STUDIES ON ILLNESSES

ASSOCIATED WITH TRAVEL.

(IN TWO VOLUMES)

VOLUME 2

JONATHAN HARVEY COSSAR
M.B.,Ch.B.
PRINCIPAL IN GENERAL PRACTICE.
RESEARCH ASSOCIATE, COMMUNICABLE
DISEASES (SCOTLAND) UNIT.

A THESIS SUBMITTED TO THE UNIVERSITY
OF GLASGOW FOR THE DEGREE OF DOCTOR
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Supplementary material, unbound copies of:

"Holiday Information and Checklist"

"Protect your health abroad" - SA.35/1987

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Table 1.01 Growth in international travel

	1949 (millions)	1960 (millions)	1970 (millions)	1984 (millions)	Increase since 1949
Total numbers of international tourists	26	72	201	312	×12
Total numbers of air travellers throughout the world	31	106	386	841	×27
Total visits abroad by United Kingdom residents	1.7	6	11.8	22.1	×13
	%	%	%	%	
Visits by United Kingdom residents (to Europe: to rest of world)	92:8	94:6	89:11	88:12	×12:×20
Mode of travel used by United Kingdom residents (sea: air)	-	60:40	43:57	37:63	-
Proportion of package holiday visits abroad by United Kingdom residents	-	30	30	59	-

Table 1.02 Infections imported by travellers

Acquired Immune Deficiency Syndrome	Legionnaires´ disease
Amoebiasis	Leshmaniasis
Brucellosis	Leptospirosis
Campylobacteriosis	Malaria
Cholera	Poliomyelitis
Cytomegalovirus mononucleosis	Rabies
Diptheria	Salmonellosis
Dysentery	Schistosomiasis
Giardiasis	Sexually transmitted diseases
Helminths	Shigellosis
Hepatitis A and B	Trypanosomiasis
Lassa fever	Tuberculosis
	Typhoid/Paratyphoid

Table 3.01 Mission field distribution of sub-groups

Missionary sub-groupings	Mission fields						Overall
	India	Africa	Jamaica	China	Other	Totals	(%)
Ordained male	44%	39%	7%	8%	3%	384	(27%)
Non-ordained male	19%	75%	1%	5%	1%	210	(15%)
Male doctor	33%	43%	0	19%	5%	98	(7%)
Ordained male doctor	26%	45%	<1%	15%	13%	47	(3%)
Sub-total males	34%	50%	4%	9%	3%	739	(52%)
Female	54%	38%	<1%	7%	<1%	441	(31%)
Female nurse	34%	43%	0	17%	6%	125	(9%)
Female doctor	67%	11%	0	22%	0	73	(5%)
Sub-total females	51%	36%	<1%	11%	1%	639	(45%)
Sub-total health care trained	40%	36%	<1%	18%	5%	343	(24%)
Totals	594(42%)	612(43%)	30(2%)	142(10%)	31(2%)	1409	(100%)
Range	(19-67%)	(11-75%)	(0-7%)	(5-22%)	(0-13%)	(3-52%)	

Table 3.02 Length of service within missionary sub-groups

Missionary sub-groupings	Service (years) <5	5-19	20-39	>40	Not stated	Mean (years)	Totals	Overall (%)
Ordained male	13%	32%	33%	13%	9%	24.9	388	(27%)
Non-ordained male	38%	37%	19%	1%	4%	13.8	213	(15%)
Male doctor	35%	43%	19%	0	3%	15.9	100	(7%)
Ordained male doctor	9%	38%	36%	15%	2%	25.1	47	(3%)
Sub-total males	23%	35%	27%	8%	6%	20.5	748	(52%)
Female	25%	36%	26%	3%	10%	24.0	446	(31%)
Female nurse	38%	42%	13%	0	6%	18.1	126	(9%)
Female doctor	20%	42%	27%	1%	9%	14.6	74	(5%)
Sub-total females	27%	38%	23%	2%	9%	21.8	646	(45%)
Sub-total health care trained	29%	42%	21%	2%	5%	17.7	347	(24%)
Totals	360(25%)	522(37%)	363(25%)	74(5%)	108(8%)	21.1	1427	(100%)
Range	(9-38%)	(32-43%)	(13-36%)	(0-15%)	(2-10%)	(13.8-25.1)		

Table 3.03 Length of service by mission location

Mission location	Service (years) <5	5-19	20-39	>40	Not stated	Mean (years)	Totals	Overall (%)
Calcutta	33%	38%	24%	0	5%	16.6	82	(6%)
N.E. India	27%	37%	25%	2%	8%	21.5	209	(15%)
N.W. India	19%	37%	31%	7%	6%	23.9	270	(19%)
S. India	25%	38%	27%	2%	7%	22.4	99	(7%)
India subtotal	23%	38%	28%	5%	7%	22.8	594	(47%)
Livingstonia	29%	43%	19%	4%	6%	22.9	122	(9%)
Blantyre	32%	29%	24%	4%	10%	18.5	96	(7%)
Central Africa	29%	39%	20%	4%	8%	21.0	283	(20%)
Calabar	34%	36%	17%	2%	11%	15.4	174	(12%)
West Africa	36%	36%	17%	1%	10%	15.1	203	(14%)
S. Africa	16%	37%	23%	17%	7%	28.2	126	(9%)
Africa subtotal	29%	37%	20%	6%	9%	21.1	612	(43%)
China	21%	27%	42%	4%	6%	23.5	142	(10%)
Jamaica	7%	33%	30%	23%	7%	30.4	30	(2%)
Other areas	32%	42%	19%	0	6%	20.9	31	(2%)
Totals	360(25%)	522(37%)	363(25%)	74(5%)	108(8%)	21.1	1427	(100%)
Range	(7-36%)	(27-43%)	(17-42%)	(0-23%)	(5-11%)	(15.1-30.4)		(2-47%)

Table 3.04 Length of service by year of appointment

Year	Service (years) <5	5-19	20-39	>40	Not stated	Totals	Overall (%)
1867-1879	25%	37%	18%	13%	7%	103	(7%)
1880-1889	16%	35%	27%	12%	10%	173	(12%)
1890-1899	30%	28%	25%	8%	9%	284	(20%)
Sub-total pre-1900	24%	32%	25%	10%	9%	560	(40%)
1900-1909	25%	36%	29%	3%	7%	273	(19%)
1910-1919	25%	41%	27%	2%	6%	259	(18%)
1920-1929	28%	42%	23%	2%	5%	324	(23%)
Sub-total post-1900	26%	40%	26%	2%	6%	856	(60%)
Totals	360(25%)	522(37%)	363(25%)	74(5%)	108(8%)	1416	(100%)
Range	(16-30%)	(28-42%)	(18-29%)	(2-13%)	(5-10%)		(7-60%)

Table 3.05 Reason for leaving service within missionary sub-groups

Missionary sub-groupings	Due to ill health	Died in service	Family ill health	To be married	Other	Totals	Overall (%)
Ordained male	21%	13%	6%	<1%	60%	388	(27%)
Non-ordained male	16%	14%	4%	0	66%	213	(15%)
Male doctor	15%	12%	10%	<1%	62%	100	(7%)
Ordained male doctor	24%	15%	9%	0	53%	47	(3%)
Sub-total males	19%	12%	6%	<1%	61%	748	(52%)
Female	21%	9%	4%	11%	56%	446	(31%)
Female nurse	22%	11%	2%	11%	54%	126	(9%)
Female doctor	19%	8%	4%	12%	57%	74	(5%)
Sub-total females	21%	9%	4%	11%	56%	646	(45%)
Sub-total health care trained	20%	11%	5%	7%	57%	347	(24%)
Totals	287(20%)	151(11%)	70(5%)	76(5%)	837(59%)	1427	(100%)
Range	(15-24%)	(8-15%)	(2-10%)	(0-12%)	(53-66%)		(3-52%)

Table 3.06 Reason for leaving service by mission location

Mission location	Due to ill health	Died in service	Family ill health	To be married	Other	Totals	Overall (%)
Calcutta	27%	7%	6%	4%	57%	82	(6%)
N.E. India	26%	8%	5%	5%	56%	209	(15%)
N.W. India	19%	9%	8%	6%	59%	270	(19%)
S. India	17%	8%	2%	11%	62%	99	(7%)
India subtotal	21%	8%	6%	7%	58%	594	(47%)
Livingstonia	19%	16%	5%	4%	57%	122	(9%)
Blantyre	18%	14%	2%	2%	65%	96	(7%)
Central Africa	18%	13%	4%	4%	61%	283	(20%)
Calabar	24%	15%	6%	5%	50%	174	(12%)
West Africa	25%	14%	5%	4%	52%	203	(14%)
S. Africa	21%	9%	2%	2%	66%	126	(9%)
Africa subtotal	21%	12%	4%	4%	59%	612	(43%)
China	14%	15%	4%	6%	61%	142	(10%)
Jamaica	27%	20%	3%	0	50%	30	(2%)
Other areas	19%	13%	10%	3%	55%	31	(2%)
Totals	287(20%)	151(11%)	70(5%)	76(5%)	837(59%)	1427	(100%)
Range	(14-27%)	(7-20%)	(2-10%)	(0-11%)	(50-66%)		(2-47%)

Table 3.07 Reason for leaving service by year of appointment

Year	Due to ill health	Died in service	Family ill health	To be married	Other	Totals	Overall (%)
1867-1879	23%	14%	4%	3%	56%	103	(7%)
1880-1889	24%	17%	4%	2%	52%	173	(12%)
1890-1899	25%	19%	5%	4%	48%	284	(20%)
Sub-total pre-1900	24%	17%	4%	3%	51%	560	(40%)
1900-1909	21%	8%	5%	6%	59%	273	(19%)
1910-1919	16%	9%	6%	7%	62%	259	(18%)
1920-1929	15%	4%	4%	7%	69%	324	(23%)
Sub-total post-1900	18%	7%	5%	7%	63%	856	(60%)
Totals	287(59%)	151(11%)	70(50%)	76(5%)	832(59%)	1416	(100%)
Range	(15-25%)	(4-19%)	(4-6%)	(2-7%)	(48-69%)		(7-60%)

Table 3.08 Reason for leaving service by year of appointment and mission location

Mission location (1867-1899)	Due to ill health	Died in service	Family ill health	To be married	Other	Totals	Overall (%)
Calcutta	29%	12%	6%	6%	47%	34	(2%)
India	28%	13%	6%	5%	48%	218	(15%)
Livingstonia	22%	29%	2%	0	47%	55	(4%)
Blantyre	19%	19%	2%	0	58%	43	(3%)
Calabar	32%	22%	4%	4%	38%	76	(5%)
Africa	24%	19%	2%	2%	52%	259	(18%)
Other areas	18%	20%	5%	0	56%	79	(6%)
Sub-total pre-1900	24%	17%	4%	3%	51%	560	(40%)
Mission location (1900-1929)							
Calcutta	23%	4%	6%	2%	65%	34	(2%)
India	17%	5%	6%	8%	64%	374	(26%)
Livingstonia	11%	4%	7%	7%	64%	67	(5%)
Blantyre	18%	8%	2%	4%	69%	51	(4%)
Calabar	19%	8%	8%	5%	59%	97	(7%)
Africa	18%	7%	6%	5%	63%	348	(25%)
Other areas	17%	13%	5%	8%	59%	120	(8%)
Sub-total post-1900	18%	7%	5%	7%	63%	856	(60%)
Totals	287(20%)	151(11%)	70(5%)	76(5%)	832(59%)	1416	(100%)
Range	(11-32%)	(4-29%)	(2-8%)	(0-8%)	(38-69%)		(2-60%)

Table 3.09 Age at death within missionary sub-groups (range 23-105 years)

Missionary sub-groupings	Age (years) 20-29	30-39	40-49	50-59	>60	Mean	Total known	Overall (%)	% of sub-group
Ordained male	1%	8%	6%	8%	76%	69.2	295	(55%)	76%
Non-ordained male	21%	5%	29%	5%	40%	52.1	42	(8%)	20%
Male doctor	3%	25%	3%	8%	63%	61.1	40	(7%)	40%
Ordained male doctor	0	10%	0	10%	79%	60.5	39	(7%)	83%
Sub-total males	3%	10%	7%	8%	72%	66.6	416	(77%)	56%
Female	1%	12%	1	6%	79%	72.7	78	(15%)	17%
Female nurse	0	21%	14%	0	64%	64.3	14	(3%)	11%
Female doctor	0	11%	0	4%	85%	71.5	27	(5%)	36%
Sub-total females	1%	13%	5%	5%	79%	71.4	119	(22%)	18%
Sub-total health care trained	1%	17%	3%	7%	73%	66.2	120	(22%)	35%
Totals	14(3%)	55(10%)	34(6%)	42(8%)	392(73%)	67.4	537	(100%)	38%
Range	(0-21%)	(5-25%)	(0-29%)	(0-10%)	(40-85%)	(52.1-72.7)		(3-77%)	(11-83%)

Table 3.10 Age at death by mission location

Mission location	Age (years) 20-29	30-39	40-49	50-59	>60	Mean	Total known	Overall (%)	% of sub-group
Calcutta	0	0	14%	86%	0	73.5	21	(4%)	26%
N.E. India	0	1%	10%	6%	83%	72.4	71	(13%)	34%
N.W. India	2%	8%	5%	9%	76%	69.8	97	(18%)	36%
S. India	5%	18%	10%	3%	64%	64.9	39	(7%)	39%
India subtotal	2%	8%	8%	7%	76%	69.9	210	(39%)	35%
Livingstonia	5%	13%	0	10%	72%	63.7	39	(7%)	32%
Blantyre	3%	19%	11%	14%	54%	61.5	37	(7%)	39%
Central Africa	3%	13%	7%	12%	65%	63.9	97	(18%)	34%
Calabar	10%	21%	8%	6%	56%	60.2	63	(12%)	36%
West Africa	8%	21%	7%	7%	56%	60.2	71	(13%)	35%
S. Africa	0	7%	3%	5%	84%	71.3	58	(11%)	46%
Africa subtotal	4%	14%	6%	9%	67%	64.6	226	(42%)	37%
China	2%	11%	2%	5%	81%	67.6	64	(12%)	44%
Jamaica	0	0	13%	21%	67%	69.4	25	(4%)	80%
Other areas	0	9%	0	0	91%	71.5	12	(2%)	37%
Totals	14(3%)	55(10%)	34(6%)	42(8%)	392(73%)	67.4	537	(100%)	38%
Range	(0-10%)	(0-21%)	(0-14%)	(0-86%)	(0-91%)	(60.2-73.5)		(2-42%)	(26-80%)

Table 3.11 Age at death by year of appointment

Year	Age (years) 20-29	30-39	40-49	50-59	>60	Total known	Overall (%)	% of sub-group
1867-1879	2%	8%	8%	8%	75%	64	(12%)	62%
1880-1889	1%	15%	10%	8%	65%	98	(18%)	57%
1890-1899	5%	14%	7%	7%	68%	151	(28%)	53%
Sub-total pre-1900	3%	13%	8%	7%	69%	313	(58%)	56%
1900-1909	1%	5%	4%	8%	81%	95	(18%)	35%
1910-1919	5%	8%	3%	5%	80%	64	(12%)	25%
1920-1929	2%	6%	3%	1%	78%	65	(12%)	20%
Sub-total post-1900	2%	6%	4%	8%	80%	224	(42%)	25%
Totals	14(3%)	55(10%)	34(6%)	42(8%)	392(73%)	537	(100%)	38%
Range	(1-5%)	(5-15%)	(3-10%)	(1-8%)	(65-81%)		(12-58%)	(20-62%)

Table 3.12 Mortality in Scottish Presbyterian missionaries 1867-1929

Cause of death	pre-1900	post-1900	Totals	Overall
Malaria	21(23)	6(10)	27	(18)
Cholera	4(4)	3(5)	7	(5)
Dysentery	1	4	5	(3)
Typhoid	2	2	4	(3)
Pneumonia	2	2	4	(3)
Tuberculosis	3	0	3	(2)
Influenza	1	1	2	(1)
Surgery	1	1	2	
Psychiatric	1	1	2	
Appendicitis	2	0	2	
Cardiac	2	0	2	
Renal	2	0	2	
Diphtheria	1	0	1	
Plague	0	1	1	
Sunstroke	1	0	1	
Accidental	1	6(10)	7	(5)
Not recorded	47(51)	32(54)	79	(52)
Totals	92(61)	59(39)	151	(100)

(percentages in parentheses)

Table 3.13 Overall reports of illness in travellers studied

Study group	Response rate	Unwell	Totals	Overall (%)
Package holidaymakers-1977	-	43%	2211	(16%)
L. pneumophila study-1977	-	78%	375	(3%)
Visitors to Scotland-1980	21%	19%	355	(3%)
Winter package holidaymakers-1980,83	28%	20%	342	(2%)
Typhoid "at risk" holidaymakers-1981	77%	40%	141	(1%)
Holidaymakers to Romania-1981	56%	75%	370	(3%)
Package holidaymakers-1981	37%	35%	3906	(28%)
Package holidaymakers-1982(E.A.)	35%	25%	1978	(14%)
Package holidaymakers-1982(G.A.)	30%	32%	3024	(22%)
Holidaymakers to Portugal-1984	38%	56%	388	(3%)
Package holidaymakers-1985	20%	28%	726	(5%)
Totals	(mean)32%	4962(36%)	13816	(100%)
Range	(20-77%)	(19-78%)	(1-28%)	

Table 3.14 Age of travellers and type of illness
(package holidaymakers and other travellers 1977)

Age group (years)	Not ill	Alimentary	Respiratory	Alimentary & Respiratory	Other	Alimentary & Other	Respiratory & Other	Totals	Overall (%)
<10	57%	35%	2%	2%	2%	2%	0	54	(2%)
11-20	50%	34%	3%	8%	3%	1%	0	381	(17%)
21-30	45%	43%	3%	5%	3%	1%	<1%	613	(28%)
31-40	56%	38%	2%	2%	2%	0	0	232	(10%)
41-50	62%	27%	3%	3%	5%	0	0	290	(13%)
51-60	74%	19%	2%	3%	2%	0	0	312	(14%)
60+	71%	24%	0	2%	2%	1%	1%	164	(7%)
not known	66%	24%	3%	4%	2%	1%	1%	165	(7%)
Totals	1261(57%)	717(32%)	58(3%)	94(4%)	65(3%)	12(1%)	4(<1%)	2211	(100%)
Range	(45-74%)	(19-43%)	(0-3%)	(2-8%)	(2-5%)	(0-2%)	(0-1%)	(2-28%)	

Table 3.15 Age of travellers and type of illness
(study of Legionnaires´ disease in travellers 1977)

Age group (years)	Not ill	Alimentary	Respiratory	Alimentary & Respiratory	Other	Alimentary & Other	Respiratory & Other	Totals	Overall (%)
0-9	75%	0	25%	0	0	0	0	4	(1%)
10-19	25%	6%	19%	25%	15%	6%	4%	48	(13%)
20-29	19%	11%	19%	16%	16%	7%	13%	70	(19%)
30-39	31%	6%	14%	11%	22%	3%	14%	36	(10%)
40-49	22%	11%	14%	22%	18%	4%	8%	76	(20%)
50-59	22%	13%	21%	17%	17%	1%	8%	76	(20%)
60+	13%	8%	15%	25%	26%	6%	8%	53	(14%)
not known	33%	17%	25%	0	17%	8%	0	12	(3%)
Totals	84(22%)	37(10%)	66(18%)	70(19%)	69(18%)	17(5%)	32(9%)	375	(100%)
Range	(13-75%)	(0-17%)	(14-25%)	(0-25%)	(0-26%)	(0-8%)	(0-14%)	(1-20%)	

Table 3.16 Age of travellers and type of illness
(visitors to Scotland 1980)

Age group (years)	Not ill	Alimentary	Respiratory	Alimentary & Respiratory	Other	Alimentary & Other	Respiratory & Other	Totals	Overall (%)
0-9	75%	0	0	0	25%	0	0	4	(1%)
10-19	50%	13%	0	13%	25%	0	0	8	(2%)
20-29	77%	3%	6%	1%	6%	5%	3%	108	(30%)
30-39	74%	9%	9%	0	4%	0	2%	45	(13%)
40-49	93%	4%	2%	0	0	0	0	45	(13%)
50-59	86%	6%	8%	0	0	0	0	50	(14%)
60+	78%	5%	4%	2%	5%	5%	0	55	(15%)
not known	90%	3%	3%	0	5%	0	0	40	(11%)
Totals	288(81%)	17(5%)	18(5%)	3(1%)	17(5%)	8(2%)	4(1%)	355	(100%)
Range	(50-93%)	(0-13%)	(0-9%)	(0-13%)	(0-25%)	(0-5%)	(0-3%)	(1-30%)	

Table 3.17 Age of travellers and type of illness
(winter package holidaymakers 1980{263} & 1983{79})

Age group (years)	Not ill	Alimentary	Respiratory	Alimentary & Respiratory	Other	Alimentary & Other	Totals	Overall (%)
<10	71%	14%	14%	0	0	0	7	(2%)
10-20	81%	8%	4%	4%	4%	0	26	(8%)
21-30	67%	10%	8%	2%	10%	3%	61	(18%)
31-40	70%	18%	5%	3%	5%	0	40	(12%)
41-50	81%	8%	4%	2%	6%	0	52	(15%)
51-60	85%	5%	3%	1%	4%	1%	73	(21%)
60+	92%	5%	2%	0	2%	0	59	(17%)
not known	92%	4%	4%	0	0	0	24	(7%)
Totals	275(80%)	28(8%)	15(4%)	5(1%)	16(5%)	3(1%)	342	(100%)
Range	(67-92%)	(4-18%)	(2-14%)	(0-4%)	(0-10%)	(0-3%)	(2-21%)	

Table 3.18 Age of travellers and type of illness
(typhoid "at risk" holidaymakers 1981)

Age group (years)	Not ill	Alimentary	Respiratory	Alimentary & Respiratory	Other	Alimentary & Other	Totals	Overall (%)
0-9	50%	50%	0	0	0	0	4	(3%)
10-19	55%	30%	0	0	0	10%	10	(7%)
20-29	28%	56%	0	0	4%	12%	25	(17%)
30-39	64%	27%	9%	0	0	0	11	(7%)
40-49	77%	15%	0	0	0	8%	13	(9%)
50-59	67%	22%	2%	2%	2%	4%	45	(32%)
60+	65%	26%	9%	0	0	0	23	(16%)
not known	80%	20%	0	0	0	0	10	(7%)
Totals	85(60%)	42(30%)	4(3%)	1(1%)	2(1%)	7(5%)	141	(100%)
Range	(28-80%)	(15-56%)	(0-9%)	(0-2%)	(0-4%)	(0-12%)	(3-32%)	

Table 3.19 Age of travellers and type of illness
(holidaymakers to Romania 1981)

Age group (years)	Not ill	Alimentary	Respiratory	Alimentary & Respiratory	Other	Alimentary & Other	Respiratory & Other	Totals	Overall (%)
0-9	17%	53%	0	10%	7%	13%	0	30	(8%)
10-19	18%	35%	0	6%	8%	35%	0	40	(11%)
20-29	20%	44%	0	5%	2%	29%	0	96	(27%)
30-39	19%	47%	2%	4%	2%	27%	0	45	(12%)
40-49	26%	44%	2%	3%	2%	24%	0	59	(16%)
50-59	27%	51%	0	2%	0	21%	0	53	(14%)
60+	62%	28%	0	6%	0	3%	1%	29	(8%)
not known	29%	44%	0	6%	0	22%	0	18	(5%)
Totals	91(25%)	162(44%)	2(1%)	17(5%)	9(2%)	88(24%)	1(<1%)	370	(100%)
Range	(17-62%)	(28-53%)	(0-2%)	(2-10%)	(0-8%)	(3-35%)	(0-1%)	(5-27%)	

Table 3.20 Age of travellers and type of illness
(package holidaymakers - Glasgow Airport 1981)

Age group (years)	Not ill	Alimentary	Respiratory	Alimentary & Respiratory	Other	Alimentary & Other	Respiratory & Other	Totals	Overall (%)
0-9	79%	10%	0	0	8%	3%	0	105	(3%)
10-19	61%	17%	<1%	2%	7%	12%	1%	550	(14%)
20-29	53%	22%	<1%	2%	6%	17%	<1%	906	(23%)
30-39	62%	17%	<1%	1%	6%	12%	1%	556	(14%)
40-49	70%	15%	1%	2%	5%	8%	<1%	710	(18%)
50-59	71%	15%	1%	1%	5%	7%	<1%	647	(17%)
60+	80%	13%	<1%	2%	3%	1%	1%	254	(7%)
not known	71%	18%	1%	0	4%	5%	1%	178	(5%)
Totals	2524(65%)	671(17%)	16(<1%)	60(2%)	222(6%)	396(10%)	17(<1%)	3906	(100%)
Range	(53-80%)	(10-22%)	(0-1%)	(0-2%)	(3-8%)	(1-17%)	(0-1%)	(3-23%)	

Table 3.21 Age of travellers and type of illness
(package holidaymakers - Edinburgh Airport 1982)

Age group (years)	Not ill	Alimentary	Respiratory	Alimentary & Respiratory	Other	Alimentary & Other	Respiratory & Other	Totals	Overall (%)
0-9	72%	7%	0	0	10%	10%	1%	187	(9%)
10-19	72%	8%	0	2%	9%	9%	<1%	323	(16%)
20-29	65%	12%	0	1%	8%	12%	1%	276	(14%)
30-39	73%	12%	<1%	<1%	7%	6%	1%	301	(15%)
40-49	78%	10%	0	0	6%	6%	1%	259	(13%)
50-59	78%	9%	1%	<1%	5%	4%	1%	313	(16%)
60+	88%	3%	<1%	0	6%	3%	0	215	(11%)
not known	78%	6%	0	0	10%	6%	1%	104	(5%)
Totals	1484(75%)	177(9%)	6(<1%)	11(1%)	147(7%)	138(7%)	15(1%)	1978	(100%)
Range	(65-88%)	(3-12%)	(0-1%)	(0-2%)	(5-10%)	(3-12%)	(0-1%)	(5-16%)	

Table 3.22 Age of travellers and type of illness
(package holidaymakers - Glasgow Airport 1982)

Age group (years)	Not ill	Alimentary	Respiratory	Alimentary & Respiratory	Other	Alimentary & Other	Respiratory & Other	Totals	Overall (%)
0-9	64%	18%	0	0	12%	6%	0	89	(3%)
10-19	63%	15%	<1%	1%	10%	10%	<1%	443	(15%)
20-29	61%	18%	0	2%	6%	12%	1%	530	(18%)
30-39	62%	17%	<1%	<1%	8%	12%	<1%	514	(17%)
40-49	74%	13%	<1%	2%	4%	6%	1%	517	(17%)
50-59	77%	13%	1%	1%	4%	3%	1%	561	(19%)
60+	83%	9%	1%	1%	2%	3%	1%	301	(10%)
not known	23%	38%	0	3%	14%	17%	4%	69	(2%)
Totals	2064(68%)	462(15%)	13(<1%)	37(1%)	188(6%)	242(8%)	18(1%)	3024	(100%)
Range	(23-83%)	(9-38%)	(0-1%)	(0-3%)	(2-14%)	(3-17%)	(0-4%)	(3-19%)	

Table 3.23 Age of travellers and type of illness
(package holidaymakers - from Portugal 1984)

Age group (years)	Not ill	Alimentary	Respiratory	Alimentary & Respiratory	Other	Alimentary & Other	Totals	Overall (%)
10-19	43%	14%	0	14%	0	29%	7	(2%)
20-29	34%	29%	0	4%	5%	27%	146	(38%)
30-39	29%	41%	0	0	3%	27%	59	(15%)
40-49	58%	21%	0	0	3%	19%	73	(19%)
50-59	60%	22%	2%	2%	3%	12%	60	(15%)
60+	75%	15%	5%	0	0	5%	20	(5%)
not known	43%	35%	0	4%	0	17%	23	(6%)
Totals	172(44%)	107(28%)	2(1%)	9(2%)	14(4%)	84(22%)	388	(100%)
Range	(29-75%)	(14-41%)	(0-5%)	(0-14%)	(0-5%)	(5-29%)	(2-38%)	

Table 3.24 Age of travellers and type of illness
(package holidaymakers - Glasgow Airport 1985)

Age group (years)	Not ill	Alimentary	Respiratory	Alimentary & Respiratory	Other	Alimentary & Other	Respiratory & Other	Totals	Overall (%)
0-9	57%	7%	0	0	29%	7%	0	14	(2%)
10-19	56%	9%	0	1%	9%	22%	3%	68	(9%)
20-29	57%	16%	0	1%	13%	12%	1%	150	(21%)
30-39	79%	7%	0	0	8%	5%	1%	130	(18%)
40-49	76%	10%	0	1%	8%	6%	0	143	(20%)
50-59	83%	8%	1%	0	4%	1%	2%	135	(19%)
60+	85%	7%	2%	0	2%	2%	0	41	(6%)
not known	80%	7%	0	0	9%	4%	0	45	(6%)
Totals	526(72%)	71(10%)	3(<1%)	3(<1%)	62(9%)	54(7%)	7(1%)	726	(100%)
Range	(56-85%)	(7-16%)	(0-2%)	(0-1%)	(2-29%)	(1-22%)	(0-3%)	(2-21%)	

Table 3.25 Age of travellers and type of illness.

