECTION I – STAFF

(As at 31st December, 1965)

TABLE A

Name of Officer	*Nature of Appointment*	*Date of Appointment*	*Any other Appointment held*
	MEDICAL STAFF		
W.G. SWANN, M.D., B.Ch., B.A.O., B.Sc., D.P.H., D.Obst.R.C.O.G., D.P.A.	Medical Officer of Health	January, 1964.	Medical Officer of Health, City of London. Medical Inspector of Aliens and Commonwealth Immigrants.
D.T. JONES, B.Sc., M.B.,B.Ch.,D.C.H., D.P.H., D.C.T.	Deputy Medical Officer of Health	June, 1963	(Deputy) ditto
W.T. ROUGIER CHAPMAN, V.R.D., M.R.C.S., L.R.C.P.	Senior Assistant Port Medical Officer	October, 1962	Medical Inspector of Aliens and Commonwealth Immigrants.
G.W. ASTON, L.M.S.S.A.,	Assistant Port Medical Officer	October, 1962	ditto
P.J. RODEN, L.M.S.S.A.	Assistant Port Medical Officer (Part-time)	February, 1958	ditto
R.F. ARMSTRONG L.R.C.P., L.R.C.S.Ed., L.R.F.P.S.Glas.	ditto	June, 1963	ditto
R.M. BEST, M.D., B.S. (Lond).	ditto	April, 1964	ditto
W.D.L. SMITH, M.B., Ch.B., D.T.M. & H., D.P.H.	ditto	November, 1962	ditto
A.J. FAIRRIE, V.R.D., M.R.C.S., L.R.C.P.	Part-time Assistant Medical Officer, Thameshaven and Shellhaven Area.	July, 1960	ditto
H.M. WILLOUGHBY, V.R.D. & Bar. M.R.C.S., L.R.C.P., D.P.H., D.T.M. & H	Infectious Disease Consultant	October, 1962	ditto
J.A. JONES, M.B., Ch.B., D.P.H.	ditto	October, 1962	ditto
W.T.G. BOUL, M.B.E., M.D., Ch.B.,D.P.H.	Infectious Diseases Consultant	March, 1957	ditto

Occasional Medical Inspectors of Aliens and Commonwealth Immigrants.

DR. D.J. AVERY	DR. J.F. LOWN	DR. J.C. WISHART	DR. R.D. SUMMERS
DR. J. OAKLEY	DR. R.N. HERSON	DR. B. DALTON	DR. D. JENKINS
DR. W. STOTT	DR. W.E. HUTCHINSON	DR. G.B. SMART	DR. D.W. KEYS
DR. M.J. CATTON			DR. W.N. WHITESIDE
			DR. H.G. MAURICE WILLIAMS, O.B.E.
			DR. G.J. LEYDON & PARTNERS

Name of Officer	*Nature of Appointment*	*Date of Appointment*	*Any other Appointment held*
	ADMINISTRATIVE STAFF (Port and City of London)		
H.F. BLUNT	Chief Clerk	May 1924	–
R.C. RATLIFF	Deputy Chief Clerk	March, 1930	–
E.V. SMITH	First Asst. Clerk	October, 1938	–
F.B. OSBORN	Senior Asst.	May, 1953	–
C.W.R. BETTS	ditto	April, 1926	–
R.H. LOTT	ditto	May, 1947	–
R.H. COLLINS	ditto	January, 1963	–
Mrs. D. SHEPHERD	First Class Asst.	April, 1965	–
D.J. FLOOD,	ditto	March, 1963	–
F.E. BALL	ditto	April, 1961	–
S.C. DARLINSON	ditto	April, 1964	–
Miss M.L. GURNEY	ditto	May, 1939	–
A.J.G. MOORE	ditto	April, 1964	–
K.B. BROWN	General Grade Asst.	April, 1964	–
Miss I.H. HAMBLIN	ditto	October 1957	–
R. HEMING	ditto	August, 1965	–
T.K. MORRIS	ditto	October, 1965	–
R.G. FARRELL	ditto	July 1965	–
A.J. SMITH	ditto	October, 1965	–
Miss J.E. MILLER	Shorthand Typist	April, 1963	–
Miss B.K. SARBUTT	ditto	January, 1965	–
Miss S. WILLIAMS	ditto	March, 1965	–
A.W. FISHER	Clerical Asst. (Royal Docks Office)	March, 1964	–
C.E.W. EASTMAN	ditto	July, 1965	–
T.A. WOODS	Messenger	November, 1955	–
J. MAIN	ditto	October, 1965	–
D.C. BARNETT	Messenger/Driver	November, 1965	–
	PORT HEALTH INSPECTORS		
T.L. MACKIE, M.B.E., F.R.S.H., M.I.N.A.	Chief Port Health Inspector and Supervisory Engineer of Launch Service.	November 1934	–
A.H. MARSHALL	Principal Port Health Insp.	March, 1953	–
D.E. MADELEY	Supervisory Port Health Insp.	September, 1932	–
G. DRING	ditto	May, 1936	–
A. GOOD	ditto	September, 1951	–
T.C.H. ROGERSON	ditto	October, 1951	–
L.N. TOPE	Senior Port Health Inspector	August, 1946	–
P.A. TRAYNIER	ditto	October, 1950	–
W.M. WALKER	ditto	October, 1954	–
W.C.B. GILHESPY	ditto	January, 1960	–
A.W. BUCHAN	Port Health Inspector	July, 1955	–
F. SPENCER	ditto	March, 1957	–
R.W. GWYER	ditto	March, 1960	–
A. GAME	ditto	August, 1961	–
J.A. STOKER	ditto	June, 1963	–
P.G. PRITCHARD	ditto	June, 1965	–
H.T. YELLAND	Meat Inspector	April, 1964	–
R.H. HEAD	ditto	April, 1964	–
	STUDENT HEALTH INSPECTORS		
J.I. ECKERSALL	Student Health Inspector	November, 1962	–
R. WALKER	ditto	September, 1963	–
P. ROTHERAM	ditto	September, 1963	–
J.C. STRACHAN	ditto	September, 1964	–
W.R. LEECH	ditto	July, 1965	–
J.D. EDWARDS	ditto	September, 1965	–
	MEAT SORTERS		
J.W. GOODS	Meat Sorter	October, 1957	–
A.E. DEACON	ditto	August, 1960	–
	RODENT INSPECTORS		
W.G. STIMSON	Senior Rodent Inspector	February, 1946	–
E.C. WATKINS	ditto	June, 1929	–
C. STOCKTON	ditto	June, 1940	–
D.J. DAVIS	ditto	August, 1941	–
S.A. CROFT	Rodent Inspector	June, 1929	–
F.D. CARTMAN	ditto	September, 1943	–
G. LAMONT	ditto	March, 1945	–
H.A BAXTER	Rodent Inspector	June, 1945	–
B.R. DENNIS	Rodent Operative	July, 1963	–
	RODENT CONTROL SCHEME		
G.CLARK	Rodent Inspector	January, 1949	–
A.L. SOUTHWOOD	ditto	January, 1949	–
A.T. EVANS	ditto	January, 1953	–
R. PAGE	Rodent Operative	July, 1963	–
J.R.W. KENNEDY	ditto	December, 1963	–
F.D. MASON	ditto	March, 1965	–
B.P. HUELIN	ditto	October, 1965	–

Name of Officer	*Nature of Appointment*	*Date of Appointment*	*Any other Appointment held*
	LAUNCHES		
C.R. SIMONS	Navigator (Senior)	August, 1938	–
W.G.A. KING	Navigator (Deputy Senior)	September, 1939	–
H.J. MASON	Navigator	August, 1946	–
M.J. EAST	ditto	September, 1954	–
R.H. SIMMONS	ditto	November, 1960	–
G. CUNNINGHAM	ditto	September, 1957	–
K. GITTENS	Engineer (Senior)	January, 1955	–
R.N. WALKER	Engineer (Deputy Senior)	April, 1964	–
W. SIMMONS	Engineer	May, 1955	–
B. JACOBS	ditto	April, 1956	–
A.R. BURGE	Shipkeeper	August, 1945	–
A.R.L. POTTER	Deckhand	July, 1945	–
E. ALEWOOD	ditto	January, 1947	–
J.L. PAY	ditto	April, 1956	–
A. RUSSELL	ditto	August, 1961	–
P. RAYNER	ditto	November, 1960	–
S.K. HOGWOOD	Deckboy	July, 1961	–
K. BURNIDGE	ditto	August, 1963	–
D. SIMMONS	ditto	December, 1963	–
A. HAIGH	ditto	June, 1964	–
D.L. KIELL	ditto	February, 1965	–
M. GALVIN	ditto	August, 1965	–
J. GODBOLT	ditto	August, 1965	–
M. WEBSTER	ditto	November, 1965	–
D. GARLAND	ditto	November, 1965	–

LAUNCHES –	*Date acquired*
"FREDERICK WHITTINGHAM"	1934
"ALFRED ROACH"	1948
"HUMPHREY MORRIS"	1962
"VICTOR ALLCARD"	1965
HULK –	
"HYGEIA"	1935

SECTION II

AMOUNT OF SHIPPING ENTERING THE DISTRICT DURING THE YEAR

TABLE B

Ships from	Number	Net Tonnage	Number Inspected		Number of ships reported as having, or having had during the voyage, infectious disease on board.
			by the Port Medical Officer	By the Port Health Inspector	
Foreign Ports	36,836	71,955,304	1,440	12,876	128
Coastwise	18,777	19,366,677	5	1,799	5
Total	55,613	91,321.981	1,445	14,675	133

SECTION III

CHARACTER OF SHIPPING AND TRADE DURING THE YEAR

TABLE C

Passenger Traffic	Number of Passengers – Inwards	127,296
	Number of Passengers – Outwards	133,704
Cargo Traffic	Principal Imports	All types of produce and merchandise
	Principal Exports	
Principal Ports from which ships arrive. The Port of London trades with all parts of the world.		

SECTION IV.

INLAND BARGE TRAFFIC

Number and Tonnage using the district.

These barges are of various designs and types and are registered annually by the Port of London Authority.

There are approximately 7,000 in service and the aggregate tonnage amounts to some 500,000 tons.

These craft are employed in the transportation of a wide variety of cargoes over the port area and extend their activities to the hinterland of the port by way of creeks and canals.

SECTION V

WATER SUPPLY

1. Source of supply for:

(a) The district–

All the docks in the London area obtain their water supplies from the Metropolitan Water Board. Tilbury Dock is supplied by the South Essex Water Company.

The majority of the wharves are supplied by Public Water Authorities within whose area of jurisdiction they are situated though several wharves have their own deep wells. A few wharves have no water supplies available for shipping, in which case water required can be obtained from water barges.

(b) Shipping–

Ships not able to obtain water from the shore supplies indicated above, or ships lying at buoys in the river, can obtain supplies from water barges. Shipping at the Isle of Grain and Tower Wharf obtain their supplies from The Medway Water Board and at Sheerness from the Sheerness Harbour Estate.

2. **Reports of tests for contamination.**

The bacteriological examination of fresh water samples is carried out by St. Andrew's Hospital, Bow for the dock area and River districts on the North bank and by the Devonport Pathological Laboratory, Greenwich, for the dock areas and River districts on the South bank, while the Public Health Laboratory at Maidstone examines samples from the Medway area.

There were four reports of contaminated hydrant supply during the year. Two contaminated hydrants were discovered during the course of routine sampling and fortunately they were not used to supply ships with drinking water. Of the others, one hydrant involved a ship which had been supplied with "suspicious" water and had sailed prior to the result of the analysis. The vessel was contacted at sea by W/T and advised to chlorinate all fresh water on board. In the case of the fourth hydrant supplying unsatisfactory water the cause was attributed to the extraordinary tidal flooding of the docks on the afternoon of the 10th December.

In the dock areas, eight "suspicious" and one "unsatisfactory" samples from the ends of delivery hoses and one "suspicious" sample from a stand pipe, were reported by the laboratories. The reasons for these reports were fully investigated and standard sterilising measures were adopted in each case. No specific causes for these incidents were discovered and negligent handling of equipment must, therefore, be assumed.

During the very high tides in December some flooding of the sunken hydrant pits occured with consequent contamination of the fittings. This problem had been anticipated and supplies to ships from the affected hydrants were stopped. When the floods subsided all hydrants affected were subjected to super-chlorination under the supervision of the Port Health Inspector concerned and a quantity of fresh water run to clear hydrants before supplies were resumed. The pit linings were treated with a strong solution with chloride of lime as an extra precaution. Samples of water were taken and sent for bacteriological examination and all results indicated the absence of coliform organisms and a very low plate count.

There was some flooding of spaces in which food stuffs were stored and any foodstuffs contaminated were detained for appropriate action.

During the year there were three instances of "suspicious" or "unfit" fresh water supplies to galley and messroom sinks from fore and after peak bulk storage tanks. In one instance, the after peak tank, which had been normally used for salt water ballast, was brought into service while in a foreign port without prior cleaning to act as a supplementary fresh water tank during an extended voyage.

The accidental or improper use of the engine room service pump was the cause of contamination of the fresh water distribution on three ships. After detailed investigations of all other incidents, no positive clues to cause of contamination were discovered.

The cleansing, cement washing and chlorination of the contaminated tanks, the flushing of the distribution systems and re-sampling was carried out in all cases before shipboard supplies were resumed.

Fresh water supplied to sinks and wash basins is frequently consumed by crews as palatable water. It is essential. therefore, that all fresh water on board ship should be free from contamination and should be as clean as possible and attain the standard applicable to drinking water.

During investigations into obscure causes of contamination and when no definite conclusions are forthcoming, some consideration should be given to the cleanliness of the tank sounding rods and the overall security of the sounding pipes. It is preferable that a particular sounding rod be reserved for sounding drinking water tanks. It is therefore most essential that, not only the routine sampling of Port fresh water supplies should be continued, but that ship storage and distribution should also be sampled as a standard routine measure in the Port.

In view of the various incidental sources of contamination of water on board ships systematic and regular sampling both at the supply hoses and ship distribution installations are essential.

3. **Precautions taken against contamination of hydrants and hosepipes:–**

There has been no major development to report during the year. The replacement of the old pattern type of water meter boxes by single units incorporating stand pipe and meter has slowly continued as required.

The following code of Practice has been faithfully applied by water operators and the figure of 92.15 per cent of "satisfactory" "good" and "excellent" samples, although not as high as in preceding years, gives rise to general satisfaction:–

CODE OF PRACTICE

Equipment

All components should be kept clean and maintained exclusively for this purpose.

Equipment should be kept in a properly appointed store and transported to and from the watering point in a suitable and covered truck.

No other equipment than that of the Port of London Authority should be used for supplying fresh water.

All hoses should be lined with rubber internally.

Every precaution should be taken to preserve the clean condition of the hose during the watering operation.

Those components taken to the watering point and not required should be left in the truck.

Watering Points

These should be clearly identified by a number at the site and the hydrant-pit cover given a durable and conspicuous coat of paint.

The permanent hydrant-pit covers should be watertight and, when the hydrant is being used, a closely fitted temporary cover should be available to allow for a standpipe and to shelter the hydrant-pit.

All hydrant-pits should be effectively drained, rendered with a smooth and light-coloured surface, and always kept in a clean condition.

The hydrant discharge should always be effectively capped when not in use.

Operation

Connections at the hydrant and on the ship should be supervised by an authorised officer of the Port of London Authority.

Standpipes should be used at the hydrant and hoses kept clear of quay and dock water.

All connections at the ship must be made in order to avoid any possibility of backsyphonage from the ship installation to the shore mains supply.

In any circumstances where closed-connection must be made on the ship, an effective non-return device should be incorporated in the supply equipment to safeguard against back-syphonage.

The water supply equipment should always be adequately flushed through before allowing the supply to enter the ship's filling lines.

As far as practicable, the supply of fresh water should be supervised by an authorised person.

4. Number and sanitary conditions of water boats and powers of control by the Authority.

Only one sample from a waterboat tank was reported as "unfit" during the year. The water boat was immediately withdrawn from service for cleaning, cement washing, chlorination and re-samping before being permitted to supply water to shipping. Three "unfit" and one "suspicious" sample from the ends of delivery hoses were reported by the laboratories. The affected hoses and connections were properly sterilised before any further service.

Water boats are registered annually by the Port of London Authority and such registration is made conditional upon the report of the Medical Officer of Health of the Port as to the fitness of the craft for the carriage of drinking water as also upon the purity of the water thus carried. To this end sampling is carried out from time to time.

TABLE 1

FRESH WATER SUPPLY SAMPLES – SUMMARY–1965

	HYDRANTS						STAND PIPES						DELIVERY HOSE ENDS						TOTALS
	Unfit	Unsat.	Suspic.	Satis.	Good	Excell.	Unfit	Unsat.	Suspic.	Satis.	Good	Excell.	Unfit	Unsat.	Suspic.	Satis.	Good	Excell.	
Royal Victoria Dock	0	0	1	2	11	0	0	0	0	0	2	0	0	1	3	2	2	0	24
Royal Albert Dock	0	1	1	10	8	0	0	0	0	0	0	0	0	0	2	1	0	0	23
King George V Dock	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	3	0	7
Tilbury Dock	0	0	0	0	6	0	0	0	1	0	11	0	0	0	3	2	6	0	29
West India Docks	0	0	0	1	41	0	0	0	0	0	0	0	0	0	0	0	0	0	42
Surrey Com. Docks	0	0	0	0	2	0	0	0	0	0	14	0	0	0	0	0	7	0	23
Regents Canal Dock	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	5
London Dock	0	0	1	0	17	0	0	0	0	1	0	0	0	0	0	0	2	0	21
River Districts	0	0	0	0	2	0	0	0	0	0	6	0	0	0	0	0	4	0	12
Isle of Grain Area	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	5	0	15
TOTALS	0	1	3	13	101	0	0	0	1	1	38	0	0	1	8	5	29	0	201
	TANKS						STAND PIPES						DELIVERY HOSE ENDS						
Water Boats	1	0	0	0	13	0	0	0	0	1	8	0	3	0	1	0	14	0	41
																		GRAND TOTAL	242

TABLE 2

FRESH WATER SUPPLY SAMPLE TOTALS & PERCENTAGES–1965

	Unfit	Unsat.	Suspic.	Satis.	Good	Excell.	Totals
Hydrants	0	1	3	13	101	0	118
Stand Pipes	0	0	1	1	38	0	40
Hose Ends	0	1	8	5	29	0	43
Water Boats	4	0	1	1	35	0	41
Totals	4	2	13	20	203	0	242
Percentages	1.65	0.83	5.37	8.27	83.88	0	100

92.15

1965

OTHER SAMPLES OF FRESH WATER

Distribution aboard ships–

Of 227 samples in the crew and passenger accommodation and galleys of ships:–

4 were excellent
174 were good
17 were satisfactory
17 were suspicious
8 were unsatisfactory
7 were unfit

Storage aboard ships–

Of 19 samples drawn direct from ship's storage tanks–

15 were good
1 was satisfactory
1 was suspicious
2 were unfit

Port Installations–

Of 58 samples drawn from dock offices, dock canteens, drinking fountains, etc.–

57 were good
1 was suspicious

River Passenger Launches–

Of 19 samples taken under the Food Hygiene (General) Regulations 1960/62 from storage tanks and galleys and licenced bar taps in River Thames passenger launches–

19 were good

SEWAGE DISPOSAL FROM SHIPS

During September, 1965, a passenger ship which had embarked 500 additional passengers at Tilbury Landing Stage, developed serious engine trouble and was taken into Tilbury Dock for repairs with the full complement of 1,603 passengers and crew still on board. During the period of 9 days when she was in dock under repair there was no alternative but to use the ship's w.c.'s for the following reasons:–

(a) Some passengers were under immigration restriction.

(b) It was impossible to find hotel accommodation for the numbers involved.

(c) There were insufficient shore lavatories within a reasonable distance of the ship.

(d) There were neither sufficient chemical closets available nor the means to service them on the scale required

Fortunately the ship was fitted with 8 sewage holding tanks each of 6 tons capacity into which all soil units discharged and which in turn could be emptied from the ship's bottom. Thus it was possible to ensure that the sewage holding tanks were chlorinated to the extent of 20 parts per million before discharge of the contents into the dock water and, as a result of this treatment no gross nuisance occurred in the Dock.

This instance emphasises the fact that only a minority of merchant ships today are able to operate an adequate system of sewage treatment while in Port. The majority of ships, ranging from the most humble cargo vessel to passenger liners of modern design, discharge their crude sewage directly overside and even in those ships with holding tanks there is normally no attempt at sewage purification.

The system of sewage disposal in most ships has made little progress since the time when trough closets were installed and flushed with a hose and it is surely time, from the Public Health view point for more attention to be paid to this important aspect of ship construction.

