[Report 1937] / Medical Officer of Health, Plymouth Port Health Authority.

Plymouth P.H.A.

Port Health Department.

I. Amount of Shipping Entering the Port during the Year 1937.

Shipping — In all 3170 vessels (apart from those engaged in the fishing trade) arrived from foreign and coastwise, the tonnage amounting to 8,027,785.

Four hundred and fifty six vessels were visited by the Medical Officers and 1,809 by the Inspector. 104 defects were found on 49 vessels and in most cases the defects were remedied while in Port. In cases where it was not possible for renovation and repairs to be carried out during the vessels' stay at Plymouth, a letter was sent to the Inspector at the next port of call in England notifying him of the details of our notice. In all 5 letters were sent. Further details will be found in Table A.

II. Character of Trade of Port.

Passenger Traffic — The number of persons passing through the Port was over 33,256 including 15,363 aliens, the latter figure being made up in the main part by American tourists.

Cargo Traffic — Coastwise. Coastwise cargo traffic consists largely of transhipped general cargoes from London, Liverpool and Glasgow, coal from the North East Ports, and coal and general goods from the Bristol Channel Ports.

Foreign. The foreign trade remained much the same as in previous years. Vessels arriving from infected ports were given immediate attention by officers of this Department. Table B (b) gives a list of the chief steamship companies and ports with which Plymouth has traded during the year 1937, and the nature of any cargo traded.

III. Source of Water Supply.

(a) For the Port.

Great Western Docks.
Cattedown & Sutton Harbour.

Plymouth Corporation Water Department from hydrants on the wharves.

(b) For Shipping. The only water boat supplying fresh water to shipping in the Port is the Ela, of 5,500 gallons capacity.

(c) Number of Water Boats and Sanitary Condition. For shipping, water is derived from the hydrants on the wharves or from the Ela. The tanks of the Ela were inspected periodically throughout the year and were found to be in a wholesome condition.

IV. Port Sanitary Regulations 1933.

(1) Arrangements for dealing with Declarations of Health.

(2) Boarding of vessels on Arrival.

(3) Notification of the Authority of inward vessels requiring Special Attention.

(4) Mooring stations designated under Article 10.

(5) Particulars of any standing exemptions from the provisions of Article 14.

(6) Experience of working of Article 16.

(7) Arrangements made for:-

(a) Premises and waiting-room for medical examination.
(b) Cleansing and disinfection of ships, persons and clothing and other articles.
(c) Premises for the temporary accommodation of persons for whom such accommodation is required for the purposes of the Regulations.
(d) Hospital accommodation available for Plague, Cholera, Yellow Fever, Smallpox and other infectious diseases.
(e) Ambulance transport.
(f) Supervision of contacts.

(8) Arrangements for the bacteriological or pathological examination of rats for plague.

(9) Arrangements for other bacteriological or pathological examinations.

(10) Arrangements for the diagnosis and treatment of venereal disease among sailors under the international arrangements.

(11) Arrangements for the interment of the dead.

(12) Other matters.

All the above remain the same as set forth in the Annual Report for the year 1933.

III. Source of Water Supply.

(a) For the Port.

Plymouth Corporation Water

(b) For Great Western Docks.

Stedown & Sutton Harbour.

Supplement from Hydrants on the Wharves.

(c) For Shipping. The only water boat supplying fresh water to shipping in the Port is the Kia, of 8,800 gallons capacity.

(d) Number of Water Boats and Sanitary Condition. For shipping, water is derived from the hydrants on the wharves or from the Kia. The tanks of the Kia were inspected periodically throughout the year and were found to be in a wholesome condition.

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All the above remain the same as set forth in the Annual Report for the Year 1932.

CASES OF INFECTIOUS SICKNESS DEALT WITH

DURING THE YEAR

1927.

	Number of Cases Investigated			Totals	
	Disposed of during voyage	Landed at Plymouth	Proceeded in ship	Passengers	Crew
Scarlet Fever	6	-	1	7	-
Enteric Fever	7	-	4	3	8
Pneumonia	-	1	4	2	3
Dysentery	3	-	2	5	-
Erysipelas	-	-	3	1	2
Pulmonary Tuberculosis	1	11	36	46	2
Tuberculosis Other Forms	-	-	1	1	-
Malaria	1	-	12	3	10
Chicken Pox	9	1	5	11	4
Measles	7	-	11	17	1
Venereal Disease	4	-	29	11	22
Influenza	-	1	1	1	1
Mumps	2	1	6	8	1
Whooping Cough	-	-	3	3	-
Leprosy	-	-	1	1	-
	40	15	119	120	54

CASES OF INFECTIOUS DISEASES DEALT WITH

DURING THE YEAR

1937.