Age group (years)	Not ill	Alimentary	Respiratory	Alimentary & Respiratory	Other	Alimentary & Other	Respiratory & Other	Totals	Overall (%)
0-9	67%	16%	1%	1%	9%	6%	<1%	499	(4%)
10-19	59%	19%	2%	4%	8%	9%	1%	1923	(14%)
20-29	52%	25%	2%	3%	6%	12%	1%	2982	(22%)
30-39	62%	19%	1%	1%	6%	9%	1%	1977	(14%)
40-49	68%	16%	1%	2%	5%	6%	1%	2246	(16%)
50-59	72%	15%	2%	2%	4%	4%	1%	2330	(17%)
60+	80%	9%	2%	2%	4%	2%	1%	1188	(9%)
not known	68%	18%	1%	1%	6%	6%	1%	672	(5%)
Totals	8854(64%)	2491(18%)	203(1%)	310(2%)	811(6%)	1049(8%)	98(1%)	13816	(100%)
Range	(52-80%)	(9-25%)	(1-2%)	(1-4%)	(4-9%)	(2-12%)	(<1-1%)	(4-22%)	

Table 3.26 Age of travellers and health experience

Age group (years)	Unwell	Totals	Overall (%)
0-9	33%	499	(4%)
10-19	41%	1923	(14%)
20-29	48%	2982	(22%)
30-39	38%	1977	(14%)
40-49	32%	2246	(16%)
50-59	28%	2330	(17%)
60+	20%	1188	(9%)
not known	32%	671	(5%)
Totals	36%	13816	(100%)
Range	(20-48%)		(4-22%)

Table 3.27 Sex of travellers and health experience

Study group	Male unwell	Male total	Female unwell	Female total	Overall unwell	Overall total	Overall (%)
Visitors to Scotland-1980	16%	174	23%	172	19%	346	(3%)
Winter package holidaymakers-1980;83	24%	150	16%	192	20%	342	(3%)
Typhoid "at risk" holidaymakers-1981	38%	64	42%	77	40%	141	(1%)
Holidaymakers from Romania-1981	77%	157	74%	213	75%	370	(3%)
Package holidaymakers-1981	34%	1682	36%	2196	35%	3878	(36%)
Package holidaymakers-1982(E.A.)	24%	867	22%	1059	23%	1926	(18%)
Package holidaymakers-1982(G.A.)	32%	1260	32%	1534	32%	2794	(26%)
Holidaymakers from Portugal-1984	56%	168	55%	220	56%	388	(4%)
Package holidaymakers-1985	25%	324	29%	401	27%	725	(7%)
Totals	31%	4846	32%	6064	32%	10910	(100%)
Range	(16-77%)		(16-74%)		(19-75%)		(1-36%)

Table 3.28 Incidence and type of illness in travellers

Study groups (as per Table 3.13)	Not ill	Alimentary	Respiratory	Alimentary & Respiratory	Other	Alimentary & Other	Respiratory & Other	Totals	Overall (%)
Pkge gp-1977	57%	32%	3%	4%	3%	1%	<1%	2211	(16%
L. pneumoph.	22%	10%	18%	19%	18%	5%	9%	375	(3%
Scot.-1980	81%	5%	5%	1%	5%	2%	1%	355	(3%
Winter gps.	80%	8%	4%	1%	5%	1%	0	342	(2%
Typhoid gp	60%	30%	3%	1%	1%	5%	0	141	(1%
Romania gp	25%	44%	1%	5%	2%	24%	<1%	370	(3%
Pkge gp-1981	65%	17%	<1%	2%	6%	10%	<1%	3906	(28%
Pkge gp-1982	75%	9%	<1%	1%	7%	7%	1%	1978	(14%
Pkge gp-1982	68%	15%	<1%	1%	6%	8%	1%	3024	(22%
Portugal gp	44%	28%	1%	2%	4%	22%	0	388	(3%
Pkge gp-1985	72%	10%	<1%	<1%	9%	7%	1%	726	(5%
Totals	8854(64%)	2491(18%)	203(1%)	310(2%)	811(6%)	1049(8%)	98(1%)	13816	(100%
Range	(22-81%)	(5-44%)	(<1-18%)	(<1-19%)	(1-18%)	(1-24%)	(0-9%)	(1-28%)	

Table 3.29 Illness experienced by travellers according to place visited.

Country	Summer		Winter		Overall
	Unwell	Total	Unwell	Total	(%)
Scotland	19%	355			(3%)
Austria			20%	44	(<1%)
Hungary	67%	131			(1%)
Romania	74%	380			(3%)
Yugoslavia	27%	843			(6%)
Bulgaria	36%	226			(2%)
USSR	37%	168	12%	50	(2%)
Italy	21%	637			(5%)
Greece	32%	1194			(9%)
Spain	36%	7035	18%	147	(52%)
Portugal	44%	701			(5%)
Malta	32%	581	21%	57	(5%)
Cyprus	20%	120			(1%)
Tunisia+Morocco	77%	189	32%	44	(2%)
Other	46%	914			(7%)
Totals	4962(37%)	13474	67(20%)	342	13816(100%)
Range	(19-77%)		(12-32%)		(<1-52%)

Table 3.30 Illness experienced by travellers according to socio-economic group.

Socio-economic group	Unwell	Total	Overall (%)
Professional	32%	2308	(17%)
Employers & managers	26%	589	(4%)
Intermediate & junior non-manual	30%	1856	(13%)
Skilled manual & own account non-professional	33%	908	(7%)
Semi-skilled manual & personal service	29%	836	(6%)
Unskilled manual	39%	127	(1%)
Others	41%	7192	(52%)
Totals	4974(36%)	13816	(100%)
Range	(26-41%)		(1-52%)

Note: "Others" include unclassifiable, unemployed, housewife, retired, member of the forces, schoolchildren, infants, students & not known.

Table 3.31 Illness experienced by travellers according to selected groupings.

Group	Unwell	Total	Overall (%)
Infants & schoolchildren	30%	953	(7%)
Housewives	24%	698	(5%)
Retired	17%	380	(3%)
Unskilled & unemployed	39%	194	(1%)
Medical, veterinary, dental & related workers	30%	300	(2%)
Remaining groups	38%	11300	(82%)
Totals	4974(36%)	13816	(100%)
Range	(17-39%)		(1-82%)

Table 3.32 Travellers´ smoking habit and illness

Group	Smokers		Non-Smokers	
	Unwell	Total	Unwell	Total
Visitors to Scotland-1980	17%	60	19%	295
Winter package holidaymakers-1980,85	22%	87	20%	241
Typhoid "at risk" holidaymakers-1981	39%	41	40%	100
Holidaymakers to Romania-1981	80%	126	75%	244
Package holidaymakers-1981	43%	883	33%	2842
Package holidaymakers-1982 (E.A.)	29%	469	23%	1043
Package holidaymakers-1982 (G.A.)	32%	779	30%	1851
Holidaymakers to Portugal-1984	55%	148	56%	240
Package holidaymakers-1985	25%	191	28%	438
Totals	1039(37%)	2784	2318(32%)	7294
Range	(17-80%)		(19-75%)	

Note: For comparative purposes "non-smokers" in the first four groups excluded those aged <20 years, and those aged <16 years in the others.

Table 3.33 Travellers´ health by accommodation type.

Type of accommodation	Unwell	Total	Overall (%)
Hotel	30%	6082	(44%)
Self-catering	26%	937	(7%)
Apartment	27%	623	(5%)
Combination	27%	340	(2%)
Other	41%	888	(6%)
Un-specified	46%	4946	(36%)
Totals	4974(36%)	13816	(100%)
Range	(26-46%)		(2-44%)

Note: "Other" includes caravan, campsite, & hostel accommodation, also staying with friends.

Table 3.34 Travellers´ health by reason for travel

Reason for travel	Unwell	Total	Overall (%)
Business	23%	22	(<1%)
Holiday	31%	9509	(69%)
Business & holiday	10%	30	(<1%)
Other	36%	45	(<1%)
Un-specified	47%	4210	(30%)
Totals	4974(36%)	13816	(100%)
Range	(10-47%)		(<1-69%)

Table 3.35 Travellers´ health by duration of stay

Duration (days)	Unwell	Total	Overall (%)
10 or less	28%	726	(5%)
11-15	30%	7837	(57%)
16-30	31%	320	(2%)
>30	23%	353	(3%)
Un-specified	49%	4580	(33%)
Totals	4974(36%)	13816	(100%)
Range	(23-49%)		(2-57%)

Table 3.36 Travellers´ health by season of travel

Season	Unwell	Total	Overall (%)
Summer	36%	12790	(93%)
Other seasons	22%	537	(4%)
Un-specified	60%	489	(4%)
Totals	4974(36%)	13816	(100%)
Range	(22-60%)		(4-93%)

Table 3.37 Travellers' health by pre-travel health status

Pre-travel health status	Unwell	Total	Overall (%)
good	31%	9454	(68%)
other	46%	290	(2%)
Un-specified	48%	4072	(29%)
Totals	4974(36%)	13816	(100%)
Range	(31-48%)		(2-68%)

Table 3.38 Unwell travellers by attributed cause

Study group	food	drink	travel	weather	exercise	other	total reports	Overall (%)
Package holidaymakers-1977	54%	26%	-	-	-	20%	1135	(21%)
L. pneumophila study-1977	35%	31%	-	-	-	34%	126	(2%)
Visitors to Scotland-1980	18%	14%	18%	34%	4%	12%	77	(1%)
Winter package holidaymakers-1980;83	29%	44%	2%	12%	4%	16%	72	(1%)
Typhoid "at risk" holidaymakers-1981	43%	23%	4%	26%	-	4%	53	(1%)
Holidaymakers from Romania-1981	59%	27%	-	4%	1%	9%	395	(7%)
Package holidaymakers-1981	56%	16%	4%	7%	1%	6%	1442	(27%)
Package holidaymakers-1982(E.A.)	34%	21%	6%	24%	1%	14%	619	(12%)
Package holidaymakers-1982(G.A.)	38%	21%	4%	25%	1%	11%	1323	(25%)
Package holidaymakers-1985	39%	15%	5%	28%	2%	11%	263	(5%)
Totals	2654(48%)	1057(20%)	175(3%)	716(14%)	40(1%)	735(14%)	5287	(100%)
Range	(18-59%)	(14-44%)	(2-18%)	(4-34%)	(1-4%)	(4-34%)		(1-27%)

Table 3.39 Unwell travellers by management.

Study group	confined to bed	attended by doctor abroad	attended by doctor(U.K.)	in hospital abroad	in hospital in U.K.	total unwell	Overall (%)
Package holidaymakers-1981	18%	5%	3%	1%	1%	1382	(45%
Package holidaymakers-1982	28%	12%	6%	1%	1%	1454	(48%
Winter package holidaymakers-1983	69%	23%	23%	-	-	13	(<1%
Package holidaymakers-1985	32%	12%	7%	1%	1%	200	(7%
Totals	723(24%)	273(9%)	137(5%)	36(1%)	25(1%)	3049	(100%
Range	(18-69%)	(5-23%)	(3-23%)	(1%)	(1%)		(<1-48%

Table 3.40 Pre-travel health advice and health experience

Advice sought	Unwell	Totals	Overall (%)
Yes	37%	209	(32%)
No	26%	444	(68%)
Totals	192(29%)	653	(100%)

Table 3.41 Pre-travel health advice source and health experience

Source	Unwell	Totals	Overall (%)
Travel agent	31%	133	(22%)
Family doctor	42%	66	(11%)
Other	36%	86	(14%)
Multi-source	36%	25	(4%)
No advice taken	26%	335	(56%)
Totals	197(31%)	645	(100%)
Range	(26-42%)		(4-56%)

Table 3.42 Precautions taken and health experience

Precautions taken	Unwell	Totals	Overall (%)
Yes	34%	246	(38%)
No	26%	401	(62%)
Totals	190(29%)	647	(100%)

Table 3.43 L. pneumophila antibody status of a self-selected group of travellers by place visited

Place visited	≥256	Totals	Overall (%)
Spain (Benidorm)	8%	75	(43%)
Spain (elsewhere)	9%	95	(55%)
Other countries	0	4	(2%)
Totals	15(9%)	174	(100%)

Table 3.44 L. pneumophila antibody status according to symptoms reported

Illness	≥256 Totals	Overall (%)
Respiratory (alone)	6%	35 (20%)
Respiratory and alimentary	10%	41 (24%)
Respiratory and other	6%	18 (10%)
Alimentary (alone)	21%	19 (11%)
Alimentary and other	12%	8 (5%)
Other	8%	39 (22%)
No illness	0	14 (8%)
Totals	15(9%)	174 (100%)
Respiratory (all)	7%	94 (54%)
Alimentary (all)	13%	68 (39%)
Range	(0-21%)	(5-54%)

Table 3.45 L. pneumophila antibody and age group of travellers

Age group (years)	≥256	Totals	Overall (%)
10-19	9%	21	(12%)
10-29	17%	24	(14%)
30-39	4%	23	(13%)
40-49	10%	38	(22%)
50-59	5%	40	(23%)
60+	0	26	(15%)
not known	1%	2	(1%)
Totals	15(9%)	174	(100%)
Range	(0-17%)		(1-23%)

Table 3.46 L. pneumophila antibody status and smoking habit

Smoking habit	≥256	Totals	Overall (%)
Smoker	10%	59	(44%)
Non-smoker	6%	75	(56%)
Totals	11(8%)	134	(100%)

Table 3.47 L. pneumophila antibody status of all travellers tested

Group	≥256	Totals	Overall (%)
Specific 1977 study	9%	174	(23%)
All other groups	0	587	(77%)
Totals	15(1.9%)	761	(100%)

Table 3.48 Polio antibody status of travellers returning from Malta

Age group (years)	Without antibody	With antibody to: One type	Two types	All three types	Totals	Overall (%)
10-19	50%	0	50%	0	2	(5%)
20-29	0	0	67%	33%	3	(8%)
30-39	0	0	0	100%	2	(5%)
40-49	0	0	0	100%	7	(18%)
50-59	6%	0	6%	88%	17	(43%)
60+	0	11%	33%	56%	9	(23%)
Totals	2(5%)	1(3%)	7(18%)	30(75%)	40	(100%)
Range	(0-50%)	(0-11%)	(0-67%)	(0-100%)	(5-43%)	

Table 3.49 Polio antibody status of travellers returning from Romania

Age group (years)	Without antibody	With antibody to: One type	Two types	All three types	Totals	Overall (%)
10-19	0	0	0	100%	5	(5%)
20-29	0	0	15%	85%	27	(25%)
30-39	0	0	13%	87%	15	(14%)
40-49	0	4%	13%	83%	23	(21%)
50-59	0	0	16%	84%	19	(18%)
60+	0	0	14%	86%	14	(13%)
not known	0	0	25%	75%	4	(4%)
Totals	0	1(<1%)	15(14%)	91(85%)	107	(100%)
Range	0	(0-4%)	(0-25%)	(75-100%)	(5-25%)	

Table 3.50 Polio antibody status of all travellers tested

Age group (years)	Without antibody	With antibody to { One type	Two types	All three types }	Totals	Overall (%)
10-19	4%	4%	13%	78%	23	(5%)
20-29	0	4%	18%	78%	119	(25%)
30-39	0	3%	17%	80%	66	(14%)
40-49	0	3%	8%	89%	91	(19%)
50-59	1%	7%	14%	78%	100	(21%)
60+	1	6%	17%	77%	71	(15%)
Totals	2(<1%)	22(5%)	68(14%)	378(80%)	470	(100%)
Range	(0-4%)	(3-7%)	(8-18%)	(77-89%)	(5-25%)	

Table 3.51 S. typhi antibody status of travellers returning from Malta

		Flagella (H) antibody titre							
		<20	20	40	80	160	320	640	Totals
Somatic (O) antibody titre	<20	22	4	4	1	1	1	1	34
	20	1	1	2	0	0	0	0	4
	40	0	0	0	0	0	0	0	0
	80	0	0	0	0	0	2	0	2
Totals		23	5	6	1	1	3	1	40

Table 3.52 S. typhi antibody status of travellers returning from Romania

		Flagella (H) antibody titre						
		<20	20	40	80	160	320	Totals
Somatic (O) antibody titre	<20	88	5	6	4	2	1	106
	20	3	0	0	3	1	0	7
	40	3	0	0	0	2	0	5
	80	1	1	0	0	0	0	2
	160	0	0	0	0	1	0	1
Totals		95	6	6	7	6	1	121

Table 3.53 S. typhi antibody status of all travellers tested

		Flagella (H) antibody titre						
		<20	20	40	80	160	320	640	Totals
Somatic (O) antibody titre	<20	233	16	18	8	9	6	0	290
	20	5	2	2	4	1	0	0	14
	40	1	0	0	0	2	0	1	4
	80	1	0	0	0	0	2	0	3
	160	0	0	0	0	1	0	0	1
Totals		240	18	20	12	13	8	1	312

Table 3.54 Scottish travellers: antibodies to hepatitis A (anti-HAV)

Age group (years)	Seropositive (%)	Totals	Overall (%)
10-19	(30)	23	(5)
20-29	(38)	119	(23)
30-39	(48)	66	(13)
40-49	(85)	91	(18)
50-59	(78)	100	(20)
60+	(89)	71	(14)
not known	(63)	41	(8)
Totals	328(64)	511	(100)
Range	(30-89)		(5-23)

Table 3.55 Scottish travellers:
antibodies to hepatitis A (averaged)

Age group (years)	Averaged seropositivity (%)	Cumulative totals	Overall (%)
<20	(30)	23	(5)
<30	(37)	142	(28)
<40	(40)	208	(41)
<50	(54)	299	(59)
<60	(60)	399	(78)
>60	(89)	71	(14)
>50	(82)	171	(35)
>40	(83)	262	(51)
not known	(63)	41	(8)
Range	(30-89)		(5-78)

Table 3.56 Travel associated admissions
(Ruchill Hospital - infectious diseases wards)

Total admissions 1/1-31/12/85	Total travel associated	Sex	Ethnic origin	
1265	71(6%)	m:44(62%)	Asian	25 (35%)
			Caucasian	17 (24%)
			African	2 (3%)
		f:27(38%)	Asian	14 (20%)
			Caucasian	10 (14%)
			African	3 (4%)

Table 3.57 Travel associated admissions by age group (Ruchill Hospital - infectious diseases wards 1985)

Age group years	Totals	Overall (%)
0-9	16	(23)
10-19	6	(8)
20-29	18	(25)
30-39	10	(14)
40-49	7	(10)
50-59	6	(8)
60+	8	(11)
Overall	71	(100)
Range		(8-25)

(mean 29 years:
median 27 years:
range 4 months -76 years)

Table 3.58 Travel associated admissions and time factors (Ruchill Hospital - infectious diseases wards 1985)

	Total	Range	Median	Mean
Days returned	-	1-365	14	51
Days hospitalised	432	1-41	5	6

Table 3.59 Travel associated admissions by countries visited.
(Ruchill Hospital - infectious diseases wards 1985)

Country visited	Totals	Overall (%)
Pakistan	26	(37)
India	16	(23)
Spain	10	(14)
Nigeria	8	(11)
Singapore	2	(3)
Tunisia, Malta, Mexico, Saudi Arabia, France, El Salvador, Kenya, Zimbabwe, Uganda.	9	(13)
	71	(100)
Range		(3-37)

Table 3.60 Travel associated admissions by diagnoses.
(Ruchill Hospital - infectious diseases wards 1985)

Diagnosis	Totals	Overall (%)
Gastro-enteritis (incl. salmonella, shigella, & campylobacter infections)	27	(38)
P. vivax malaria	20	(28)
P. falciparum malaria	6	(8)
P. ovale malaria	1	(1)
"Viral" infection	3	(4)
Pneumonia	2	(3)
P.u.o.	2	(3)
Hepatitis A, hepatitis B, typhus, brucellosis, bacteraemia, u.t.i., bullous urticaria, influenza, infected bites, sarcoid.	10	(14)
	71	(100)
Range		(1-38)

Table 3.61 Presence of health information by season of travel brochure

Health information	Summer (%)	Winter (%)	Year round (%)	Totals	Overall (%)
Present	(64)	(53)	(83)	43	(67)
Not present	(36)	(47)	(17)	21	(11)
Totals	22(34)	19(30)	23(36)	64	(100)

Table 3.62 Health information detail by continent destination of travel brochure

Health information	Europe (%)	Asia (%)	Europe & Africa (%)	Worldwide (%)	Totals	Overall (%)
Specific	0	(33)	(12)	(27)	7	(11)
General	(38)	(33)	(77)	(73)	36	(56)
Absent	(62)	(33)	(12)	0	21	(33)
Totals	29(45)	3(5)	17(27)	15(23)	64	(100)

Table 4.01 Summary of findings from studies on missionaries

mortality rate pre-1900	> mortality rate post-1900
retirals due to ill health pre-1900	> retirals due to ill health post-1900
deaths from infectious cause pre-1900	> deaths from infectious cause post-1900
missionary service over 40 years pre-1900	> missionary service over 40 years post-1900
accidental deaths post-1900	> accidental deaths pre-1900
mortality rate in Africa (especially West and Central)	> mortality rate in India and most other areas
premature death in Africa (especially West and Central)	> premature death in all other areas
morbidity rate in Africa (especially West and Central)	> morbidity rate in India and most other areas
missionary service under 5 years in Africa (especially West)	> missionary service under 5 years in most other areas
mean length of service in Jamaica (30.4 years)	> mean length of service in all other areas
morbidity, mortality and length of service in ordained male doctors	> morbidity, mortality and length of service in all other sub-groups
premature death and service under 5 years in non-ordained males	> premature death and service under 5 years in all other sub-groups
retirals due to ill health amongst male doctors	< retirals due to ill health amongst all other sub-groups
death in service amongst female doctors	< death in service amongst all other sub-groups

Table 4.02 Summary of findings from studies on travellers

	attack rate from alimentary illness	most affected age group	highest rate by area/country
16,568 Swiss travellers (Steffen et al)	28%	20-29 years (37%)	north Africa (57%)
2,665 Finnish travellers (Peltola et al)	18%	-	north Africa (54%)
13,816 Scots holidaymakers (thesis group)	28%	20-29 years (48%)	north Africa (68%)

Table 4.03 Visitors to Scotland by country of origin (1980)

Country of origin	totals	(%)
U.K.	97	(27)
U.S.A.	76	(21)
Australia	44	(12)
Canada	34	(10)
New Zealand	27	(8)
E.E.C. (except Eire)	25	(7)
Scandinavia	18	(5)
rest of West. Europe	10	(3)
South Africa	6	(2)
Middle East	3	(1)
Far East	7	(2)
not known	8	(2)
	355	

Table 4.04 Extrapolation of study findings

overall attack rate experienced by travellers studied	.....36%
averaged "response rate" (% return from total number of forms distributed)	.....32%
"real attack rate", assuming all "non-questionnaire returners" to be well	.....11%
total number of U.K. package holidaymakers (1984)	.....13.04 million
number affected by illness (11% of 13.04 million)	.....1.43 million
number confined to bed (24% of 1.43 million)	343,200
number seen by a doctor (14% of 1.43 million)	200,200
number hospitalised (2% of 1.43 million)	28,600

Table 4.05 Travellers´ "at risk" profile

package holidaymakers	> other travellers
inexperienced travellers	> other travellers
travellers further south, particularly north Africa	> other travellers
summer travellers	> winter travellers
younger age groups (specifically 20-29 years)	> older age groups
smokers	> non-smokers

Table 4.06 Imported infections Scotland 1975-84
(3657 reports by Community Medicine Specialists)

Agent	percentage
Salmonellosis	43
Shigellosis	14
Campbylobacterosis	13
Malaria	9
Giardiasis	7
Hepatitis A and B	4
Typhoid/paratyphoid fever	3
Helminths	2
Tuberculosis	1
Legionnaires´ disease	0.5
Sexually transmitted diseases	0.3
Others	3.2

(courtesy of Dr. J.C.M. Sharp)

Table 4.07 Imported infections in Scotland 1981-84 and reasons for travel overseas

Reason for travel	Number of travellers 1981	Number of travellers 1982	Number of travellers 1983	Number of travellers 1984	Totals
Holiday	341 (73)	360 (78)	396 (81)	515 (83)	1612 (79)
Business	49 (10)	41 (9)	30 (6)	37 (6)	157 (8)
Immigrant	45 (10)	17 (4)	10 (2)	23 (4)	95 (5)
Employed overseas	-	9 (2)	14 (3)	15 (2)	38 (2)
Accompanying family	12 (3)	10 (2)	17 (4)	5	44 (2)
Ship/aircrew	7 (2)	6 (1)	5 (1)	5	23 (1)
Service personnel	-	-	-	4	4
Other/not stated	15	17	18	18	68
Totals	469	460	490	622	2041

(percentages in parethesis)

(courtesy of Dr. J.C.M. Sharp)

Figures 1.01 - 4.07

N.B. The figures are intended to be complementary to the text and the detailed numbers given in the tables. Due to technical difficulties with graphic displays some discrepancies may be apparent when absolute numbers are compared to those shown in the tables or text as "not stated/known" have been omitted in some cases. These differences are not of significance as the numbers in the text and the tables are correlated.