The effects of the present practice are easy to assess when thought is given to the subject. The bigger passenger liners may well have on board some 2,000 persons and the amount of sewage discharge would be equivalent to that of a small town. In fog the ship may anchor off, or being under way, pass slowly by, a seaside town with objectionable results to the beaches, or it may be delayed in an estuary when the discharge would foul the river up stream or down stream according to the state of the tide. On entering a Dock the sewage discharge from such a ship for the full 2,000 persons, will certainly be operating for some hours and again on the day of sailing, and to add to the problem there may well be more than one ship in dock. In cargo ships with a crew of perhaps 50 or 70 per ship the problem is less onerous and generally there are more cargo ships than passenger ships.

In London, there is a Port of London Authority Byelaw which requires all w.c.'s on board ship to be kept locked while the ship is in Dock, and adjacent to each berth there is a block of public lavatories, some of which are reserved for ship's personnel. It is evident that the object of these provisions is to prevent the discharge of crude sewage into the non-tidal waters of the Dock.

Obviously with passengers on a ship it is not practicable to keep w.c.'s locked, and even with no passengers aboard there are complications. The bigger ships approximate to 700 feet in length, and with some of the officers and crews living accommodation as far as 600 feet from the gangway and the sanitary accommodation ashore sited a further 200 yards from the gangway, it makes an aggregate journey of nearly a quarter of a mile. The situation is not appreciably better in the cargo ships.

Ships officers of all nationalities often complain that shore w.c.'s are not as well kept as they would expect, especially as wives, when on board ship, are also expected to use these shore establishments. On this point it may be fairly commented that, in general, shore lavatories are clean but are, of necessity, of rugged construction designed mainly with a view to being proof against vandalism. They are inconveniently situated at many berths especially those for women, and the whole situation is an ever present source of irritation to ship's personnel.

The remedy is simple. There are proprietary designs of sewage purification units available which are suitable for permanent installation in ships. Such units have been fitted in a few ships and have already given several years of trouble-free service. The cost of fitting the installation into new ships during construction is relatively small and it would appear that the time has come when such installations should be made compulsory in all new ships. In existing ships the cost is likely to be greater because of the necessity to alter the existing plumbing. Weight and size are not major problems.

The benefits from a ship-owner's point of view are:–

1. Freedom from minor restrictions.
2. Freedom from fines for contravening Byelaws.
3. No liability to claims for sewage damage to cargo in lighters alongside the ship.

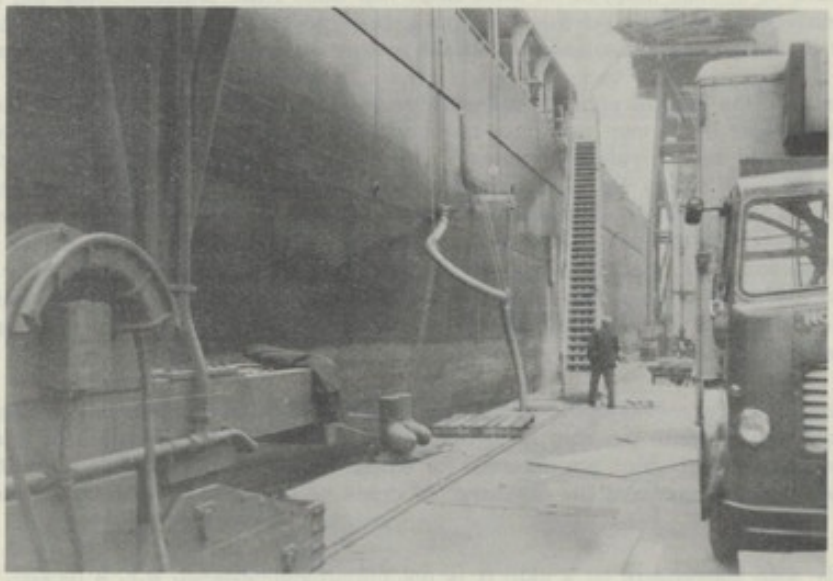
From the view point of ship's personnel there need not be any more "excursions" across the quay and a very real improvement in comfort and privacy in the Port, particularly in adverse weather conditions and at inconvenient times.

One word of warning, the term "septic tank" is used very loosly amongst seamen; it should mean much more than "holding tank" and any proposed sewage purification system, intended for a ship, should be subject to examination and advice from a qualified sanitarian.

Direct Discharge Ashore

An idea which has been developed recently on a limited scale provides for the untreated sewage of a ship to be discharged directly into the adjacent shore sewer through a strong flexible hose connection. It is admitted that this relatively simple solution to the problem has a limited field of application, yet it has been successfully applied to one cargo ship berth in the Royal Victoria Dock where such a linkage was made available and the idea is now being studied in relation to other berths.

The range of application demands certain elementary provisions. There must be a sufficient head of free flow between the ship's side discharge and the sewer, with simple and secure connections at both ends of the flexible hose. This requires that the discharge orifice must be linked at a point above the water line, and the range of height must be considered in relation to the variation of draft during loading and discharge of cargo. Other problems may arise with different ships but this should not be beyond the ingenuity of the industry.



Sewage Disposal connection

SECTION VI – PUBLIC HEALTH (SHIPS) REGULATIONS 1952/63

1. **List of Infected Areas (Regulation 6) – Arrangements for the preparation and amendment of the list, the form of list, the persons to whom it is supplied and the procedure for supplying it to those persons**

Regulation 6 of the Public Health (Ships) Regulations, 1952/63, requires that "the medical officer of health for every district shall from time to time prepare and keep up to date a list of ports and other areas which are infected or believed to be infected with quarantinable disease or which may serve other places or areas so infected or believed to be infected" and, further, that copies of every such list and any amendment thereof shall be supplied to the Pilots and Customs Officers employed in the district.

To attempt to supply the Pilots and Customs Officers with a weekly list of such ports and areas based on the Weekly Record of Quarantinable Diseases issued by the World Health Organisation would lead to chaos and to much more delay and inconvenience to shipping than the system of inspecting, as a routine, ships from any part of the World in which dangerous infectious diseases are endemic or, from time to time, epidemic. Consequently, for convenience of working, the infected area is taken to include any port in all Asia, Africa, South America or Central America (excluding transit through the Panama Canal). In the event of quarantinable disease occurring outside this area, the Pilots and Customs Officers would at once be notified.

Ships bound for London coming up the English Channel take on a Pilot off Dungeness, those coming across the North Sea take on a Pilot at the Sunk Lightship, near Harwich. The Elder Brethren of Trinity House have kindly agreed that Pilots should hand copies of the Declaration of Health to the Masters of ships they board and accordingly supplies of the Declaration of Health are sent as required to the Pilotage Offices at Dover and Harwich. In addition, several of the larger shipping companies using the port are supplied, on request, with Declaration of Health forms which are placed on board their vessels with other ship's papers.

The instructions on page 4 of the Declaration of Health (applying only to the Port of London) are as follows:–

INSTRUCTIONS

I. THE MASTER of a ship approaching LONDON from a Foreign Port MUST

(1) Ascertain the health of all persons on board.

(2) Complete and sign this Maritime Declaration of Health

(3) Hand this Declaration to the Customs Officer or Port Medical Officer, whoever first visits the ship.

II. If the answer to any question on page one is 'YES', or – EXCEPT IN THE CASE OF TANKERS –

If during the last FOUR WEEKS the ship has called at ANY PORT in all ASIA, AFRICA, SOUTH AMERICA OR CENTRAL AMERICA (excluding transit through the Panama Canal) –

THE MASTER MUST –

(1) Send a wireless message to 'PORTELTH' LONDON stating;–

NAME OF SHIP
EXFECTED TIME OF ARRIVAL AT GRAVESEND
NUMBER, AGES and SEX of ALL CASES OF INFECTIOUS DISEASE

This message to be sent not less than 4 or more than 12 hours before the expected time of arrival at Gravesend.

(2) SIGNAL – From MUCKING No. 5 BUOY until PRATIQUE is GRANTED.

BY DAY – FLY the Flag Signal L I M
BY NIGHT – Show a RED Light over a WHITE Light

(3) If a Ship's Surgeon is not carried, have the crew mustered ready for inspection by the Port Medical Officer as soon as he boards the ship.

(4) NOT proceed beyond Gravesend Pilot Station until visited by the Port Medical Officer.

III. If the answers to all the questions on page 1 are 'NO', and the ship has not called during the previous FOUR weeks at any of the Ports mentioned above, the Master need not communicate with the Port Health Authority unless directed to do so by a Customs Officer.

IV. The Master of a ship approaching the Port of London who has any doubts or difficulties over Port Health Regulations should obtain advice direct from the Port Medical Officer, through the Thames Navigation Service (V.H.F. R/T). It is also possible for ships without V.H.F. R/T to consult the Port Medical Officer through North Foreland Radio Station. Information and advice on any other medical problems are available by the same channels.

NOTE–Article 18(1) of the regulations states:– 'On arrival of a ship from any foreign port or from an infected area which is not a foreign port, no person other than a Pilot, a Customs Officer, an Immigration Officer or an authorised officer shall, without the permission of the Medical Officer, board or leave the ship until it is free from control under these regulations, and the Master shall take all steps necessary to secure compliance with this provision.'

2. **Radio messages**

(a) Arrangements for sending permission by radio for ships to enter the district (Regulation 13)

(b) Arrangements for receiving messages by radio from ships and for acting thereon (Regulation 14(1) (a) and (2))

The Thames Navigation Service of the Port of London Authority has its Operation Room at Gravesend and keeps in contact with ships coming up the River Thames on radio frequencies allocated in accordance with international agreement.

The Boarding vessels "HUMPHREY MORRIS" and the "VICTOR ALLCARD" are fitted with radio/telephone equipment on the International frequencies giving direct radio/telephone communication with shipping and with other river services including H.M. Customs.

In addition the Port Health Authority has its own radio/telephone link between the Hulk "HYGEIA" (the 'office' and mooring station at Gravesend), the "HUMPHREY MORRIS" and "VICTOR ALLCARD" and the Operations Room.

Masters of ships approaching London from a Foreign Port, whether or not fitted with radio equipment for contacting the Thames Navigation Service, are still required to send a radio message to "Portelth London" giving expected time of arrival at Gravesend and particulars of any infectious disease on board. All such messages are received by the North Foreland Radio Station and then telephoned direct by the G.P.O. to the Boarding Medical Officer on duty at the Hulk "Hygeia".

In the event of further information being required from a ship, for instance, as to clinical details of any infectious diseases or perhaps as to the necessity of removing a patient at Gravesend, or, again, about preparations to be made by the ship for disembarkation of a patient, contact with the ship by the Boarding Medical Officer can be made through the Thames Navigation Service up to as much as two hours in advance of the time of arrival at Gravesend.

At times when the Boarding Medical Officer is fully occupied, e.g. when there is a medical emergency or several ships to be visited urgently, or to avoid delay to a ship in exceptional circumstances, it is possible to check with the ship direct and with the co-operation of H.M. Customs arrange for 'free pratique' to be granted immediately and without the ship being boarded by the Medical Officer.

3. **Notifications otherwise than by Radio (Regulation 14(1)(b)**

Ships requiring the Port Medical Officer at night show the statutory signal of 'a red light over a white light', the lights being not more than six feet apart, shown at the peak or where the signal can best be seen from the shore.

The present instructions as to signals for ships requiring the Boarding Medical Officer are therefore as follows:

BY DAY – Fly the Flag Signal L I M
BY NIGHT – Show a Red Light over a White Light

4. **Mooring Stations (Regulations 22 to 30)**

On arrival of an infected or suspected ship, or any other ship on which there has been during its current voyage and within the last four weeks before arrival a case of quarantinable disease (plague, cholera, yellow fever, smallpox, typhus or relapsing fever), the medical officer may direct that the master take the ship to a 'mooring station' so that the ship does not come into contact with other ships or the shore.

It has been agreed with the Port of London Authority and the Waterguard Superintendent of Her Majesty's Customs and Excise that the Mooring Stations will be at suitable berths to be allocated by the Harbour Master as required.

Particulars of any Standing Exemption from the provisions of Article 14

Unless there is sickness on board, oil tankers are not required to send a radio message as to time of arrival.

In the case of oil tankers, proceeding up the River Medway and to Thames Haven, arrangements have been made for H.M. Customs and Excise to issue Pratique if the answers given to questions on the Declaration of Health form are all in the negative.

If any answers are in the affirmative H.M. Customs carry out the following procedure.

(a) Inform the Master that he is not to allow any unauthorised person to leave the ship without the Medical Officer's permission;

(b) Issue modified pratique and allow vessel to proceed to her place of mooring, loading or discharge. A full "Certificate of Pratique" is left on board addressed to the Medical Officer of Health who will issue it in due course.

(c) In the most expeditious manner notify the nearest Medical Officer of the Port Health Authority.

5. **Arrangements for:**

(a) Hospital accommodation for infectious diseases (other than Smallpox – see Section VII)

Since Denton Hospital has been taken over by the South East Metropolitan Regional Hospital Board under the National Health Services Act, the Port Health Authority has continued to exercise, through the Senior Assistant Port Medical Officer, and the Assistant Port Medical Officers, the medical supervision of cases admitted to the hospital. The Nursing and administrative control lies with the Dartford Hospital Management Committee. Consultant advice on difficult cases is available through the Physician-Superintendent of Joyce Green Hospital, Dartford.

Denton Hospital is always ready to receive cases of infectious disease occurring on ship. This hospital, however, has only very limited clinical facilities and cases which are likely to require specialised treatment or laboratory investigation are sent direct, or via Denton Hospital, to Joyce Green Hospital or one of the larger hospitals in the Metropolis.

If at all possible, cases of sickness are disembarked into one of the Port Health Authority's launches for conveyance to Denton Hospital, there to be admitted or else put into a waiting ambulance. Ships which are berthing at Tilbury Landing Stage can conveniently land sick cases there, either into a Port Health launch or into an ambulance.

Should weather or other conditions make it inadvisable to land a case at Gravesend, the patient may be allowed by the Boarding Medical Officer to proceed up River in the ship to the dock, in which event arrangements are made with the Emergency Bed Service for the case to be removed by ambulance to a suitable hospital immediately the ship berths.

The number of cases admitted to Denton Hospital in 1965 was as follows:

Chickenpox	3
Bronchitis	1
Gastro-Enteritis	1
Cellulitis	1
Glandular Fever	1
Infectious Hepatitis	1
Influenza	3
Influenza and Pneumonia	1
Malaria	1
Miscellaneous	3
Mumps	2
Sore Throat	1
Tonsillitis	2
TOTAL	21

(b) **Surveillance and follow up of contacts**

In the event of a vessel arriving on which there has been a case or cases of a major infectious disease, all persons on board are considered to be possible contacts.

Each contact is interrogated and makes out a form giving full details as to name and the proposed address in the United Kingdom to which he is proceeding immediately on disembarkation. These particulars, together with an appropriate note of the circumstances, are then forwarded to the Medical Officer of Health of the district in which the address of the contact is situated. He is also given a two-part card, one part setting out the surveillance conditions under which he is allowed to disembark and the other for use by him only if he should change his address within a specified period, usually up to the end of the inoculation period of the disease in question. This part of the card is on the 'Business Reply Card' system and so does not have to be stamped.

A specimen of the card used for smallpox contact is reproduced below:–

Please Read Carefully and retain.

CORPORATION OF LONDON
PORT HEALTH AUTHORITY

PUBLIC HEALTH (SHIPS) REGULATIONS 1952 to 1963

In accordance with the above Regulations you are permitted to disembark under surveillance (Medical Supervision) on the following conditions :—

1. That you **complete** and give to the Medical Officer of Health of the Port of London the Address Form S.2. supplied with this card.
2. That if you change your address at any time within 14 days of disembarkation you shall notify forthwith your new address to the Medical Officer of Health of the Port of London on the attached card.
3. That if you should feel ill within the next 14 days you will at once report to a doctor, and inform him that you may have been in contact with smallpox.
4. Surveillance will be carried out by the Medical Officer of Health of the local authority in whose district you will be staying.

Guildhall,
London, E.C.2.
MONarch 3030

PENALTY for breach of the Regulations, £100.

CORPORATION OF LONDON
PORT HEALTH AUTHORITY

PUBLIC HEALTH (SHIPS) REGULATIONS 1952 to 1963

NOTIFICATION OF CHANGE OF ADDRESS WITHIN 14 DAYS OF DISEMBARKATION

Having disembarked from the S.S. .....
on (date) ..... my address from (date) .....
to (date) ..... will be as under.
Name .....
Surname Forenames
No. or Name of House .....
Street .....
Town and Postal District .....
County .....
Signature .....

PLEASE USE BLOCK LETTERS

This card may be sent through the post unstamped but if it is enclosed in an envelope, postage must be prepaid.

4000 — 1163 — A1124

(c) Cleansing and disinfection of ships, persons, clothing and other articles.

Disinfection of infected quarters is usually carried out by the Port Health Inspector in whose area the vessel berths. If, however, the space requiring disinfection is large, a private firm is employed to carry out the disinfection under the supervision of the Port Health Inspector.

The Disinfection Station at Denton Hospital is by arrangement with the South East Metropolitan Regional Hospital Board and the Dartford Hospital Management Committee made available to the Port Health Authority for the disinfection of clothing, bedding, etc., and, if necessary, for the cleansing of persons.

Arrangements have also been made for disinfected bedding from ships in the docks of the London Area to be sent to the disinfection station at Plaistow Hospital.

SECTION VII – SMALLPOX

1. Name of Isolation Hospital to which smallpox cases are sent from the District.

Long Reach Hospital is situated on the south bank of the River Thames about eight miles above Gravesend. The hospital consists of 10 ward blocks capable of accommodating 170 patients but, except in cases of emergency, only three ward blocks (2 of 20 beds and 1, a cubicle ward of 10 beds), total 50 beds, are kept available for immediate use. The hospital includes residential quarters for the staff and a laundry, although the administration and staffing is carried out from Joyce Green Hospital, Dartford.

2. Arrangements for transport of such cases to that Hospital by ambulance giving the name of the Authority responsible for the ambulance and the vaccinal state of the ambulance crews.

A case or cases of smallpox would be removed from the vessel by this Authority's Ambulance launch and conveyed ashore via the pontoon at Denton and from thence conveyed by road ambulance direct to Long Reach Hospital.

The Port Health Authority would be responsible for the vaccinal state of their Ambulance Launch crews, while the vaccinal state of the Road Ambulance personnel would be the concern of the South-East Metropolitan Regional Hospital Board under whose jurisdiction both Joyce Green and Long Reach Hospitals fall.

3. Names of smallpox consultants available.

Dr. J.V. Armstrong	Dr. H.S. Banks	Dr. W.T.G. Boul
Dr. J.D. Kershaw	Dr. G.D.W. McKendrick	Dr. A. Melvin Ramsay

4. Facilities for laboratory diagnosis of smallpox.

Facilities are available at the Virus Laboratory at the Central Public Health Laboratory at Colindale.

Typhoid Fever

A ship arrived in Tilbury on the 3rd February 1965 having landed a bellboy at Marseilles on the 29th January with a diagnosis of (?) Pneumonia but which was later confirmed to be Typhoid Fever. The boy had gone ashore at Freemantle on the 10th January and consumed three meat pies and a glass of beer, at Colombo on the 16th he had only bottled drink and at Bombay on the 18th nothing at all. He first complained of feeling ill on the 22nd January with a sore throat and vomiting. During the next seven days he was slightly constipated, had a bradycardia but no headache. It is of some significance that the patient ate the meat pies on the 10th January and had his first symptoms on the 22nd, just 12 days later.

The ship's surgeon had given T.A.B. injections to approximately 140 members of the crew, concentrating on the galley staff and the immediate contacts of the patient.

In view of the history of the case the Boarding Medical Officer decided to find out from the ship surgeon's Day Book how many cases of Gastro-enteritis had been reported during the homeward voyage. Five passengers and thirteen crew were reported up to the 10th January and twenty-four passengers and one crew from 10th January to 2nd February. These numbers were not however considered abnormally excessive for a sea voyage which included passengers going ashore in the Middle East.

Investigation revealed that the duties of the bellboy involved the serving of coffee to passengers, and, particularly as it was a 'one-class' ship, it was necessary to place all the passengers and crew under surveillance. The last date of contact was taken as the 22nd January when the boy first reported sick. Notifications were therefore sent to local Medical Officers of Health in respect of the 750 passengers and those members of the 603 crew who were going on leave. The remainder of the crew, including the Asian crew, were kept under surveillance by the ship's doctor.

The mattresses and bedding used by the patient were removed to Denton Hospital for steam disinfection and the necessary quarters, including the After Hospital Block, were fumigated with formalin candles. Other crew spaces were washed with a light solution of disinfectant.