	Number of Cases Investigated			Totals	
	Diagnosed at during voyage	Landed as Pro-dromal	Pro-ceeded to ship	Passengers	Crew
Scarlet Fever	8	-	1	7	-
Enteric Fever	7	-	4	3	8
Pneumonia	-	1	4	5	5
Dysentery	8	-	2	8	-
Erysipelas	-	-	3	1	2
Tuberculosis Pulmonary	1	11	32	46	2
Tuberculosis Other forms	-	-	1	1	-
Malaria	1	-	12	2	10
Chicken Pox	8	1	8	11	4
Measles	7	-	11	17	1
Venereal Disease	4	-	28	11	22
Influenza	-	1	1	1	1
Mumps	2	1	6	8	1
Whooping Cough	-	-	3	3	-
Leprosy	-	-	1	1	-
	40	15	119	120	64

Medical Work under the Aliens Order 1920.

The number of aliens landed at this port during the year was 15,363 in addition to 72 alien seamen, all of whom were either medically examined or inspected: 161 were subjected to detailed examination for various reasons, but it was not necessary to refuse permission to land in any case. Those staying over three months were treated as immigrants and subjected to more careful medical examination, so that no alien should be permitted to land, who, by reason of physical or mental infirmity might become a burden or charge on the community.

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V. Measures against Rodents.

(1) Steps taken for the detection of rodent plague.

(2) Measures taken to prevent the passage of rats between the ships and the shore.

(3) Methods of deratisation of (a) Ships, and (b) Premises in the vicinity of docks or quays.

(4) Measures taken for the detection of rat prevalence in ships and on shore.

(5) Rat proofing.

The measures taken under all the above headings remain the same as set out in the Annual Report for the year 1933.

Plague Precautions were carried out on 82 vessels arriving from plague infected or suspected ports and suitable measures taken to prevent rats from leaving or gaining access to the ship.

1 Deratisation Certificate and 36 Deratisation Exemption Certificates were issued. In certain cases a month's extension was granted and the ships were allowed to proceed for fumigation either at their home ports or next port of loading. In each case the appropriate authority was notified. The contractors' prices for fumigation appear to be relatively high at Plymouth and ships are reluctant to undergo fumigation because of the cost.

Further details will be found in Tables E to H.

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(1) Steps taken for the destruction of rodent plague.

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REPORT ON THE RAT-FLEAS OF PLYMOUTH

by R.B. Mayfield. M.D.
(formerly Asst. M.O.H. Plymouth)

This investigation began in May 1935 and ended in May 1937. The object was to gain some idea of the species and numbers of fleas harboured by the rats which inhabit the Plymouth docks. The total number of rats examined for fleas was eighty three, seventy seven of these being caught on the docks and the remaining six in the town of Plymouth.

Technique

Only live rats, trapped singly, were used in this survey. The cage containing the rat was placed in a white calico bag, and the whole enclosed in a wooden box together with a rag soaked in chloroform. After a suitable interval had elapsed, the bag containing the caged rat was removed from the box, and the fleas collected by thoroughly combing the rat and searching the bag.

Results.

(A) Rats Caught on Dock Premises.

The total number of rats investigated in this area was seventy seven, consisting of sixty three Rattus norvegicus and fourteen Rattus rattus. Two of the former species and one of the latter were immature specimens.

Three species of rat-flea were found on the docks, Nosopsyllus (Ceratophyllus) fasciatus, Xenopsylla cheopis, and Leptopsylla segnis (musculi).

(a) Rattus norvegicus. Table I shows the total numbers of each species of flea found on adult brown rats during the period of the investigation, together with the average numbers of fleas per rat. Here and subsequently "F" denotes "number of fleas", and "F/R" denotes number of fleas per rat.

TABLE I

Species of flea	F	F/R
X. cheopis	171	2.8
N. fasciatus	352	5.8
L. segnis	79	1.3
Total fleas	602	9.9

Number of rats - 61

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TABLE I

Species of flea	F	F/R
X. cheopis	171	2.8
N. fasciatus	552	8.8
L. segnis	79	1.2
Total fleas	802	9.8

Number of rats - 61

Table II shows the average numbers of fleas per rat in quarterly periods of the year, the rats dealt with here being the same as in Table I. It should be noted that the second quarter in 1935 does not include April, and the second quarter in 1937 does not include June.

TABLE II.