figure 1.01

Movement of Scots Abroad

PERIOD	THOSE CHIEFLY INVOLVED	DESTINATION	APPROXIMATE NO.s
15th Century	Mercenaries	France, Sweden, Bohemia, Denmark	
Early 17th Century	" Directed " Colonies	Ulster	8000
Early 17th Century	Students, Traders, Soldiers	France, Holland	30,000
Late 17th Century	Colonists	Darien	3000
Mid- 18th Century	Enforced Colonisation After 45 Rebellion & to Escape Famine	North America	20,000
Early 19th Century	Following Highland Clearances	Canada, Australia, New Zealand	20,000
Mid - 19th Century	To Escape Famine and Seek Employment	North America, New Zealand, Australia	483,000

figure 1.02 Malaria notifications in Scotland, England and Wales (1970-1985)

figures 1.03 and 1.04 Health advice booklets for travellers

figure 1.05 Sources of advice for doctors

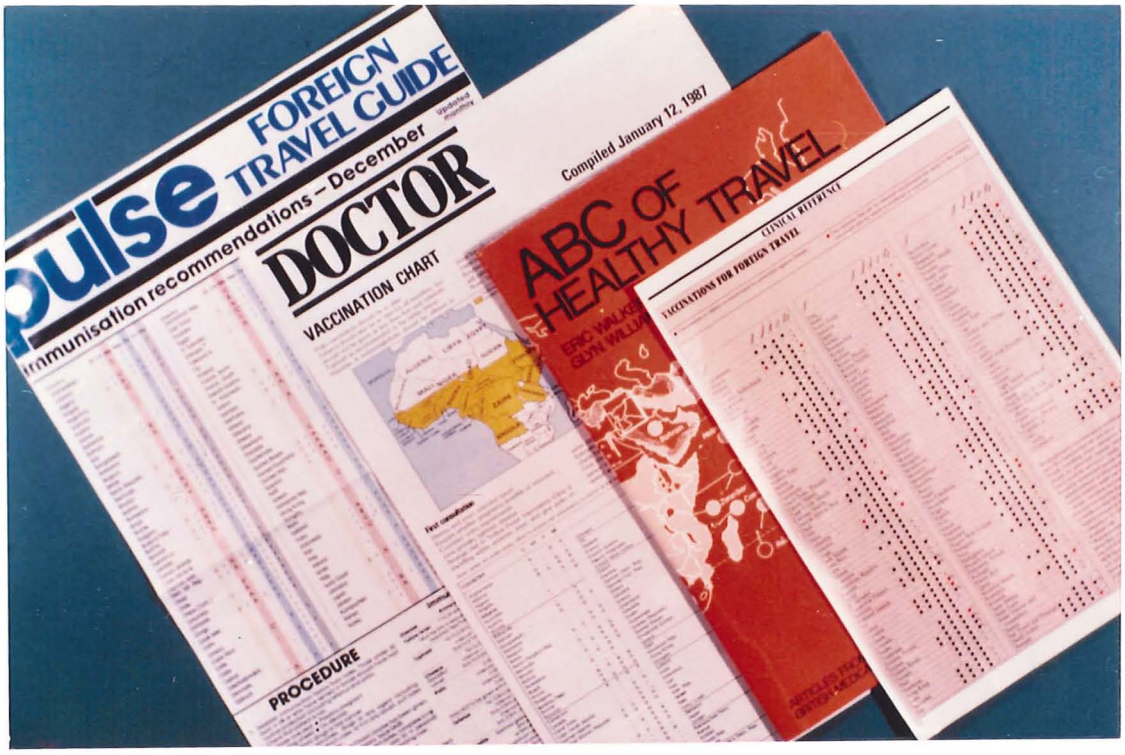


figure 1.06 Bellview Stratford Hotel, Philadelphia (now renamed Fairmont)

figure 1.07 Legionella pneumophila culture on charcoal yeast agar

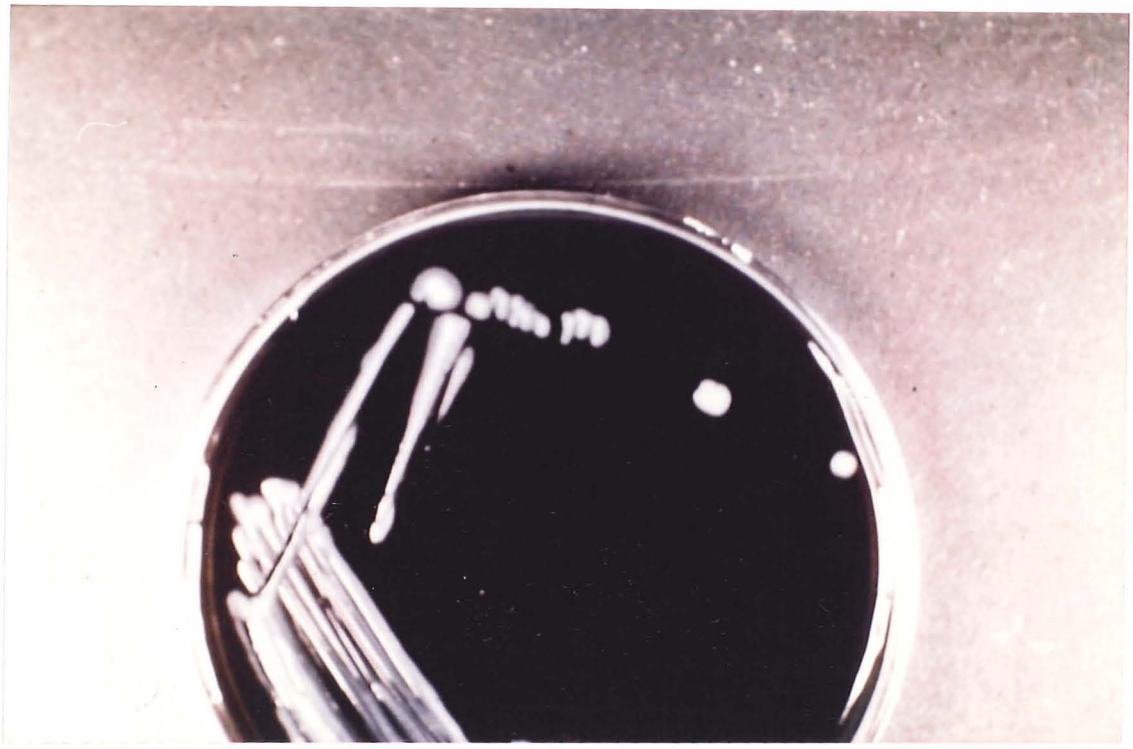


figure 1.08 Electron micrograph of Legionella pneumophila (x 5600)

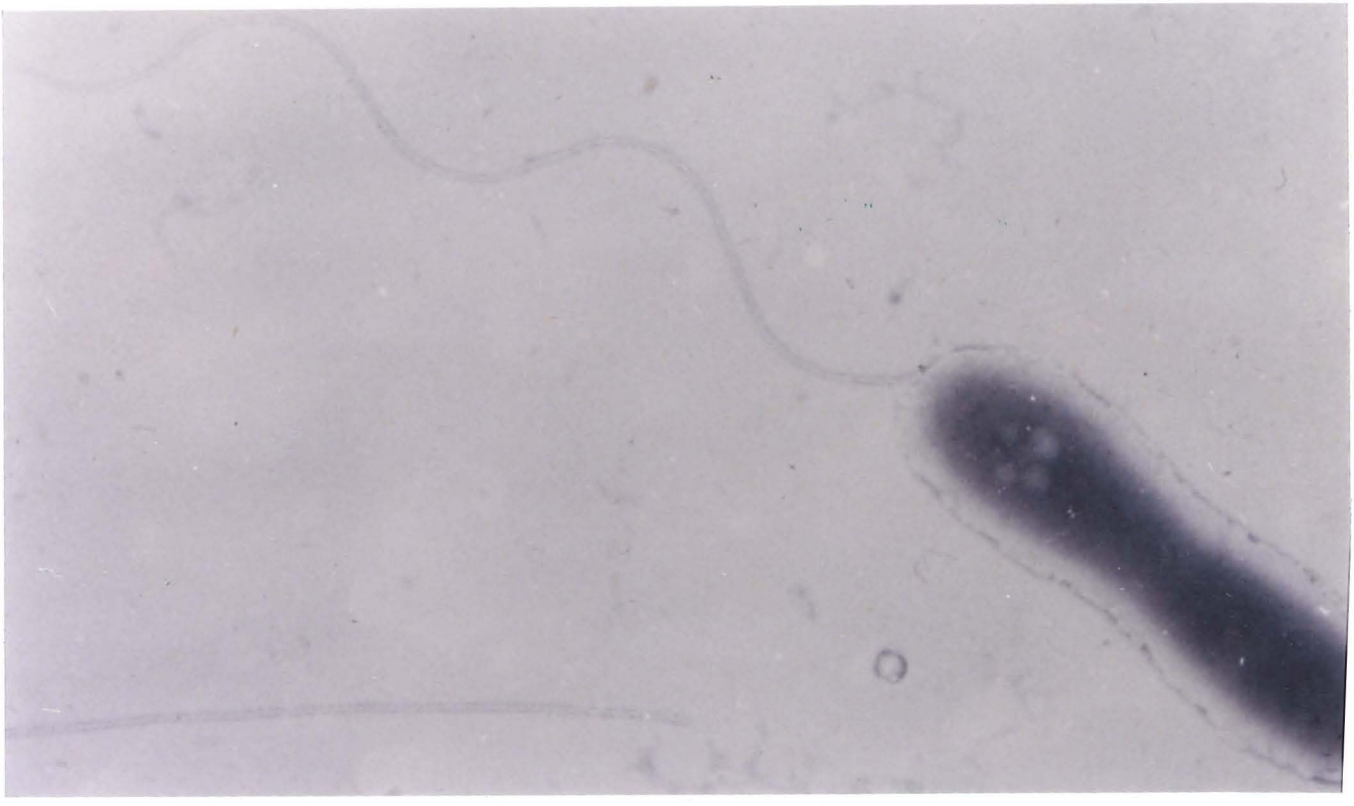


figure 1.09 Legionella pneumophila - Gram's stain showing Gram-negative rods

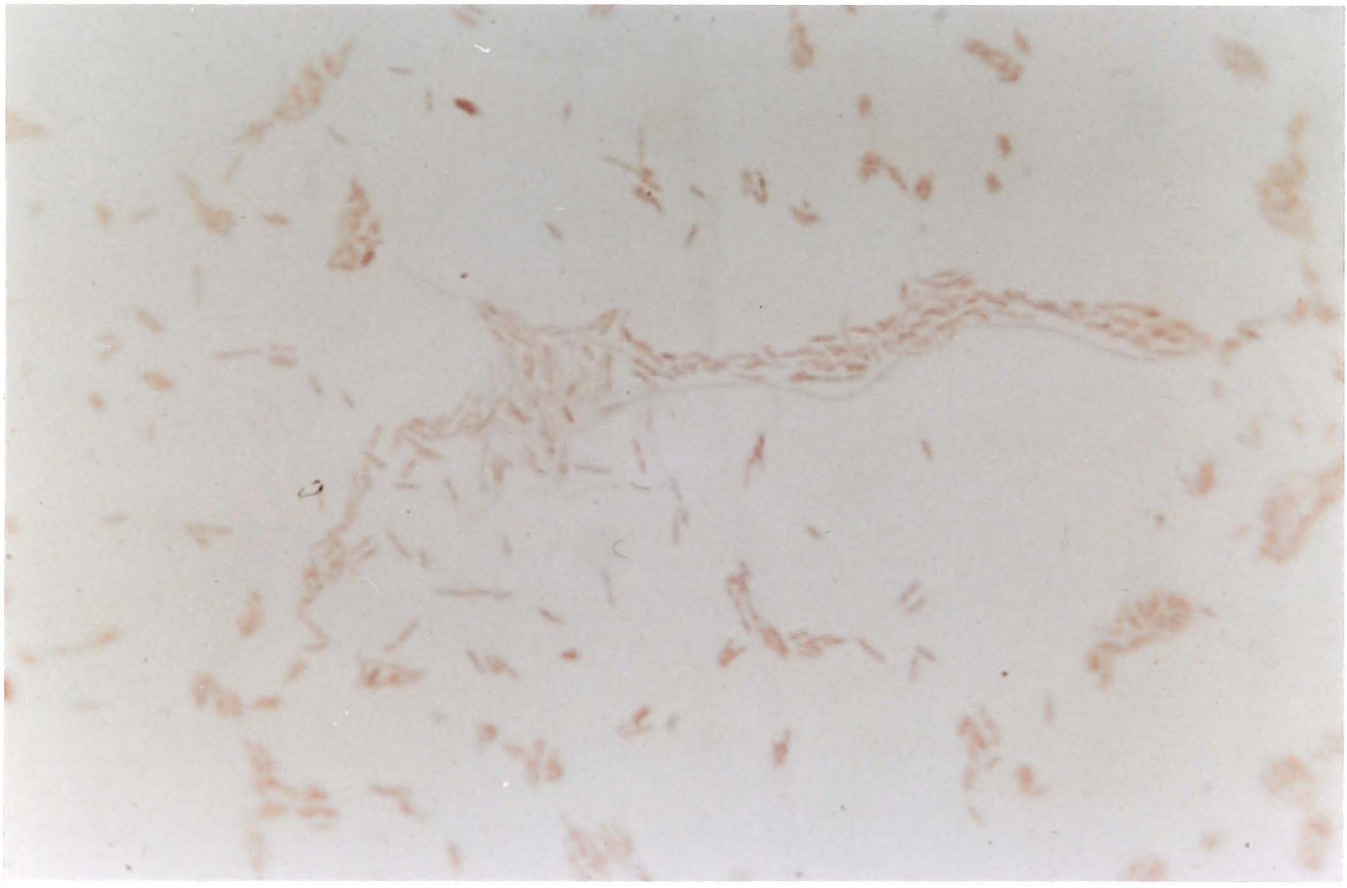


figure 1.10 Indirect fluorescent antibody stain, using positive patient's serum of Legionella pneumophila

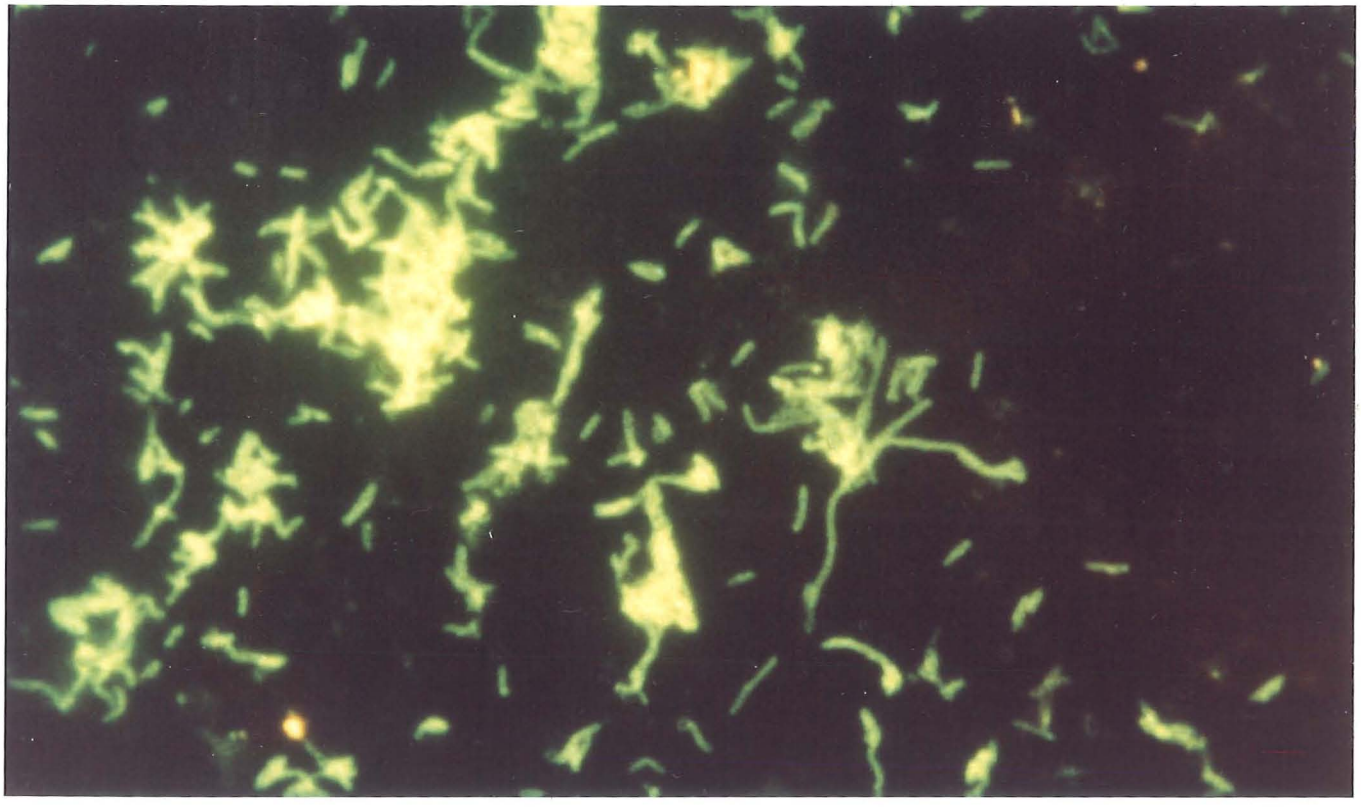
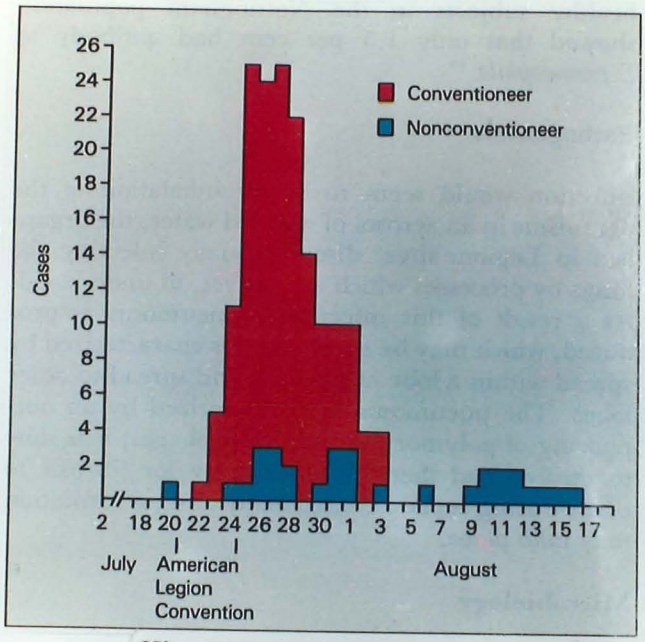
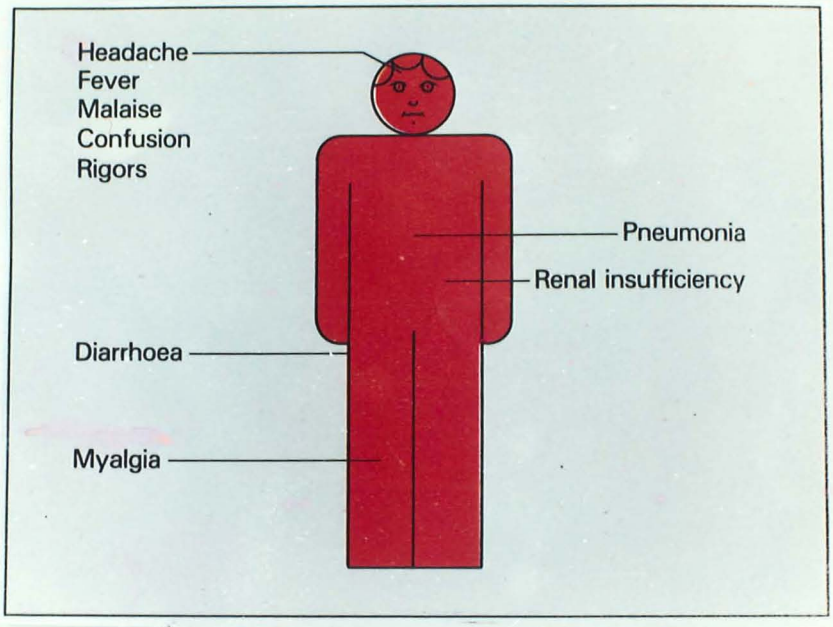


figure 1.11



Histogram showing the explosive outbreak of Legionnaires' disease in Philadelphia in 1976.

figure 1.12



Clinical features associated with Legionnaires' disease.

figure 1.13 Chest x-ray of a 50-year-old male with Legionnaires' disease showing extensive consolidation of the right lung and considerable distension of the large intestine. This patient also exhibited mental confusion and diarrhoea.

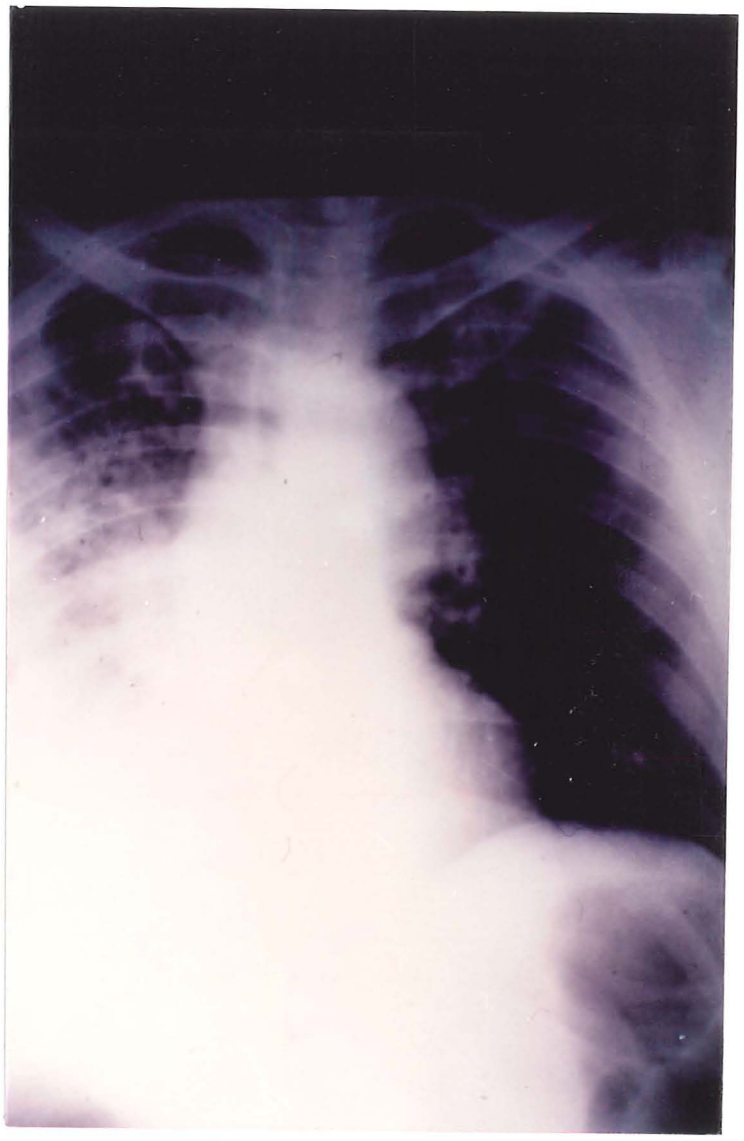
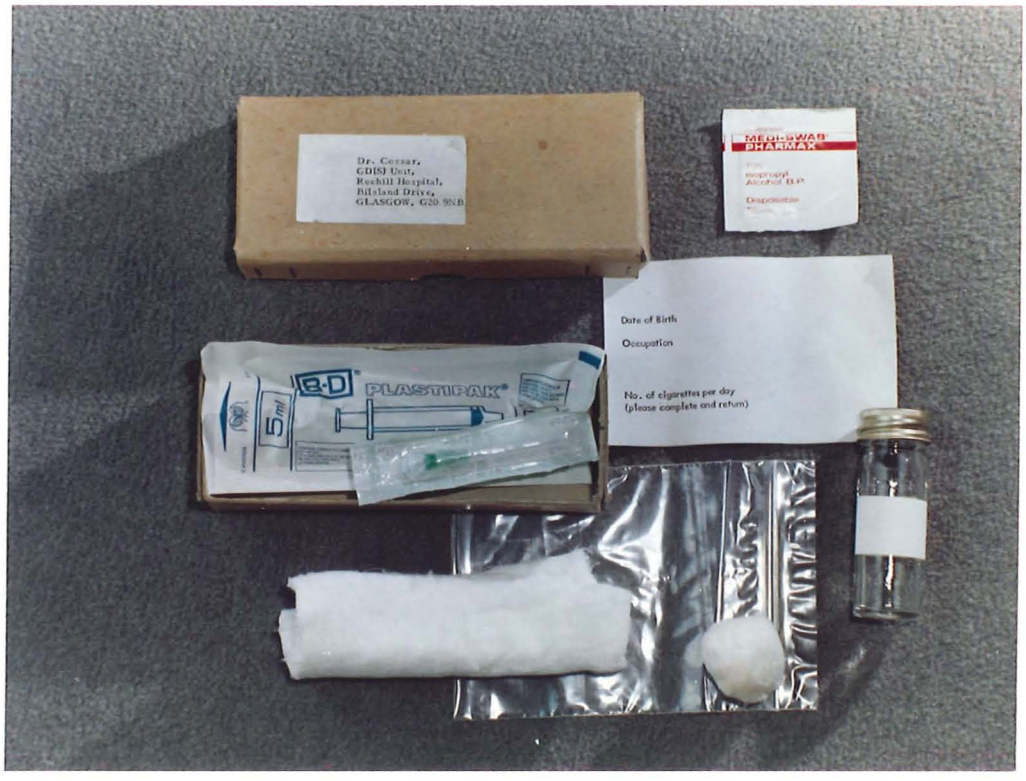


figure 2.01 Glasgow Airport

figure 2.02 Survey desk at Glasgow Airport

figure 2.03 Sampling "test-kit" sent to family doctors



POSTAL SAMPLE COLLECTION: (G.A. 1978)