Suspected Smallpox –

A ship arrived in London on the 8th September, 1965, and the Master reported that an Indian crew member aged 44 years had died and had been buried at sea. The history given was that the man joined the ship at Aden on 24th August, having left Bombay by air on the 21st August. He went sick next day with generalised pains but with normal temperature and no other signs or symptoms and was put to bed as a query heat stroke case. He was found dead next morning and was buried at sea the same day.

In the absence of any evidence to the contrary it had to be assumed that there was a possibility that he died from acute fulminating smallpox. The Ministry of Health were informed and agreed that there was this possibility and that surveillance procedures should be instituted. Accordingly, the names and addresses of persons leaving the ship in London were sent to the Medical Officers of Health of the areas to which they were proceeding, the members of the crew remaining on board were kept under surveillance and the Medical Officers of Health of the further ports of call of the ship were notified.

Examination of International Certificates of Vaccination against Smallpox

By the provisions of the Public Health (Ships) (Amendment) Regulations 1963 the Medical Officer may require the production of international certificates of vaccination against smallpox by persons arriving from abroad but will require production of such certificates if so requested by the Minister of Health. The Minister of Health indicated by letter that persons arriving by ship from ports in the smallpox endemic area should be required to produce valid vaccination certificates.

It was realised that there would be difficulties in examining vaccination certificates of persons arriving in the Port of London where ships discharge their passengers at widely divergent points. The Minister of Health was informed that to examine all certificates in every case might result in a ship being delayed. An answer was received that a ship should not be held merely for the inspection of vaccination certificates. Accordingly shipping Companies using the Port of London were asked to arrange for lists of smallpox vaccination certificates of passengers and crews, countersigned by the Master and by the ship's surgeon, if carried, to be produced on the arrival of the ship in the Port of London.

A proportion of the ships arriving are now producing such lists and at least a spot check is made of a percentage of the certificates. Certain of the larger passenger ships are boarded by a Medical team at a previous port to examine aliens and commonwealth immigrants and in such cases vaccination certificates are examined during the voyage to London.

The Regulations do not provide for any legal sanctions to be taken against a person arriving without a valid certificate of vaccination if he agrees to be vaccinated or to be placed under surveillance. Only if he refuses and it can be shown that he intended to evade the regulations can any legal action be taken.

If masters of ships arriving could be legally required to produce certified lists with dates of international certificates against smallpox of all persons on board checking would be simplified and the number of persons arriving without valid certificates would no doubt be reduced.

Paratyphoid Fever

On the 25th October 1965, information was received that there were sick persons on board a ship, lying at McDougall's Wharf, Millwall Dock. This information had been passed by the Agents for the ship to the Boarding Medical Officer on Duty at Gravesend, they also stated that two members of the crew, who had been left at Bremen as suffering from "severe flu" had now been diagnosed as suffering from paratyphoid B fever (the ship made no declaration of this fact when she entered the Port and the Captain had not told the Port Health Inspector of these facts when the Inspector made a routine visit to the ship on the morning of the 25th October). Your Deputy Medical Officer personally investigated the situation and discovered that, in all, 7 men had fallen ill since the 7th October, 1965. Of these, 2 had been taken off at Bremen, 3 had recovered and 2 were still ill. On examination the two men who were still ill were considered to be suffering from paratyphoid fever and were admitted to the Seamen's Hospital, Greenwich.

Next day, arrangements were made for bacteriological investigation of everyone on board and samples of water and for the disinfection of the quarters of those men who had suffered from the disease. Another man fell ill on this day and was admitted to the same hospital by a doctor from the Norwegian Public Health Service. All 3 men were later confirmed as suffering from paratyphoid B fever.

Bacteriological examination of the water specimens proved negative, but two of the men still on board were found to be 'carriers' of the organism of paratyphoid B fever. One of these men had had the disease and recovered, but the second one was not one of the 7 original cases. It is perhaps significant that he was the galley boy.

In the meantime, and before the above results became available, the ship had sailed for Gothenburg. The Port Medical Officer there was kept informed by cable of all the developments as they occurred and the Norwegian Health Services' representative in London agreed to notify the authorities in Oslo (which was the ship's home Port and to which she was proceeding to finish her voyage).

This incident is a classic example of the way in which potential epidemic conditions can develop very rapidly in a closed community and of the way in which stringent precautions can nip the outbreak in the bud before it has time to develop and to spread beyond the confines of that community. There is no evidence that the paratyphoid fever was contracted by anybody in this country as a result of the outbreak on the ship.

SECTION VIII

VENEREAL DISEASE

Venereal Disease is not compulsorily notifiable to Medical Officers of Health but efforts are made both by the Boarding Medical Officers and the Port Health Inspectors to bring to the notice of seamen using the port the facilities available for free treatment and the importance of obtaining skilled treatment as early as possible.

Should there be a known case, it is usually possible to arrange for the patient concerned to be taken at once to the nearest clinic of the Seamen's Hospital or other hospital in the vicinity of the ship.

SECTION IX

CASES OF NOTIFIABLE AND OTHER INFECTIOUS DISEASES ON SHIPS

TABLE D

Category –

Cases landed from ships from foreign ports

Disease	No. of cases during the year		No. of ships concerned
	Passengers	Crew	
Chickenpox	10	4	9
Dysentery	-	3	3
Enteric (Typhoid or Para-typhoid) Fever	-	3	1
Infective Hepatitis	1	1	2
Malaria	-	2	2
Measles	8	-	4
Miscellaneous	6	15	18
Mumps	2	1	3
Pneumonia	-	4	4
Pulmonary Tuberculosis	1	5	6
Non-Pulmonary Tuberculosis	-	4	2
Pyrexia of Unknown Origin	-	1	1
Scabies	-	6	5
Tonsillitis	-	5	5
Totals	28	54	65

Cases which have occurred on ships from foreign ports but have been disposed of before arrival

Disease	Passengers	Crew	No. of ships concerned
Chickenpox	16	5	16
Enteric (Typhoid or Para-typhoid) Fever	-	3	2
Gastro-Enteritis	133	23	6
German Measles	3	-	2
Infective Hepatitis	3	2	3
Influenza	3	1	2
Malaria	-	2	2
Measles	13	1	3
Miscellaneous	6	4	8
Mumps	5	2	4
Pneumonia	1	-	1
Pulmonary Tuberculosis	1	2	3
Smallpox (suspected)	-	1	1
Totals	184	46	53

Cases landed from other ships

Enteritis	1	-	1
Miscellaneous	-	4	4
Totals	1	4	5

SECTION X

OBSERVATIONS ON THE OCCURRENCE OF MALARIA ON SHIPS

Four cases of Malaria (all seamen) were reported on ships during the year under review. This compares with nine cases in 1964.

One of the seamen was well on arrival, one was landed to Hospital at Gibraltar and two were admitted to hospital on arrival in London.

A notice giving advice on the Chief Precautions and Treatment of Malaria is issued by the Ministry of Transport and should be on board every British ship.

SECTION XI

MEASURES TAKEN AGAINST SHIPS INFECTED OR SUSPECTED OF PLAGUE

No ships infected with or suspected of plague arrived during the year.

The Fourth Schedule to the Public Health (Ships) Regulations, 1963, under the heading "Additional measures in respect to the quarantinable diseases" – Part I – Plague, reads as follows:–

"(1) The Medical Officer may –

(a) require any suspect on board to be disinfected and place him under surveillance, the period of surveillance being reckoned from the date of arrival of the ship;

(b) require the disinfecting and, if necessary, disinfection of the baggage of any infected person or suspect, and of any other article on board and any part of the ship which the medical officer considers to be contaminated.

(2) If there is rodent plague on board, the medical officer shall require the ship to be deratted in a manner to be determined by him, but without prejudice to the generality of this requirement the following special provisions shall apply to any such deratting –

(a) the deratting shall be carried out as soon as the holds have been emptied;

(b) one or more preliminary derattings of a ship with the cargo in situ, or during its unloading, may be carried out to prevent the escape of infected rodents;

(c) If the complete destruction of rodents cannot be secured because only part of the cargo is due to be unloaded, a ship shall not be prevented from unloading that part, but the medical officer may apply any measure which he considers necessary to prevent the escape of infected rodents."

Plague being primarily a disease of rats all vessels are inspected immediately on arrival at their berths in the docks and river for the presence of any mortality among the rats on board which is not attributable to any known cause, such as trapping, poisoning, etc.

Incidentally one of the "Health Questions" on page 1 of the "Maritime Declaration of Health" requires the Master to answer "Yes or No" to the question "Has plague occurred or been suspected amongst the rats or mice on board during the voyage, or has there been an abnormal mortality among them?"

Any dead rats are immediately sent to the Central Public Health Laboratory at Colindale for examination for bacillus pestis, each rat being accompanied by a label on which is given precise information as to where the rat was found in order to arrive at a focus of infection should the examination prove positive. The information is, of course, far more vital when the rat has been found ashore than when found on board a ship.

In the event of a positive result the "additional measures" referred to above would be put into operation—the discharge of the cargo would be promptly stopped and arrangements made for the vessel to be fumigated throughout with hydrogen cyanide, with the cargo in situ, the vessel being moved to an approved mooring.

Following the initial fumigation and collection of dead rats resulting therefrom, further samples of such rats would be submitted for examination and the discharge of cargo would be permitted under observation. The destination of the cargo would be forwarded to the Medical Officer of Health of the district to which it was proceeding, together with an explanatory note.

If any of the cargo had already been discharged overside into lighters before the discovery of plague infection, the lighters would be fumigated immediately.

On completion of the discharge of cargo from the vessel a second fumigation would be carried out, again using hydrogen cyanide, to destroy the residual rat population, if any.

SECTION XII

MEASURES AGAINST RODENTS IN SHIPS FROM FOREIGN PORTS

To undertake their responsibilities, the Port Health authority employs a competent and experienced team of sixteen Rodent Inspectors, under the supervision of the Port Health Inspectors, who exercise control measures on all ships within the Port as well as the shore premises within the docks.

Procedure for inspection of ships for rats

All ships are inspected on arrival at the dock quay or river wharf for evidence of rodents, particularly those ships arriving from ports that are or suspected of being infected with plague. To this end, it is customary to attend all ships in order of priority as soon as practicable after arrival at the berth and, if possible, before any disturbance of cargo has taken place and so gain more conclusive evidence of rodent activity or other relevant factors, including the presence of dead or moribund specimens. The latter discoveries may be due to diseases or the result of a system of continuous treatment to eradicate rodents while the ship remains in service, a system growing in popularity for ships that acquire recurring infestations from vulnerable trade routes.

The usual method of continuous control treatment involves providing fixed poison baiting points in the cargo spaces and the peak storerooms. The bait usually comprises some form of cereal base and an anticoagulant admixture. These baits must, of course, be attractive at all times and to avoid moulds in humid conditions, a fungicide is added to the prepared baits. In consequence of this treatment it is possible to discover dead rodents in the spaces when the ship reaches port, and specific enquiries must be made by the Port Health Inspectors concerning the dead rodents in order to establish that there is no disease connected with the mortality. It is customary to be suspicious in such circumstances and to submit retrieved specimens for bacteriological examination.

Arrangements for the bacteriological examination of rodents, with special reference to rodent plague, including the number of rodents sent for examination during the year.

All rats for examination are sent to the Central Public Health Laboratory at Colindale. The bodies are placed in polythene bags which in turn are placed inside metal boxes, sealed and labelled so that there is no risk of the escape of any rat fleas whilst taken by hand to the Laboratory.

The introduction of an epizootic into the Port is, nowadays, very slight owing to the rat population being so small and under such strict control that the arrival of a plague infected rat, even should it manage to get ashore, would be highly unlikely to have any serious significance.

Sixty five rats were sent to the Laboratory during the year and were examined for plague, all results were negative.

Arrangements in the district for deratting ships, the method used, and if done by a commercial contractor, the name of the contractor.

Arrangements exist in all areas for the deratting of ships by private contractors, under the supervision of the Port Health Inspectors, using the following methods:–

(a) The burning of sulphur at the rate of 3 lbs. per 1,000 cubic feet of space for a period of not less than six hours.

(b) The generation of hydrocyanic acid gas by various methods. For the destruction of rats a concentration of HCN at the rate of 2 ozs. per 1,000 cubic feet of space is required with a minimum of two hours contact.

Both the above methods are very seldom used nowadays and in fact were not used at all during 1965, owing to the cost of the operation and the time taken overall.

(c) '1080', and 'Warfarin'. Sodium Fluoroacetate (1080) is now used for the deratting of ships in London more than any other method owing to its ease of operation and the saving of time and cost to the shipowner.

(d) Trapping. This method is seldom used except for the destruction of isolated rats which have escaped a major poisoning operation or which have not yet established themselves.

(e) Methyl Bromide. This is an effective and lethal fumigant with considerable penetrating powers and is not difficult to disperse after an operation. It is also used as an insecticide, particularly in the dry fruit industry and therefore where there is an infestation of rodents and insects the combined problem can be solved with one operation.

The following firms are approved for carrying out the deratting of ships:–

London Fumigation Co. Ltd.
Rentokil Laboratories Ltd.
Contra-Pest Service Ltd.

Progress in the Rat-proofing of ships

Particular attention has been directed towards rodent-proofing both afloat and ashore. The purpose is to deny rodents harbourage in which to hide and breed, to restrict channels of communication and to deny access to food and drink. The principles are a profitable investment and have accounted for a substantial reduction in persistent rodent infestations, while facilitating the intermittent extermination measures when required. It is encouraging to notice the steady decline in the number of ships in need of deratting measures and this improvement is attributed to better international control, more sanitary construction and reflections of health education. The same principles have been adopted in the construction of new premises in the Docks in which respect the cooperation of the Port of London Authority is always fully received.

Rodents Recovered.

	Rats		Mice
Ships	765	Ships	73
Shore	1,341	Shore	1,480
Total	2,106		1,553

The number of rats recovered represents a numerical decline which has been a feature for some years past, but is in no way related to any relaxation of effort. The reduction could be attributed to rodent-proofing and it could be influenced by the modified range of rodenticides. The number of dead rodents actually recovered can be assumed to be a proportion of those actually exterminated, although most rodents poisoned by '1080' are incapable of straying after the intake of the poison and this has proved of immense value to the searcher for specimens.

The decline of infestations aboard sea-going ships also continues and the sustained control on the harbour lighters has proved invaluable in restricting the spread of infestations around the Port, in providing a reliable check on the health of the rats within the Port and, of considerable importance, in reducing the number resident to breed, thereby causing substantial economic losses to food and property.

RODENT CONTROL MEASURES CARRIED OUT ON LIGHTERS

It is gratifying to report that in spite of some staffing difficulties the rodent control measures on Lighters have been carried out successfully for another year.

The ratio of lighters that needed deratting has been maintained at a very low level i.e. 1.5 per cent of the total number inspected as compared with 2.3 per cent in 1964. The average number of rats recovered per lighter deratted has however increased from 4 to 5.4.

There has been an increase in the number of lighters recorded with a negligible degree of old evidence. This is attributed to the fact that although a lighter is usually swept up after fumigation and so far as practicable is clean, because of its construction, at the end compartments where angle bar is more freely used, there are places where old evidence of rats accumulates and such places do not normally get cleaned as a routine after a deratting operation. These observations are now being taken into account and recorded.

Rat proofing of lighters has continued throughout the year at the various repair yards and it is satisfying to note that since 1959 when the Lighterage Industry was generally represented at a lecture and discussion on rat proofing techniques, the percentage of lighters requiring deratting treatment has decreased from 4.5 per cent to 1.6 per cent of those inspected.

The following methods of deratting have been employed throughout the year:-

Fumigants. Sulphur Dioxide gas and Methyl Bromide vapour.

Rodenticides. Sodium mono-fluoroacetate baiting. The method of treatment is determined by the circumstances and degree of infestation at the time of inspection.

Throughout the year 904 lighters have been fumigated with Methyl Bromide, for insect control of the cargo by the following companies:-

London Fumigation Company Limited
Rentokil Laboratories Limited
Contra-Pest Service Limited.
Butlers and Colonial Wharves Limited.
New Caledonian Wharf and Millwall Wharf.

Since the dosage required for insect control varies between twenty and thirty ounces per 1,000 cubic feet according to the specie of insect pest, with a twenty-four hour exposure period, the aggregate effect is more than sufficient to destroy any rats present at the time of fumigation.

During the year twenty-one of the rats recovered from treated lighters were sent to the Public Health Laboratory, Colindale for routine bacteriological examination. Pasturella pestis was NOT isolated from any specimen.

USE OF SODIUM FLUOROACETATE (1080) & FLUOROACETIMIDE (1081)

Sodium mono-fluoroacetate – '1080' – was extensively used throughout the first six months of the year with very satisfactory results. This poison is definitely most suited to a major seaport with a disciplined and experienced staff and the advantages in labour saving and positive control are features which cannot be ignored in circumstances where there is a risk of rodent borne diseases and where rodent attractive foodstuffs abound.

A drastic change, however, has been enforced since June which can only be considered as a retrograde decision. The Poison Rules, 1965 prohibit the sale of '1080' and '1081' other than for use as a rodenticide in ships and sewers and, therefore, the valuable potentials of these rodenticides has been lost as regards the open spaces and warehouses, places from which some of the most stubborn infestations have been overcome in the past by the use of these rodenticides.

A recurring infestation on a site treated with either of these poisons is unusual, a factor which indicates the scope of their effective application and dispenses with any idea that rodents may become resistant to their very toxic properties.

One immediate effect of this change has been a sense of frustration to the rodent staff already strained to the limits. Much more time will be required for each operation, more money will be needed for baits and it remains to be seen if the high standard of control can be maintained with the additional problems arising from the major reconstruction schemes in the Docks. Present reports indicate that the change is unfavourable.

TABLE E

Rodents destroyed (bodies recovered) during the year in ships and in shore premises.

(1) On vessels

Number of	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Black Rats	93	36	125	27	64	162	54	17	18	32	84	45	757
Brown Rats	-	-	5	1	2	-	2	-	-	2	-	-	10
Rats examined	2	5	5	4	7	9	5	3	3	4	8	2	57
Rats infected with Plague	-	-	-	-	-	-	-	-	-	-	-	-	-

(2) In Docks, Quays, Wharves and Warehouses

Number of	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Black Rats	50	98	44	82	59	18	60	24	31	24	18	14	522
Brown Rats	39	91	119	65	75	63	107	21	59	95	51	32	827
Rats examined	-	2	-	-	2	-	2	-	1	-	1	-	8
Rats infected with Plague	-	-	-	-	-	-	-	-	-	-	-	-	-

1,533 mice were also destroyed; 73 in ships and 1,480 in shore premises.

TABLE F

Deratting Certificates and Deratting Exemption Certificates issued during the year for Ships from Foreign Ports.

NO. OF DERATTING CERTIFICATES ISSUED						Number of Deratting Exemption Certificates Issued	Total Certificates Issued
After Fumigation with		After Trapping	After Poisoning	After Trapping and Poisoning	Total		
HCN	Other Fumigants (state method)						
1.	2.	3.	4.	4(a)	5	6.	7.
Nil	Methyl Bromide 3	Nil	"1080" 24 Warfarin 3	Nil	30	1,088	1,118

PREVENTION OF DAMAGE BY PESTS (APPLICATION TO SHIPPING) ORDER 1951–56

During the year 10 Rodent Control Certificates were issued to coastwise ships as provided for by the terms of the Prevention of Damage by Pests (Application to Shipping) Order, 1951-56.

WEST INDIA AND MILLWALL DOCKS

Demolition and Reconstruction Changes

During the past three years extensive alterations, on which this Authority where applicable gave its advice during the planning stages, have taken place and are still in progress throughout the India Docks Group. Old and dilapidated sheds and warehouses have been demolished and replaced by modern, well ventilated and rat-proof buildings, predominantly of steel construction. The road system throughout the docks has been completely overhauled and modernised by widening and resurfacing and generally brought up-to-date to carry the increasingly heavy traffic now using the docks. Large car parks have been provided to accommodate this traffic as well as the private cars which otherwise cause obstruction on the roads and at warehouse entrances.

Old public sanitary conveniences have been methodically replaced by ones of modern design with hand washing facilities and hot air hand drying machines. These facilities appear to be appreciated by the dock workers in general although frustration is encountered from time to time from petty vandalism and the handiwork of the amateur "artist".

SECTION XIII

INSPECTION OF SHIPS FOR NUISANCES

TABLE G

Inspection and Notices	*No. of Vessels*
Number of vessels visited by Port Health Inspectors	14,675
Number of vessels on which sanitary defects were found, and details reported to the Master, Owners and/or Ministry of Transport	207
Number Statutory Notices served	NIL
Number of Vessels on which sanitary defects were remedied	487

Summary of Structural and other Defects.