	1935			1936				1937	
Quarter of year	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd
X. cheopis	13.0	4.0	4.5	0.7	1.1	0.0	1.0	1.1	0.3
N. fasciatus	6.0	9.0	5.0	7.0	4.0	8.3	2.0	7.6	5.7
L. segnis	3.8	1.5	0.4	0.7	0.5	5.3	2.8	0.3	0.7
Total fleas	22.8	14.5	9.8	8.5	5.6	13.7	5.8	9.9	9.5
Number of rats	6	2	11	11	11	3	5	9	3

Table II does not reveal any seasonal variation in the numbers per rat of any of the three species of flea encountered, though this may be because the numbers of rats are too small. A noticeable feature is the sharp fall in the incidence of X. cheopis, but it must be borne in mind that the rat-flea population of a port is liable to sudden increases due to immigration.

It is interesting to note that 96% of the X. cheopis taken of brown rats on the docks came from a single grain warehouse, and the remaining 4% from within two hundred yards of these premises. This flea is not, of course, a native of this country, but is imported from warmer climates. It has been found plentifully in the Ports of Liverpool and Cardiff in recent years, at Bristol (1916), and at Guy's Hospital (1911). A single specimen was taken from a brown rat at Plymouth in 1905.

(b) Rattus rattus. The single immature R. rattus yielded one specimen of N. fasciatus. The gleanings from the thirteen adults are shown in Table III.

Table II shows the average numbers of fleas per rat in quarterly periods of the year, the rats dealt with here being the same as in Table I. It should be noted that the second quarter in 1933 does not include April, and the second quarter in 1937 does not include June.

TABLE II.

Quarter of Year	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd
	1933			1934				1937	
X. cheopis	12.0	4.0	4.8	0.7	1.1	0.0	1.0	1.1	0.3
B. fasciatus	6.0	8.0	5.0	7.0	4.0	8.3	2.0	7.6	8.7
L. segnis	3.8	1.8	0.4	0.7	0.8	5.3	2.8	0.8	0.7
Total fleas	22.8	14.8	9.8	8.8	8.8	13.7	5.8	9.9	9.8
Number of rats	8	2	12	11	11	3	8	9	3

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(b) Bastus rattus. The single immature B. rattus yielded one specimen of N. fasciatus. The fleas from the thirteen adults are shown in Table III.

TABLE III.

Species of flea	F	F/R
X. cheopis	7	0.5
N. fasciatus	50	3.9
L. segnis	25	1.9
Total fleas	82	6.3

Here again, the X. cheopis were all derived from the grain store mentioned above or its near neighbourhood.

(B) Rats Caught in the Town of Plymouth

Four R. norvegicus and two R. rattus were trapped in the town of Plymouth and examined for fleas. Between them they yielded thirty two specimens of N. fasciatus and three of L. segnis. None of these rats harboured X. cheopis.

Acknowledgement.

My best thanks are due to Professor P.A. Buxton of the London School of Hygiene and Tropical Medicine who very kindly checked the identifications of all the fleas collected in this survey.

TABLE III.

Species of flea	♀	♀/♂
X. cheopis	7	0.8
N. fasciatus	80	3.9
L. segnis	85	1.9
Total fleas	92	6.5

Here again, the X. cheopis were all derived from the grain store mentioned above or its near neighbourhood.

(8) Rats Caught in the Town of Plymouth

Four R. norvegicus and two R. rattus were trapped in the town of Plymouth and examined for fleas. Between them they yielded thirty two specimens of N. fasciatus and three of L. segnis. None of these rats harboured X. cheopis.

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Oysters. As mentioned in the Annual Report for 1936 the owner of the Yealm Oyster Fisheries has modified his tanks on lines suggested by this Department. Throughout the summer experiments were carried out in the newly constructed tanks in close collaboration with Professor Eyre, to whom we are indebted for the vast amount of bacteriological work he has undertaken and for his advice on numerous occasions.

The principle of the method used is that sea water will purify itself when allowed to sediment for ten to twelve days, and may then be regarded as "clean". The self-cleansing properties of the oysters are well known and if fed on clean water they will rapidly cleanse themselves.

There are three tanks arranged in parallel. The first tank (A) has a depth of 10 feet and is used for sedimentation purposes. Water is run in up to a depth of 8 ft. 6 inches - thus giving a volume of water of approximately 32,000 gallons. Water is allowed to sediment for ten to twelve days and then run into a second tank (B) to a depth of 3 feet. The volume of water in this second tank for treatment tank) is approximately 9,000 gallons. Oysters, previously freed from gross pollution by scrubbing, are placed in a single layer on special trays, lying eighteen inches from the bottom of the tank, for a period of two days. The water is then run out of the tank and the oysters hosed with "clean" water from the sedimenting tank (A). A further 9,000 gallons of "clean" water are then transferred into the treatment tank (B) from the sedimentation tank (A) and the process repeated, making a total of four days treatment.