Figure 2.04

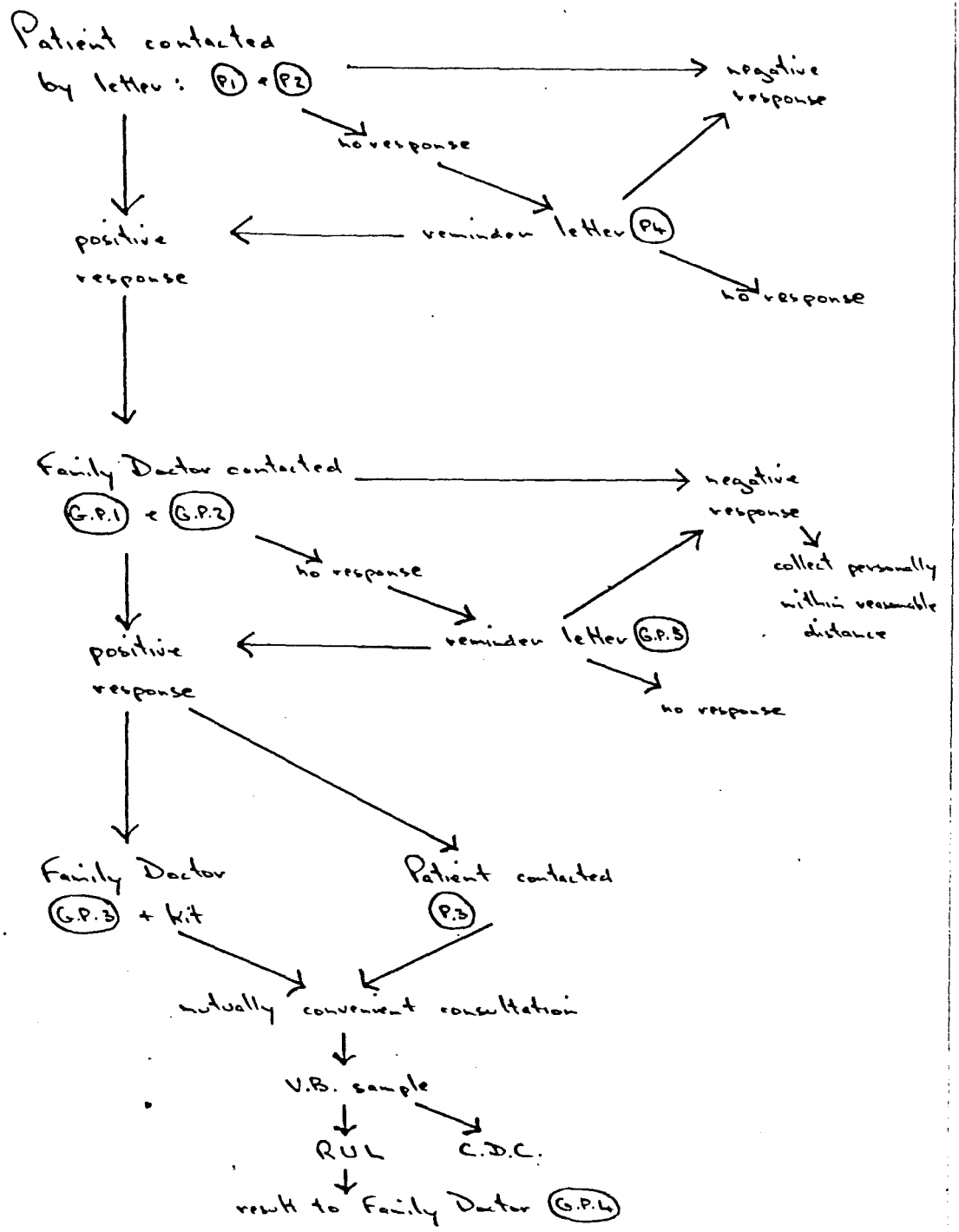


figure 3.01

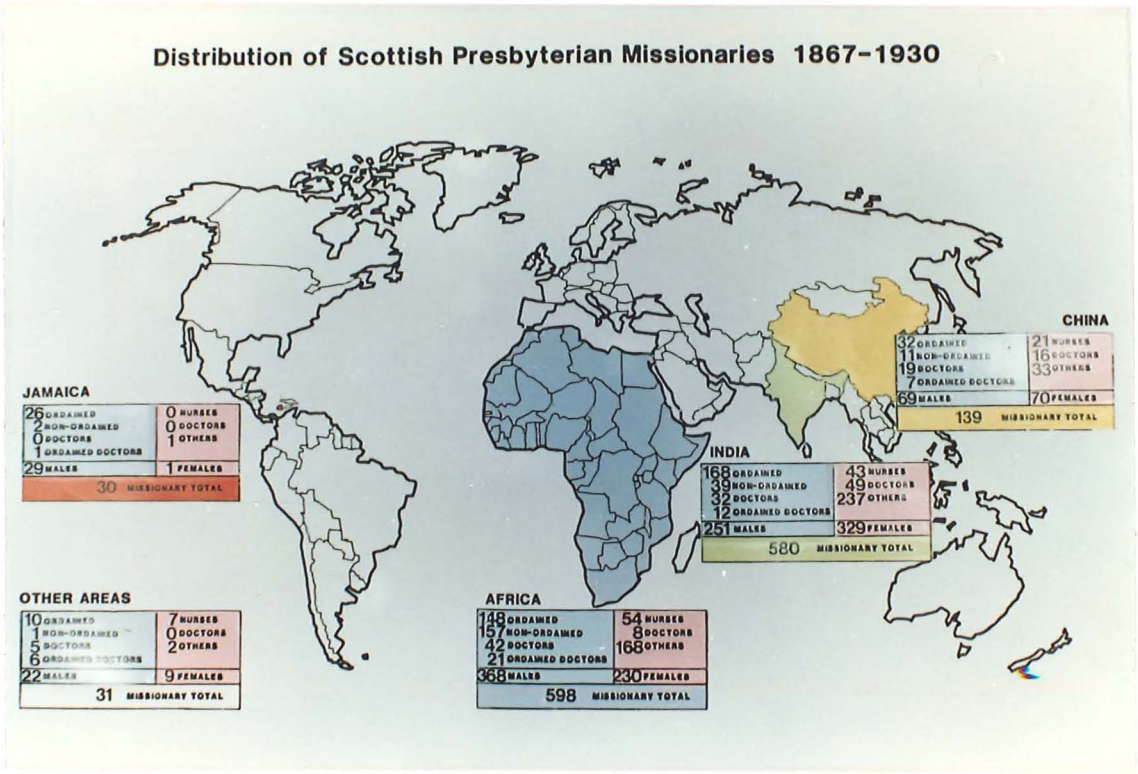


figure 3.02

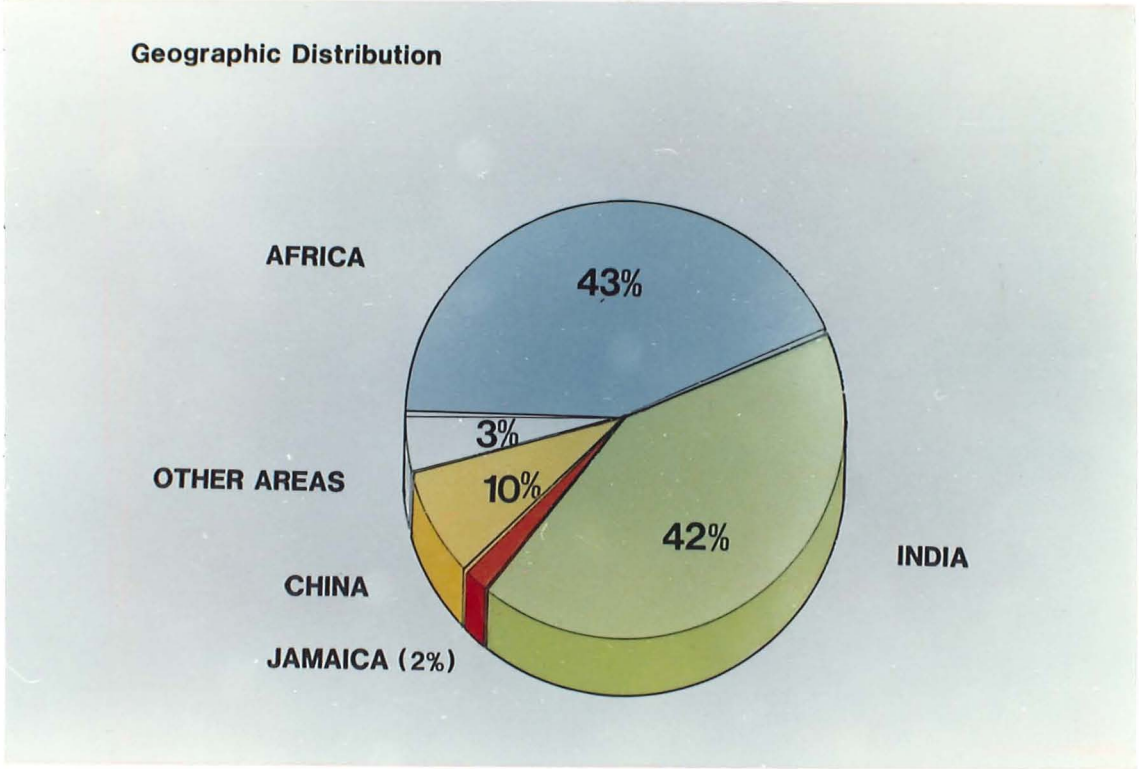


figure 3.03

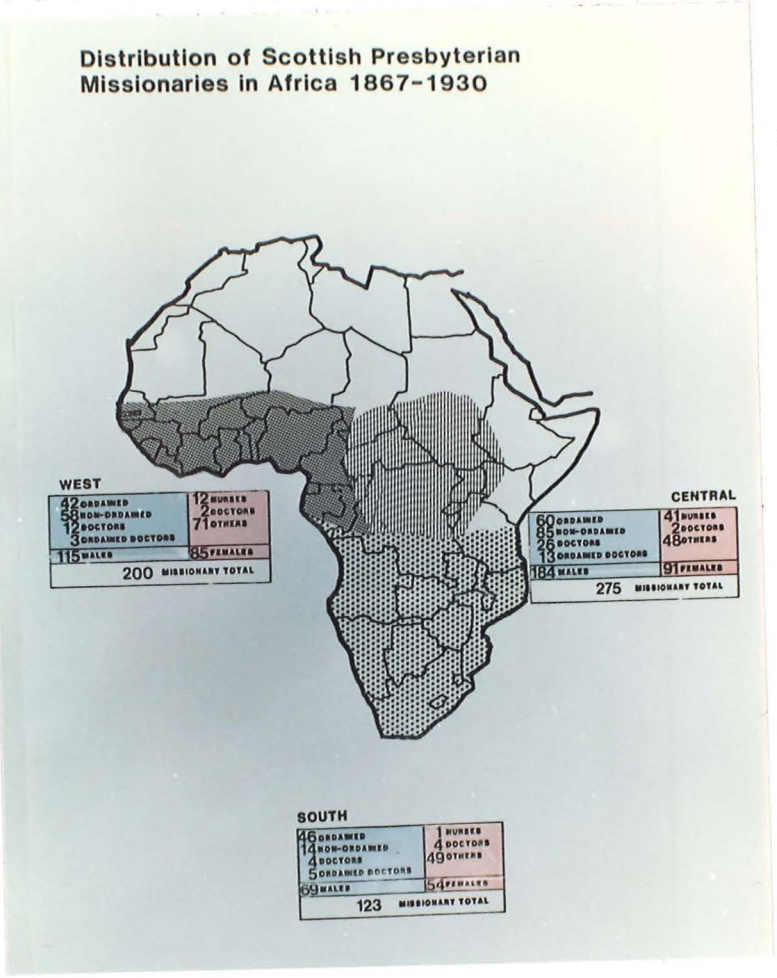


figure 3.04

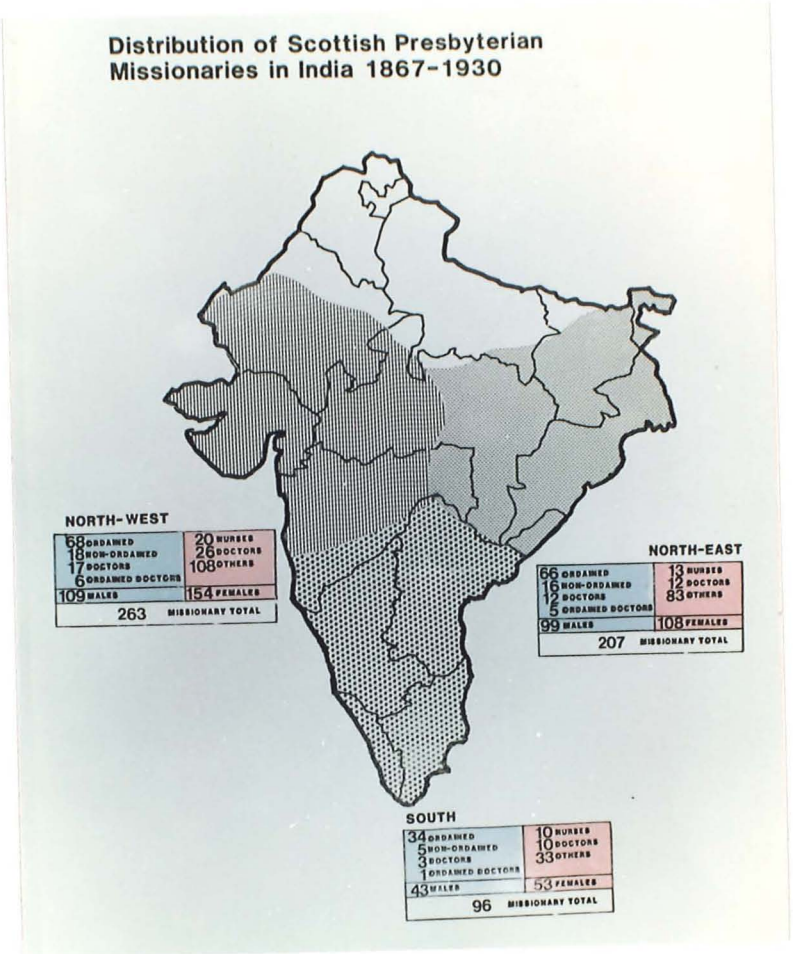


figure 3.05

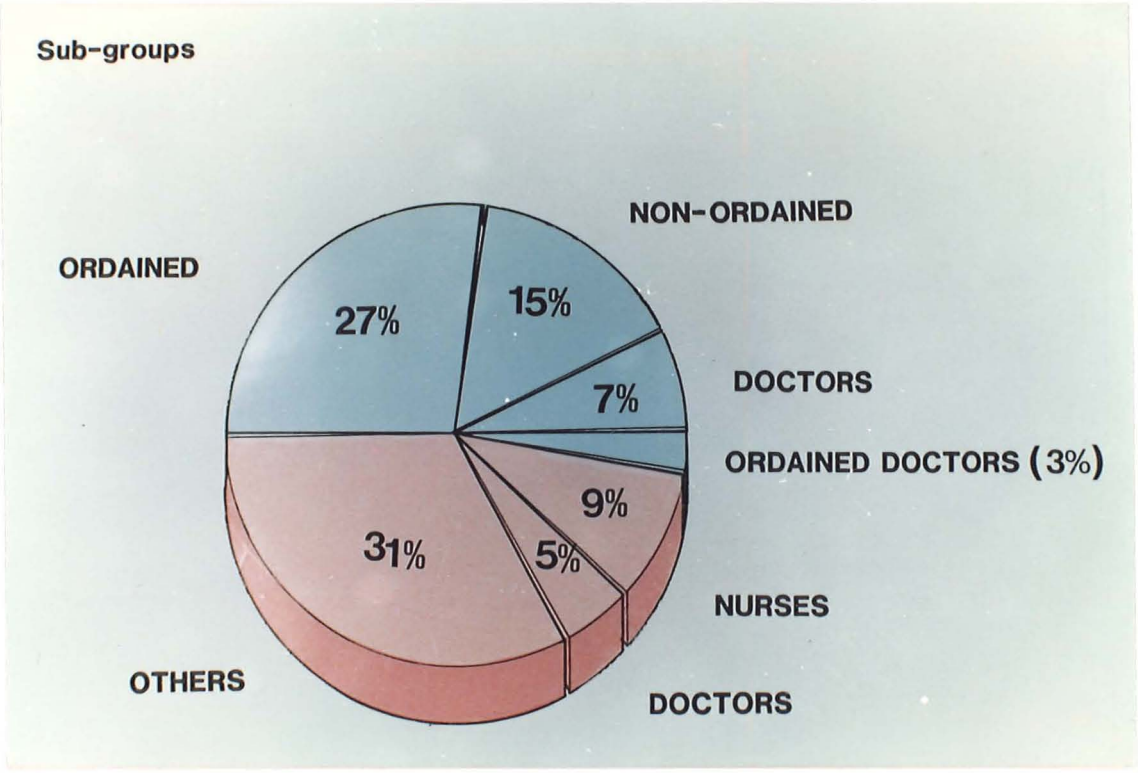
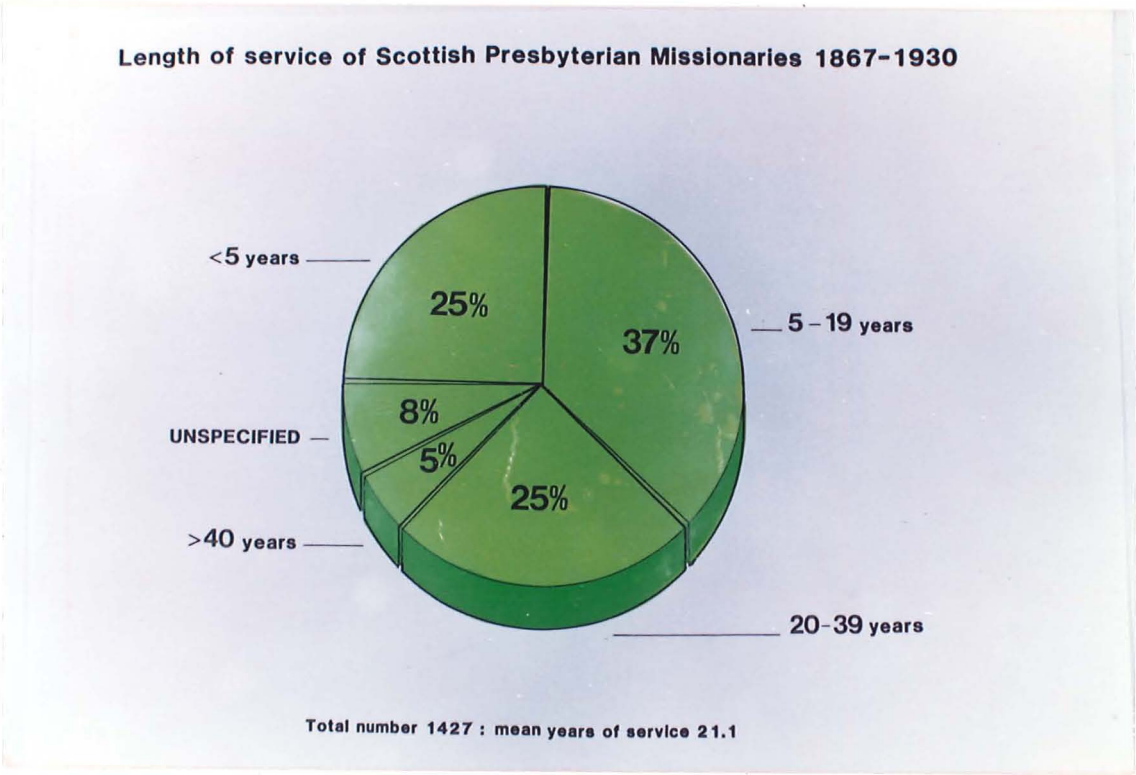


figure 3.06



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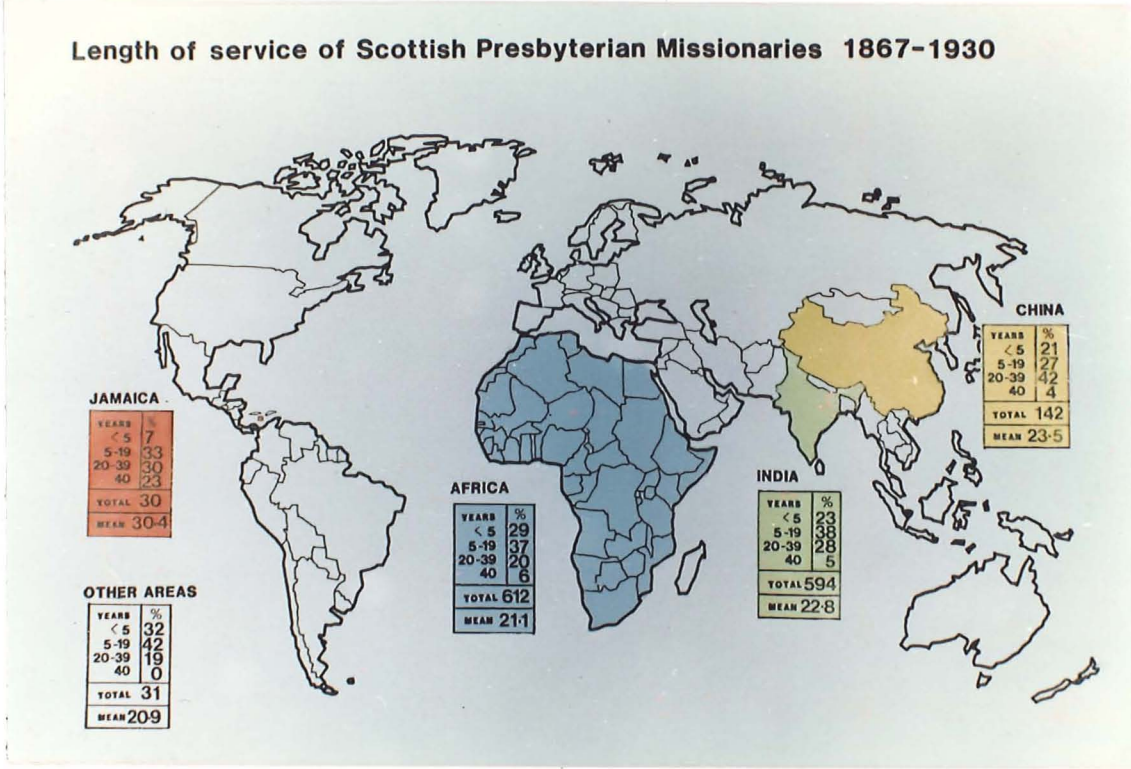


figure 3.08

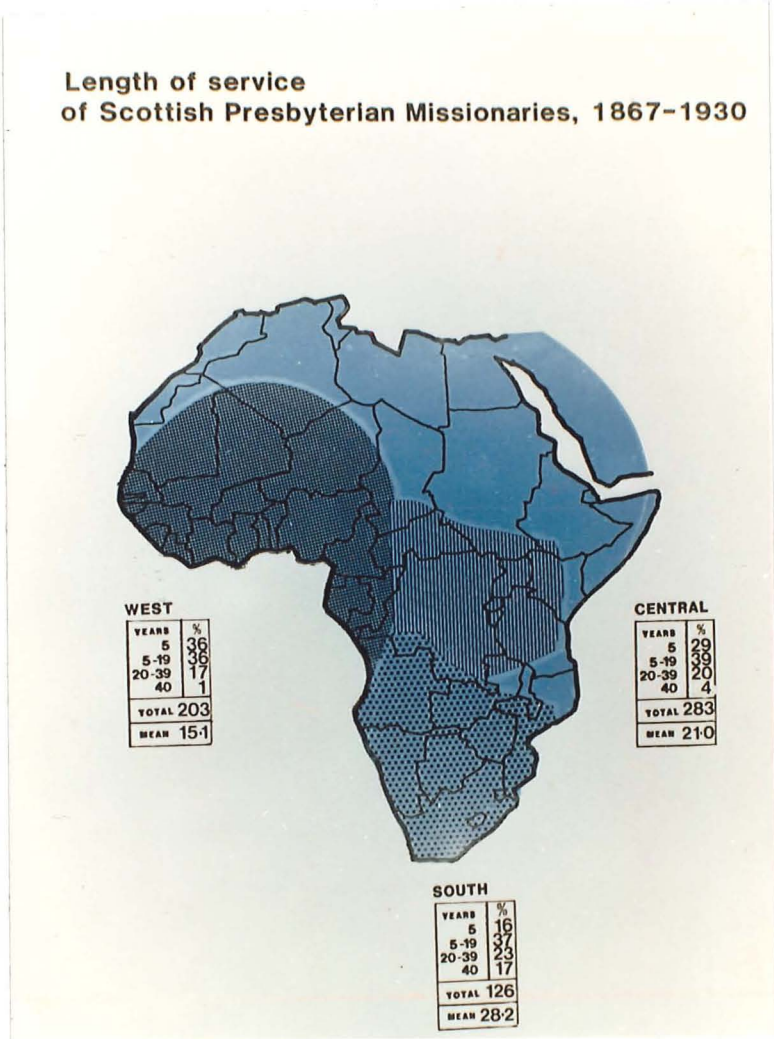
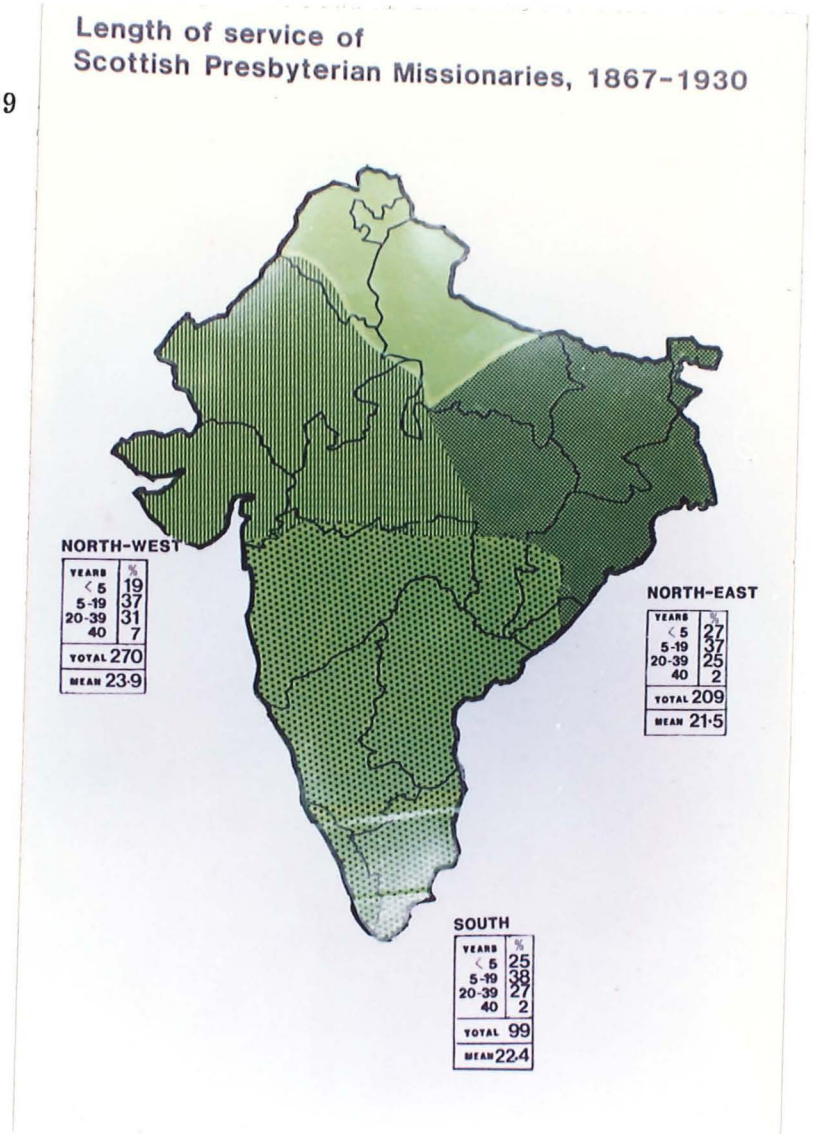


figure 3.09



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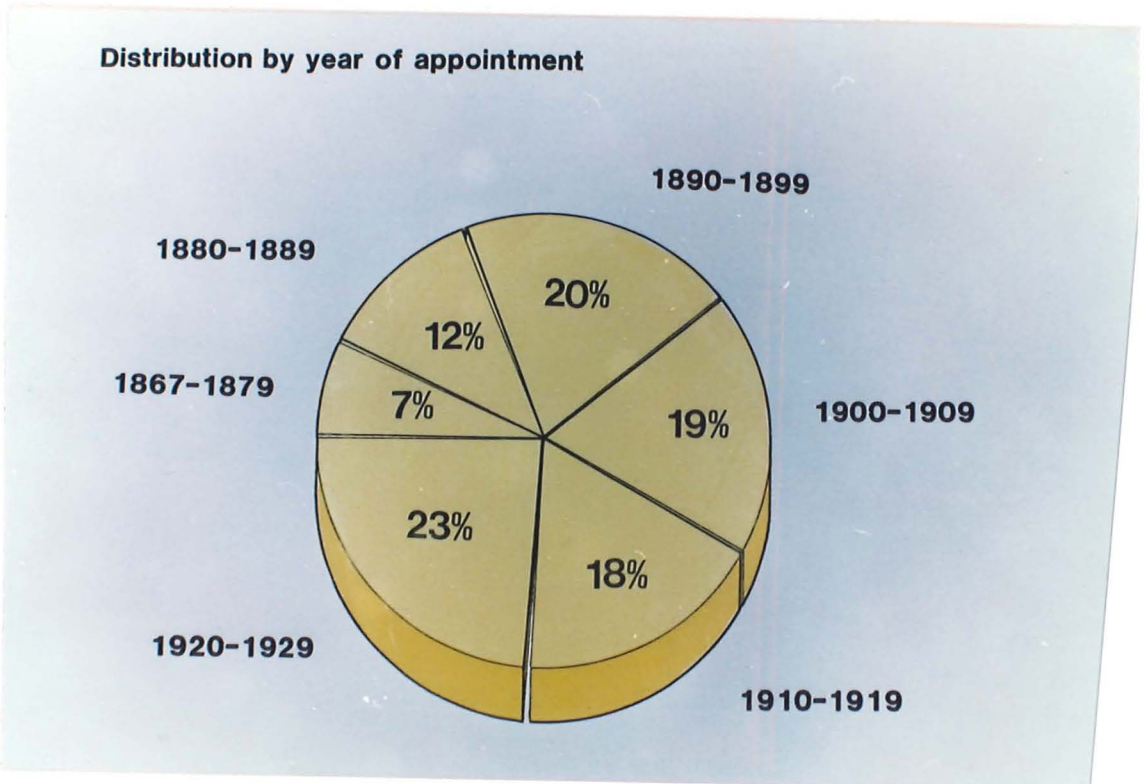