Inadequate ventilation	2
Defective Lighting	3
Defective or Insufficient Heating	4
Condensation	3
Leaking Decks	11
Leaking Ports and Decklights etc.	9
Leaking Sideplates	2
Defective or obstructed floor drainage	12
Water Lodging on top of Peak Tanks	3
Defective Bulkheads	4
do. Floors	19
do. Doors	1
do. Bunks	1
do. Clothes Lockers	1
do. Food Lockers	6
do. Food Storage	27
do. Cooking Arrangements	33
Defective or Uncleanly Drinking Water Storage	3
Water Closets – Defective	31
do. Foul or choked	45
do. Inadequate Flush	17
Wash Basins – Defective	22
do. Foul	26
Neglected Paintwork or distemper	18
Misappropriation of crew space	1
Verminous Quarters	57
Miscellaneous	129
TOTAL	490

SECTION XIV

PUBLIC HEALTH (SHELLFISH) REGULATIONS, 1934

The Public Health (Shellfish) Regulations, 1934, confer powers on a local authority whereby on receipt of a report of their Medical Officer of Health that the consumption of shellfish taken from a laying is likely to cause danger to public health, they may make an Order prohibiting the distribution for sale for human consumption of shellfish taken from the laying either absolutely or subject to such exceptions and conditions as they think proper, having regard to the interests of the public health.

Two such Orders have been made. The first in 1936, covering the public and private layings bordering that part of the foreshore of the Estuary of the River Thames between Canvey Island and Shoeburyness; and the second, in 1957, covering the foreshore or waters bordering on that part of the Estuary of the River Thames or any tributary thereof, between Garrison Point, Sheerness, and Warden Point in the Isle of Sheppey.

The importation of Portuguese Oysters for "fattening" in the River Roach and in Barling Hall Creek, and subsequent re-export to France "ready for the table" has continued during the year. Each batch of oysters was passed through a Cleansing Tank before re-export and a Certificate of Purity, as required by the French Authorities was issued, only after sampling and bacteriological examination had proved that each batch was clean. The co-operation which has been received in this matter from the Public Health Laboratory at Chelmsford (Dr. R. Pilsworth - Director) is very much appreciated.

There are signs that oyster beds are now recovering from the severe winter of 1962/63 and this will make the Import - Fattening - and Re-export of Portuguese Oysters a less attractive proposition commercially than it has been over the past two years, and it is possible the trade will not continue. Cultivation of Native Oysters in the area has now been resumed, although on a restricted scale, the layings having been closed down since 1962.

The Cockle Industry

Centred at Leigh-on-Sea shows little change. The sterilisation establishments are kept under regular observation and during the year they have complied fully with the requirements of the Public Health (Shellfish) Regulations 1934. They are conducted in a most satisfactory manner. The Public Health Department for the Borough of Southend-on-Sea continues to take regular samples of the cockles after they have been cooked, washed and prepared for sale.

In 1949 and 1950 many of the Establishments revised the lay-out of their premises and installed additional and improved apparatus. At the same time amendments to the routine of cooking and washing the cockles as advised by this Authority were introduced. The alterations to apparatus and routine then introduced have been most successful and have stood the test of time. The cockles are of an improved bacterial standard and there have been no reports of gastro-enteritis traced back to the Leigh Cockle Establishments since that time.

SECTION XV

MEDICAL INSPECTION OF ALIENS AND COMMONWEALTH IMMIGRANTS

1. List of Medical Inspectors holding warrants of appointment on 31st December, 1965 –

Dr. W.G. Swann, Dr. W.T. Rougier Chapman, Dr. G.W. Aston, Dr. P.J. Roden, Dr. D.T. Jones, Dr. R.M. Best, Dr. W.D.L. Smith, Dr. A.J. Fairrie, Dr. H. Willoughby, Dr. J.A. Jones, Dr. Marion Ravell, Dr. C.D. MacCarthy, Dr. A.W. Hagger, Dr. R.G. Dewhurst, Dr. R.G.W. Moore, Dr. A.G. Rickenback, Dr. D.J. Avery, Dr. B. Dalton, Dr. J. Oakley, Dr. P.R. Browne, Dr. J.C. Wishart, Dr. M.J. Catton, Dr. W. Stott, Dr. J.F. Lown, Dr. R.N. Herson, Dr. W.T.G. Boul, Dr. W.E. Hutchinson, Dr. G.B. Smart, Dr. R.D. Summers, Dr. D. Jenkins, Dr. D.W. Keys, Dr. W.N. Whiteside, Dr. H.C. Maurice Williams, Dr. G.J. Leydon & Partners.

2. List of other staff engaged on the work:–

Clerical staff at the central office.

3. Organisation of the work:–

Aliens and Commonwealth Immigrants are medically examined at the request of an Immigration Officer of the Home Office on arrival in the Port by the Medical Inspector, who is either the Boarding Medical Officer or a part-time Medical Inspector called in to deal with a particular ship. A 24 hour a day boarding service is maintained at Gravesend. Since the inception of the Commonwealth Immigrants Act the larger passenger ships have been boarded at Ports of call prior to their arrival in London as noted below.

4. Alien Arrivals.

(a) Total number of arriving ships carrying aliens	3,138
(b) Total number of aliens –	
(i) arriving at the port	35,989
(ii) medically examined	65
(c) Certificates issued	Nil

Commonwealth Immigrants Arrivals

Commonwealth citizens subject to control		13,600
Commonwealth citizens examined		1,016
Certificates issued		5
Ships boarded by members of the panel of doctors		
Brixham	5	
Barcelona	3	
Ceuta	1	
Gibraltar	5	
Lisbon	2	
Rotterdam	1	
London	104	121

5. Medical examination of aliens and commonwealth immigrants is carried out on board ship.

SECTION XVI

MISCELLANEOUS

Arrangements for the burial on shore of persons who have died on board ship from infectious disease.

The body of any person dying on board ship, or in Denton Hospital, from infectious disease would normally be removed from the ship or Denton Hospital for burial by a Private Undertaker acting on the instructions of the shipping company or the next-of-kin, the local police being kept informed.

In the event of the death being one of smallpox, special instructions as to precautions to be taken would be given to the undertaker by the Port Health Authority.

CLEAN AIR ACT 1956

THE DARK SMOKE (PERMITTED PERIODS)

(VESSELS) REGULATIONS 1958

During the year there has been ample evidence that there is need for consistent attention not only to take statutory action as found necessary but to prevent minor incidents becoming statutory nuisances.

On many occasions Inspectors have made verbal representations in respect of minor infringements resulting in prompt remedial action being taken, and the advice given on these occasions to the Master or Chief Engineer has no doubt resulted in the prevention of further occurrences.

Difficulty arises from time to time in connection with outward bound ships whereby it has not been possible to follow the ship for any considerable time to determine the extent of the offence or to communicate an immediate message to the Master.

However, by constant observation and investigation of all offences however small and by providing advice when necessary, the staff of Inspectors, most of whom are certificated Smoke Inspectors, have made a considerable contribution towards gradually reducing the number of offences.

Official recorded action taken during the year included:–

Prosecutions	2 (Successful)
Statutory Notices served	3
Informal Notices and Warnings	14

PUBLIC HEALTH ACT, 1936, PART X – CANAL BOATS

Hitherto, these boats have used Regents Canal Dock as a terminal and loaded various cargoes destined inland, but the pattern of the Industry has been changed and a canal boat is now rarely seen in the Dock. It is the exception when one arrives to load a specific cargo. None were seen during the year.

LOADING AND TRANSPORT OF REFUSE BY LIGHTERS

Routine visits to loading wharves and regular inspection of the lighters engaged in this trade have been maintained during the year. Several minor infringements of the Byelaws were dealt with. In one case successful legal proceedings were taken.

The tipping at Honduras Wharf has stopped and there is no intention of resumption. There were, therefore, fifteen wharves in regular service on the riverside and creeks and six additional wharves were maintained for emergency tipping. Two refuse depots outside the jurisdiction of the Port Health Authority continued to transport refuse by lighters to disposal points within the district of the Port Health Authority. As far as practicable, the operations of loading, carriage and discharge were checked by the Inspectors afloat to ensure the provisions of the Byelaws were complied with.

A gradual improvement has been achieved generally, but tipping buoyant refuse at open wharves will always give rise to anxiety even though considerable efforts are made to minimise nuisances and infringements of the Byelaws.

The Greater London Council has now become actively interested in the refuse wharves and schemes for improvement are in being. To this end, collaboration has continued between Greater London Council Officers and appropriate Port Health Inspectors. Three schemes have been adopted e.g. present time, short term and long term. Minor changes will be made to improve outstanding deficiencies while plans and financial resources will be geared to the longer term schemes.

It is anticipated that modernisation will be completed in a reasonable time if the finance is made available to the venture.

HOUSEBOATS

The Essex County Council Act, 1952, provides that the mooring of any houseboat within the County shall not be lawful without the consent of the Council of the district in which the houseboat is situated and that the Council may require the owner or occupier to remove or demolish any houseboat not authorised by them.

The Port and City of London Health Committee are, however, still responsible under the London Government Act, 1963. for sanitary supervision of houseboats coming within the jurisdiction of the Port Health Authority, although under the Essex County Council Act, 1952, the local Council in Essex is now responsible for the licensing and stipulating conditions under which licenses to the resident houseboats will be granted.

The functions of the Port Health Committee with regard to the sanitary supervision of houseboats are safeguarded by Section 212 of the Act, which provides *inter alia* that no consent shall be given to moor any houseboat within the Port of London without the previously written consent of the Corporation of London as the Port Health Authority of the Port of London.

Benfleet

During the year, the Benfleet Urban District Council with the concurrence of the Port Health Authority granted eighteen "temporary consents" to craft which were considered fit for human habitation for the ensuing twelve months. This is one less than last year. Although the "temporary consent" permits permanent habitation, many of the houseboats are seldom occupied. There are always some problems relating to refuse and sewage disposal and provision of wholesome drinking water associated with this type of dwelling. An additional problem is that of environmental health, due to the close proximity of a major refuse tipping site.

Canvey Island

The Canvey Island Urban District Council have never granted "temporary consents" but sewage, refuse and drinking water facilities are available at the seaward end of Smallgains Creek where five houseboats are moored. When the site was last inspected it was evident that only one of the houseboats was used for habitation but the remaining four although empty were in good condition.

DANGEROUS DRUGS

During the year nineteen certificates authorising the purchase of scheduled Dangerous Drugs were issued under the Dangerous Drugs Regulations, 1953, Regulation 13 (2) of which is as follows:–

(a) The master of a foreign ship which is in a port in Great Britain shall be authorised to procure such quantity of drugs and preparations as may be certified by the medical officer of health of the port health authority within whose jurisdiction the ship is or, in his absence, by the assistant medical officer of health, to be necessary for the equipment of the ship until it reaches its home port.

(b) A person who supplies a drug or preparation in accordance with a certificate given under this paragraph shall retain the certificate and mark it with the date on which the drug or preparation was supplied and keep it on his premises so as to be at all times available for inspection.

PIGEON CONTROL

The pattern of control and the methods of destruction have remained the same as previous years and action has been intensified on all Docks premises which have proved to be roosting sites and/or feeding centres. As a consequence, there have been few complaints of damage or fouling.

The Port of London Authority employs a skilled private contractor to cover all the Docks. The chief method of eliminating pigeons is to feed the birds at suitable times with baits incorporating a narcotic. The stupified victims are collected and destroyed painlessly. These operations are repeated as new flocks take possession. Tenants of some industrial premises systematically carry out trapping of the birds and destruction of the eggs and nests existing at their properties.

The Port Health Inspectors keep the control system under review and records are made available to them as required. The meat import sheds and granaries are given specific attention in order to comply with the Food Hygiene (Docks, Carriers etc.) Regulations, 1960.

Number of birds narcoticised and destroyed	25,550
Number of birds trapped and destroyed	822
Number of eggs destroyed	1,310

THE FOOD HYGIENE (DOCK CARRIERS ETC.) REGULATIONS, 1960

Progress in the application of these Regulations has continued generally during the year. The co-operation received from the shipping and transport industries has been encouraging and the Port Health Inspectors have made themselves available for consultation at all stages of development in re-construction and re-organisation schemes. Statutory enforcement has not been necessary at any time.

Apart from the premises and activities within the docks, the land and water transports are kept under review at regular intervals and considerable progress has been achieved in this respect. Barges at the quays and motor transports at berths and marshalling points are checked as a routine and the owners are now well aware of the requirements of the Regulations.

Although the overall progress made in the past five years would seem to be slow it has nonethe-less been steady and the results already achieved augur well for the future.

FOOD HYGIENE (GENERAL) REGULATIONS, 1960-62

The customary annual survey of passenger carrying launches, which operate the summer service on the river, was carried out by the various owners during the earlier months of the year. These occasions provide an opportunity to inspect the fresh water installation and to make certain that all service components are clean, of good repair and the water chlorinated. The survey also provides an opportunity to repair defects and to adopt progressive modifications. In this respect the owners have always shown outstanding willingness in giving their full co-operation. Apart from cleansing and a few minor adjustments, the launches went into successful service as in previous years and regular inspections have been made while afloat without any adverse incident.

Food Hygiene has been carefully observed during the summer season both afloat and at terminal supply establishments, and in general found to be highly satisfactory.

The three larger vessels which continue the excursions to coastal resorts and the Continent were all re-fitted to a standard in excess of the minimum requirements of the Regulations except for the storage of fresh water which for constructional reasons will always remain limited. Exemption Certificates in this respect have been issued by this Authority.

53 routine inspections were carried out during the year. The improvements made in consequence of previous visits had been maintained and in some cases amplified voluntarily.

FOOD INSPECTION

The total amount of foodstuffs detained for examination and either condemned as unfit for human consumption and destroyed or otherwise disposed of under guarantee and supervision was 3,515 tons. 1 cwts. 2 qrs. 12 lbs.

The following is a summary showing methods of disposal:–

	Weight				*Comparable Weight 1964*			
	Tons.	*cwts.*	qrs.	lbs.	*Tons.*	*cwts.*	*qrs.*	*lbs.*
Burnt	42	18	2	3	43	6	1	1
Buried	2,409	12	0	17	2,006	7	3	6
Contractor	61	18	3	16	22	2	1	23
*Other Districts	411	19	3	6	1,796	13	0	8
*Animal Feeding	61	10	1	24	646	16	0	17
*Refining					571	7	2	10
Re-exported	527	1	3	2	443	1	2	21
Totals –	3,515	1	2	12	5,529	15	0	2

Items marked * were released with the agreement of and under the supervision of local medical officers of health.

Of the 3,515 tons listed above, the principal items and methods of disposal consisted of:–

Burnt	*Tons.*	*Cwts.*
5,446 tins, 398 ctns. 314 jars and 1 barrel of juices, pulps, fruits, vegetables, meat and fish - burst, blown, broken or leaky	17	19
24 bags Tapioca Sweepings		17
75 bags Carbon-black contaminated Rice and dirty Rice Sweepings	3	6
22 ctns. wet-damaged Macaroni		5
5 dock-water damaged Lambs		1
4 ctns. loose-collected Horsemeat		2
4 boxes and 3 bags Offal - soft, dirty and loose-collected		10
15 ctns. uncertificated Cooked Pork Shoulder		10
1 cask Fresh Cranberries - contaminated with extraneous matter.		1
44 ctns. Currants - wet damaged, fermenting and rodent damaged		16
21 ctns. Sultanas - stained		5
Quantity of Banana waste	6	1
144 ctns. wet damaged Jelly Crystals	1	10
340 ctns. Dessert Topping - contained prohibited preservatives	1	15
5 bags soiled and dirty Gelatine		5
10 ctns. Celery - frost damaged		4
16 ctns. Noodles - wet and mouldy		3
5 ctns. Cake Mix - cartons broken and contents damaged		1
1 ctn. Red Peppers - dock water damaged		4
3 ctns. Instant Coffee - cartons broken and contents damaged		1
1 bag Indian Pickles - rodent infested		1
3 bags Cow Peas - loose-collected		3
33 boxes Oranges - dock water damaged	1	4
50 ctns. French Dressing - prohibited preservative		6
1 cask Stuffed Olives - contents exposed and damaged		4
33 ctns. Spaghetti - contents spilled and dirty		9
6 ctns. Apples - contaminated with mineral oil		2
2 bags Sodium Caseinate - bags split and contents damaged		3
13 ctns. Shelled Walnuts - wet stained		1
2 casks Gherkins - casks damaged and contents dirty		5
5 bags Tea Sweepings		1
5 bags Gluten Flour - contaminated with excreta		5
Quantity Beef, Flour and Rice - ship's rejected stores	3	7
Buried		
20,075 tins, 1,642 ctns. 714 jars and 7 barrels of juices, pulps, fruits, vegetables, meat and fish - burst, blown, broken or leaky	123	10
16 ctns. Sultanas - stained		14
12 ctns. Currants - stained		3
Quantity Dried Fruit - mouldy		9
Lighter of Dried Fruit - wet and mouldy	10	2
1 cask Cherries - contents spilled and dirty		4
1,860 cases Plums and 475 cases Nectarines - over ripe and wasty	31	19
85 boxes Melons -	1	11
14 x ½ boxes Melons - rodent damaged		2
153 boxes Apples - wasty, broken cartons and loose.collected	8	5
457 boxes Apples - salt-water damaged	8	11
170 ctns. Apples - contaminated with mineral oil	2	19
6,800 ctns. Apples - salvaged after collison	131	13
70 casks Olives in Brine - rotting	5	11
9 cases Pears - wasty		1
2 cases Pears - dock water damaged		1
5,473 cases Oranges - wasty	183	4
3 bags Oranges and Lemons - wasty		10
400 trays Grapes - wasty	4	10
15 ctns. Grapefruit - stained		2
88 ctns. Plantains - wasty	1	11
2 boxes Clementines - dock water damaged		3
Quantity Banana waste	1,518	6
157 crates Garlic - oil stained and wasty	4	1
3,216 baskets Tomatoes - wasty	22	0
7 bags Split Peas - fire-damaged sweepings		6
344 bags Peas - wet-damaged and loose-collected	15	9
49 ctns. Dehydrated Onion Powder - wet-damaged	1	2
Quantity Onion Sweepings	1	10
30 bags Onions - wasty and dirty		7
263 bags Potatoes - wasty	6	11
32 boxes Cucumbers - wasty		4

	Tons.	Cwts.
124 bags Yams - wasty	12	4
5,470 nets Carrots - wasty	67	12
15 bags Pumpkins - wasty		8
20 crates Celery - wasty	1	2
36 bags Flour - rejected ship's stores		16
26 bags Flour - weevil infested ship's stores		16
33 bags Rice - sweepings and wet damaged		18
29 bags Rice - oil damaged		2
835 ctns. Macaroni - wet-damaged	9	10
2 bags Lentils - fire-damaged		2
Quantity Sugar - dock-water damaged	60	-
1,799 bags Sugar - carrier barge sank	130	-
8 ctns. Orange Nectar - excess lead		2
39 barrels Orange Juice - heads out and contents damaged	7	17
14 casks Orange Juice - unsound	3	19
3 casks Lime Juice - heads out and contents damaged		18
2 barrels Apricot Pulp - barrels stove-in and contents damaged		6
1 barrel Apricot Pulp - dock-water damaged		4
1 barrel Lemon Juice - heads out and contents damaged		4
6 cases Sausages - dock-water and rodent damaged also contaminated with chemical		1
5 ctns Offal - dock-water damaged		3
42 ctns. Prawns - sulphide discolouration		7
1 barrel Mackerel - contents spilled and dirty		1
7 bags Dried Mint and Thyme - dock-water damaged		3
1 bag Spearmint Leaves - dock-water damaged		1
3 bags Gram Dhal - rodent damaged		3
1 bags Toor Dhal - contaminated with oil		1
3 bags Glaxo Powder - dock-water damaged		3
6 bags Potato Starch - dock-water damaged		6
73 cases Spaghetti - rodent infested		18
17 ctns. Red Peppers - rotted and stained		4
3 ctns. Pancake Mix - wet damaged		7
2 bags Wheat Gluten - loose-collected and rodent damaged		2
1 barrel Gherkins - dirty and contaminated		4
2 cases Egg Noodles - dock-water damaged		1
5 bags Peanuts and Peanut Sweepings - dirty		4
3 casks Ginger - casks broken and contents damaged		6
20 barrels Pickles - heads out and contents damaged	1	14
136 trays Beans - wasty and mouldy		12
33 ctns. Confectionery - stale and unwholesome		12
16 crates Cheese - contents spilled and dirty	1	1
9 chests Tea - excess lead		7
13 bags Desiccated Coconut - wet damaged		4
3 bags Juniper Berries - wet damaged		3
Quantity of ship's stores - fire damaged	11	8
Contractor		
6 Beef Hinds, 53 Beef Livers, 87 Beef Tongues, 207 Beef Kidneys, 1 Beef Brisket, 2 Beef Hearts, 141 Ox Livers, 56 bags Ox Offal, 95 Ox Kidneys, 12 Ox Hearts, 14 Cow Rumps, 1 Cow Crop, 3,550 Lambs, 184 Lamb Parts, 2 Lamb Livers, 5 Lamb Shoulders, 3 ctns. Lamb Hearts, 13 Ewes, 1 Ewe Leg, 5 Sheep Legs, 20 Mutton Necks, 2 Mutton Legs, 76 Rabbits, 28 ctns. Kangaroo Meat, 3 ctns. Veal, 52 Wethers, 6 ctns. Chucks and Blades, 11 ctns. Butter, 10 ctns. Lard and 27 cases Chinese Hams - diseased, loose-collected dock-water damaged, bloodstained, wet, stained, soft, dirty, bacterial contamination, decomposed, smelly, iced, rancid, mis-shapen, and faecal contamination	61	13
Other Districts		
123 ctns. Beef Offal and Tails - bacterial contamination - for processing	3	6
1067 ctns. Offal - bacterial contamination - for processing	29	13
2 ctns. Boneless Beef - bacterial contamination - for processing		1
24 ctns. Beef Livers - soft, stained and smelly, - for processing		15
204 ctns. Beef Kidneys - recognition of Meat Establishment withdrawn - for processing	5	5
Quantity Beef Fat - uncertificated - for Industrial Purposes	6	10
2 ctns Bobby Veal Legs - bacterial contamination - for processing		1
6 ctns B/L Veal - bacterial contamination - for processing		3