At the onset, treatment consisted of two periods of three days each, but this was reduced because it was found that the oysters did not function vigorously on the third day. Bacteriological examinations revealed no detriment following the reduction in time. Between two and four thousand oysters are treated in this way at a time, according to the requirements of the market.

The cleansed oysters are then placed in special storage tanks until required for market. Clean water from one of the sedimentation tanks is pumped into these tanks daily to a depth of eighteen inches.

oysters. As mentioned in the Annual Report for 1936 the owner of the Basin Oyster Fisheries has modified his tanks on lines suggested by this Department. Throughout the summer experiments were carried out in the newly constructed tanks in close collaboration with Professor Kyre, to whom we are indebted for the vast amount of bacteriological work he has undertaken and for his advice on numerous occasions.

The principle of the method used is that sea water will purify itself when allowed to sediment for ten to twelve days, and may then be regarded as "clean". The self-cleansing properties of the oysters are well known and if fed on clean water they will rapidly cleanse themselves.

There are three tanks arranged in parallel. The first tank (A) has a depth of 10 feet and is used for sedimentation purposes. Water is run in up to a depth of 8 ft. 6 inches - thus giving a volume of water of approximately 25,000 gallons. Water is allowed to sediment for ten to twelve days and then run into a second tank (B) to a depth of 3 feet. The volume of water in this second tank for treatment tank) is approximately 8,000 gallons. Oysters, previously freed from gross pollution by scrubbing, are placed in a single layer on special trays, lying eighteen inches from the bottom of the tank, for a period of two days. The water is then run out of the tank and the oysters dosed with "clean" water from the sedimenting tank (A). A further 8,000 gallons of "clean" water are then transferred into the treatment tank (B) from the sedimentation tank (A) and the process repeated, making a total of four days treatment.

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The cleansed oysters are then placed in special storage tanks until required for market. Clean water from one of the sedimentation tanks is pumped into these tanks daily to a depth of eighteen inches.

The oysters are placed on special wooden trays, about nine inches from the bottom of the tank.

The third tank (C) is a larger but shallower tank which is used as a second sedimentation tank. Water is run into here to a depth of five feet giving a volume of approximately 31,500 gallons, and treated in a similar way to that in tank (A).

By the use of two sedimentation tanks it is possible to have a continuous supply of "clean" sea water for purposes of purification.

Full attention is given to details of cleanliness and all tanks are scrubbed out before being refilled.

I am pleased to report that so far the method used has been successful and that bacteriological reports have all been very satisfactory throughout the oyster season 1937-1938.

Public Health (Shellfish) Regulations, 1934.

Reference to the map on page will show that a large amount of untreated sewage is discharged into the Hamoaze and Hooe Lake. Unfortunately, a certain amount of shellfish (cockles, mussels, limpets and winkles) is collected from these places for sale, although the trade is very small and purely local. Bacteriological examination of the water showed that the layings were polluted and the shellfish were found to be unfit for human consumption. An order was made by the Council under the Public Health (Cleansing of Shellfish) Regulations, 1934 closing the following layings:- Hooe Lake; The Hamoaze including West Mud; St. John's Lake; off Torpoint Institution; Weston Mill Lake; off Rat's Island; The Mouth of the St. Germans River; off Saltash; and in the River Tamar and its Tributaries. This order became operative on December 1st, 1937.

Shellfish sold in the City of Plymouth come from the following sources:-

Cockles - King's Lynn.
Limpets - Foreshore from Mount Batten to Wembury.
Port Wrinkle, Cornwall.
Mussels - Padstow, Cornwall.
Periwinkles - Foreshore from Mount Batten to Wembury.
Port Wrinkle, Cornwall.
Padstow, Cornwall.

The oysters are placed on special wooden trays, about nine inches from the bottom of the tank.

The third tank (C) is a larger but shallower tank which is used as a second sedimentation tank. Water is run into here to a depth of five feet giving a volume of approximately 21,000 gallons, and treated in a similar way to that in tank (A).

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Port Wrinkle, Cornwall.
Padstow, Cornwall.

Oysters - Brightlingsea, Essex.
Billingsgate Market, London.
River Yealm, Steer Point.
Queens and Escallops - Plymouth and Brixham, landed by Trawlers.
Whelks - Plymouth, Brixham and Torbay, landed by Trawlers.