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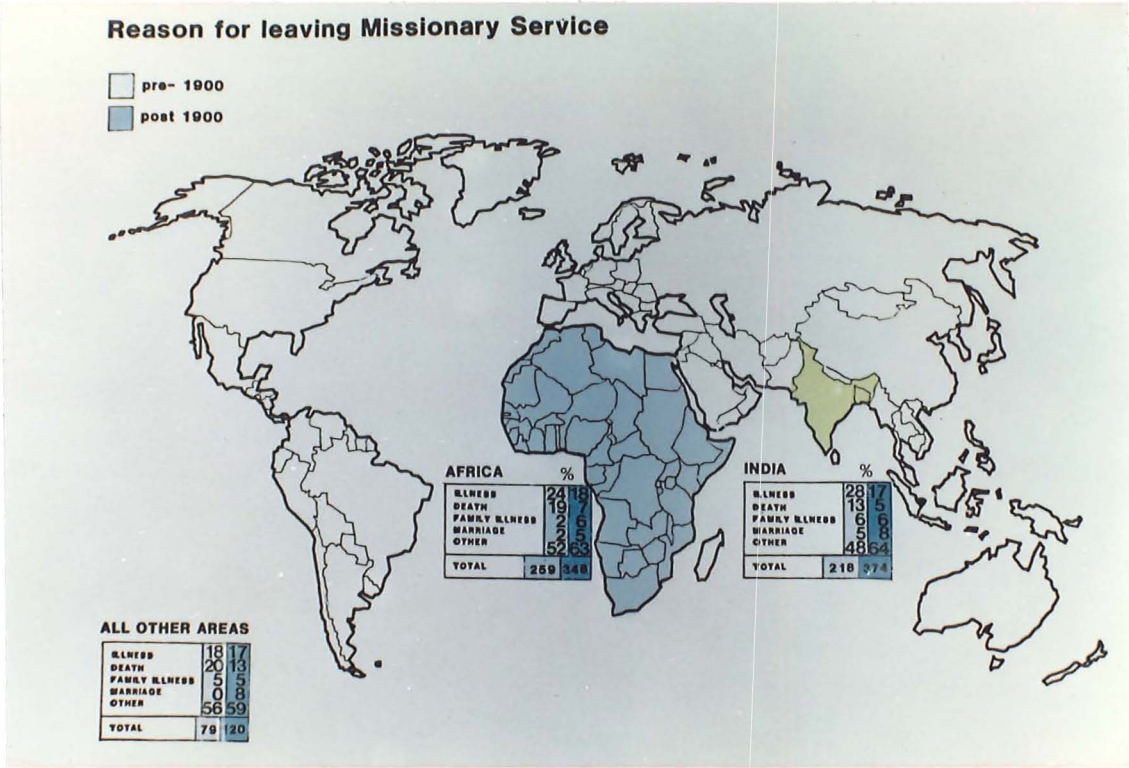

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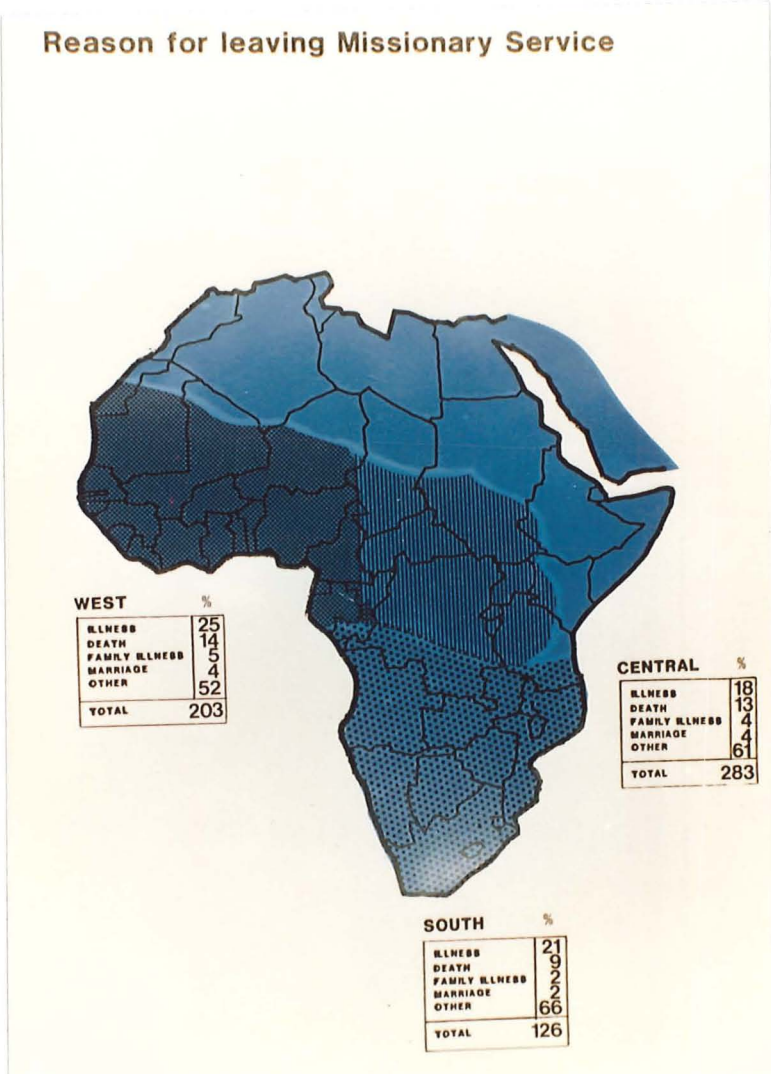

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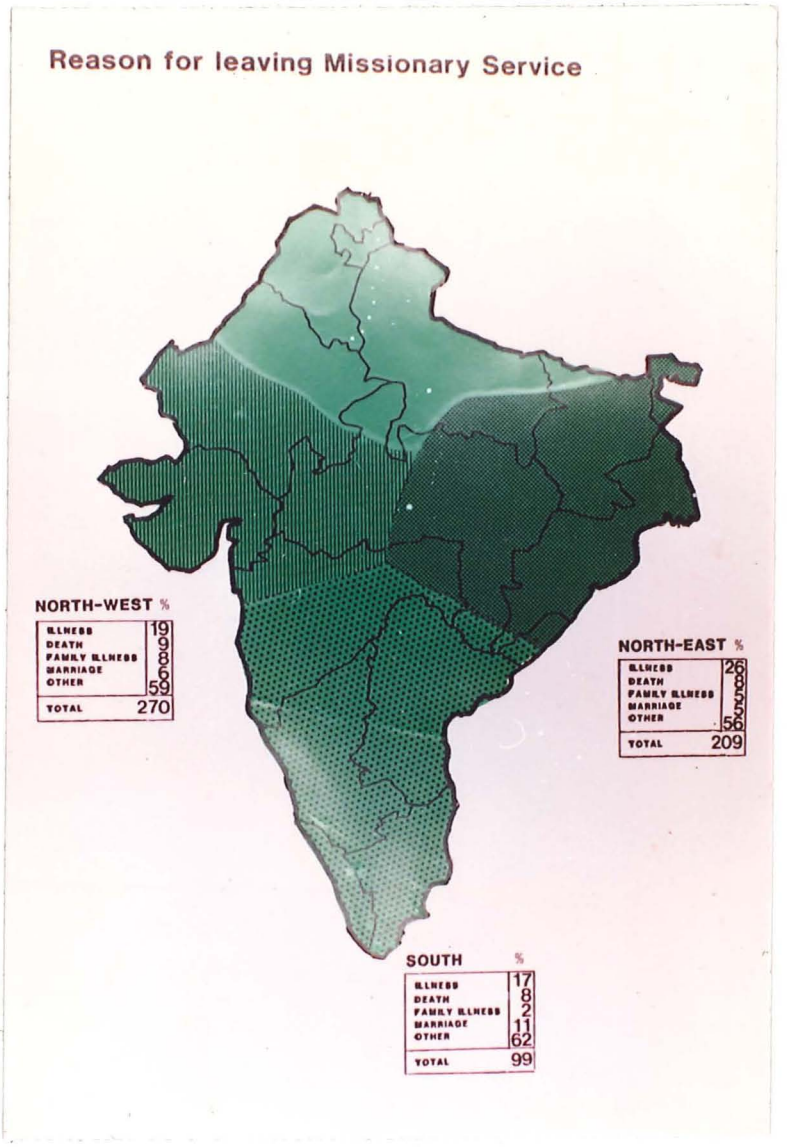

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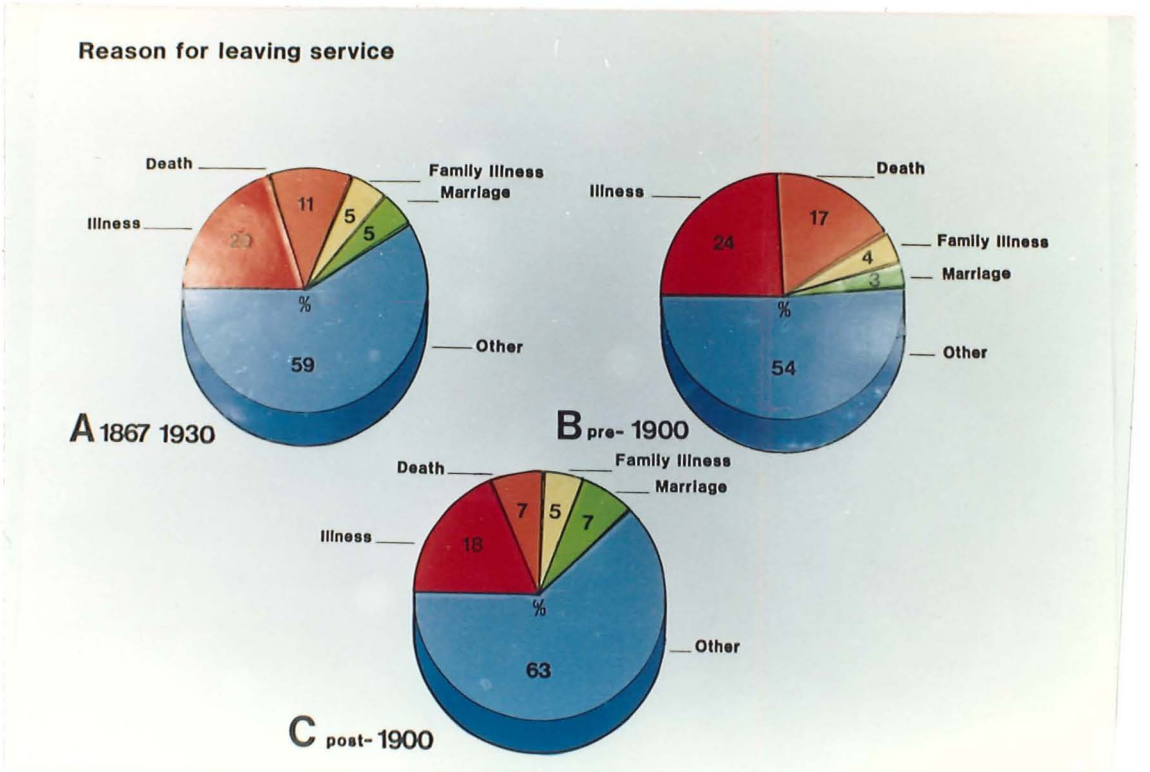

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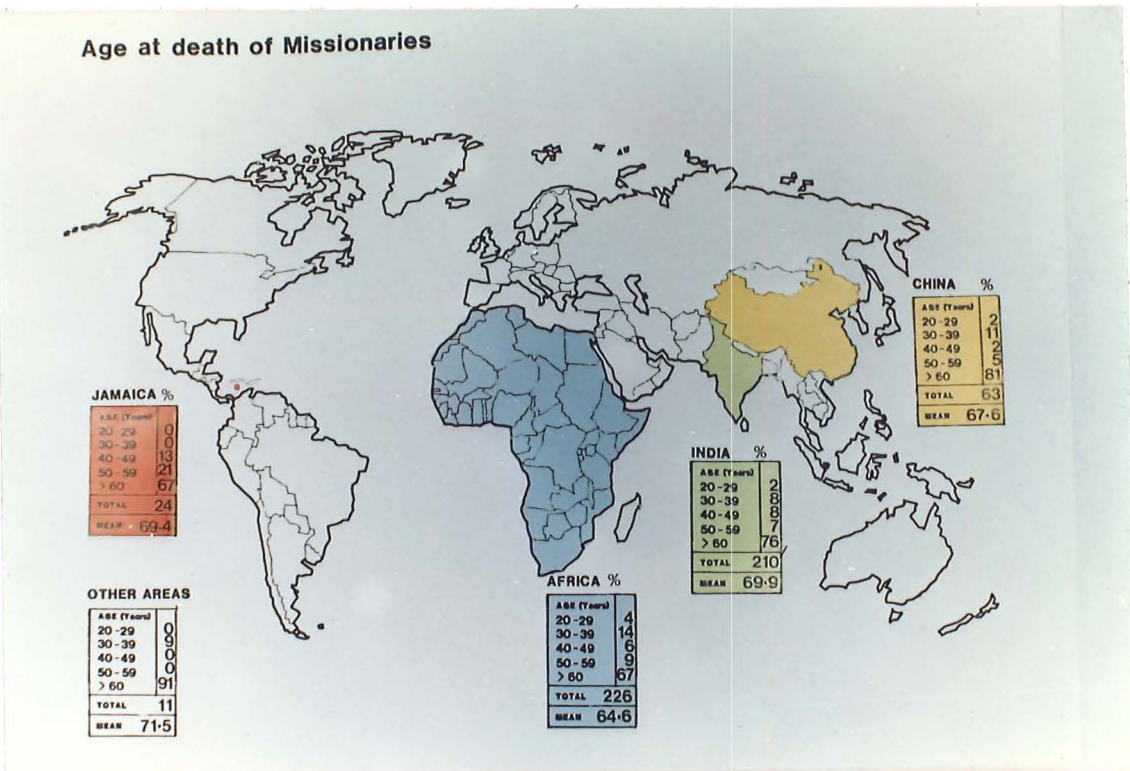

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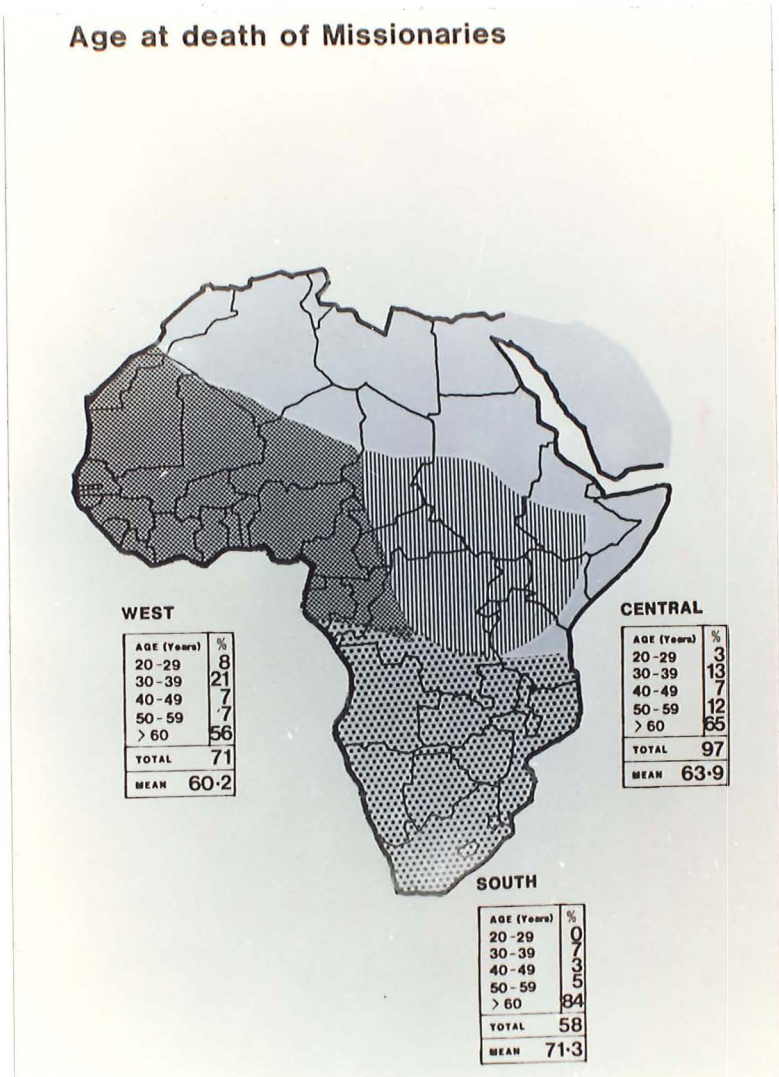

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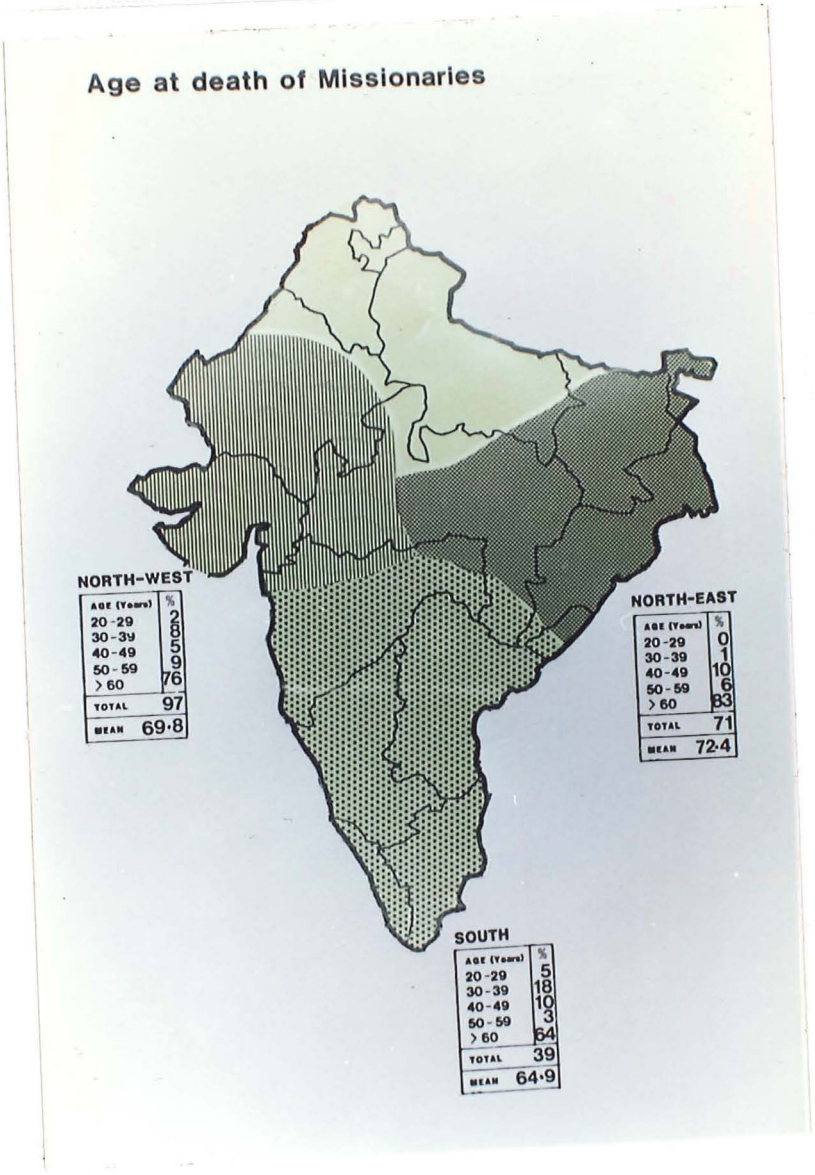

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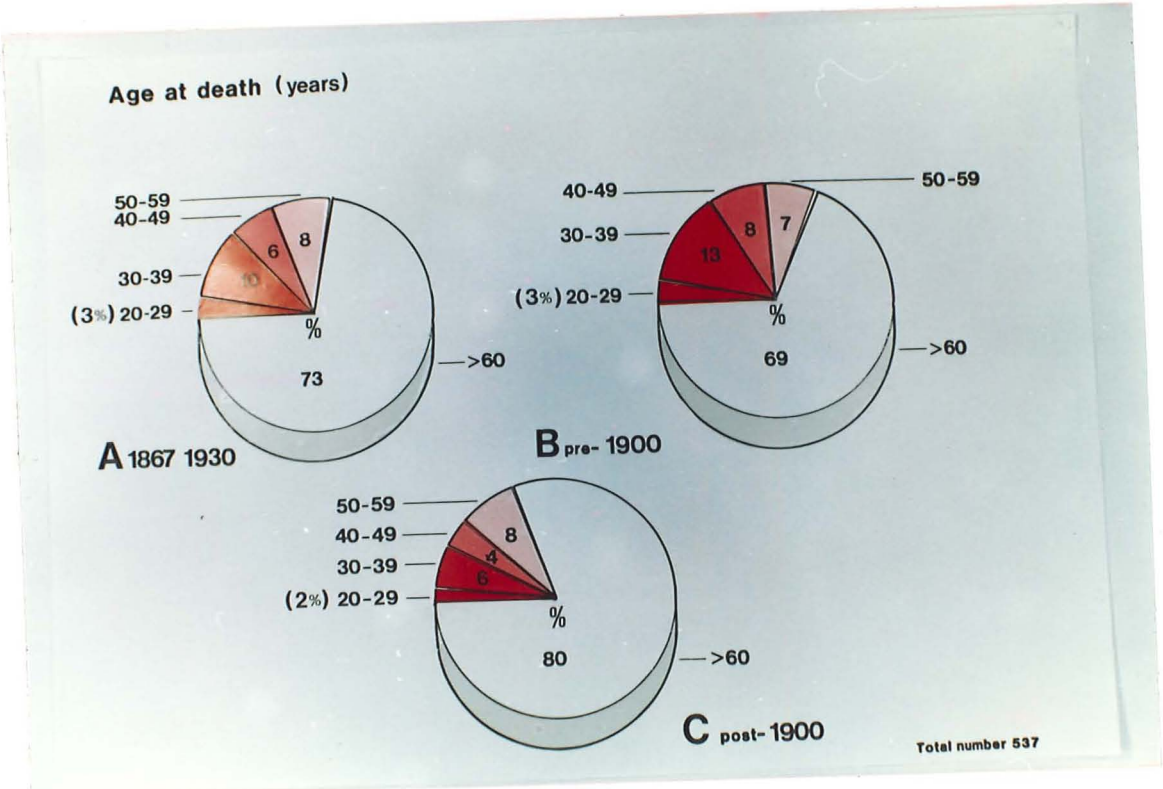

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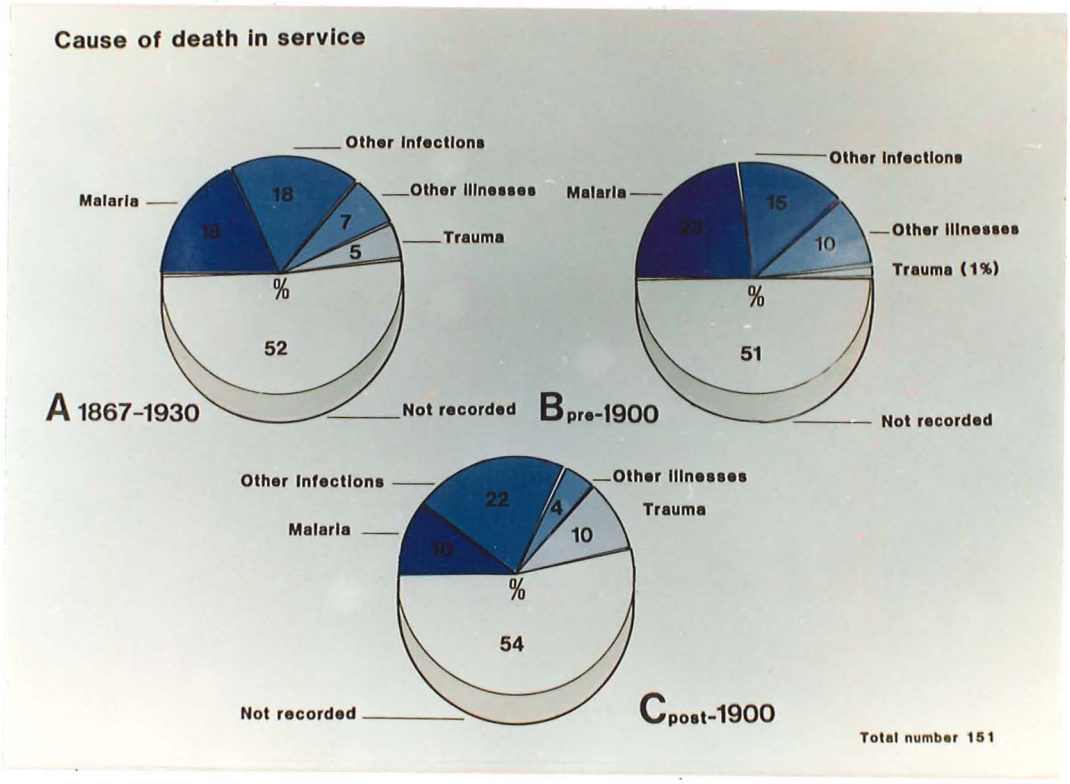