1,619 ctns, Kangaroo Meat - bacterial contamination - for processing	42	16
21 ctns Lamb Livers - bloodstained and dirty - for processing		12
3 ctns Lamb Legs - bacterial contamination - for processing		2
459 ctns Wether Legs – bacterial contamination - for processing	17	7
3 ctns. Ewe Legs - bacterial contamination - for processing		2
42 bags Wild Pork - uncertificated - for industrial purposes		10
2 cases Dried Turtle Meat - larvae infested - for cleansing		5
189 ctns. Inedible Lungs - uncertificated - for processing	5	13
Quantity Tea - dirty and sweepings, - for chemical and fertiliser manufacture	45	3
2 bags Almonds - wet damaged - for sorting		1
587 bags Sultanas - slight gypsum contamination - for washing	7	6
Quantity tinned Shrimps and Prawns - fire damaged - for sorting	5	12
40 bags Flour - weevil infested - for animal feeding		17
473 ctns. Canned Goods - salt-water damaged - cleansing and relabelling		10
1,209 bags Pickling Onions - wet damaged and wasty - for garbling	30	4
157 ctns. Spaghetti and Macaroni - wet damaged - for sorting	1	19
30 ctns. Butter - loose-collected - for industrial purposes		15
1,000 bags Rice - fire smoke and wet damaged - for reconditioning	50	0
75 bags Sugar - stained and sweepings - for refining	3	11
5,679 bags Lactose - sea water damaged - for refining	141	19
240 bags Split Ginger - wet damaged - for sorting	10	5
Animal Feeding		
28 ctns Currants - wet damaged		7
60 bags raisins - contaminated with gypsum powder	1	10
9 bags Milk Powder - rodent damaged		4
67 bags Milk Powder - bags broken and contents damaged	3	14
1 ctn. Milk Powder - dock water damaged		1
18 bags Flour - stained and dirty	1	2
463 bags Flour - contaminated with carbon black	28	19
77 bags Flour - ships rejected stores	1	14
4 bags Flour - contaminated with asbestos		5
19 bags Broken Rice - bags torn and contents damaged		19
16 bags Rice - Sweepings		11
22 bags Rice - weevil infested	1	2
235 bags Malt - wet damaged	11	15
45 bags Lentils - wet, dirty and contaminated	2	2
5 bags Peas - sweepings		5
53 bags Groundnuts - wet damaged	2	17
5 bags Wheat Germ - wet stained		7
14 bags Chick Peas, rodent damaged		13
34 bags Beans - fire damaged	1	18
35 bags Maize - stained and rodent damaged		17
Re-export		
42 ctns. Currants - oil damaged		10
30 casks Casings - uncertificated	6	12
2 casks Lamb casings - uncertificated		7
8 casks Hog Casings - uncertificated		8
86 ctns Boneless Beef - Scrapmeat	3	0
300 ctns Boiled Beef in Gelatine - uncertificated	3	2
179 quarters bone in beef hinds and fores - uncertificated	11	1
30 cases Pork Sausages - uncertificated		7
41 cases sausages - uncertificated		9
10 ctns. Boneless Mutton - scrapmeat		5
808 ctns. Mutton Legs, Ox Tongues and Ox Crops - Incorrect Official Certificate	433	1
168 ctns. Meat Products - uncertificated	1	5
224 bags Chilli Powder - prohibited colouring matter	11	14
128 bags curry powder - prohibited colouring matter	4	10
228 boxes curry powder - prohibited colouring matter	5	12
70 bags Turmeric Powder - prohibited colouring matter	3	10
50 ctns. Anchovy style Sprats - prohibited preservative		13
36 chests Congo Tea - excess sand and mineral matter	2	15
680 ctns Canelloni - uncertificated	5	3
12 ctns Whey Cheese - prohibited preservative		2
155 ctns Canadian Fruit Cake - prohibited colouring matter	1	13
1,100 ctns. Pure Lard - uncertificated	13	15

The following figures have been given by the Port of London Authority and acknowledgement is made for their help. The figures are in respect of the year 1965 and are tonnages of foodstuffs

landed on their quays and handled by them during the year.

Butter, Cheese and margarine	6,154
Canned Goods	134,114
Flour	9,301
Fruit, Dried	27,688
Fruit, green and vegetable	275,925
Grain and Seed	149,648
Meat Chilled and Frozen	495,659
Other Provisions	39,056
Sugar	829
Tea	21,824
	1,160,198

Taking the total weight of items in the first table as 3,515 tons the amount dealt with expressed as a percentage of imports for the same period equals 0.30%.

FOOD SAMPLING

Tea

During the year 324 samples of tea were drawn and examined. Of these 3 were unsatisfactory and suitable arrangements have been made to deal with the consignments involved.

Other Sampling - Public Analyst

During the year 538 other samples were sent to the Public Analyst as follows:–

Sample	*Satisfactory*	*Unsatisfactory*	*Action*
Sliced Smoked Salmon	1	0	
Dressed Crab	7	0	
Smoked Cod Roes	3	0	
Soft Roes	2	0	
Shrimps	5	0	
Shrimp Cocktail	1	1	Prohibited preservative - letter to Merchant and A.S. A.P.H.A.
Dried Shrimp Powder	0	1	Contained lead 6 ppm letter to Merchant
Shrimp Relish	1	0	
Prawns	1	0	
Sherrysild	1	1	Prohibited preservative - letter to merchant and local M.O.H.
Mussels	0	1	Prohibited preservative - Letter to Merchant.
Lumpfish Caviar	1	0	
Sardines	7	0	1-Incorrect label - letter to Merchant and M.O.H.
Tunny Fish	1	0	
Clam Sauce	1	0	
Crab Relish	1	0	
Fish Paste	3	0	
Oyster Sauce	1	0	
Brislings in Sauce	4	0	
Anchovy style sprats	0	1	Prohibited preservative - re-exported
Smoked Herring Fillets	1	0	
Frog Legs	1	0	
Chilli Powder	16	11	3-Prohibited Colouring Matter re-exported 3-Prohibited Colouring Matter re-export Notice Served. 5-Adulterated - Letter to Merchant and Local M.O.H.
Curry Powder	6	12	9-Prohibited colouring matter re-exported. 3-Adulterated - Letter to Merchant and Local M.O.H.

Sample	*Satisfactory*	*Unsatisfactory*	*Action*
Turmeric Powder	3	0	2-Prohibited colouring matter Letter to Merchant. 1-Adulterated - Letter to Merchant and Local M.O.H.
Whole Turmeric	1	0	
Curry Paste	1	0	
Meat Products	5	0	
Cooked Pork Shoulder	2	0	2-Incorrect Labels - Letter to Merchant and Local M.O.H.
Bacon Grill	1	0	
Sausages	5	0	
Chinese Meat Product	6	0	
Pork Luncheon Meat	4	0	
Chicken Meat	1	0	
Stewed Steak	2	0	1-Incorrect Labels - Letter to Merchant and Local M.O.H.
Oranges	10	0	
Apples	4	0	
Plums	3	0	
Cranberries	1	1	Cranberries fermenting released for manufacturing purposes.
Prunes	29	0	
Raisins	1	1	Contaminated with Gypsum - released for washing.
Dried Apricots	1	0	
Dried Mixed Fruit	5	2	Contained Sorbic Acid - Letter to Merchant.
Dried Apple	1	0	
Dried Pears	1	0	
Dried Red Dates	1	0	
Tinned Mangoes	1	0	
Solid Pack Apples	2	0	
Tinned Grapes	1	0	
Tinned Strawberries	2	0	
Tinned Raspberries	1	0	
Solid Pack Blackcurrants	1	0	
Fruit Cocktail	1	0	
Crushed Banana	1	0	
Vanilla Extract	12	0	3-Incorrect Labels - Letter to Merchant and Local M.O.H.
Strawberry Concentrated Extract	1	0	
Fruit Powder	3	0	
Strawberry Flavouring Essence	1	0	
Vanilla Flavouring Essence	2	0	2-Incorrect Label - letter to Merchant & Local M.O.H.
Romarom Extract	1	0	
Apricot Pulp	1	0	
Lime Juice	1	0	
Orange Juice	2	0	
Blackcurrant Juice	2	0	1-Incorrect label - Letter to Merchant & Local M.O.H.
Apple Juice	1	0	
Gooseberry Juice	1	0	1-Incorrect label - Letter to Merchant and Local M.O.H.
Fruit Toppings	0	3	Contained prohibited preservative - re-exported.
Fruit Sauces	3	5	Contained prohibited preservative - re-exported.
Mineral Water	1	0	
Martini Vermouth	1	0	
Ships drinking water	1	0	
Condensed Milk	1	0	
Instant Tea	1	0	
Instant Coffee	1	0	
Tomato Puree	67	4	Excess mould re-exported

Sample	*Satisfactory*	*Unsatisfactory*	*Action*
Tomato Sauce	1	0	
Rye Flakes	1	0	
Dehydrated Carrot	1	0	
Dehydrated Cabbage	1	0	
Kibbled Onions	1	0	
Potato Gems	1	0	
Celery Hearts	4	0	
Stuffed Olives	4	0	
Gram Flour	1	0	
Gherkins	0	1	Excess preservative - Letter to Merchant & Local M.O.H.
Green Beans	0	1	Prohibited Colour - goods re-exported
Tung Choy Winter Vegetable	1	0	Incorrect Label - Letter to Merchant & Local M.O.H.
Asparagus Tips	2	0	
Dehydrated Cauliflower	1	0	
Rice	1	0	
Lettuce Hearts	1	0	
Peas	1	0	
Fried Onions	1	0	
Paprika	1	0	
Bombay Halwa	1	0	
Cream Spread	0	1	Prohibited preservative - Letter to Merchant and Local M.O.H.
Milk Spread	0	1	Prohibited preservative - re-exported.
Pâté de Foie	1	0	
Liver pâté	1	0	
Cheese and Shrimp Pâté	1	0	
Cheese and Ham Pâté	1	0	
Tongue Pâté	1	0	
Ham Pâté	2	0	
Pâté de Foie pur Porc	3	0	
Pâté	1	0	
Game Pate	4	0	
Cheese	1	1	Excess preservative - Letter to Merchant & Local M.O.H.
Cheese Spread	1	1	Prohibited Preservative - Letter to Merchant and Local M.O.H.
Goats Cheese Spread	0	1	Prohibited preservative - Letter to Merchant and Local M.O.H.
Macaroni and Meat in Tomato Sauce	1	0	
Macaroni and Cheese	1	0	
Ravioli in Tomato Sauce	2	0	
Spaghetti, Sausages and Meat) Balls in Tomato Sauce)	1	0	
Sauce	2	0	
Cocktail Crackers	1	0	
Breadsticks	1	0	
Rye Bread	1	0	
Flour	5	0	
Mayonnaise	1	2	(1-Prohibited preservative - (Surrendered for destruction. (1-Prohibited preservative - (Letter to Merchant and Local (M.O.H.
Cream of Tartar	1	0	
Chestnut Paste	1	0	
Suprême de Foie de Volaille	1	0	Incorrect label - Letter to Merchant and local M.O.H.
Corn Relish	1	0	
Seasoning	1	0	
Tartar Sauce	1	0	
French Dressing	0	1	Prohibited preservative - re-exported.

Samples	*Satisfactory*	*Unsatisfactory*	*Action*
Indian Pickles	23	9	Prohibited preservative - re-exported.
Chinese Mixed Pickle	2	0	
Jamaican Sweets	1	0	
Confectionery Dye	1	0	
Rum Bon Bons	1	0	
Cherry Brandy Bonbons	1	0	
Chocolate Petit Fours	0	1	Prohibited colour - Letter to Merchant and Local M.O.H.
Frozen Fruit Pies	7	0	
Fruit Cake	1	1	Prohibited colour - Letter to Merchant and local M.O.H.
Ginger Biscuits	1	0	
Apple Pie Slices	1	0	
Cake Mixes	4	0	
Pizza	1	0	
Guava	1	0	
Spiced Tamarind	1	0	Incorrect Label - Letter to Merchant and local M.O.H.
Prime Steam Lard	10	0	
Soya Sauce	1	0	
Aromatic Jilk	1	0	
Heliomatt	3	0	Incorrect labels - Letter to Merchant and Local M.O.H.
Ginger	3	0	
Animal feeding stuffs	24	0	
Cream	3	0	
Baby Foods	3	1	3-Incorrect Labels - Letter to Merchant and local M.O.H. 1-Contained Tin 250 ppm - Letter to Merchant
Instant Custard Powder	1	0	
Fried Egg Plant	1	0	
Tinned Snails	1	0	1-Incorrect label - Letter to Merchant and local M.O.H.
Jelly Crystals	7	0	
Soups	4	0	
Butter	1	0	
Groundnuts	29	3	2-Showed Aflatoxin - goods released after sorting. 1-Showed Aflatoxin - goods released following further negative samples.

Other Sampling - Bacteriological

Horsemeat	2563	755	Appropriate sterilised Consignments
Kangaroo Meat	424	231	"
Veal	236	28	"
Mutton	328	12	"
Beef	178	7	"
Egg	104	0	
Corned Beef	12	0	
Dessicated Coconut	20	0	
Chicken Meat	2	0	
Shrimps	14	0	
Dried Minced Beef	2	0	
Prawns	2	0	
Baby Foods	3	0	
Sardines	1	0	
Vermouth	2	0	
Pig	5	0	
Cake Frosting Mix	2	0	
Mashed Bananas	1	0	
Chinese Meat Products	6	0	
Dried Mint	3	0	
Dried Thyme	1	0	
Chinese Curry Paste	10	0	
Chinese Bean Sprouts	1	0	

Samples	*Satisfactory*	*Unsatisfactory*	*Action*
Ham	2	0	
Shrimp Powder	1	0	
Mussels	1	0	
Chinese Hams	27	0	
Fruit Powder	2	0	
Rabbits	10	0	

GROUNDNUTS AND COLOURING MATTERS

The following articles on Groundnuts and Colouring Matters are submitted by the Public Analyst, Dr. H. Amphlett Williams.

Groundnuts

In 1960 outbreaks of an apparently new disease occurred in young turkeys causing over 100,000 deaths. The disease, which became known as "Turkey–X" disease, although later found to affect other domestic birds, particularly ducks, was traced to a large consignment of Brazilian groundnut meal that had become affected by a fungus, Aspergillus flavus. Investigation showed that this fungus, quite a common one, produces a highly toxic metabolite, to which the name "Aflatoxin" has been given, and that even minute proportions of aflatoxin, of the order of one or two parts per million of the groundnuts, causes an acute hepatosis characterised by necrosis of the liver parenchyma and proliferation of the bile duct epithelium. According to recent reports aflatoxin has produced hepatomas in trout at a level of 0.001 part per million. This illustrates the futility of attempting to apply quantitative limits for carcinogens. The toxin affects calves and pigs, the young being particularly susceptible, and also causes liver carcinoma in rats, but no scientific evidence is yet available as to its effect on man.

Consignments of groundnuts entering the Port are now being sampled and using a sensitive method of fluorescent chromatographic analysis developed by the Tropical Products Institute, aflatoxin has been detected in proportions ranging from "Low" to "High" in 7 out of 88 samples examined since July 1964.

Colouring Matters

As a result of the recent development of entirely new analytical techniques artificial dyes can now be extracted from complex and naturally coloured foods, isolated and often identified. Many of the dyes formerly used in food have been found in animal experiments to be injurious, and the coal-tar dyes now permitted to be used in food are restricted to a list of thirty, although eighteen of these are of dubious or unknown safety. Since there are hundreds of dyes, however, the identification of an unknown one, even after isolation, may involve very many tests, all on a micro scale.

Although there is evidence that some dyes, particularly the oil-soluble ones, may produce catharsis, the principal danger from dyestuffs is associated with cancer, and accumulated evidence indicates that a number of the azo, triphenylmethane and stilbene dyes are potent tumour-producing agents.

This laboratory has been particularly exercised by the identification of dyes of the azo class in various foods. Many dyes of this class contain in their molecule a naphthyl group attached by the azo linkage to various supporting aromatic groups. They include some of the finest dyes, fast, and apparently quite safe on materials in everyday use, and even in cosmetics or when painted on the skin. But when swallowed they become subjected to the digestive processes of the body, and recent biochemical studies indicate that the molecule is first split at the azo linkage into smaller molecules, the naphthyl moiety being reduced to naphthylamine and then hydroxylated; the hydroxyl group becoming attached, when other positions around the nucleus are occupied by substituent groups, to the ortho position (i.e. next to the amine group). The ortho hydroxynaphthylamine thus formed is believed to be the actual carcinogenic agent and this compound has been shown to induce cancers of the liver, bladder or other parts of the excretory system. In a similar manner dyes containing other aromatic amine groups capable of being converted by reduction and hydroxylation to the respective orthohydroxyamines are also suspected to be carcinogenic.

The well-known Sudan Red dyes are of the orthohydroxynaphthylazo class and have been found in this laboratory in several imported foods. In 1959, 26 samples of Brazilian oranges were found to be coloured with Oil Orange XO (Sudan II). The consignments were stopped and no further samples coloured with this dye have been detected.

In 1964, seven samples, and in 1965, twenty-one samples of imported spices – Chilli, Turmeric and Curry Powders, mainly from East Africa – were found to contain prohibited dyes, viz: Sudan Red G, Brilliant Croceine, Sudan III and Sudan IV, the last three being disazo dyes, capable of reduction to two potentially carcinogenic breakdown products. These dyes had been added not only to improve the appearance of the spice but in many instances to conceal admixture with pea flour and husks, rice and other cereals; a form of adulteration apparently common a century ago when red lead was used as the colouring matter.

Spices are, of course, only consumed in small quantities; but it must be emphasized that carcinogens cannot be compared with most other poisons. They have no "threshold of safety", and there is reason to believe that the minutest dose may evoke a cancerous tendancy that may be passed on from generation to generation of body cells until long after the poison has been excreted a malignancy may develop in some part of the digestive system of the body. For this reason a great deal of work is devoted in this laboratory to the detection of such substances in food; and although most of the work yields negative results and consequently does not appear in the laboratory reports, it may be mentioned that prohibited "C" Class dyes, i.e. "Colours which have been shown to have, or are suspected to have, harmful effects on health", were also found in various other imported foods, including Canned Beans, Canned Mussels, Mixed Pickles, Fruit Cakes, Petit Fours and a Colouring Liquid, the following dyes being identified:– Brilliant Blue FCF, Orange GGN, Metanil Yellow, Guinea Green B and Fuchsine.

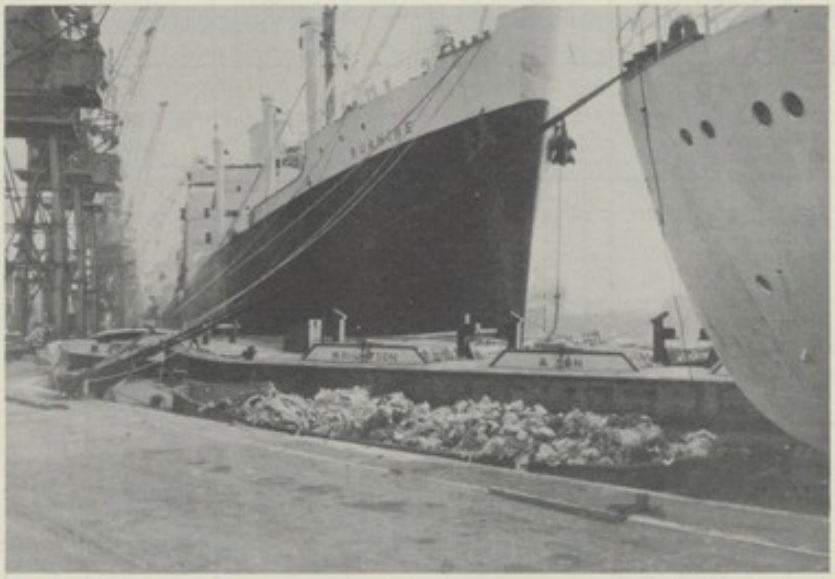
INEVITABLE WASTE OF BANANAS

Over the past few years much has been written and more has been said about the waste of good bananas at No. 35 Shed, Royal Albert Dock, the regular banana discharge berth. It would, therefore, seem appropriate to throw some light on this very controversial subject by an examination of the facts.