Swimming Pools - Tinside. Prior to the opening of the Swimming Season a Chlorination Plant was installed at the Tinside Swimming Pool. During the season 37 samples of water were taken for bacteriological examination and the results were satisfactory. The concentration of free chlorine has been kept between .1 and .4 parts per million, and there have been no serious complaints attributable to the presence of chlorine.

Mount Wise Swimming Baths. Thirteen samples were taken from No.1 basin and fifteen from No.2 basin. The results were satisfactory.

Other Swimming Places. Unfortunately, many of the sites favoured by bathers are situated in close proximity to various sewer outfalls. The map on page shows the sewer outfalls from the City which discharge into the surrounding sea and tidal rivers.

Foodstuffs. A systematic inspection of foodstuffs landed in the Port resulted in 755 vessels being visited in this connection, and nearly 39 tons of foodstuff were dealt with as being unsound, unwholesome, and otherwise unfit for human consumption. Details are given in the following table:-

FOODS CONDEMNED DURING THE YEAR, 1937.

DIVISION		T.	C.	Q.	LBS.	DISPOSAL
3. Apples	3 tins			1	9	To Incinerator
Apricots	1 tin				2	do
Apricot pulps	28 tins		3	2	0	do
Corned Beef	4 tins			1	0	do
Hams	32 tins		4	0	3	do
Pines	35 tins			1	24	do
Prunes	2 tins				10	do
Veal	38 tins		2	3	14	do
4. Apples			5	0	0	For Pigs' Food
Grapes			10	0	0	To Refuse Dump
Lemons			5	0	0	do
Oranges			15	0	0	do
Potatoes		35	0	0	0	For Pigs' Food
5. Wheat			19	2	0	For Pigs' Food
TOTAL		38	6	0	6	

Two parcels of Apples were found to contain .021 and .035 grains arsenious oxide per pound. As the average permissible is .01 per pound, the apples in each case were returned to Liverpool under Guarantee for reconditioning.

Oysterhouse - Brightlingsea, Essex.
Billingsgate Market, London.
River Yealm, Steer Point.
Mussels and Escallops - Plymouth and Brixham, landed by Trawlers.
Whelks - Plymouth, Brixham and Torbay, landed by Trawlers.

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Apricots	1 tin				2	do
Apricot pulp	23 tins		3	2	0	do
Corned Beef	4 tins			1	0	do
Ham	32 tins		4	0	3	do
Pines	38 tins			1	24	do
Prunes	9 tins				10	do
Veal	32 tins		2	3	14	do
4. Apples			6	0	0	For Pigs' Food
Grapes			10	0	0	To Refuse Dump
Lemons			3	0	0	do
Oranges			18	0	0	do
Potatoes		36	0	0	0	For Pigs' Food
8. Wheat			19	2	0	For Pigs' Food
TOTAL			38	6	0	8

Two parcels of Apples were found to contain .021 and .088 grains arsenious oxide per pound. As the average permissible is .01 per pound, the apples in each case were returned to Liverpool under Guarantee for reconditioning.

RECORDS OF VESSELS INSPECTED, TONNAGE, CREWS, PASSENGERS, SICKNESS, ETC., FOR THE TEN YEARS ENDED 1937.

Year	No.of Vessels Inspected	NATIONALITY		No.of Crews on Board	Registered Tonnage	Sickness		Passengers		Deaths	Landed for Treatment	INSANITARY	
		British	Foreign			During Voyage	Infectious	On Board	Landing			No.of Vessels	No.of Defects
1928	2,869	2,155	714	251,583	6,740,888	853	448	208,187	43,963	61	151	127	690
1929	2,261	1,781	480	248,119	6,665,530	1,224	636	213,386	47,471	71	134	103	633
1930	2,071	1,424	647	267,973	7,343,851	1,401	637	224,753	45,002	60	160	83	514
1931	1,940	1,363	577	225,010	6,612,552	1,321	776	180,285	34,744	60	108	55	212
1932	1,994	1,475	519	195,816	6,536,655	1,226	778	156,874	31,468	36	207	27	284
1933	2,082	1,542	540	215,072	6,609,646	702	394	120,916	28,264	55	85	13	94
1934	2,105	1,175	1,030	191,569	6,566,558	224	116	128,177	31,417	55	22	31	146
1935	1,980	1,445	535	154,777	5,493,853	333	276	110,963	34,634	52	14	45	183
1936	2,269	1,280	989	177,468	5,481,037	207	190	100,912	31,572	55	23	59	262
1937	2,265	1,686	579	215,879	5,735,941	187	174	107,001	33,256	50	15	49	104