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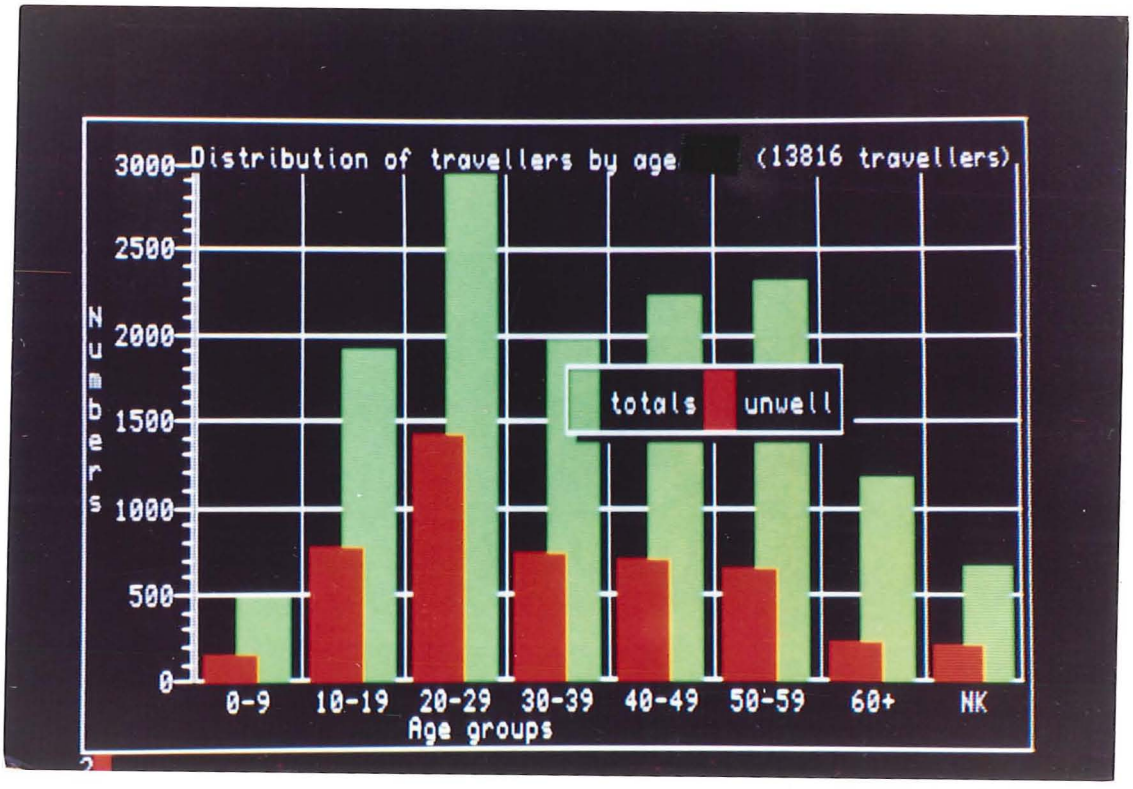

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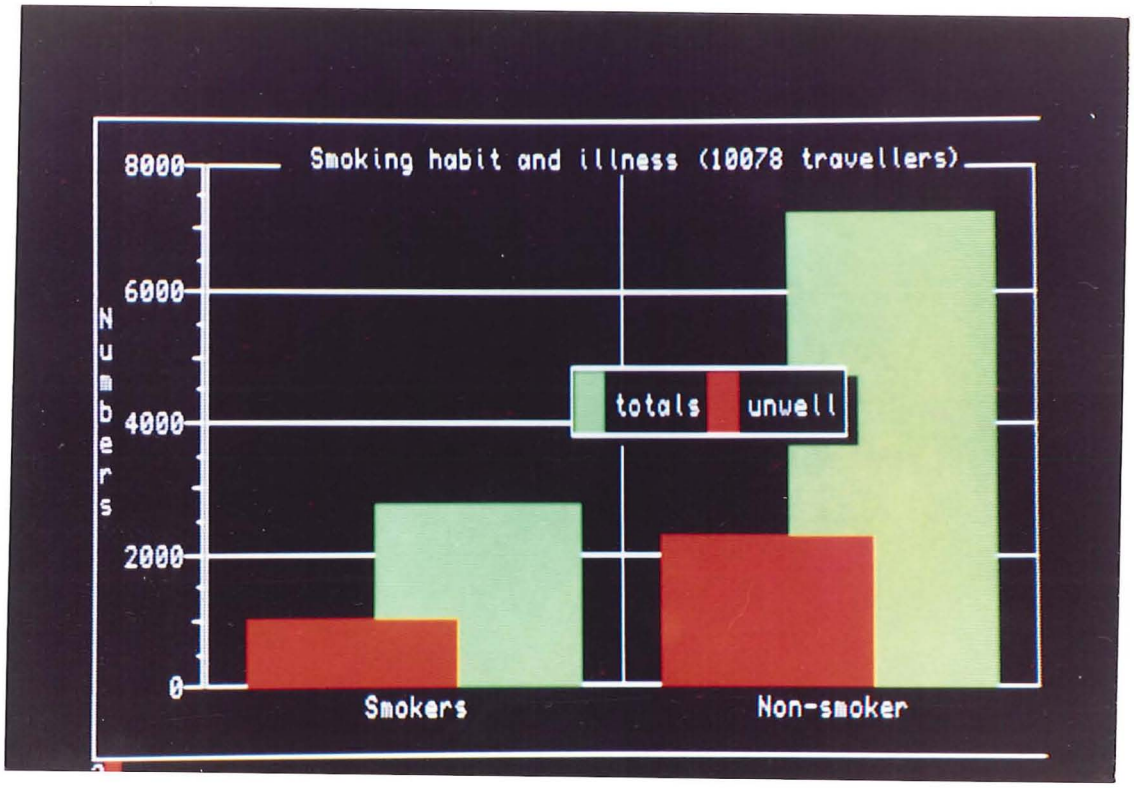

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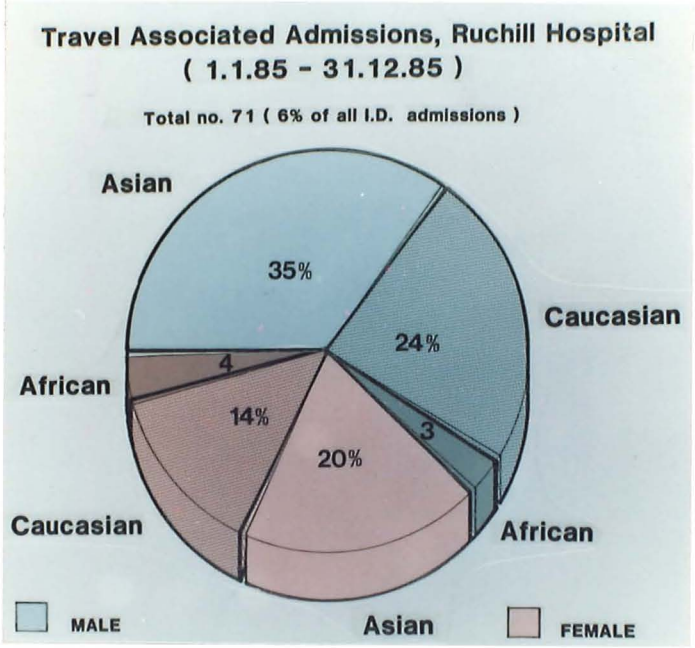


figure 4.01

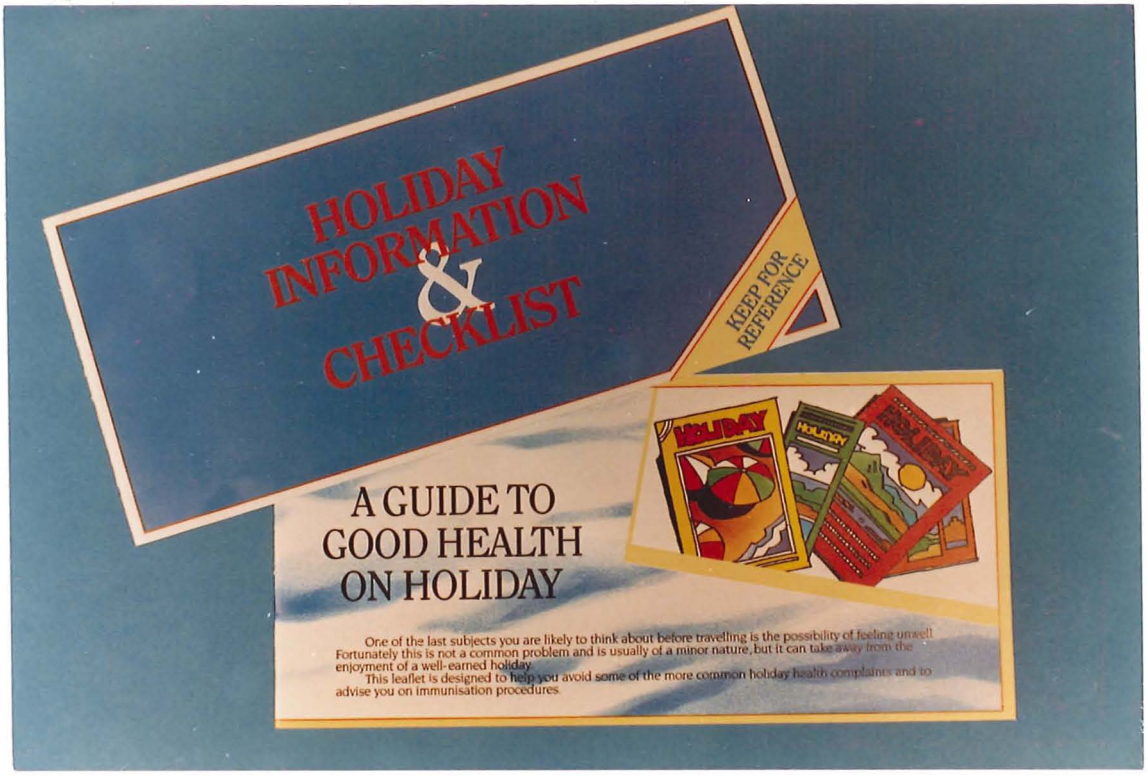


figure 4.02

figure 4.03

figure 4.04

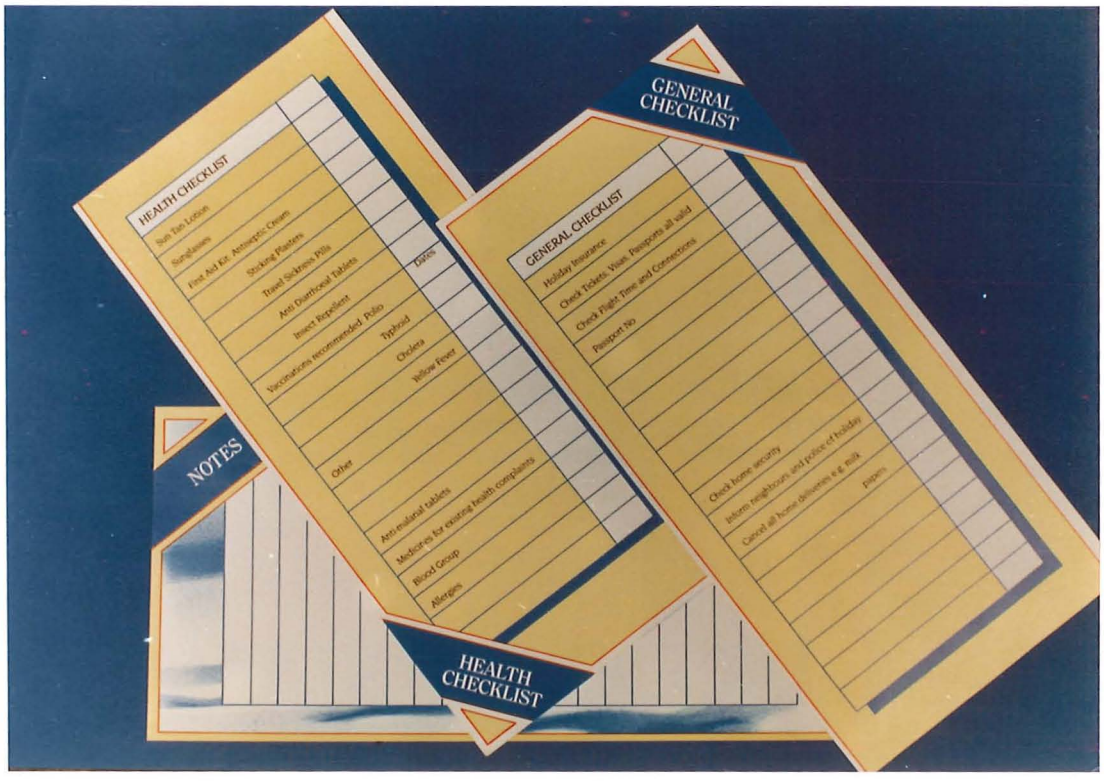


figure 4.05

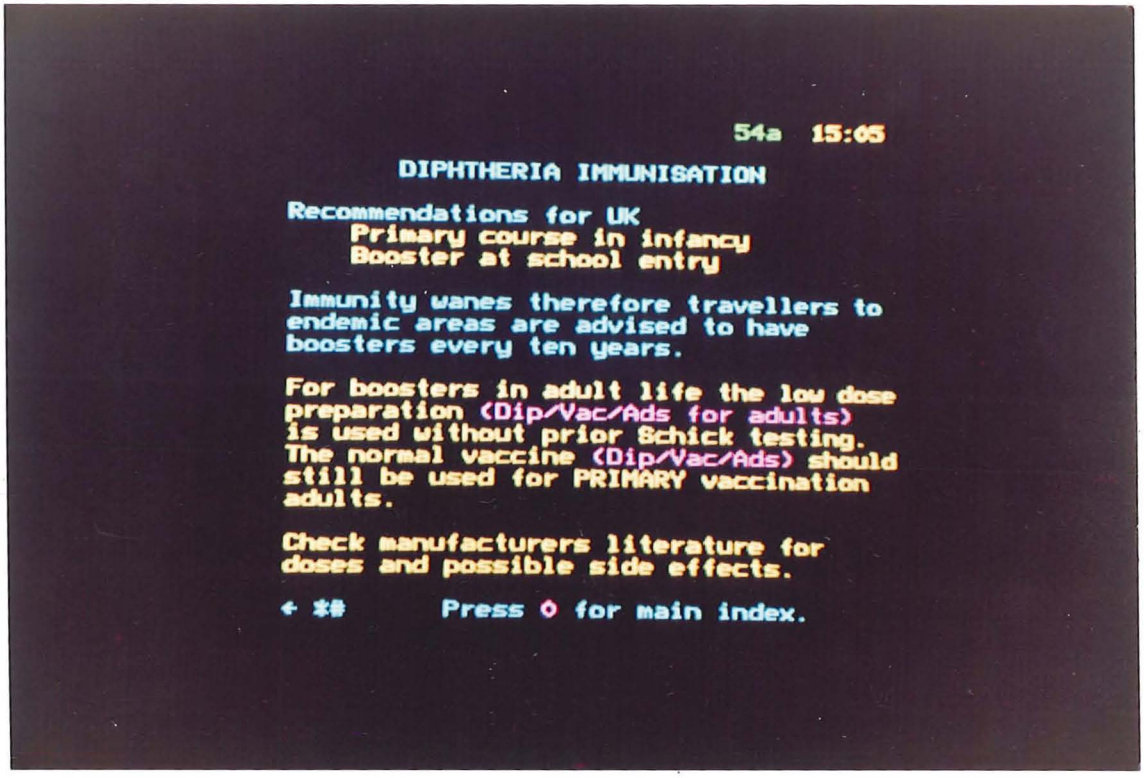


figure 4.06

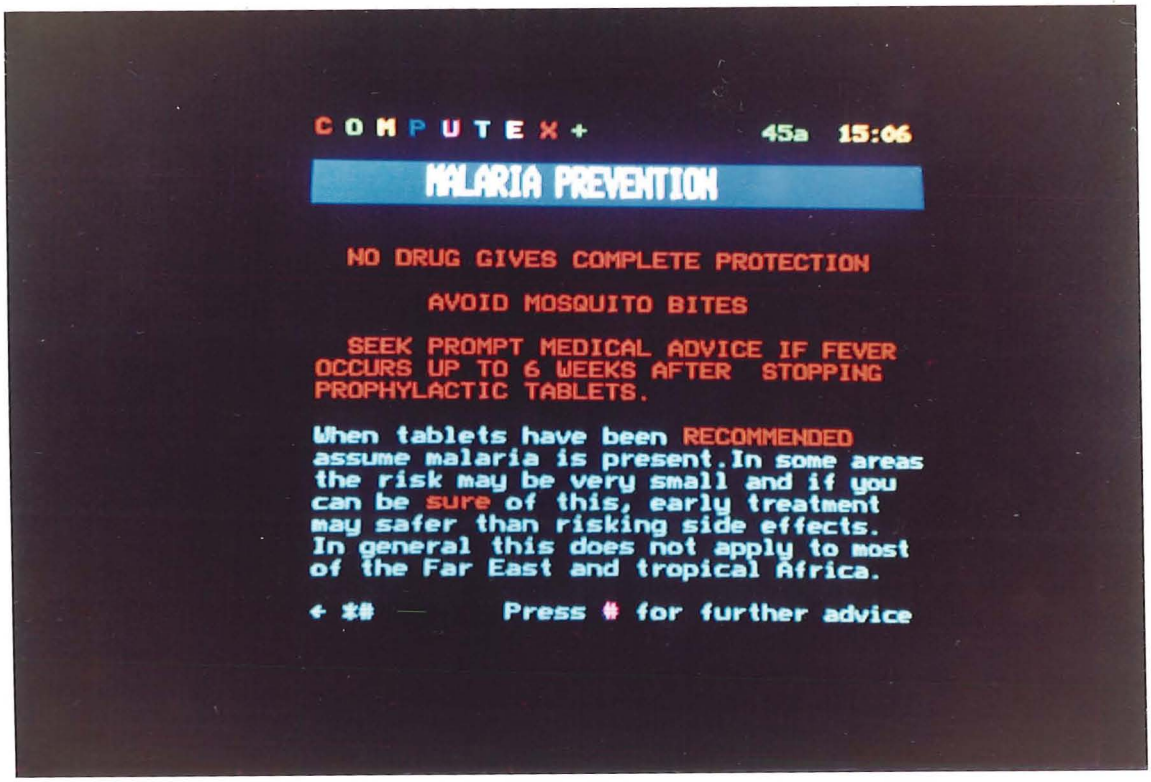


figure 4.07

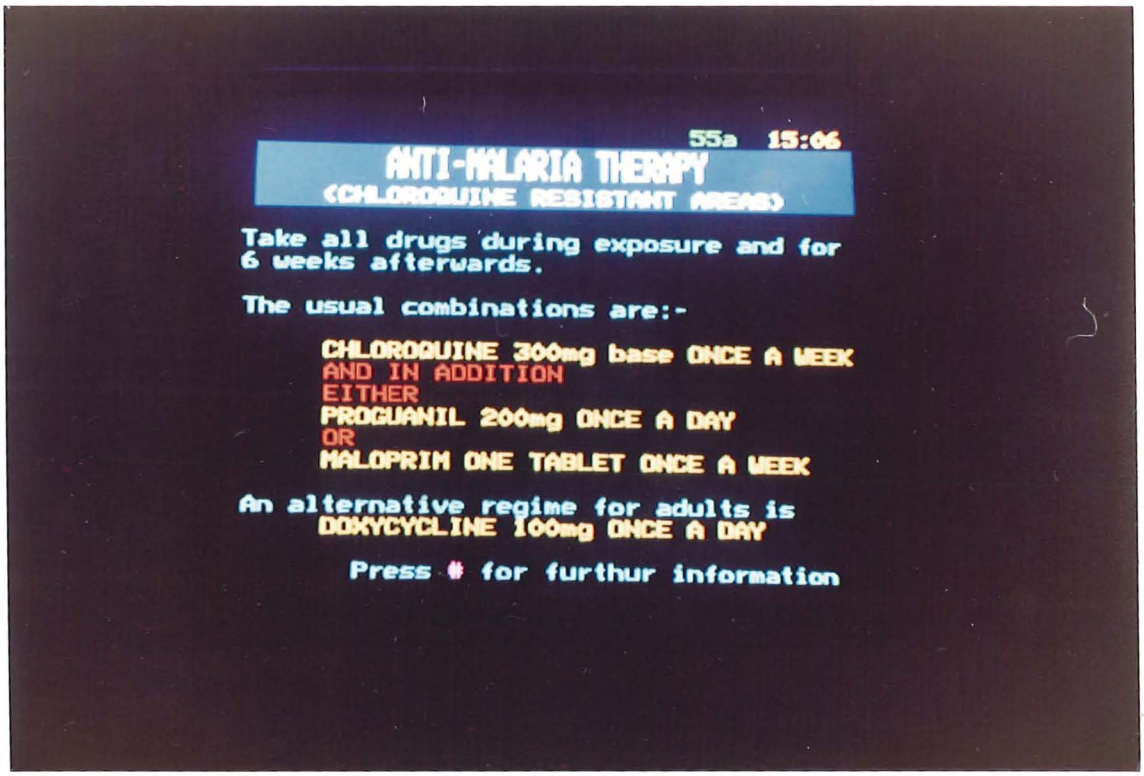
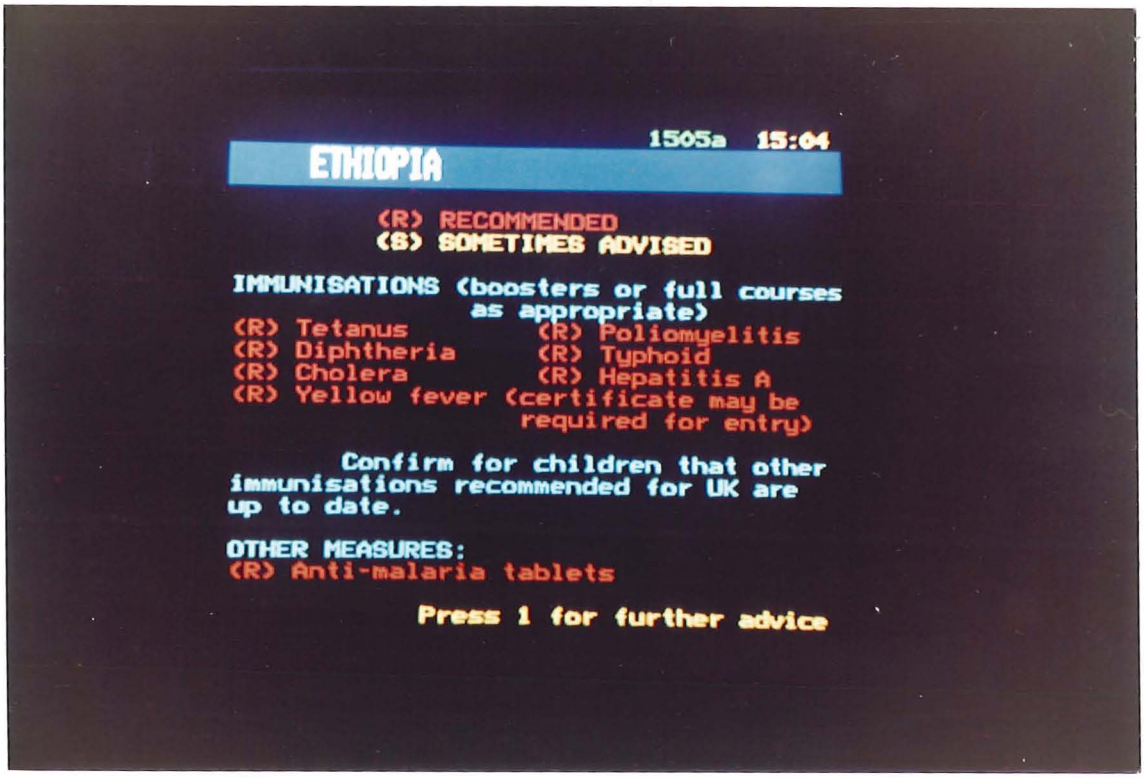


figure 4.08



Appendix I

CONFIDENTIAL

ILLNESSES ASSOCIATED WITH TRAVEL

Name _____ Age _____ (optional)

Address _____ Sex _____

_____

Occupation _____

Please state where you travelled to -

Country _____ Town _____ Hotel _____

Date of departure from U.K. if appropriate _____

Date of return to U.K. if appropriate _____

During or since travelling have you been Well/Unwell ?

Reasons for Travel

Holiday _____

Business _____

Others (please state) _____

If 'unwell', what symptoms did you have? (see below)

.....

Symptoms	Date of onset	How long did these symptoms last?
Vomiting		
Diarrhoea		
Fever		
Headache		
Dizziness		
Chest Pain		
Breathlessness		
Other (Please state)		

.....

Were you ill enough to be confined to bed? Yes/No

Did you consult a doctor? Yes/No

If 'yes', please specify if a) Abroad or b) in this country

Were you admitted to hospital? Yes/No

If 'yes', please specify if a) Abroad or b) in this country

OVER/

Did you attribute any of the symptoms overleaf to:

i) sunbathing

ii) eating

iii) drinking

iv) exercise

v) other (please state)

.....

What was the state of your general health before travelling Good/Otherwise

If "otherwise", please comment

.....

Other comments (if necessary)

Signature _____

On completion of this form, please return as soon as possible to Room 7, CD(S) Unit, Ruchill Hospital, Glasgow, G21 9NB (pre-paid envelope enclosed)

CONFIDENTIAL

ILLNESSES ASSOCIATED WITH TRAVEL

Name _____ Age _____ (optional)

Address _____ Sex _____

_____

Occupation _____

Please state where you travelled to -

Country _____ Town _____ Hotel _____

Date of departure from U.K. if appropriate _____

Date of return to U.K. if appropriate _____

During or since travelling have you been Well / Unwell?

Reasons for travel Holiday _____

Business _____

Other (please state) _____

If 'unwell', what symptoms did you have? (see below)

Symptoms	Date of onset	How long did these symptoms last?
Vomiting		
Diarrhoea		
Fever		
Headache		
Dizziness		
Chest Pain		
Breathlessness		
Other (please state)		

Were you ill enough to be confined to bed? Yes/No

Did you consult a doctor? Yes/No

If 'yes', please specify if (a) Abroad, or (b) in this country

Were you admitted to hospital? Yes/No

If 'yes', please specify if (a) Abroad, or (b) in this country

OVER/

Did you attribute any of the symptoms overleaf to:

i) sunbathing

ii) eating

iii) drinking

iv) exercise

v) other (please state)

.....

What was the state of your general health before travelling — Good/Otherwise

If 'otherwise', please comment

.....

Do you smoke? — Yes/No

If 'yes' (i) cigarette/pipe tobacco

(ii) quantity per day _____

.....

Other comments (if necessary)

Signature _____

On completion of this form, please return as soon as possible to Room 7, CD(S) Unit, Ruchill Hospital, GLASGOW, G20 9NB (pre-paid envelope is enclosed).

CONFIDENTIAL

For Official Use Only

P H 1 8 1 1-5

ILLNESSES ASSOCIATED WITH TRAVEL

Name _____ Age _____ (optional) 6-10

Home Address _____ Sex _____ 11, 12, 13

_____ 14-18

Occupation _____ 19-22

Please state where you travelled to -

Country _____ Town _____ Hotel/ Apartment _____ 23-24, 25-26, 27

Date of travel from home _____ 28-33

Date of departure for home _____ 34-39

During or since travelling have you been Well/Unwell? 40

Reasons for travel

Holiday _____

Business _____ 41

Other (please state) _____

If 'unwell', what symptoms did you have? (see below) 42

Symptoms	Date of onset	How long did these symptoms last?
Vomiting		
Diarrhoea		43-44
Fever		
Headache		
Dizziness		
Chest Pain		
Breathlessness		
Other (please state)		

Were you ill enough to be confined to bed? Yes/No 45

Did you consult a doctor? Yes/No 46

Were you admitted to hospital? Yes/No 47

If 'yes', please specify if (a) Abroad or (b) in this country

over /

Did you attribute any of these symptoms overleaf to : If 'yes' please specify: 48-50

i) eating

ii) drinking

iii) exercise

iv) travel

v) weather

vi) other (please state)

.....