During 1965, 57 cargoes comprising 72,541 tons of Jamaican bananas were discharged at No. 35 Shed and out of these 1,470 tons were surrendered to the Port Health Authority for destruction by burial at Surridge's Controlled Refuse Tip, Mucking Flats, East Tilbury. This represents 2.03% of the total carried. The bananas are discharged from the ships by means of continuous conveyor belts and four experienced banana selectors are stationed at the belt terminals to reject any bananas considered unsuitable for delivery to the ripening chambers.

By far the greatest reason for rejection (about 92%) is due to Santa Marta Stem End Rot (Gloeosporium). This is a decay of the stem ends of individual fingers eventually resulting in the fingers dropping off the hand. It is caused by a fungus which infects the stem ends where they have been previously creased by mechanical damage. The remaining 8% rejected is accounted for by other fungus diseases, mechanical damage, and over ripeness. It is these over-ripe (yellow) bananas that attract attention while in the refuse barge.

The question of alternative disposal of the 2.03% of waste bananas is always under consideration. Practically the only outlet is for animal feeding, but, because the fruit has to be peeled, it presents a less attractive proposition to the buyer, and the price offered makes the transaction hardly worthwhile



Barge laden with Waste Bananas

IMPORTED MEAT CONTROL

The work of meat control in the Royal Docks Group continued successfully throughout the year, although it is evident that more could be achieved over a wider range of imported meat if the inspection room was enlarged. To this end, representation has been made to the Port of London Authority and is being favourably considered.

The main activity has involved:–

Physical Examination for Diseases	9,646 packages
Bacteriological Sampling	4,936 packages
Reconditioning from Contamination, etc.	33,300 packages

The supervision and re-export of 6,559 packages of Prohibited meats, which included 5,778 without acceptable Official Certificates.

In addition to this, the control and disposal of 910,557 packages of Pet Food meat has been supervised.

It will be noticed that the amount of meats intended for the pets food trade constitutes a major problem for supervision. Whatever procedure is adopted to comply with The Meat (Staining & Sterilization) Regulations involves much detailed administrative work to cover the network of its movements from the ship to the ultimate destination. Whether the provisions in the impending revision of the Imported Food Regulations will take account of animals from which this pets food meat is derived remains to be seen and may affect the present procedure of control. There is a growing opinion that all meat intended for pets food should be sterilized to accord with the Meat (Staining & Sterilization) Regulations. Should this procedure be adopted then much of the administrative and sampling control would be eliminated.

Mechanised Installation

During the year, work has commenced on the construction of the first mechanised meat discharging berth at 'B' berth in the Royal Victoria Dock. It is an enterprising project and aims to discharge a ship in considerably less time, the packages of meat being conveyed from the ship's hold to the land transport loading bays on a travelling belt.

The organisation and technical control are being carefully planned and the Port Health Authority is represented at the consultations with the Port of London Authority and the Industry. Facilities for the inspection of the cargo in situ and of the rapidly moving packages on the conveyor are to be considered.

It is anticipated that the scheme will be put into operation in the Autumn of 1966.

1965. MEAT DETAINED FOR RECONDITIONING

Country	*Sheep & Lambs*	*Beef B/IN*	*Beef Cuts & B/L Beef*	*Mutton Cuts B/L Mutton*	*Beef Livers*	*Other Offals*	*Pork*	*Totals*
Argentine	1,447 carcases	9 qtrs.	35 ctns./bags		858 ctns./bags	155 ctns./bags		2,504
Australia	382 carcases		1,387 ctns.	607 ctns.	660 ctns.	579 ctns.		3,615
Brazil					95 ctns./bags			95
Canada						5 ctns.		5
New Zealand	20,478 carcases		53 ctns.	248 ctns	400 ctns	355 ctns./bags	6 Sides	21,540
Uruguay					12 bags			12
U.S.A.					1,146 ctns.	4,383 ctns		5,529
TOTALS	22,307	9	1,475	855	3,171	5,477	6	33,300

BACTERIOLOGICAL SAMPLING 1965.

Country	*Horsemeat*	*Kangaroo*	*B/L Veal*	*B/L Mutton & Mutton Cuts*	*B/L Beef & Beef Cuts*	*Rabbits*	*Various Offals*	*Cooked Meats*	*Totals*
Argentine	2,307								2,307
Australia	206	741	144	280	100	10	55		1,536
New Zealand			120	40	10				170
Brazil	424								424
Uruguay	305								305
Paraguay	152								152
Bechuanaland					5				5
Canada	10								10
China								27	27
TOTALS	3,404	741	264	320	115	10	55	27	4,936
Salmonellae Positive	779	253	29	13	3	Neg	5	Neg	
Percentage	22.8%	34%	11%	4%	2.6%	–	9%	–	

ROUTINE EXAMINATION FOR DISEASE. 1965

Country	*Sheep & Lambs*	*B/L Beef*	*B/L Mutton*	*Ox & Beef Livers*	*Other Offals*	*Rabbits*	*Totals*
Argentine	1,540	30		822	95		2,487
Australia	445	164	60	540	176	115	1,500
Brazil				70			70
Canada				170	20		190
China						20	20
New Zealand	3,066	192	46	380	30		3,714
Uruguay	1,415						1,415
U.S.A.		10		220	20		250
TOTALS	6,466	396	106	2,202	341	135	9,646

FERTILISERS AND FEEDING STUFFS ACT, 1926
FERTILISERS AND FEEDING STUFFS REGULATIONS, 1960

Twenty-four samples of Feeding Stuffs were submitted to the Agricultural Analyst. No sample of Fertiliser was sent.

In each case the sample was found to be within the limits of variation permissible under the Regulations.

Student Public Health Inspectors.

Six Student Public Health Inspectors are employed by the Port Health Authority and all made satisfactory progress. Two of them completed the four year course and were successful in their examination for the Diploma of Public Health Inspector. Both obtained appointments within the Corporation, one as a Port Inspector and the other as a Public Health Inspector in the City.

During the year training was given to students from other Local Authorities, thirty-five of them having received instruction for three or more days in Port Health work.

Visitors

In response to requests from Government Departments, Local Authorities and Institutions of health education, a considerable number of doctors and public health inspectors have received instruction in Port Health organisations and practices, sometimes in groups and sometimes as individuals. Overseas visitors came from CYPRUS, GHANA, INDIA, IRAN, ISRAEL, JAPAN, MALTA, NIGERIA and POLAND.

PAPERS

The following Papers were read by the Medical Officer of Health at Conferences held during the year:–

1. Health Congress of the Royal Society of Health. – 27th April, 1965.

TYPHOID FEVER : PAST AND PRESENT
THE EVALUATION OF RISKS OF INFECTION ARISING FROM FOOD, WITH SPECIAL REFERENCE TO CANNED FOOD AND TYPHOID FEVER.

By W.G. SWANN, B.SC., M.D., D.OBST.R.C.O.G., D.P.A., D.P.H.
Medical Officer of Health, Port and City of London

An attempt at an evaluation of the risks of infection is bound to be at the best an inaccurate approximation. In the nature of things it can only be a commonsense sort of assessment and not an objective scientific appraisal. "The deficiency of available vital statistics with respect to both completeness and accuracy is well known[1]." Any medical officer of health is aware that the notification of infectious diseases is incomplete, and this in particular in relation to bacterial food infections. Notifications of typhoid fever, however, are likely to be more complete, owing to the fact that generally the illness is so severe as to require medical care and special investigation in hospital. But this is not necessarily so. In the South Shields outbreak in 1963, a boy had been ill for a fortnight with pyrexial illness associated with abdominal discomfort before he was admitted to hospital and found to be suffering from typhoid fever. Similarly the second case had an indefinite history of onset and had been ill for twelve days before the diagnosis of typhoid was made. Only when general practitioners and hospitals had been asked to keep a strict lookout were several other cases found. In the Harlow outbreak in 1963, there was the same insidious onset of the outbreak with considerable delay before the first cases were diagnosed, but some cases were definitely infected by a large dose of virulent organisms as the incubation period was as short as six days. Even more so, the evidence in the Aberdeen outbreak points in some instances to an incubational period as short as four days with a mass of virulent contamination of the infected food. But in the above-mentioned outbreaks most of the typhoid cases were eventually discovered and notified.

In relation to some other food-borne infections it is otherwise. Many individual mild cases as well as outbreaks of bacteriological food poisoning doubtless are never notified. The illness may be so slight as not to require medical attention, and even then it may not be sufficiently severe to be adequately investigated bacteriologically in order that the aetiological agent can be detected. Many cases are treated in their own homes without such investigations. In fact milder

gastro-intestinal upsets occur which do not receive medical treatment at all, so that we are far from having a complete record of the incidence of food infections in any year. However, in so far as such mild infections do not cause illness they are practically inevitable in our society and are part of the process whereby the individual builds up a natural active immunity to infection. This, in so far as it is for the well-being of the individual and the community, is all to the good rather than the mere scientific bacteriological investigation of minor infections to no useful purpose.

1. Sources of Infection

Next let us look at the risk of infection from typhoid fever with regard to the various sources of infection. Over the ten years from 1954 to 1963, the notifications in England and Wales were respectively, 122, 193, 136, 125, 150, 123, 90 (the lowest ever recorded, 1960), 97, 130 and 247. The annual number of deaths never exceeded 7 with an average of about 3 deaths per annum.[2].

2. Risk of contracting infection abroad

Over this ten-year period an increasing percentage of cases of typhoid were contracted abroad, the source of infection not being in this country, Some of these occurred in seamen and travellers, but the vast majority of cases were contracted by persons abroad on holidays in countries like Spain, Italy, Teneriffe. Some occurred as sporadic isolated cases, but coach parties were involved, 13 cases occurring in one instance and 11 in another. In fact the risk of contracting this infection abroad is now ranging between 25 to 40 per cent of the total cases notified each year. Accordingly the chief medical officer of the Ministry of Health is continuing to reiterate in his annual reports the desirability of holidaymakers being protected by TAB immunization if travelling outside this country. The risk of contracting typhoid in this country is considerably less than in many other European countries as is shown by the large percentage of notified cases contracted there having regard to the relatively smaller number of persons at risk.

3. Risk of Water-borne Infection

One finding of the W.H.O. Expert Committee is self-evident, viz. 'The evidence of the importance of safe municipal water supplies in controlling and preventing water-borne outbreaks of typhoid fever is highly persuasive."[3]. Constant vigilance is necessary as is illustrated by consideration of the two large-scale outbreaks of 1936 and 1937 reported in the paper by Dr. E.T. Conybeare this afternoon.

With regard to European contracted infection, that associated with the Zermatt water-borne outbreak in 1963 is so recent as to be well remembered. It is interesting that the development of typhoid fever in three persons who had recently returned from Switzerland to this country drew attention to this outbreak in the first instance. The first two diagnosed cases had travelled by air to Zurich and then by train, stopping at Brique for a night en route to Zermatt. The three cases in another party also travelled by air to Geneva and thence to Zermatt directly by train. In all some 68 bacteriologically confirmed cases contracted their disease from the infected Zermatt water supply.

In this Zermatt outbreak, a so-called non-specific gastro-intestinal illness of short duration was widespread for several weeks before the outbreak was detected. This might well have been taken as an initial warning and the water supply subjected to thorough investigation as a consequence. The fact that the diarrhoea lasted a mere two or three days—a frequent enough occurrence especially amongst visitors to the continent—may well have masked the realization of the true nature and source of the infection. The preliminary dose of infection may also have been small with local residents receiving immunizing doses, whereas the diagnosis of cases returning to England drew attention to what was really at fault in Zermatt. Thirty-one of the cases occurred in a single party of 95, indicating the concentrated infection of the water supply of one hotel in this outbreak.

The public water supply has been not the only risk of contraction of infection by water in recent years. The only common factor found amongst eighteen children in Durham Rural District who developed paratyphoid fever was the habit of bathing in the River Browney in 1955. Phage Type 1 organisms were isolated from the river and the patients[4,5]. Similarly, two cases of typhoid fever in a village in Devon occurring at widely separated periods of time in 1956 and a fatal case in 1957, were children who went to the same school. They were fond of wading in a local stream into which a storm water overflow emptied crude sewage. The cases were infected with Vi Phage Type A *Salm typhi*, as was an old man who had had typhoid fever some fifty years previously. No previous cases were known to have been caused by this carrier; nor in fact was his carrier state suspected till he came to reside nearby, and infected the local stream. Another instance where water is concerned as a vehicle of infection was in 1956 when a boy fell into a pond in Kent which was thought to be the source of his infection with typhoid fever. After admission to hospital, three nurses contracted the disease, an illustration of the ever recurring risk of contracting the disease directly from a patient or carrier.

4. Risk from Personal contact with a Case or Carrier.

During the ten years under review, multiple cases of typhoid fever occurred in the same household, e.g. in 1962 this happened on three occasions, illustrating the danger of close personal contact with infected persons. In addition, one of those instances again illustrates the notoriously long duration of the carrier condition during which the risk of infection exists. In a household with one of the 1962 cases, another two persons had been infected, one in 1957 and the other in 1947, by the same chronic carrier.

The risk of personal contact in mental hospitals with known chronic carriers is well known. This again occurred in 1962 when some cases were contracted in this way during that year. Another outstanding occurrence of infection by personal contact is the mother who had typhoid fever in 1907 and infected three of her children at that time. The same woman as a grandmother attending a christening party of her grandchildren 54 years later in 1961, succeeded in infecting five small children, four of them her grandchildren, although she had not prepared any of the food for the party.

In the same year, 1961 there were six other family incidents. In the previous year in Portsmouth an outbreak of seven cases and one excreter were caused by a father and two small sons who were incubating the disease, visiting and infecting the grandparents as well as three lodgers who stayed with them. This gives an illustration of personal case-spread though the primary source of the outbreak was not traced.

One wonders whether a reconsideration of the histories of outbreaks where the cause was not found at the time, would reveal any possibility of canned food as the missed source. It is most intriguing to see how Dr. E.S. Anderson[6] re-examined the evidence of the Oswestry outbreak which was thought at the time to have been caused by milk-borne infection[7]. This source was not substantiated, as most of the cases occurred amongst nursing and domestic staff of a hospital whereas consumers from the same milk supply outside the hospital were not involved. Phage Typing also confirmed that the milk was not the vehicle of infection. Recent re-typing of the organisms has established that it was Phage Type 34, the same as that responsible for the Aberdeen outbreak. In addition, corned beef was an item in the meals consumed by the domestic and nursing staffs about the relevant dates of infection. This may dispose of milk as a recent vehicle for the conveyance of typhoid, but it is to be noted that milk has recently been responsible for conveying food poisoning, so it may be convenient at this point to consider–

5. Risk of infection from Typhoid compared to other Salmonella Food-borne Organisms

For this purpose the year 1963 is taken as the most recent for which figures are available. In 1963 there were 247 corrected notifications of typhoid fever. This is almost twice the annual average incidence for the preceding ten years. With the number of cases in Aberdeen this incidence will be almost doubled again in 1964. In 1963 there were 342 corrected notifications of para-typhoid fever whereas there were some 13,000 cases of food poisoning reported including cases where cause was not discovered (about 10,000 notified cases). Closer liaison is necessary between notifying medical practitioners, medical officers of health, the Ministry of Health, and the Public Health Laboratories, to secure more accurate statistics. It would appear that the figures given in the annual report of the chief medical officer of the Ministry of Health for 1963 are not comparable to those given in the Monthly Bulletin of the Ministry of Health and the Public Health Laboratory Service for the same year. There were 15 deaths associated with food poisoning according to the Ministry of Health report; 27 deaths are recorded by the Laboratory Service. Three different sets of figures of incidence for *Salm typhi-murium* are to be found, one, in the Annual Report of the Chief Medical Officer of the Ministry of Health for 1963[8], and two others in the Monthly Bulletins of the Ministry of Health and the Public Health Laboratory Service for 1964[9,10]. In particular the risk of contracting *Clostridium Welchii* food poisoning appears to be on the increase, the notifications have almost trebled in a year, being 3,377, and of these four died, three of them following a meal which included boiled ham[11]. In nearly all the *C. Welchii* outbreaks the pre-cooking of meat, which was subsequently eaten cold or re-heated inadequately before being consumed was the underlying factor. This seems to have been a common practice in hospitals and schools where two thirds of the outbreaks occurred. This happens in spite of the condemnation of such practice and repeated warnings regarding the dangers involved.

6. Risk of Infection by Enteric Fever and Food Poisoning associated with different foods.

Apart from the Zermatt outbreak of typhoid fever in 1963 (68 cases) there were three major outbreaks in that year each associated with corned beef sliced from 6 lb cans, one each at Harlow (26 cases), Bedford (23 cases) and South Shields (27 cases). A visitor to this country from Holland contracted infection in this country from infected oysters, which reminds us that there is still the risk of contracting typhoid fever from shellfish. The Dutch case was one of a series of twelve cases occurring during the autumn of 1958. These were all presumed to have been caused by the ingestion of infected oysters derived from one group of layings. Shellfish from a foreshore contained Vi Phage Type E.1 strain *Salm. typhi*, as did two cases of typhoid who had partaken of cockles gathered on the same foreshore in 1956 near a sewage outworks. So shellfish are still a risk and in particular those not subject to treatment as required by Orders made under the Public Health (Shellfish) Regulations, 1934. Four outbreaks of paratyphoid fever were associated with the use of Chinese frozen egg in bakeries.

In case one should think that milk is no longer a likely vehicle of infection, it is salutory to note that there were five outbreaks of food poisoning caused by unpasteurized milk in 1963. The Annual Report of the Chief Medical Officer of the Ministry of Health reports three outbreaks[12] so caused and the Public Health Laboratory Service five outbreaks[13]. One led to an outbreak of twenty eight cases of *Salm. heidelberg*[14]. There were about 40 cases of *Salm. typhi-murium* from two of the other milk outbreaks. Bakery products featured in two other outbreaks of food poisoning, cream cakes being the peccant food. One of these outbreaks involved some 150 persons. In both a human carrier was the most probable source of infection.

Pork meat and processed pork meat led to food poisoning outbreaks around Leicester, pointing to the pig as the animal reservoir of infection. *Salm. brandenberg* isolated from the cases was found in pig carcases from lairages in the meat factory and its products as well as food handlers. It is most interesting to note that in 126 outbreaks caused by food, 110 of these were meat products, and of these 84 per cent were made-up or processed meats such as pre-cooked cold or reheated meat, or meat pies made with pre-cooked meat.

7. Risk in particular that associated with Canned Foods

To complete the picture for 1963 as far as food poisoning was concerned, canned meats were suspect in only two outbreaks; of these one was *Salm. derby* in which sliced luncheon meat was suspect, and the other canned chicken which had been contaminated with staphylococci by an infected hand. In another outbreak canned fish was suspect but no causal organism was discovered. At the conference earlier this year on the Safety of Canned Foods, Dr. J.M. Ross gave a review of problems in epidemiology and administration including a résumé of some outbreaks of food poisoning and typhoid fever due to canned meats, especially corned beef and inevitably of S. American origin as the greater part of the supply comes from Argentina. One may add to this list another incident. In 1955 a 6 lb can of corned beef from South America caused an outbreak of salmonella food poisoning, and in fact in that year there were eight outbreaks associated with canned meat, two of which were connected with freshly opened cans[15].

There were the 1957 outbreaks of staphylococcal food poisoning associated with canned peas reported in this résumé, when one considers the infection of canned food by typhoid fever following the Crowthorne outbreak from the consumption of corned beef causing two deaths amongst 42 cases in 1949[16]. The unique incident occurred in 1953 in which typhoid fever was actually isolated from a can of imported cream. The cream was so sour and many cans of the batch were in poor condition. 17 per cent of the cans examined having living bacteria though the cream was supposed to be sterilized. Fortunately the state of the cream was such that few partook of the contents so that only one symptomless excreter of typhoid was found. The factory concerned was using well water which was polluted by a nearby stream[17].

In the report of an outbreak of typhoid fever in Glasgow in 1942 where the suspected source of infection was thought to be a butcher's shop, Peters and Clutterback predicted 'a meat outbreak of this nature is a comparatively new occurrence, but with the increasing distribution of canned meat it is not unlikely that such outbreaks may increase." They suggested that corned beef and pressed beef and other canned meats might be contaminated after removal from the can. We now know that canned meat can be and may have been contaminated during processing before the can is opened[18]. This leads to the consideration of:

8. Risks of infection with reference to the Canning Process itself

It is interesting to note that the impetus which led to canning as a method for the preservation of food came in the crisis of war. The acute shortage of food in 1795 during the Revolution when France was at war with hostile nations led to the introduction of this process. The French Government, faced with the problem, offered a prize for a method of preserving food that would help in the maintenance of supplies for distribution to the military and civilian population Nicholas Appert observed that adequate heating of food in a sealed container prevented spoilage of the food though he did not know the reason why. His experiments led him to the conclusion that cleanliness in the preparation of food, adequate heat treatment and sealing in an air-tight container prevented spoilage. In spite of many modern advances in technicological science, Appert's principles still are fundamental. The big risk that has come to light through the evidence available from recent outbreaks is the occurrence of a microleakage of cans. In other words, cans thought to be air-tight in some instances are not really so. It was always realized from the manner of construction of cans and the methods of sealing that there must be a possibility of defects at the seams or ends or as a consequence of the sealing or closing process being at fault subsequent to the filling of the cans. Attention has now been drawn in particular to tiny leaks which may occur as a result of the varying pressures inside and outside the can due to changes in temperature and pressure during the canning process. There is in addition the abuse of cans by knocking and bumping in the manipulation of the cans subsequent to being filled and sealed. This occurs in their automatic conveyance or handling while being cooled, cleansed, labelled and packed.

While preparing this paper I happened to be reading C.A. Coulson's book *Science, Technology and The Christian* (Wyvern Books 1964), and at page 25 I came across the following:

"Lord Fleck, a former Chairman of I.C.I. Ltd., has written of how 'the Macedonian Phalanx and the Roman legion, the bowmen of England and Cromwell's Ironsides, each formed a decisive contribution to the technology of warfare, but in the American Civil War (during the first industrial revolution, in the mid-nineteenth century) for the first time, the technological resources of a whole nation were ultimately mobilized to overwhelm an opponent. There was mass-production of weapons and ammunition, of uniforms and boots; canned food was supplied to armies transported for the first time by rail. In a famous dispatch to Lincoln in 1862, John Ericsson, who had designed the floating armoured battery Monitor, wrote: "The time has come Mr. President, when our cause will have to be sustained not by numbers, but by superior weapons. By a proper application of mechanical devices alone will you be able with absolute certainty to destroy the enemies of the Union." ' "

These mechanical devices undoubtedly included canned foods.

I do not propose to describe the fabrication of the sanitary can as described in a standard text book[19] or more recently at the Conference on the Safety of Canned Foods[20]. Hitherto reliance has been placed on subsequent storage for a few weeks in order that spoilage may be observed by physical examination of the cans for evidence of blown cans. Now we are led to believe that microleakage can admit living pathogenic organisms that are not revealed either during the period of initial storage nor indeed at any time by mere inspection of the can. Typhoid organisms apparently can gain access and multiply to such a degree as to be the initial cause of an outbreak such as has occurred in Aberdeen without any obvious change in the contents when the can is opened. We are informed that there can be either a selective entry of typhoid organisms or more likely a predominant growth of typhoid germs after entry with suppression of an adequate growth of gas-producing organisms to give evidence of their presence by blown cans.

It should be noted that the three 1963 outbreaks at Harlow, South Shields and Bedford were associated with one particular brand of corned beef produced at Establishment Argentina No. 25 at which untreated river water was used for cooling cans of corned beef after sterilization. The number of the cans associated with the outbreaks in the United Kingdom indicated that meat canned at the factory on and after the 30 May 1962, were suspect and these were voluntarily withdrawn by the distributors. Stocks of corned beef from the factory were examined over a period of time, and some on bacteriological examination yielded pure cultures of faecal coli. Furthermore, the spoilage of the products of this particular factory were four times the normal[21]. It was definitely established that the outbreak at Harlow in 1963 was associated with canned corned beef and it was very probable that the corned beef was contaminated during manufacture, either by cooling in polluted water which had access to the can or by a typhoid carrier handling the can while still wet after cooling.

The development of modern food supermarkets, where large numbers of persons are served are more likely to cause large outbreaks than small stores or butchers' shops. There is the added special risk from meat whilst on display at the counter. The diversity and quantity of meats served and handled means that the contamination can spread widely through a diversity of products by the use of slicing machines or knives for cutting. The habit of storing unsold portions in a refrigerator during the night means that various products are cross-infected. They are then all redistributed the next day on display counters to incubate at room or warm window temperatures, unless special refrigerated display counters are provided. There is also the danger of various employees handling the different kinds of meat, and some of them even becoming symptomless carriers.

Some local authorities have compulsory registration of butchers' or fleshers' shops at which fresh meat only was traditionally sold, but during the war years, the necessity of selling other forms of meat, such as tinned corned beef, led to the introduction of the sale of these kinds of meat and many other articles of food from butchers' shops. This, together with the development of large stores and supermarkets has increased the risks as outlined above.

P. M. Meers and D. Goode[22] at the Royal Army Medical College have done experiments on intact cans of corned beef actually inoculated with *Salm. typhi* as the sole contaminant. The cans were resealed, stored and contents examined for *Sal. typhi* at various intervals. The *Salm. typhi* spread rapidly throughout the corned beef at 37°C. and much more slowly at room temperature. *Escherichia coli,* although a gas-producing organism, alone or in combination with *Salm. typhi* did not "blow" cans, though cans with *C. Welchii* and *E. coli* did blow. It is probable that if any batch of cans exposed to faecal contamination and containing typhoid organisms some will be infected with *C. Welchii* as well as *Salm. typhi* and so act as indicator. Meers and Goode suggest that blowing of tins might be used as an index of potentially dangerous contamination. It is not enough merely to reject blown cans in these circumstances. A percentage of blown cans above a certain level should lead to rejection of the whole batch. In the circumstances of the Aberdeen outbreak, the presence of four times the usual number of blown cans should have led to rejection of the whole batch in addition to the fact that untreated water was used for cooling.

In order that one may have some idea of the amount of canned meat as compared with other forms of meat imported through the Port of London, I submit the following figures for the year 1963:

(1)	Total imported meat including carcase meat, canned meat, sausages, rabbits and whalemeat but excluding poultry and horsemeat	266,352 tons 1 cwt.
(2)	Total imported canned meat	69,460 tons 13 cwts.
(3)	Total imported corned beef	27,670 tons 3 cwts.

Finally, in order to get the risk of infection from typhoid fever into perspective, it is necessary to remember that in 1963 all infectious diseases continued to decline as a cause of death whereas there were marked increases in death rates due to accidental poisoning, cancer of the lung, motor vehicle accidents and suicide. It is well to remind ourselves that from the standpoint of mortality in England and Wales, typhoid and paratyphoid fever caused 5 deaths in 1963 whereas 6,351 persons were killed in motor accidents. About four times this number died of cancer of the lung (24,434) and 5,715 committed suicide.

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2. Association of Sea and Air Port Health Authorities Conference – 2nd July 1965.

THE WATER SUPPLY OF SHIPS

Introduction

In former times water was a major source of illness in ships. This was inevitable as rain was the main source of drinking water being collected unhygienically as the voyage progressed. It was stored in casks. Before 1772 it was considered desirable that water should be boiled before being issued. It was not however till that year that the Admiralty directed that all men-of-war be fitted with stills. Subsequently illness due to impure water began to decrease. In 1815 a start was made in the replacement of casks for drinking water by iron tanks. From then onwards rapid progress was made.

At the present time the water supply of ships is, for the most part, satisfactory. The incidence of water borne disease, at least in home waters is minimal. On the other hand the distribution of the water supply in some ships may be unnecessarily complicated and especially on this account give many opportunities for human errors which result in contamination of the supply. In addition, although the official recommendations are fairly comprehensive, the regulations are not so but contain many exemptions. On this account it is very necessary for Medical Officers of Health to maintain constant vigilance by their Port Health Inspectors.

In a paper like this it is only possible to discuss the topic in general terms giving some local illustrations of some of the problems. Other ports and shipping companies undoubtedly have varying practices and experiences. I trust that we will learn of these during the discussion.

Sources of Supply

Fresh Water. The sources are, of course, the town mains in ports throughout the world. There is little need to expatiate on this. Pure supplies are now readily available on most shipping routes. Companies usually have ports of choice for water supplies which they regard as pure, taking precautions with any water taken perforce elsewhere.

It is the duty of the Medical Officer of Health to keep a check that the water as delivered by the quayside hydrants in the Port Health District is safe. When a supply main is accidentally damaged the resulting pollution can be gross. This occured in the Port of London a few years ago. a dock hydrant, which had hitherto yielded consistently "good" samples, suddenly shewed Escherichia Coli contamination exceeding a count of 100 per 100 ml. Flushing of the supply main and chlorination did not remedy the impurity. The pipe had to be exposed. It was found to be fractured where it ran in earth below the level of the nearby dock water. This combined with the fluctuating pressure in the main accounted for the exceptionally high degree of contamination. To prevent recurrence of such an incident the main can be laid in a prefabricated concrete conduit parallel with the sill of the quay. The conduit has ample means of inspection and cleansing and is suitably protected at the hydrants.

Sea Water. It is perhaps superfluous to refer to the source of sea water in relation to ships and I do so only to draw attention to its subsequent conversion into distilled water and the problems sea water can produce are dealt with under the appropriate later headings of this paper.

Distilled Water. In addition to boiler supplies, distilled water is used to supplement the stored fresh water in many ships. One of the major factors in the early struggle to gain control over water borne disease, distillation is still widely used. The choice, however, is now made for reasons other than the provision of a pure water supply. Motor ships are naturally less likely to favour distillation than steam ships. Other determining factors are the time between ports and the economic value of the space that fresh water storage occupies when compared with the cost of producing distilled water.

Transfer of the Supply

Direct

Sea Water. This in itself presents no special problem except in relation to the time and place of usage. There is no Regulation against the use of sea water while a ship is in dock, river or other polluted place. There is a clear warning against such usage in a Ministry of Transport Notice, but the Handbook for the guidance of Shipowners has merely a recommendation that the salt water supply to a galley should be fitted with a stop cock with locking arrangements. It is also only recommended that a salt water intake should be situated forward of, and on the opposite side of the ship to any sanitary discharges. Beyond these specified, but apparently merely permissible dangers is that of the accidental introduction of sea water into the fresh water supply.

Fresh Water. The transfer of water by hose from a hydrant on the quay to a filler pipe on deck would appear a simple matter, but all too often it has led to the pollution of the supply. In 1960 the co-operation of the Port of London Authority was obtained for the introduction of a "Code of Practice" for the supply of fresh water from shore to ships. This has resulted in supplies as delivered on board being regularly of "satisfactory" or higher standard (84% "excellent").

The Code covers all the points relative to equipment, handling and supervision. The Code is reproduced at the end of this paper so perhaps it will suffice to consider only those points brought out by the following two incidents. The first involved a ship which always maintained a reservoir of fresh water for fire fighting purposes. Its supply line was coupled directly to a hydrant on the drinking water main ashore by a closed connection to the fire fighting storage tanks. As the intake of fresh water seemed to be proceeding satisfactorily, even though slowly, it was left unattended for some time. The hydrant was one of several on the same main in which the pressure varied with the simultaneous demands of neighbouring ships. The fire fighting system having been completely filled, a subsequent fall in pressure of the mains supply, resulted in a reverse flow and contamination of the drinking water mains, This illustrates the danger of the closed connection and draws attention to the one point in the Code of Practice that it has not yet been possible to implement in full. This is the provision of a non-return device on the supply equipment. This matter has been deferred for the present owing to considerations of water pressure and the finance involved.

In the second incident a large passenger liner was involved in which a considerable proportion of the crew remained on board while in port. This ship had two fire-fighting systems; one on a high pressure installation and the other a fresh water sprinkler system. Both had a stop valve fitting on the superstructure. The deck connections were not far removed from one another and it was customary to connect the sprinkler system to the drinking water supply from the shore to ensure a continuous supply in case of emergency. Unfortunately the fresh water hose was close-connected to the high pressure fitting by mistake and the stop valve opened by a careless

employee with the result that circulating dock water in the fire-fighting and ballast line overcame the pressure in the entire fresh water ring main of the dock and polluted, not only the supply to the offending ship but to neighbouring ships and shore premises alike. To reinstate the potable water supply was indeed a major operation and heavy economic losses were substantially cut by the Services of efficient water boats and with the complete co-operation of all concerned. It was not until after the pollution had become widespread and extensive investigation had been carried out that the culprit admitted his guilt.

Indirect. Supply via water barge should, in theory, increase the risk of pollution but in practice this has not been the case in London, and of recent years the results of analysis have been consistently "excellent". These results apply to single skin steel constructed barges which are, however, never allowed to "ground" between overhauls. This is a great improvement from the bad old days when a barge was only three parts filled from the main and then allowed to "fill itself up" through the leaking seams from the river. It must be added that this was not in the River Thames. However the danger and the mistrust persist and some shipping companies give instructions that all water taken from a barge in any port must be chlorinated.

An additional hazard in the transfer of water from shore to ship by water barge is illustrated by yet another experience in the Port of London. A water barge unable to get alongside an unladen ship in the optimum position for use of its hose, found that this would not reach the ship's filler pipes directly. It was therefore decided to use the ship's deck washing pipe. The pipe was carefully flushed out first, but it was not realised that this pipe was also the outlet for cooling water for an auxiliary engine. During the filling operation the engine was started up and a not inconsiderable pollution resulted. It was fortunately discovered very soon afterwards and no harm resulted though a lot of cleansing was necessary.

Ship fittings are now generally satisfactory, and conform to the Regulations with the exception that sight glasses for determining water levels are not often provided. Also the tops of the sounding pipes which substitute for the sight glasses may be flush with the deck even when the filler and air pipes are raised. Since tanks in use are normally sounded every day it is a matter worthy of attention. In this connection it may not be entirely academic to refer to gulls which are proven carriers of many excretal bacteria, including those of typhoid fever.

Storage. It is from this point on that the supply of fresh water may become needlessly complicated. The Regulations accept the provision of two supplies of differing quality. One of potable quality for drinking and cooking purposes and the other, for all other "domestic" purposes. This second supply need not be fit for drinking. If this system is adopted the two supplies must be separate at all points. If all fresh water is maintained at potable standard there is no call for separation. This latter and highly preferable practice is increasing and is now approaching general application. It should be compulsory. There would then only remain separate fresh water storage for boilers for which chemical contamination is more important than bacterial pollution.

Tanks for the storage of fresh water can be classed in order of preference –

1. Tanks, other than peak tanks, above the inner bottom, and independent of the hull.
2. Tanks, other than peak tanks, above the inner bottom, but not independent of the hull.
3. Double bottom tanks.
4. Peak tanks.

Classes 1 and 2 are generally recommended for drinking water, but Class 3 is quite acceptable in cargo liners provided there is no connection with any other water service. Passenger liners may use any of their tanks, while for whalers in this, as in most other hygienic matters, there appears to be no specific standards. The reasons for the preference are obvious, but with so many exemptions it seems doubtful if such a classification serves a useful purpose. It may rightly discourage the use of peak tanks, which in bad weather, especially the forepeak, are liable to "pant" and leak at the seams which are also susceptible to impact damage.

The handbook contains numerous other recommendations regarding the siting, internal structure, drainage arrangements and manholes of tanks. There is an additional Ministry of Transport Notice advising that drinking water tanks should be opened up, cleansed, cement washed (or otherwise recoated) and aired at intervals not exceeding 12 months.

The treatment of water in ships in relation to purification will be the subject of a separate heading, but reference may be made here to distilled water which, when required to supplement the fresh water supply for drinking is treated before storage. One such process is to mix 20lbs. of slaked lime and 1½lbs. of stabilised chloride of lime with 100 gallons of fresh water. This is sufficient to treat 200 tons of distilled water and is fed in before it reaches the storage tank. This gives a pH of 8.6 and reduces the metal solvency of the water. The water is further treated in the storage tanks by the addition of a solution of 12 ozs. sodium thiosulphate and 22½lbs. of sodium bicarbonate in 90 gallons of water. This neutralises the chlorine, improves the palatability, and gives an alkalinity of 60 mgms/litre pH 7.8.

All tanks in a ship are also concerned with stability and trim. It is thus necessary that double bottom and peak tanks used for fresh water can be filled with sea water – for ballast – if

necessary. The decision for this lies with the Master or his Mate on watch, but the operation is carried out by the Engineer on watch. The fittings are usually of a kind that require the use of a spanner to reverse an inserted blank, so that accidental filling of fresh water into sea water ballast is most unlikely.

There is a recommendation that tanks used for water ballast taken from the open sea should not be used for storing potable water unless they have been cleansed. This is an ideal, and where there is quick turn round in port, it may only be possible or expedient to flush out the tanks with fresh water, especially at intermediate ports. A more serious danger lies in the reverse procedure in which ballast tanks that have never been cleansed are used for fresh water. Some time ago a Port Health Inspector in London, paying a routine visit to a ship, heard a complaint from the crew that the drinking water made them feel sick (produced nausea). Enquiries revealed that as the forthcoming voyage would normally involve the taking of water in ports where it was very costly, an attempt had been made to effect an economy by pumping out the double bottom ballast tank and filling it with fresh water. Fortunately for the crew this tank was put into immediate service before the ship sailed.

Quantity

Drinking Water. The Regulations simply refer to tanks of adequate capacity, but the Merchant Shipping (Seaman's Provisions) Order, 1957 lays down a scale of 28 quarts per man per week. More simply a gallon a man a day.

Fresh Water (other than drinking water)

The Regulations specify that the tanks for fresh water to supply "washing accommodation" shall have a capacity of at least 10 gallons for each member of the crew for each day likely to elapse between successive replenishments. There must also be an adequate supply of hot and cold fresh water to the laundry facilities and to a sink in the galley for washing-up purposes. No separate amounts are specified, so presumably this must be part of the 10 gallons.

The minimum requirements ashore are frequently given as 30 gallons per head per day, made up as follows:–

* Drinking and Cooking	1 gallon
* Dishes & house washing	3 gallons
W.C.	5 gallons
Municipal	5 gallons
* Personal washing	5 gallons
* Laundry	3 gallons
Trade	5 gallons
Unavoidable waste	3 gallons

With no reason to believe that the requirements at sea are now any less than ashore for the same purposes, the total of the 4 starred items plus waste 15 gallons must be the minimum for fresh water, and preferably this should all be of potable quality.

In practice the shore consumption for all purposes now exceeds 50 gallons per head per day in the area supplied by the Metropolitan Water Board. Similarly, at sea, in ships which are able to maintain an almost unlimited supply of fresh water of potable standard for all purposes except W.C's. the average consumption just exceeds 40 gallons per head per day.

Some idea of the storage problem may be obtained by considering an actual case. A ship with a total complement of 600 and a maximum of 10 days between ports carries 1,200 tons of fresh water of potable standard, plus a separate 250 tons for the boilers, and is only just able to maintain "unlimited" supplies.

Treatment

Effect of Storage.

In shore supplies storage is one of the most important factors in the self-purification of water. It reduces the number of all bacteria and e.g. destroys about 90% of typhoid in five to seven days. This is not important, or indeed revelant, in relation to ships supplies where the aim is to store pure water and then prevent it from becoming contaminated.

The tanks in which water is stored vary considerably in shape and size, but generally hold at least 40 tons and have a minimum depth of 3 feet, even in double bottom tanks. They are also normally totally dark and filled to capacity. Thus, provided the cement washing or other "lining" is effective there is no reason for any abnormal growth of bacteria. It conforms, in other words, to the established principle that once a water has been pumped it should never be allowed to see the daylight until it issues from a consumer's tap.

Chlorination. When this is decided, it is customary to introduce the chlorine before filtration. Since this is normally only done with doubtful supplies, which could contain much suspended matter chloramination is to be preferred.

In a ship with a Surgeon the responsibility is delegated to him; although it is usual for the ship to keep a detailed record of the amounts and timing for the addition of chemicals to each tank as it is filled. In a ship without a Surgeon and in which only a stabilised bleach is used, the Common practice is to follow the instructions in the Ship Captains' Medical Guide. In British ships each tin of chloride of lime holds a measure and this (one-eight of an ounce) is considered sufficient to purify 200 gallons of water. If the bleaching powder has 33% available chlorine, this represents a dosage of rather more than one part per million.

Where water is taken "direct" from a town mains regarded as pure, there is no further chlorination and rarely any subsequent check for free chlorine. Water taken from any other ports, or from a barge in any port is viewed with suspicion by some shipping companies and is chlorinated. It is tested four or five days later for the presence of free chlorine.