What was the state of your general health before travelling Good/Otherwise

If 'otherwise', please comment 51

Do you smoke? Yes/No

If 'yes' i) cigarette/pipe tobacco

quantity per day _____ 52

.....

Other comments (if necessary)

53-55

Signature _____

On completion of this form, please return as soon as possible to :-

Room 7, CD(S) Unit, Ruchill Hospital, Glasgow, G20 9NB.
(Pre-paid envelope is enclosed).

SERIAL NUMBER

CONFIDENTIAL

ILLNESS ASSOCIATED WITH TRAVEL

SURNAME.....FORENAME.....INITIAL.....

ADDRESS..... AGE(Optional).....

..... SEX.....

..... OCCUPATION.....

.....POST CODE.....

Where did you travel to?

COUNTRY.....TOWN/AREA.....

NAME OF HOTEL/CAMP-SITE/APARTMENT ETC .....

TYPE OF ACCOMMODATION

Hotel	☐	Caravan	☐	Business	☐
Self-catering	☐	Friends	☐	Holiday	☐
Apartment	☐	Hostel	☐	Business and Holiday	☐
Camp-site	☐	Other	☐	Other	☐

REASONS FOR TRAVEL

DATES OF TRAVEL(Enter dates in the following way,e.g.1st September 1981 [01][09][81]

DATE OF LEAVING HOME [ ][ ][ ]

DATE OF RETURN HOME [ ][ ][ ]

HEALTH

1) Have you been ill whilst travelling away from home,or since returning? YES ☐ NO ☐

2) Was your health good before travelling? YES ☐ NO ☐

3) Do you smoke? YES ☐ NO ☐

If YES number of CIGARETTES/DAY ☐ CIGARS/DAY ☐ OUNCES TOBACCO/WEEK ☐

IF YOU HAVE NOT BEEN ILL PLEASE MISS OUT THE FOLLOWING SECTION

PLEASE TURN OVER

DETAILS OF ILLNESS

Did you suffer from any of the following complaints?

		What date did the complaint start and how long did it last?
VOMITING	☐	.....
DIARRHOEA	☐	.....
FEVER	☐	.....
HEADACHE	☐	.....
DIZZINESS	☐	.....
CHEST PAIN	☐	.....
BREATHLESSNESS	☐	.....
OTHER	☐	.....

Please give details of 'other' complaints

Do you think any of the following caused your illness?

EATING	☐	TRAVEL	☐
DRINKING	☐	WEATHER	☐
EXERCISE	☐	OTHER	☐

Please give details of 'other' causes

Were you ill enough to stay in bed?	YES	☐	NO	☐
Did you see a doctor	YES	☐	NO	☐
If YES was it abroad or in Britain?	ABROAD	☐	BRITAIN	☐
Were you admitted to hospital?	YES	☐	NO	☐
If YES was it abroad or in Britain?	ABROAD	☐	BRITAIN	☐

OTHER COMMENTS

Please add any other comments you may have

Signature.....

Date.....

Thank you for your assistance in completing this form.

Please return it in the pre-paid envelope supplied to: COMMUNICABLE DISEASES (SCOT) UNIT
RUCHILL HOSPITAL
GLASGOW G20 9NB

CONFIDENTIAL

ILLNESSES ASSOCIATED WITH TRAVEL WITHIN SCOTLAND

Name _____ Age _____(optional)

Address _____ Sex _____

_____

Occupation _____

Please state where you travelled to -

Country _____ Town _____ Hotel _____

Date of travel from home _____

Date of departure _____

During or since travelling have you been Well/Unwell?

Reasons for travel
Holiday _____
Business _____
Other (please state) _____

If 'unwell', what symptoms did you have? (see below)

Symptoms	Date of onset	How long did these symptoms last?
Vomiting		
Diarrhoea		
Fever		
Headache		
Dizziness		
Chest Pain		
Breathlessness		
Other (please state)		

Were you ill enough to be confined to bed? Yes/No

Did you consult a doctor? Yes/No

Were you admitted to hospital? Yes/No

OVER/

Did you attribute any of the symptoms overleaf to:

i) eating

ii) drinking

iii) exercise

iv) travel

v) weather

vi) other (please state)

.....

What was the state of your general health before travelling — Good/Otherwise

if 'otherwise', please comment

.....

Do you smoke? — Yes/No

If 'yes' (i) cigarette/pipe tobacco

(ii) quantity per day _____

.....

Other comments (if necessary)

Signature _____

On completion of this form, please return as soon as possible to Room 7, CD(S) Unit, Ruchill Hospital, GLASGOW, G20 9NB (pre-paid envelope is enclosed).

ILLNESS ASSOCIATED WITH TRAVEL

SURNAME ..... FORENAME ..... INITIAL .....

ADDRESS ..... AGE(Optional) .....

..... SEX .....

..... OCCUPATION .....

..... POST CODE .....

Where have you visited?

TOWNS:AREAS .....

NAME OF HOTEL/CAMP-SITE/APARTMENT ETC. .....

TYPE OF ACCOMMODATION

Hotel	☐	Caravan	☐
Self-catering	☐	Friends	☐
Apartment	☐	Hostel	☐
Camp-site	☐	Other	☐

REASONS FOR TRAVEL

Business	☐
Holiday	☐
Business and Holiday	☐
Other	☐

DATES OF TRAVEL (Enter dates in the following way, e.g. 1st June, 1983 [01][06][83]

DATE OF LEAVING HOME ☐☐☐

DATE OF RETURN HOME ☐☐☐

HEALTH

1) Have you been ill whilst travelling away from home? YES ☐ NO ☐

2) Was your health good before travelling? YES ☐ NO ☐

3) Do you smoke? YES ☐ NO ☐

If YES number of CIGARETTES/DAY ☐ CIGARS/DAY ☐ OUNCES TOBACCO/WEEK ☐

IF YOU HAVE NOT BEEN ILL PLEASE MISS OUT THE FOLLOWING SECTION

PLEASE TURN OVER

DETAILS OF ILLNESS

Did you suffer from any of the following complaints?

		What date did the complaint start and how long did it last?
VOMITING	☐	.....
DIARRHOEA	☐	.....
FEVER	☐	.....
HEADACHE	☐	.....
DIZZINESS	☐	.....
CHEST PAIN	☐	.....
BREATHLESSNESS	☐	.....
OTHER	☐	.....

Please give details of 'other' complaints

Did you think any of the following caused your illness?

EATING	☐	TRAVEL	☐
DRINKING	☐	WEATHER	☐
EXERCISE	☐	OTHER	☐

Please give details of 'other' causes

Were you ill enough to stay in bed?	YES ☐	NO ☐
Did you see a doctor?	YES ☐	NO ☐
Were you admitted to hospital?	YES ☐	NO ☐

OTHER COMMENTS

Please add any other comments you may have

Signature .....

Date .....

Thank you for your assistance in completing this form.

Please return it in the pre-paid envelope supplied to: COMMUNICABLE DISEASES SCOT. UNIT
RUCHILL HOSPITAL
GLASGOW

CONFIDENTIAL

SERIAL NUMBER ☐☐☐☐☐☐

ILLNESS ASSOCIATED WITH TRAVEL

SURNAME.....FORENAME.....INITIAL.....

ADDRESS .....AGE (optional).....

.....SEX .....

.....OCCUPATION .....

.....POST CODE.....

Where have you visited?

TOWNS/AREAS.....COUNTRY.....

NAME OF HOTEL/CAMP-SITE/APARTMENT ETC. .....

TYPE OF ACCOMMODATION

Hotel	☐	Caravan	☐	Business	☐
Self-Catering	☐	Friends	☐	Holiday	☐
Apartment	☐	Hostel	☐	Business and Holiday	☐
Camp-site	☐	Other (please specify)	☐	Other (please specify)	☐
		.....		.....	

REASONS FOR TRAVEL

DATES OF TRAVEL Enter dates in the following way, e.g. 1st June, 1985 [0][1][0][6][8][5]

DATE OF LEAVING HOME ☐☐☐☐☐☐

DATE OF RETURN HOME ☐☐☐☐☐☐

HEALTH

1) Have you been ill whilst travelling away from home? YES ☐ NO ☐

2) Was your health good before travelling? YES ☐ NO ☐

If NO please give brief details .....

3) Do you smoke? YES ☐ NO ☐

If YES number of CIGARETTES/DAY ☐☐ CIGARS/DAY ☐☐ OUNCES OF TOBACCO/WEEK ☐☐

IF YOU HAVE NOT BEEN ILL PLEASE MISS OUT THE NEXT SECTION

PLEASE TURN OVER

DETAILS OF ILLNESS

Did you suffer from any of the following complaints?

What date did the complaint start and how long did it last?

VOMITING	☐	.....
DIARRHOEA	☐	.....
FEVER	☐	.....
HEADACHE	☐	.....
DIZZINESS	☐	.....
CHEST PAIN	☐	.....
BREATHLESSNESS	☐	.....
OTHER	☐	.....

Please give details of 'other' complaints

Did you think any of the following caused your illness?

EATING	☐	TRAVEL	☐
DRINKING	☐	WEATHER	☐
EXERCISE	☐	OTHER	☐

Please give details of 'other' causes

Were you ill enough to stay in bed?	YES	☐	NO	☐	For how long .....?
Did you see a doctor?	YES	☐	NO	☐	
If YES was it abroad or in Britain?	ABROAD	☐	BRITAIN	☐	
Were you admitted to hospital?	YES	☐	NO	☐	For how long .....?
If YES was it abroad or in Britain?	ABROAD	☐	BRITAIN	☐	

OTHER COMMENTS

Please add any other comments you may have

Signature .....

Date .....

Thank you for your assistance in completing this form, the contents of which will be kept completely confidential.

Please return it in the pre-paid envelope supplied to: COMMUNICABLE DISEASES (SCOT) UNIT
RUCHILL HOSPITAL
GLASGOW G20 9NB

PRE-TRAVEL HEALTH PRECAUTIONS

Did you look for any advice about health precautions before travelling abroad?

YES ☐ NO ☐

Did you get advice from any of the following sources?

TRAVEL AGENT	YES ☐	NO ☐
FAMILY DOCTOR	YES ☐	NO ☐
OTHER (please specify)	YES ☐	NO ☐

.....

.....

Did you take any of the following precautions?

			date (if known)
POLIO IMMUNISATION	YES ☐	NO ☐	.....
TYPHOID IMMUNISATION	YES ☐	NO ☐	.....
CHOLERA IMMUNISATION	YES ☐	NO ☐	.....
TETANUS IMMUNISATION	YES ☐	NO ☐	.....
			name (if known)
ANTI-MALARIAL TABLETS	YES ☐	NO ☐	.....
OTHER (please specify)	YES ☐	NO ☐	

.....

.....

Did you take any precautions whilst abroad? YES ☐ NO ☐

If YES please specify .....

.....

INFECTIOUS DISEASES UNIT RELO

SERIAL NO: _____

TO COMPLETE AT ADMISSION BY ADMITTING DOCTOR

Patient's details:

NAME: _____

DATE OF ADM: _____ WARD _____

AGE: _____

ETHNIC ORIGIN : _____

REFERRED BY :
(e.g. G.P., Casualty etc.)

FOREIGN TRAVEL : (within last 4/52)

REFERRAL DIAGNOSIS :

UNDERLYING REASON FOR ADMISSION:
(medical and/or social)

ADMISSION DIAGNOSIS : (if different)

TO COMPLETE ON DISCHARGE BY WARD HOUSE OFFICER - IF IN DOUBT - DISCUSS

DISCHARGE DIAGNOSIS : 1.

2.

3.

4.

TRAVEL ASSOCIATION ?
(VHF Category if approp)

Transfer for
(specify)

- Management?
- Investigation?
(e.g. ultrasound)

OUTCOME & SEQUELAE

WAS PRINCIPAL REFERRING CONDITION PROBABLY DUE TO INFECTION ?

DURATION OF ISOLATION:
(approx. number of days)

CLINICAL ASSESSMENT:
(mild, moderate, severe, critical)

COMMENTS:
(change of diagnosis at out-patients?)

P.T.O.

TO COMPLETE AFTER DISCHARGE : By Registrar/SHO at time of Discharge Letter

IF IN DOUBT - DISCUSS !

DURATION OF HOSPITAL STAY:

OUT-PATIENT APPOINTMENT ARRANGED:

WAS ISOLATION APPROPRIATE AT ADMISSION ?

WAS CONTINUAL ISOLATION APPROPRIATE ?

Check by Consultant or Deputy

EVALUATION REVIEW:

RETAIN BY UNIT SECRETARY
(keep in Box File)

Designation of letters - key

GA 1	= Glasgow Airport survey first contact letter
GA 1b	= Glasgow Airport survey first contact letter (modified)
P.1.	= first contact letter requesting blood sample
IC 1	= first contact letter via insurance company
SA/P1	= first contact letter to traveller on Saga holiday
P.H.1	= first contact letter to traveller returning from Benidorm
P.H.1A	= further contact letter to traveller returning from Benidorm
T.A.1	= contact letter to travel agent re Benidorm holidaymakers
P.H.1A.81	= first contact letter to traveller returning from Malta
GA/P1	= further contact letter requesting blood sample
LDS2/P2	= follow-up letter requesting blood sample
SA/P2	= Saga follow-up letter requesting blood sample
80B/P2	= follow-up letter requesting blood sample
80B/P2/1	= further follow-up letter requesting blood sample
P2	= patient response letter to sample request
P3	= response to traveller agreeing to sample request
P4	= letter to non-responding traveller
P5	= letter to responding traveller but no sample received
G.P.1	= first contact letter to family doctor
G.P.1A.	= first contact letter to family doctor (Benidorm traveller)
GA/G.P.1	= first contact letter to family doctor (airport survey)
G.P.80B	= further contact letter to family doctor (Benidorm traveller
G.P.81B	= first contact letter to family doctor (Malta traveller)
LDS2/GP1	= further contact letter to family doctor (airport survey)
G.P.2/81/C	= first contact letter to family doctor (Romania traveller)
G.P.2	= family doctor´s response to sample request
G.P.4.	= letter enclosing result of serum test
G.P.5	= letter to non-responding family doctor
G.P.6	= letter following reminder letter to traveller
G.P.7	= response letter following return of "test-kit"
G.P.11	= response to request for further "test-kit"
G.P.12.	= further response to request for "test-kit"
G.P.14	= further letter enclosing result of serum test

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel: 041-946 7120

Our Ref: GA 1

RUCHILL HOSPITAL,

GLASGOW, G20 9NB.

ILLNESSES ASSOCIATED WITH TRAVEL

An enquiry is being conducted by this Unit into the amount and type of illness contracted by persons while on holiday, business, etc. overseas. This information will be most useful in determining the precautions which should be recommended to future travellers.

Since you have recently returned from abroad, it would be very helpful if you could possibly provide some information on your experience on the attached form, which it is hoped you will find simple to complete.

This information will, of course, be kept strictly confidential. A pre-paid envelope is attached for your reply.

Any help you can give will be greatly appreciated. Even if you remained well, we should still be glad if you would kindly complete the form and return it to us.

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref GA 1b

RUCHILL HOSPITAL,
GLASGOW G20 9NE

ILLNESSES ASSOCIATED WITH TRAVEL

An enquiry is being conducted by this Unit into the amount and type of illness contracted by persons whilst staying away from home on holiday, business trips, etc. This information will be most useful in determining the precautions which should be recommended to future travellers.

Following your return home, it would be very helpful if you could possibly provide some information on your experience on the attached form, which it is hoped you will find simple to complete.

This information will, of course, be kept strictly confidential. A pre-paid envelope is attached for your reply.

Any help you can give will be greatly appreciated. Even if you remained well, we should still be glad if you would kindly complete the form and return it to us.

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref P. 1.

RUCHILL HOSPITAL,
GLASGOW G20 9NB

ILLNESS ASSOCIATED WITH TRAVEL

You will remember you kindly completed a form, giving information about illness associated with travel. We are most grateful for your help and co-operation with this.

We have had a very encouraging response to our enquiry and this should lead to a clearer understanding of these illnesses.

In order to follow-up the information you have provided, it would be very helpful if it would be possible to obtain a small blood sample in order to carry out some laboratory tests.

It would be greatly appreciated if you feel you can help us in this way. Any information obtained will, of course, be kept strictly confidential. A pre-paid reply form and envelope is attached for your convenience.

DR. J. H. COSSAR,
COMMUNICABLE DISEASES (SCOTLAND)UNIT

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041-946 7120
EXTENSION 388
Your Ref
Our Ref IC1

RUCHILL HOSPITAL,
GLASGOW G20 9NB

ILLNESSES ASSOCIATED WITH TRAVEL

An enquiry is being conducted by this Unit into the amount and type of illness contracted by persons while on holiday, business, etc. overseas. This information will be most useful in determining the precautions which should be recommended to future travellers.

Since you have recently returned from abroad, it would be very helpful if you could possibly provide some information on your experience on the attached form, which it is hoped you will find simple to complete.

This information will, of course, be kept strictly confidential. A pre-paid envelope is attached for your reply.

Any help you can give will be greatly appreciated.

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041-946 7120
EXTENSION
Your Ref
Our Ref SA/P1

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear

An enquiry is being conducted by this Unit into the amount and type of illness contracted by persons while on holiday, business etc. overseas. This information will be most useful in determining the precautions which should be recommended to future travellers.

As you have recently returned from abroad, it would be very helpful if you could possibly provide some information on your experience on the attached form, which it is hoped you will find simple to complete.

This information will, of course, be kept strictly confidential. A pre-paid label is attached for your reply.

Any help you can give will be greatly appreciated.

Yours sincerely,

DR. J.H. COSSAR

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel: 041-946-7120
EXTENSION
Your Ref:
Our Ref:

RUCHILL HOSPITAL
GLASGOW G20 9NB

Dear Traveller,

Thank you for taking the time to read this letter. One of the last subjects one is likely to give thought to before travelling is the possibility of feeling unwell. Fortunately this is not a common problem and is usually of a minor nature but it can detract from the enjoyment of a well-earned holiday.

For some years now, studies have been conducted by this Unit into the amount and type of illness experienced by travellers whilst away from home. This information is most useful in determining the precautions which are recommended to travellers to minimise the chance of illness. To enable us to continue the studies we are totally dependent upon the goodwill of travellers and tourist services alike for the completion of questionnaires.

Before you leave Scotland, we would be most grateful if you could possibly provide some information on your experience on the attached questionnaire. For statistical accuracy it is most important to us that you complete the form <u>even if you have been completely well</u>. This information will, of course, be kept strictly confidential.

Thank you for your help.

Yours sincerely

Dr. J.H. COSSAR

P.S. A pre-paid envelope is attached for posting your reply in the United Kingdom.

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTEN SN
Your Re
Our Re

P.E.1

BUCHIEL HOSPITAL
GLASGOW G20 9NB

Dear

Thank you for your recent reply to Dr. Bartlett's enquiry which you received via Thomson Travel Limited.

We have been investigating illness amongst Scottish holidaymakers travelling abroad for some years now, and Dr. Bartlett has kindly passed on your letter to us for follow-up. So far we have had a very encouraging response to our enquiries and this should lead to a clearer understanding of these travel associated illnesses, and provide helpful advice for future travellers.

In order to follow up the information which you have given, it would be very helpful if you could provide us with further information on the enclosed forms. The first form is a standard questionnaire which we distribute to holidaymakers on their return to Scotland. The second form is to enquire if it would be possible for us to obtain a small blood sample in order to carry out some laboratory tests. We can make arrangements for this to be done by your own doctor or alternatively I can come and take this at your home.

I would be most grateful if you feel you can help us in this way. Even if you have been completely well, or if you feel unable to provide a small blood sample, it would still be helpful if you complete and return the forms to us.

Any information obtained will be kept strictly confidential. A pre-paid reply form and envelope is attached for your convenience.

Yours sincerely,

DR. J. H. COSSAR

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref P.H.1A.

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear

For some years now we have been conducting an enquiry into the amount and type of illness contracted by people from Scotland whilst abroad on holiday, business trips, etc. This information is most useful in determining the precautions and vaccinations recommended to travellers.

You will probably have learned from the news media that an outbreak of Legionnaires' disease occurred at the Rio Park Hotel, Benidorm, this summer. Thomson Travel Limited have kindly given us a note of the Scottish holidaymakers who stayed at the hotel during the holiday season.

As we are making a study of this episode of illness it would be very helpful to us if you could provide us with some information on the enclosed questionnaire form. This is a standard questionnaire which we distribute to holidaymakers on their return to Scotland. Even if you have been completely well, it would still be helpful if you could complete and return the form to us.

Any information obtained will be kept strictly confidential. A pre-paid reply form and envelope is attached for your convenience.

Yours sincerely,

DR. J.H. COSSAR

Encl.

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
Extension
Your Ref
Our Ref T.A.1

RUCHILL HOSPITAL
GLASGOW G20 9NE

Dear Sir,

For several years this Unit has been conducting enquiries into the amount and type of illness contracted by persons whilst staying away from home on holiday, business trips, etc. This information is most useful in determining the precautions which should be recommended to future travellers.

Following the recent unfortunate outbreak of illness amongst holidaymakers who stayed at the Rio Park Hotel, Benidorm, during August 1980, Thomson Travel Ltd. have been most helpful with our study in trying to learn as much as possible about illness associated with travel.

We understand that Mr. Ron Wheal, Commercial Controller of Thomson Holidays has recently written to you about this problem. In his letter Mr. Wheal requested information be sent to the English Centre for Communicable Disease Control in London. However, because of our involvement with travellers in Scotland Mr. Wheal is happy for the information to come direct to us.

We have been given a list of all the people from Scotland who stayed at the hotel during August/September, 1980 and are most interested to make contact with all these people. We would, therefore, be obliged for your assistance in providing us with the addresses of those people who booked through your Travel Agency for a Rio Park Holiday in August. The names of these holidaymakers and their departure date is as listed below.

We are most appreciative of your co-operation in this matter and we can assure you that the information which we derive from our studies is kept strictly confidential.

It may be that you have already sent information to London and if so it would be helpful if you could indicate this in the space below. Please accept our apologies for any confusion which this administrative alteration has caused you.

Yours sincerely,

DR. J.H. COSSAR

I have/have not already sent information as requested in Mr. Wheal's letter.

(please delete as appropriate).

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref P.H.1A.81

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear

For some years now we have been conducting an enquiry into the amount and type of illness contracted by people from Scotland whilst abroad on holiday, business trips, etc. This information is most useful in determining the precautions and vaccinations recommended to travellers.

You will probably have learned from the news media that an outbreak of Typhoid infection occurred at the Golden Sands Hotel, Malta, this summer. The tour companies involved have kindly given us a note of the Scottish holidaymakers who stayed at the hotel during the holiday season.

As we are making a study of this episode of illness it would be very helpful to us if you could provide us with some information on the enclosed questionnaire form. This is a standard questionnaire which we distribute to holidaymakers on their return to Scotland. Even if you have been completely well, it would still be helpful if you could complete and return the form to us.

Any information obtained will be kept strictly confidential. A pre-paid reply form and envelope is attached for your convenience.

Yours sincerely,

DR. J. H. COSSAR

Encl.

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref GA/P1

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear

You may remember that you kindly completed a questionnaire at Glasgow Airport on return from your holiday abroad last year.

The response to our enquiry has been most encouraging and this should lead to a clearer understanding of illness associated with travel abroad.

In particular we are now able to test for evidence of previous infection with Legionnaires' disease. In order to follow-up the information which you have provided, it would be very helpful if it would be possible to obtain a small blood sample in order to carry out some laboratory tests. Arrangements can be made for this to be done by your own doctor or alternatively I can come and take this at your home.

I would be most grateful if you feel you can help us in this way. Any information obtained will, of course, be kept strictly confidential. A pre-paid reply form and envelope is attached for your convenience.

Yours sincerely,

DR. J.H. COSSAR

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041-946 7120
EXTENSION
Your Ref
Our Ref LDS2/P1

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear

You will remember that you kindly completed a questionnaire at Glasgow Airport following your recent return from holidaying abroad.

The response to our enquiry has been most encouraging and this should lead to a clearer understanding of illness associated with travel abroad.

In particular this information will be most useful in determining the precautions which should be recommended to future travellers. In order to follow-up the information which you have provided, it would be very helpful if it would be possible to obtain a small blood sample in order to carry out some laboratory tests. Arrangements can be made for this to be done by your own doctor or alternatively I can come and take this at your home.

I would be most grateful if you feel you can help us in this way. Any information obtained will, of course, be kept strictly confidential. A pre-paid reply form and envelope is attached for your convenience.

Yours sincerely,

DR. J.H. COSSAR

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref SA/P2

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear

You may remember that you kindly completed a questionnaire on return from your holiday abroad this year.

The response to our enquiry has been most encouraging and this should lead to a clearer understanding of illness associated with travel abroad.

In particular we are now able to test for evidence of previous infection from a small blood sample. In order to follow-up the information which you have provided, it would be very helpful if it would be possible to obtain a small blood sample in order to carry out some laboratory tests. Arrangements can be made for this to be done by your own doctor or alternatively I can come and take this at your home.

I would be most grateful if you feel you can help us in this way. Any information obtained will be kept strictly confidential. A pre-paid reply form and envelope is attached for your convenience.

Yours sincerely,

Dr. J.H. COSSAR.

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref 80B/P2

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear

Thank you for your recent reply to my letter and for returning the completed questionnaire.

The response to our enquiry has been most encouraging and this should lead to a clearer understanding of the pattern of illness associated with travel abroad.

Over the past few years, we have tried to obtain a small blood sample from both well and unwell holidaymakers who have participated in our studies. From this, we are able to determine the immunity (or resistance) of holiday-makers to certain diseases such as polio, tetanus, etc. This information helps us formulate the vaccination advice which we offer to travellers.

I realise that it is a considerable imposition and inconvenience to ask if you would be willing to supply a small sample of blood. However, if you feel that you can help us in this way, arrangements can be made for the sample to be taken by your own doctor, or alternatively I can come and take this at your home.

I would be most grateful if you can assist us by returning the enclosed pre-paid reply form and envelope. Any information obtained will be kept strictly confidential.

Yours sincerely,

DR. J. H. COSSAR

Enc:

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
Extension
Your Ref
Our Ref 80B/P2/1

[illegible]

Dear

Thank you for completing and returning the questionnaire following your recent holiday abroad.

The response to our enquiry has been most encouraging and this should lead to a clearer understanding of the pattern of illness associated with travel abroad.

Over the past few years, we have tried to obtain a small blood sample from both well and unwell holidaymakers who have participated in our studies. From this, we are able to determine the immunity (or resistance) of holiday-makers to certain diseases such as polio, tetanus, etc.. This information helps us formulate the vaccination advice which we offer to travellers.

I realise that it is a considerable imposition and inconvenience to ask if you would be willing to supply a small sample of blood. However, if you feel that you can help us in this way, arrangements can be made for the sample to be taken by your own doctor, or alternatively I can come and take this at your home.

I would be most grateful if you can assist us by returning the enclosed pre-paid reply form and envelope. Any information obtained will be kept strictly confidential.

Yours sincerely,

DR. J. H. COSSAR

Enc:

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref P. 2.

RUCHILL HOSPITAL,
GLASGOW G20 9NB

NAME ..... Tel. No. .....

ADDRESS .....

Please complete name and surgery address of Family Doctor:

.....

.....

Please delete as appropriate and return

a) I regret I am unable to help you

b) I can help by supplying a small blood sample

Signed.....