Filtration. This is commonly, and unlike shore practice, the last treatment. It is done in the first stage of distribution. Patent filters are used with elements of carbon or other material that can be "backwashed" or replaced as necessary. There is rather a tendency to neglect the filters. This is possibly based on the principle that the water is pure anyway. The filters can then become an incubator for bacteria which only cause anxiety when discovered by sampling during an appropriate investigation of the water supply.

Distribution

Method. The distribution of water in ships is very varied in detail, but has to comply with the principle that each "class" of supply – potable, domestic, fresh and salt – must be kept entirely separate at every point. This might be considered, theoretically, to make the separation of potable and domestic fresh water acceptable but it does, in practice, create problems. However good the original design and installation, these standards can be difficult to retain when structural alterations are effected in parts of the accommodation, possibly on several occasions. The pipe lines can then become very complicated and may even become cross-connected as found aboard a ship while an outbreak of typhoid fever was being investigated.

There is also the opportunity that the dual system gives for human error in operation and now that the maintenance of all fresh water at potable standard is becoming the rule rather than the exception, it is natural to assume that it is always so. Labelling of taps is apt to be an ineffective substitute.

In accordance with the principle of separation the Regulations specify that when service tanks are used they shall be directly connected with the main storage tanks for that class of water, and that in ships of 1,000 tons or over the pumping shall be by mechanical means (ships of 3,000 tons for drinking water.)

When all the fresh water is maintained at potable standard it is possible to instal one distribution circuit to cater for all the selected services. The terminal supply may be maintained by a circulating pump and gravity feed tank in closed-circuit or preferably by a later method which consists of a pressurised storage tank from which the distribution to terminals throughout the ship is supplied at constant pressure. This principle of a common closed-circuit reduces the risk of contamination, but, should it ever occur, the entire network of distribution will become involved.

There are numerous Regulations and more recommendations regarding the type and placing of taps. Also the scale of provision of wash basins, baths and such like. There is no great present concern with these, and it is not proposed to catalogue them here although it may be worth mentioning that the supply of salt water to baths and showers is restricted to those provided in excess of the scale.

Hot Water. The arrangements for hot supplies are not likely to produce direct hygiene problems but calorifiers are subject to recommendations regarding siting ventilation and safety valve. When exhaust gases from engines are used to heat water there must be alternative arrangements for use in port.

Cooling. A cooled supply of drinking water must be provided in ships of 1,000 tons or more going to foreign parts. A recommended method of cooling is to include a 20 gallon tank in the refrigerated vegetable room, with draw off taps on deck and in the main pantry. An alternative is to have a cooling coil in the tank using circulating brine.

Items of indirect distribution.

Drinking water in life boats. Although wooden casks are still to be found, galvanised steel tanks are now more generally fitted. They should be, and usually are, frequently emptied, flushed out and replenished. At longer intervals they are scrubbed out, if possible, and/or treated with steam.

Drinking water bottles. These are still a compulsory piece of equipment in sleeping accommodation, but it is obviously very difficult to ensure that they are all regularly cleansed and replenished.

Ice. For table service and drinks ice is made in the ordinary domestic manner. Drinking water in divided trays is placed in a refrigerator. Made from a safe water it presents no more hazard than any other "handled" ingredient of food or drink.

Distribution of water to galleys

Although a supply of cold drinking water has to be laid on in galleys, pantries and mess rooms, it need not be over the sinks. In food preparation, not only is the use of fresh water of non-potable standard permitted, but also sea water is countenanced, even though a final rinse in fresh water is advised.

There does not have to be a supply of drinking water in a wash place, even though this is the most likely place for teeth to be cleaned. There is, however, a recommendation that taps are to labelled.

Control and Responsibility

The responsibility of the Medical Officer of Health in relation to the supply of drinking water to ships has been mentioned and some of the problems illustrated. It is not proposed to go into further detail.

In the ships, under the overall responsibility of the Master, the Mate is responsible for storage, the Chief Engineer for distribution and the Surgeon for purity of the water supply.

When a Port Health Inspector meets with conditions prejudicial to health or a "nuisance" and this involves some defective part of the installation, re-instatement or correction can be obtained through his own Authority. However if change in structural design or equipment is necessary this must be arranged through the Ministry of Transport Surveyor. In the day-to-day practice of the Port of London there is close co-operation between the two officials.

When all the regulations and recommendations are complied with there still remains the factor of human error of judgment. This is most important and emphasises the need for teaching in the broadest sense. In this, the Port Health Inspector has the advantage that he is often dealing with intelligent men who respond well to enlightenment, a word preferred here to formal instruction or education. This is well illustrated by practical references. Where the fresh water supply to a wash place is of non-potable standard, advice to affix a warning notice has always been accepted and implemented. Unfortunately not all the users of the wash place will heed the warning. Advice to prevent polluted harbour water being used in a galley has met with more material success. After the danger has been explained, the sea water supply has been dismantled or permanently cut off in many instances. This applied to both British and Foreign ships.

Sampling

The systematic sampling practice in the Port of London is to sterilise the hydrant coupling and bathe it in the cascade of the supply before taking the sample at this stage. Subsequently the supply hose is led to a filling point aboard ship and connected to the hydrant. A quantity of water is allowed to flush the hose and run to waste before a second sample is taken from the hose terminal aboard ship. This provides a test of the potability of the water as actually delivered to the ship and affords a means of checking the cleanliness of the hose and fittings. Thereafter further samples are taken from suitable points in the drinking water supply system to check and eliminate any possibility of contamination within the ship.

If sampling is done because of reasonable suspicion or fact of contamination it is hardly necessary to state that the supply is discontinued until the results are known.

Standards

The following grades are used in the Port of London –

Quality.	Plate count per ml.	Coliforms per 100 ml.
Excellent.	Nil	Nil
Good	Less than 100	Nil
Satisfactory	Less than 300	Nil
Suspicious	More than 300	Less than 5
Unsatisfactory	More than 300	More than 5
Unfit	–	More than 5 and including faecal coli.

Summary and Conclusions

The maintenance of all fresh water supplies aboard ship at potable standard should now be compulsory.

With the above over-riding consideration all recommendations in the Ministry of Transport Handbook for the guidance of Shipowners – "Crew accommodation in Merchant Ships" – concerning water supply should become law.

There should be no supply of sea water to any galley or other part of a ship in which food is prepared, cooked or served.

SUGGESTED CODE OF PRACTICE

The supply of fresh water from shore to ships

Equipment

All components should be kept clean and maintained exclusively for this purpose.

It should be kept in a properly appointed store and transported to and from the watering point in a suitable and covered truck.

No other equipment than that of the Port of London Authority should be used for supplying fresh water.

All hoses should be lined with rubber internally.

Every precaution should be taken to preserve the clean condition of the hose during the watering operation.

Those components taken to the watering point and not required should be left in the truck.

Watering Points

These should be clearly identified by a number at the site and the hydrant-pit cover given a durable and conspicious coat of paint.

The permanent hydrant-pit covers should be watertight and, when the hydrant is being used, a closely fitted temporary cover should be available to allow for a standpipe and to shelter the hydrant-pit.

All hydrant-pits should be effectively drained, rendered with a smooth and light-coloured surface, and always kept in a clean condition.

The hydrant discharge should always be effectively capped when not in use.

Operation

Connections at the hydrant and on the ship should be supervised by an authorised officer of the Port of London Authority.

Standpipes should be used at the hydrant and hoses kept clear of quay and dock water.

All connections at the ship must be made in order to avoid any possibility of back-syphonage from the ship installation to the shore mains supply.

In any circumstances where a closed-connection must be made on the ship, an effective non-return device should be incorporated in the supply equipment to safeguard against back-syphonage.

The water supply equipment should always be adequately flushed through before allowing the supply to enter the ship's filling lines.

As far as practicable, the supply of fresh water should not be left unattended by an authorised person.

Any contaminated equipment should not be used until it has been returned to the store for suitable cleansing.

APPENDIX I

MEDICAL INSPECTION – From 1st January to 31st December, 1965.

GRAVESEND

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
No. of ships medically inspected	106	116	122	117	107	140	142	138	102	121	100	129	1,440
No of Passengers	53	652	346	139	644	652	6,663	3,889	722	738	400	524	15,422
No. of crew	141	260	218	146	203	299	350	191	243	65	135	129	2,380
No. of ships arriving from abroad	1,130	1,112	1,260	1,167	1,302	1,276	1,447	1,369	1,195	1,257	1,120	1,148	14,783

APPENDIX II

INFECTIOUS DISEASES

Disease	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
(a) Cases reported –										
Cholera (including suspected)	–	–	–	–	–	–	–	–	–	–
Plague do.	–	–	–	–	–	–	–	–	–	–
Yellow Fever do.	–	–	–	–	–	1	–	–	–	–
Typhus Fever do.	–	–	–	–	–	–	–	–	–	–
Smallpox do.	–	–	–	–	1	2	5	1	2	1
Enteric Fever	5	3	7	5	1	–	2	2	–	6
Scarlet Fever	2	2	1	4	1	–	1	–	–	–
Measles	67	91	71	63	109	35	60	68	43	22
German Measles	3	7	25	2	8	12	14	6	14	3
Diphtheria	–	–	1	–	1	2	–	–	–	–
Erysipelas	1	–	–	–	–	–	–	–	–	–
Pulmonary Tuberculosis	32	39	45	42	39	26	33	24	17	9
Other diseases (including chickenpox)	212	1,328	659	313	956	303	258	198	146	276
TOTALS	322	1,470	809	429	1,116	381	373	299	222	317
(b) Admitted to Hospital –										
Cholera (including suspected)	–	–	–	–	–	–	–	–	–	–
Plague do.	–	–	–	–	–	–	–	–	–	–
Yellow Fever do.	–	–	–	–	–	–	–	–	–	–
Typhus Fever do.	–	–	–	–	–	–	–	–	–	–
Smallpox do.	–	–	–	–	–	–	3	1	1	–
Scarlet Fever	–	2	–	–	–	–	1	–	–	–
Diphtheria	–	–	1	–	1	–	–	–	–	–
Enteric Fever	–	2	3	3	3	–	2	1	–	5
Measles	20	35	5	8	10	11	11	7	11	2
Mumps	5	3	7	–	9	3	4	3	1	2
Dysentry	–	1	4	7	1	1	4	9	4	3
Other diseases (including chickenpox)	63	271	114	75	86	65	86	86	72	44
TOTALS	88	314	134	93	110	80	111	107	89	56

APPENDIX III

RETURN OF RATS CAUGHT AND DESTROYED DURING YEAR 1965

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
LONDON DOCK –													
Warehouses	12	5	3	8	24	6	18	4	16	9	6	7	118
Vessels	–	–	–	–	–	–	1	–	–	–	–	–	1
ST. KATHARINE DOCK –													
Warehouses	1					4			9	3	–	–	17
Vessels	–	–	–	–	–	–	–	–	–	–	–	–	–
SURREY COMMERCIAL DOCK –													
Warehouses	–	17	9	5	-	8	2	3	–	–	2	1	47
Vessels	–	–	–	–	–	–	–	–	–	–	–	–	–
REGENT'S CANAL DOCK –													
Warehouses	–	–	–	1	13	–	–	–	–	–	–	–	14
Vessels	–	–	–	–	–	–	–	–	–	–	–	–	–
EAST INDIA DOCK –													
Warehouses	–	–	–	–	–	–	–	–	–	–	12	–	12
Vessels	–	–	–	–	–	–	–	–	–	–	–	–	–
WEST INDIA DOCK –													
Warehouses	7	74	31	43	13	1	34	1	4	7	–	3	218
Vessels	–	–	–	–	–	–	–	–	–	–	–	–	–
MILLWALL DOCK –													
Warehouses	4	5	20	6	11	–	36	2	2	61	19	13	179
Vessels	–	–	–	–	–	–	–	–	–	–	–	–	–
ROYAL VICTORIA DOCK –													
Warehouses	34	51	61	61	19	13	75	8	37	31	14	5	409
Vessels	–	16	5	6	4	–	7	3	9	4	5	4	63
ROYAL ALBERT DOCK –													
Warehouses	16	23	18	11	35	17	–	16	12	8	5	9	170
Vessels	5	1	14	8	3	18	40	–	3	2	8	–	102
KING GEORGE V. DOCK –													
Warehouses	11	10	3	1	14	–	2	9	2	–	3	1	56
Vessels	15	–	–	–	–	16	–	7	–	–	–	–	38
TILBURY DOCK –													
Warehouses	4	4	18	11	5	32	–	2	8	–	8	7	99
Vessels	43	1	45	–	24	6	–	4	2	1	3	40	169
RIVER –													
Vessels	30	18	66	14	35	122	8	3	4	25	68	1	394
TOTALS	182	225	293	175	200	243	223	62	108	151	153	91	2106

APPENDIX IV

General Summary and Analysis of the Sanitary Inspections etc. in the Port of London for the year ended 31st December, 1965.

Type of Vessels/Premises		*Inspected*	*Defective*	*To be cleaned*
Foreign Going:	Steam	12,876	209	417
	Sail	–	–	–
Coastwise:	Steam	1,799	16	7
	Sail	–	–	–
	Sub-Total	14,675	225	424
Inland Navigation	Steam	177	1	4
	Sail	–	–	–
	Lighters	681	4	60
Canal Boats:		4	–	4
Shore Premises:		7,778	116	143
	Sub-Total	8,640	121	211
	Total	23,315	346	635

Areas where Foreign Going and Coastwise vessels were inspected.

Dock and River	*No. of Inspections*	*No. of vessels inspected in Launches*	
London and St. Katherine	1,147		
Regents Canal	248		
Surrey Commercial	1,091		
East India	259		
West India	1,055		
Millwall	657		
Royal Albert	981		(Humphrey Morris
Royal Victoria	835	1,731	(Victor Allcard
King George V	619		
Upper River	1,739		
Middle River	1,194	4,196	(Frederick Whittingham
Lower River	1,731		(Alfred Roach
River Medway	1,263		
Tilbury	1,856	8,748	Inspected in Docks etc.
Total	14,675	14,675	

Nationalities of Foreign Going and Coastwise vessels inspected.

	No. of Inspections		*No. of Inspections*
America	93	*Brought forward*	11,822
Argentina	15	Italy	79
Belgium	162	Japan	62
Brazil	11	Kuwait	5
Bulgaria	15	Lebanon	21
Burma	22	Liberia	192
China	5	Nigeria	53
Cuba	4	Panama	101
Denmark	375	Pakistan	39
Eire	2	Persia	1
Holland	2,162	Poland	194
Egypt	12	Rumania	18
Finland	305	Sudan	16
France	103	Spain	160
Germany	1,535	South Africa	10
Ghana	29	Switzerland	13
Great Britain	6,391	Sweden & Norway	1,578
Greece	340	Turkey	56
Hong Kong	8	Uruguay	2
Iceland	51	U.S.S.R.	191
India	139	Yugoslavia	59
Iraq	10	Malta	2
Indonesia	1	Dominican Republic	1
Israel	32		
C/F	11,822	Total	14,675

POWERS

The Principal Acts of Parliament and Statutory Instruments affecting the work of the Port Health Authority of the Port of London since the 1st April 1965 are:–

ABATEMENT OF NUISANCES AND REMOVAL OF REFUSE
- Public Health Act 1936
- Public Health Act 1961
- Noise Abatement Act 1960
- London Government Act 1963

ADMINISTRATION
- Public Health Act 1936
- London Government Act 1963
- London Port Health Authority Order 1965
- City of London (Various Powers) Act 1965

ALIENS
- Aliens Order 1953, S.I. No. 1671
- Ministry of Health Instructions to Medical Inspectors, 1955

ANIMALS
- Export Cattle Protection Order 1957, S.I. No. 170
- Export Cattle Protection (Amendment) Order 1957, S.I. No. 1254

CANAL BOATS
- Public Health Act 1936
- Public Health Act 1961

COMMONWEALTH IMMIGRANTS
- Commonwealth Immigrants Act 1962
- Ministry of Health Instructions to Medical Inspectors, 1962

CONSTITUTION OF THE AUTHORITY
- Public Health Act 1936
- London Government Act 1963
- London Port Health Authority Order 1965
- City of London (Various Powers) Act 1965

CREW ACCOMMODATION
- Public Health Act 1936
- Public Health Act 1961

DANGEROUS DRUGS
- Dangerous Drugs Regulations 1953, S.I. No. 499
- Dangerous Drugs Regulations 1957, S.I. No. 704

FERTILISERS AND FEEDING STUFFS
- Fertilisers and Feeding Stuffs Act 1926
- Fertilisers and Feeding Stuffs Regulations 1960 S.I. No. 1165
- Fertilisers and Feeding Stuffs (Amendment) Regulations 1964 S.I. No. 142

FOOD
- London Government Act 1963
- Public Health (Imported Milk) Regulations 1926 S.R. & O. No. 820
- Public Health (Imported Food) Regulations 1937 and 1948 S.R. & O. 1937 No. 329 S.I. 1948, No. 886, S.I. 1948 No. 1121.
- The Preservatives in Food Regulations 1962 S.I. 1962 No. 1532
- The Liquid Egg (Pasteurisation) Regulations 1963 S.I. No. 1503
- The Meat (Staining & Sterilization) Regulations 1960 S.I. No. 1268
- Food and Drugs (Whalemeat) Regulations 1949 and 1950 S.I. No. 404; 1950 No. 189.
- Food and Drugs Act 1955
- The Lead in Food Regulations 1961 S.I. 1931
- The Emulsifiers & Stabilisers in Food Regulations 1962 S.I. No. 720
- Colouring Matter in Food Regulations 1957 S.I. No. 1066
- Antioxidant in Food Regulations 1958 S.I. No. 1454
- Fluorine in Food Regulations 1959 S.I. No. 2106
- Arsenic in Food Regulations 1959 and 1960 1959 S.I. No. 831; 1960 S.I. No. 2261.
- The Food Hygiene (Docks Carriers etc.) Regulations 1960 S.I. No. 1602
- The Food Hygiene (General) Regulations 1960 and 1962. 1960 S.I. No. 1601; 1962 S.I. No.228
- The Bread and Flour Regulations 1963 S.I. No. 1435
- The Mineral Hydrocarbons in Food Regulations 1964

FUMIGATIONS

Hydrogen Cyanide (Fumigation of Ships) Regulations 1951 S.I. No. 1760
Hydrogen Cyanide (Fumigation of Buildings) Regulations 1951 S.I. No. 1759

HOUSEBOATS

Public Health Act 1936
Public Health Act 1961
City of London (Various Powers) Act 1933, Part III. Sections 6 and 7

INFECTIOUS DISEASE

Public Health Act 1936
Public Health Act 1961
London Government Act 1963
Public Health (Ships) Regulations 1952 to 1963 S.I. 1952, No. 1411; S.I. 1954, No. 675; S.I. 1961 No. 13; S.I. 1963, No. 1258.
Public Health (Infectious Disease) Regulations 1953 S.I. No. 299

RATS AND MICE

Public Health (Ships) Regulations 1952 to 1963 S.I. 1952 No. 1411; S.I. 1954 No. 675; S.I. 1961, No. 13; S.I. 1963, No. 1258.
Prevention of Damage by Pests Act 1949
Prevention of Damage by Pests (Application to Shipping) Order 1951, S.I. 967
Prevention of Damage by Pests (Application to Shipping) (Amendment No. 2)Order 1956
Poison Rules 1964 S.I. 1964, No. 582
Poison Rules 1965 S.I. 1965 No. 1150

SHELLFISH

Public Health (Shellfish) Regulations 1934 and 1948. S.R. & O. 1934 No. 1342; S.I. 1948 No. 1120.
Order dated 23rd April 1936 made by the Port Health Authority under the Public Health (Shellfish) Regulations 1934 in respect of a "prescribed area" in Essex.
Order dated 25th July 1957 made by the Port Health Authority under the Public Health (Shellfish) Regulations 1934 in respect of a "prescribed area" in Kent.
Medway (Shellfish) Regulations 1935 S.R. & O. No. 1221.

SMOKE ABATEMENT

Public Health Act 1936
Clean Air Act 1956
Dark Smoke (Permitted Periods) Regulations 1958 S.I. No. 498
Dark Smoke (Permitted Periods) (Vessels) Regulations 1958 S.I. No. 878

BYE-LAWS

Bye-Laws have been made by the Port Health Authority:

1. For preventing nuisances arising from barges or vessels carrying offensive cargoes.

2. For removing to hospital any person suffering from dangerous infectious diseases, and for the keeping therein of such persons as long as may be deemed necessary.

3. With respect to houseboats used for human habitation within the limits of the Port of London.

PUBLICATIONS OF THE PORT HEALTH AUTHORITY

Corporation of London as the Port Health Authority of the Port of London: A Summary of Powers and Duties.

Clean Food Handling.

Social Services: Information as to National and Voluntary Organisations ready to assist the seafarer and his family.