We shall contact you soon to make a convenient arrangement for the collection of the sample

Thank you for your courtesy in replying.

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref P.3.

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear

Thank you for your reply to my letter and for agreeing to assist us by supplying a small blood sample.

I have contacted your family doctor who has kindly agreed to collect the blood sample if you would be good enough to arrange an appointment to see him within the next few days.

I appreciate your help.

Yours sincerely,

Dr. J.H. Cossar

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref PL.

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear

I wrote to you several weeks ago in connection with illness associated with travel. It would be of help to me if you could send back your reply in the pre-paid envelope, even if you are unable to help by supplying a small blood sample.

Thank you for your co-operation.

Yours faithfully,

DR. J.H. COSSAR

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041-946 7120
EXTENSION
Your Ref
Our Ref P5

RUCHILL HOSPITAL
GLASGOW G20 9LF

Dear

You may remember that recently you kindly agreed to assist us by donating a small blood sample.

From our records, I note that a sample has not been tested. I have contacted your family doctor who can help by collecting the sample if you would be good enough to arrange an appointment to see him within the next few days.

I appreciate your help.

Yours sincerely,

DR. J. H. COSSAR

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel: 041-946 7120
EXTENSION
Your Ref
Our Ref G.P.1

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear Dr.

An inquiry is being conducted by this Unit into illness contracted by persons while on holiday, business etc. overseas. In particular we are following up people with a history of respiratory symptoms in this context. One of your patients kindly volunteered information in response to the nationwide publicity which surrounded the possible links of this kind of illness with Legionnaires' Disease.

From our initial studies, it is very worthwhile to carry out microbiological studies on the serum of particular groups of people who developed respiratory symptoms whilst abroad or shortly after their return.

Your patient, who falls into this category, has already kindly agreed to donate a blood sample.

We would be pleased to send on to you all the necessary materials, syringe, container, pre-paid return carton, etc., and also to contact the patient for you, if you feel you could assist us by collecting a 5 ml. clotted sample of blood.

A pre-paid reply letter and envelope is enclosed for your convenience.

Yours sincerely,

DR. J.H. COSSAR

Name and address of patient:

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref G.P. 1A.

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear Dr.

We have been investigating illness amongst Scottish holidaymakers travelling abroad for some years now. We are following up both symptomatic and asymptomatic people and carrying out microbiological studies on their serum in an effort to determine the incidence of contact with Legionnaires' Disease and to help place this disease in a true perspective in relation to foreign travel.

Recently there has been a further outbreak of Legionnaires' Disease at the Rio Park Hotel, Benidorm. We have made contact with most of the Scottish holidaymakers who stayed at the hotel over the summer. One of your patients who stayed at the hotel has volunteered information in response to our inquiry, and has kindly agreed to donate a blood sample.

On account of the numbers involved and the address distribution which is nationwide, we would be most grateful for your help. We would be pleased to send on to you all the necessary materials - syringe, container, pre-paid return carton, etc. and also to contact the patient for you, if you feel you could assist us by collecting a 5 ml. clotted sample of blood.

A pre-paid reply letter and envelope is enclosed for your convenience.

Yours sincerely,

DR. J.H. COSSAR

Name and address of patient:

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref GA/G. P. 1

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear Dr.

An inquiry is being conducted by this Unit into illness contracted by persons while on holiday, business etc. overseas. In particular we are following up people with a history of respiratory symptoms in this context. We have found that some of these people have come into contact with Legionnaires' Disease.

One of your patients kindly volunteered information in response to a survey carried out at Glasgow Airport. From our initial studies, it is very worthwhile to carry out microbiological studies on the serum of particular groups of people who developed respiratory symptoms whilst abroad or shortly after their return.

Your patient, who falls into this category, has already kindly agreed to donate a blood sample.

We would be pleased to send on to you all the necessary materials, syringe, container, pre-paid return carton, etc., and also to contact the patient for you, if you feel you could assist us by collecting a 5 ml. clotted sample of blood.

A pre-paid reply letter and envelope is enclosed for your convenience.

Yours sincerely,

DR. J. H. COSSAR

Name and address of patient:

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041-946 7120
EXTENSION
Your Ref
Our Ref G.P.80B

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear Dr.

We have been investigating illness amongst Scottish holidaymakers travelling abroad for some years now. We are following up both symptomatic and asymptomatic people and carrying out microbiological studies on their serum in an effort to determine the incidence of contact with Legionnaires' Disease and to help place this disease in a true perspective in relation to foreign travel. In addition, we are trying to determine the immune status of holidaymakers in relation to polio and tetanus.

Recently there has been a further outbreak of Legionnaires' Disease at the Rio Park Hotel, Benidorm. We have made contact with most of the Scottish holidaymakers who stayed at the hotel over last summer. One of your patients who stayed at the hotel has volunteered information in response to our inquiry, and has kindly agreed to donate a blood sample.

On account of the numbers involved and the address distribution which is nationwide, we would be most grateful for your help. We would be pleased to send on to you all the necessary materials - syringe, container, pre-paid return carton, etc. and also to contact the patient for you, if you feel you could assist us by collecting a 5 ml. clotted sample of blood.

A pre-paid reply letter and envelope is enclosed for your convenience.

Yours sincerely,

DR. J. H. COSSAR

Name and address of patient:

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref G.P.81B

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear Dr.

We have been investigating illness amongst Scottish holidaymakers travelling abroad for some years now. We are following up both symptomatic and asymptomatic people and carrying out microbiological studies on their serum in an effort to determine the incidence of contact with Legionnaires' Disease and to help place this disease in a true perspective in relation to foreign travel. In addition, we are trying to determine the immune status of holidaymakers in relation to polio and tetanus.

Recently there has been an outbreak of Typhoid at the Golden Sands Hotel, Malta. We have made contact with most of the Scottish holidaymakers who stayed at the hotel over last summer. One of your patients who stayed at the hotel has volunteered information in response to our inquiry, and has kindly agreed to donate a blood sample.

On account of the numbers involved and the address distribution which is nationwide, we would be most grateful for your help. We would be pleased to send on to you all the necessary materials - syringe, container, pre-paid return carton, etc. and also to contact the patient for you, if you feel you could assist us by collecting a 5 ml. clotted sample of blood.

A pre-paid reply letter and envelope is enclosed for your convenience.

Yours sincerely,

DR. J.H. COSSAR

Name and address of patient:

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref.
Our Ref LDS2/GP1

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear Dr.

An inquiry is being conducted by this Unit into illness contracted by persons while on holiday, business etc. overseas. In particular we are following up people with a history of respiratory symptoms in this context. One of your patients kindly volunteered information in response to the survey which is being carried out at Glasgow Airport.

From our initial studies, it is very worthwhile to carry out microbiological studies on the serum of particular groups of people who developed respiratory symptoms whilst abroad or shortly after their return.

Your patient, who falls into this category, has already kindly agreed to donate a blood sample.

We would be pleased to send on to you all the necessary materials, syringe, container, pre-paid return carton, etc., and also to contact the patient for you, if you feel you could assist us by collecting a 5 ml. clotted sample of blood.

A pre-paid reply letter and envelope is enclosed for your convenience.

Yours sincerely,

DR. J.H. COSSAR

Name and address of patient:

.....

.....

.....

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref G.P.2/81/C

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear Dr.

We have been investigating illness amongst Scottish holidaymakers travelling abroad for some years now. We are following up both symptomatic and asymptomatic people and carrying out microbiological studies on their serum in an effort to determine the incidence of contact with Legionnaires' Disease and to help place this disease in a true perspective in relation to foreign travel. In addition, we are trying to determine the immune status of holidaymakers in relation to polio and tetanus.

Recently there has been an outbreak of gastro-enteritis at the Rumanian resort of Mangalia. We have made contact with most of the Scottish holiday-makers who stayed there recently. One of your patients who stayed there has volunteered information in response to our inquiry, and has kindly agreed to donate a blood sample.

On account of the numbers involved and the address distribution which is nationwide, we would be most grateful for your help. We would be pleased to send on to you all the necessary materials - syringe, container, pre-paid return carton, etc. and also to contact the patient for you, if you feel you could assist us by collecting a 5 ml. clotted sample of blood.

A pre-paid reply letter and envelope is enclosed for your convenience.

Yours sincerely,

DR. J. H. COSSAR

Name and address of patient:

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041-946 7120
EXTENSION
Your Ref
Our Ref G. P. 2

RUCHILL HOSPITAL,
GLASGOW G20 9NB

I shall be *able/unable to assist you.

Signed (rubber stamp)

Your courtesy in replying is appreciated.

(* Please delete as appropriate)

Name and address of family doctor:

Name and address of patient:

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041-946 7120
EXTENSION
Your Ref
Our Ref G. P. 4.

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dr.

Dear Dr.

re: _____

_____

_____

_____

We are conducting a survey into illness associated with travel. In particular, we are testing for anti-bodies to the bacterium which causes Legionnaires Disease. Your patient responded to our survey inquiry and kindly volunteered to provide a blood sample.

I attach a copy of the results in case it is of use to you.

Thank you once again for your help.

Yours sincerely,

DR. J. H. COSSAR

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel. 041 946 7120
EXTENSION
Your Ref
Our Ref G.P.5

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear Dr.

You may remember that I wrote to you on .
We have found that a number of people who have had an illness with respiratory symptoms whilst abroad, or shortly after their return, have come into contact with Legionnaires' Disease.

I was hoping to make a convenient arrangement for one of your patients to attend the surgery so that a sample of venous blood could be collected. We would then test the sample for antibodies to Legionnaires' Disease.

Your patient has already volunteered information which suggests that it would be most worthwhile to carry out this test, and has also kindly agreed to donate a 5ml sample. I have enclosed copies of the original forms for your convenience in replying.

Please do not hesitate to contact me if I can be of further assistance in facilitating the collection of the blood sample.

Yours sincerely,

DR. J.H. COSSAR

Enc.

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041-946 7120
EXTENSION
Your Ref
Our Ref G. P. 6

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear Dr.

You may remember that recently you kindly agreed to assist in the collection of a blood sample from one of your patients. We would then test this sample for antibodies to Legionnaires' Disease.

From our records, I note that a sample has not been tested. I have written to your patient again asking him to make an appointment to see you.

I hope this will be of assistance to you.

Yours sincerely,

DR. J. H. COSSAR

Name and address of patient:

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref.
Our Ref G.P.7

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear Dr.

I have today received the test-kits for your patients which you have kindly returned to me.

I note that a blood sample has not been obtained. I shall be pleased to offer further assistance if this would be of help in obtaining a sample.

Please do not hesitate to contact me.

Yours sincerely,

DR. J. H. COSSAR

Name and Address of Patients:

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041-946 7120
EXTENSION
Your Ref
Our Ref G.P.11

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear Dr.

Please find enclosed one test-kit as requested. I have included a standard laboratory request card for convenience of documentation and identification.

I have returned a further request slip for future use.

Thank you for your interest in this study.

Yours sincerely,

DR. J.H. COSSAR

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041 946 7120
EXTENSION
Your Ref
Our Ref G.P.12.

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dear Dr.

Please find enclosed one test-kit as requested. I have included a standard laboratory request card for convenience of documentation and identification. Also enclosed is a further request slip for future use.

Once the test result comes through it will be passed on to you.

Thank you for your interest in this study.

Yours sincerely,

DR. J.H. COSSAR

COMMUNICABLE DISEASES (SCOTLAND) UNIT

Tel 041-946 7120
EXTENSION
Your Ref
Our Ref G. P. 14

RUCHILL HOSPITAL,
GLASGOW G20 9NB

Dr.

Dear Dr.

re. _____

_____

_____

_____

As you know, we are conducting a survey into illness associated with travel. In particular, we are testing for anti-bodies to Legionella pneumophila.

Please find enclosed a copy of the result for your patient.

Thank you once again for your help.

Yours sincerely,

DR. J.H. COSSAR

Missionary coding

NAME

A SERIAL NUMBER ☐☐☐☐

B SEX ☐

C MISSION FIELD ☐☐☐

D YEAR OF BIRTH ☐☐☐☐

E AGE AT DEATH ☐☐

F YEAR OF APPOINTMENT ☐☐☐☐

G YEARS OF SERVICE ☐☐

H RETIRED ON ACCOUNT OF ILL-HEALTH ☐

I SPECIFIC ILLNESS ☐☐

A range: 1-1500

B range: 0-7

C range: 100-600

D range: 1800-2000

E range: 0-99

F range: 1800-2000

G range: 0-99

H range: 0-5

I range: 0-16

B codes: 0 = not known/stated 1 = male ordained
2 = male not ordained 3 = female
4 = male doctor 5 = female doctor
6 = ordained male doctor 7 = female nurse

C codes: India (north west)
100 = Bombay 101 = Poona 114 = Hugli
121 = Punjab 123 = Chamba 125 = Jalna
126 = Nagpur 120 = Rajputana
India (north east)
111 = Calcutta 112 = Bengal 122 = Darjeeling
124 = Gujrat 127 = Sialkot 129 = Sikkim
130 = Kalimpong 132 = Santalia 133 = Doars
India (south)
110 = Madras
Africa (south)
200 = Emgwalia 201 = Blythswood 202 = Kaffraria
203 = Lovedale 204 = Natal 205 = Cape provinces
206 = Umsinga 207 = Impolweni 208 = Burnshill
209 = Cunningham 240 = Pirie 241 = Pondoland
Africa (central)
210 = Livingstonia 211 = Blantyre 231 = Nyasaland
233 = Domasi 234 = Lomwelland 230 = Kikuyu
232 = Tanganika 235 = Iringa
Africa (west)
220 = Calabar 221 = Gold Coast
Caribbean
300 = Jamaica
China
400 = Ichang 401 = Chefoo 402 = Tibet
Other
500 = New Hebrides 501 = Japan 600 = Arabia

H codes: (retirements due to ill health or other reason)

0 = not stated/known	1 = yes
2 = died in service	3 = married
4 = family illness	5 = accidental death

I codes: (specific illness)

1 = psychiatric	2 = kidney disease
3 = cholera	4 = malaria
5 = appendicitis	6 = pneumonia
7 = dysentery	8 = surgery
9 = typhoid	10 = sunstroke
11 = 5 + 6	12 = heart disease
13 = plague	14 = tuberculosis
15 = eyesight problem	16 = influenza

Appendix II

MYSTERY BUG FROM BENIDORM

DOCTORS in Glasgow think they've solved the four-year-old mystery of a killer infection known as the Benidorm bug.

In 1973 three Scots died of a pneumonia type disease after holidaying in Benidorm, Spain.

In June this year a woman died in Glasgow with a chest infection after holidaying in Benidorm.

In 1973 it was thought the fatal illness might have been caused by some local Spanish drink or medicine.

Despite tests, the real cause remained a mystery.

Glasgow Doctors' Discovery

The latest outbreak of the disease is in Columbus, Ohio, where one person died last week and another three are ill.

Doctors in America have described it as a severe form of pneumonia, which does not respond to normal treatment, and which can only be determined by blood tests.

In July last year, 29 Americans died after a conference.

Doctors could only say the symtoms were like pneumonia.

But in Glasgow, an infectious diseases specialist was driving home when he heard about the American deaths on his car radio.

It struck him the symtoms were very like those of the Scots who'd died.

It was enough to start a fresh investigation.

After the woman died in Glasgow, doctors found what's almost certainly the cause of all the mystery deaths.

A new kind of bug which has never been seen before —half bacteria and half virus.

Members of the medical team from Ruchill Hospital have been meeting planes at Glasgow Airport, handing out questionaires to people returning from holidays in Majorca and Spain.

The infectious diseases unit at Ruchill Hospital, Glasgow, would be happy to hear from anyone who's recently been on holiday in Spain and who suffered some sort of chest trouble afterwards.

RECORD VIEW

Damp misery

HEATSTROKE and sunstroke are NOT expected to be features of this week's weather.

So said BBC weatherman Ian McCaskill in his forecast last night. And, alas, there seems little chance he will be proved wrong.

The best the Glasgow-born met. man has been able to offer us so far this month has been a memorable forecast of "warm rain."

It's been the wettest July anyone can remember. But at least the medical world has been doing its best to keep our spirits up.

It has issued a stream of reports highlighting the dangers of too much sunshine.

- *A campaign was launched at Glasgow University alerting sunbathers to the risk of skin cancer.*
- *A team of London doctors warned that sunglasses can lead to blindness because they let through too many of the sun's rays.*
- *And now a Glasgow doctor has pointed out the health risks faced by Britons who go on holiday to Mediterranean sunspots.*

Temperatures throughout the Med yesterday were a mere 30 degrees higher than in Scotland.

The mere thought of it is enough to bring anyone out in a rash.

HOLIDAYS ARE A HEALTH RISK WARNS DOCTOR

HOLIDAYS abroad are bad for your health, a Scots doctor warns today.

For a survey showed that HALF of the Britons who go overseas become ill.

And Dr Jonathan Cossar found that people on package holidays are most at risk.

RECORD REPORTER

At best, they might have sore throats, or upset stomachs. But typhoid and polio are also a real danger.

The Glasgow G.P. carried out a 10-year study, and interviewed 4100 travellers before and after their holidays.

Writing in Doctor magazine, he reports that 75 per cent risked typhoid because they had no immunisation, and 25 per cent had no protection against polio.

Now he is urging travel agents and doctors to warn holidaymakers of the dangers — especially in Mediterranean countries.

Dr Cossar hopes that tour firms will include health warnings in their brochures.

He said: "I'm not a killjoy, and don't want to stop people enjoying their holidays. But there is cause for concern.

"There is a high rate of illness among people on package tours.

"This is because usually they are not experienced travellers.

"People in the 20 to 29 age group are also a high risk, because they let their hair down more — and suffer for it.

RISK

"When you go on holiday there is a sudden change of lifestyle. You drink more, over-eat, and have too much sun.

"Moderation is the way to enjoy a holiday."

Dr Cossar said that Mediterranean countries have a much higher incidence of typhoid and polio than Britain, and all travellers should ensure their immunisation against both diseases was up to date.

RECORD VIEW —Page Two

IBIZA BUG HITS SCOTS TOURISTS

AN increasing number of holidaymakers are returning from the Spanish island of Ibiza with respiratory illnesses similar to Legionnaires Disease, writes our medical correspondent.

Symptoms are 'flu-like, with fever, aches and pains, shivering, dry coughs, and shortness of breath—similar to the onset of Legionnaires Disease.

Last month, a 35-year-old Leeds man was diagnosed as having Legionnaires after a holiday on Ibiza.

Now The Sunday Post has discovered a number of Glasgow holidaymakers hit by a mystery bug.

One man, from Eaglesham, was in San Antonio, the Ibizan capital, when he developed a painful, chesty cough and fever.

Doctors first suspected mild Legionnaires Disease. They're awaiting results of a blood test.

Two English people, who met on holiday, have been off work with what they thought was 'flu.

Workmates Ronnie Semple, Tom Roseman, Ronnie Ferguson, and Derek Hutchinson, from Glasgow, have also recently returned from San Antonio with fevers and a dry cough.

Ronnie says he suffered worst while still in San Antonio. Scores of other Scots holidaymakers he met also went down with the bug.

Dr Tim Robotham of Leeds Public Health Laboratory, a leading expert on Legionnaires Disease, says as many as 75 per cent of people returning from holidays abroad suffer some form of illness.

"Evidence shows that every year a number of Britons holidaying in Ibiza suffer Legionnaires Disease."

The Communicable Disease (Scotland) Unit at Glasgow's Ruchill Hospital has monitored holiday illnesses closely since three Glaswegians died from Legionaires' Disease after a holiday in Benidorm several years ago.

Dr Jonathan Cosser says that in the last ten years they have interviewed 18,000 Scots returning from holidays abroad.

"Up to 40 per cent suffer some form of upset, with a significant percentage having respiratory illnesses."

Dr Cosser's department and the Scottish Health Education Council are so concerned they have now produced a warning leaflet for travel agents to distribute to their customers.

Holiday firms criticised

A group of Glasgow doctors has criticised four operators for failing to give adequate health advice to holiday-makers.

Writing in the *British Medical Journal*, the four members of the Communicable Diseases (Scotland) Unit, based at Rachill Hospital, say that between a third and a half of people who travel abroad fall ill, in some cases seriously.

"In view of the amount of illness associated with travel, it gives cause for concern that a third of the brochures we analysed carried no health advice for travellers."

The team studied 84 brochures and found that only seven gave details of specific immunisation recommendations or of particular environmental or climatic conditions.

THE LONDON EVENING
STANDARD
Wednesday, December 10, 1986 20p INCORPORATING THE EVENING NEWS

Brochures 'should show danger zones'

EVERY holiday brochure should carry advice on how best to avoid the dreaded Spanish tummy, a team of medical experts has recommended.

Analysis by the Scottish Communicable Diseases Unit at Ruchill Hospital, Glasgow, showed that 62 per cent of brochures containing European packages carried no health advice at all.

The group checked a total of 64 brochures. Of the 15 which contained worldwide holidays all offered some kind of medical guidance, but only four gave specific details of immunisation or particular environmental or climatic conditions.

Dr Jonathan Cossar, a research associate with the unit, believes there would be widespread benefit if travellers were advised how to minimise the risk of Spanish tummy.

His unit has already produced a booklet which has been distributed to leading operators. He believes such pamphlets should be inserted into brochures by operators.

His advice on avoiding the worst includes the following points:

- Drink the water only when you've checked it's safe—ask the rep if in doubt. And don't trust the ice.
- Try to stick to cooked foods. Wash it if it's uncooked and peel fruit.
- Take plenty of fluids to avoid dehydration and heat exhaustion.
- Don't over-expose to the sun, wear sunglasses and use protective cream.
- If in doubt about the milk, boil it.
- Avoid undercooked meat.

GENERAL PRACTITIONER

FRIDAY DECEMBER 12 1986

GP booklet may reduce travel risks

GPs and the travel industry should work with health educators to reduce the health risks of overseas travel, suggests a Scottish general practitioner, who has produced a holiday health checklist of his own.

Dr Jonathan Cossar, a Glasgow GP who holds a research post at the Communicable Diseases (Scotland) Unit, has studied the health problems of returning travellers. Over 40 per cent of 14,000 people interviewed at Glasgow airport reported medical problems during their holidays.

Dr Cossar explained: 'Most people had minor self-limiting illnesses such as a mild diarrhoeal upset. But others acquired more serious diseases such as malaria. We felt we wanted to do something to prevent these problems'.

Dr Cossar: 'We wanted to do something to prevent problems.'

So the CDU and Scottish Health Education Group produced a booklet for distribution to travellers. The glossy publication, *Holiday Information and Checklist*, is being distributed on a pilot basis to selected Scottish travel agents. It will be given free of charge to customers and is directed towards those taking package trips to the Mediterranean rather than those travelling to more exotic locations.

Dr Cossar believes that GPs should raise patients' awareness about holiday health. He suggests that they should offer specific advice when seeing patients for other problems, and should ensure that their patients' polio and tetanus immunisations are up to date.

A short report from the CDU in last week's *BMJ* claims that the travel industry could do more to promote the health of customers. Of 64 brochures analysed a third carried no health information, but all carried promotional information for health insurance.

Transcript from Interview on BBC Radio Scotland

Broadcast Monday, 8th December, 1986 at 5.40 p.m.

At least a third of all holidaymakers who go abroad fall ill, in some cases seriously. A group of Glasgow doctors have now produced their own health check list which they hope the Travel Trade will distribute to customers. The doctors all connected with the Communicable Diseases Unit at Glasgow's Ruchill Hospital polled more than 14,000 travellers from Glasgow Airport over ten years and they are critical of the travel trade for providing insufficient advice. I asked Dr. Jonathan Cossar,

Q. What sort of ailments were being suffered?

JHC. They were predominently of a mild nature, the usual tummy upset or travellers' diarrhoea but within that, there were more serious illnesses recorded and it is the scale of the problem and the fact that there can be more serious aspects to it that gives cause for looking at the adequacy of pre-travel health advice.

Q. What makes you believe that people simply aren't getting the advice they need?

JHC. I think the fact that many people do contract, for example, malaria looking at a more serious problem, and that this is an increasing trend - up to 2000 cases last year, would suggest that people are not being adequately informed both of the major problems and I think also of the minor ones is a follow to that.

Q. Maybe they are simply not paying attention? I mean when your holiday details come you are looking at your travel ticket making sure that it is for the right date, that you have got the correct accommodation in your hotels, you have got your luggage labels to worry about. Do you think that people are perhaps not paying attention or missing the information that is available?

JHC/

JHC. No. I think, whilst that can be a factor, I don't think the information currently available is either being presented or made available in the correct format, and I feel that there is obviously area for improvement.

Q. So you have put out a small document? What led to its current format?

JHC. I think to try and give a uniformity of advice that would be readily available to the traveller, ideally through the travel agents that most people contact prior to going, to make it a convenient document - the size of an airline ticket, and to make it an attractive document that is colourful and would stand up to the packaging of travel holiday brochures. Something, also, that would encourage people to read it and not feel inhibited with regard to seeking further advice or indeed going away on holiday. We are not here to affect the travel trade's market in any way.

Q. Are you not in danger of frightening people from going abroad?

JHC. No. We look at this from a very positive view point. We think everybody is a winner in this situation. That the consumer - the traveller, is going to get the most out of their holiday, secondly, we feel that the travel trade have a vested interest in ensuring the well-being of their clients who will, therefore, return to them and come again for another holiday and recommend the holiday to their friends. Thirdly, we see this as being of benefit to the health service back home that people won't be returning needing to call on the resources of the health service due to holiday illnesses in the same way.

Q. In fact, at certain times of year are G.P.s being overloaded?

F JHC/

JHC. I don't think I would go so far as to say overloaded but I feel that there is an increasing pattern of people returning with upsets following holidays abroad, particularly as they are going to travel further afield to the areas where there are greater hazards.

TRANSCRIPT OF INTERVIEW ON BBC RADIO SCOTLAND
WITH GERRY DAVISON, 12th JUNE, 1987
THE JIMMY MACK PROGRAMME

G.D. Let's start off by thinking about summer health. This is the time of year when many people are looking forward to or planning a holiday. Whatever or wherever. near or far, can be a very important break which will charge the batteries and allow for a well earned rest. Of course a growing number of people each year have their eyes set on the sun and are ready to set off for foreign parts, but whether it's abroad or within our own shores what are often disregarded or at least not placed highly enough on the planning list are the summer health hazards, whether it's an insect bite or hay fever, mediterranean tummy upset or a tropical disease, well my first guest this morning is Dr. Jonathan Cossar and within the next few minutes I am going to ask him to offer us some advice to help try to avoid what could be a holiday disaster. Now if you have a health query about the holiday period that you think we might be able to help you with, give us a call. The number to ring in is 041 if you are outside Glasgow 338 6161.

Dr. Cossar good morning to you.

J.H.C. Good morning

G.D. We tend to think of winter as the time for most people being ill, but is summer a particularly bad season too?

J.H.C. In general what you have said is quite true, but clearly when one ups and away on holiday perhaps to a part of the world where there are quite different climatic conditions or cultural differences to the home country then there can be a health hazard there and it's good advice to make some advance planning so that you can enjoy the holiday and minimise the chances of something like this spoiling it.

G.D. Right. Let's think in terms of going abroad to a country we haven't been to before. What are the general principles?

J.H.C. Well I think the key is to plan well ahead, to understand what local conditions might prevail in terms of climate and also if there may be some special precautions, e.g. how good is your pre-existing health, if you perhaps have a tendency to a heart disease or diabetes then you should plan to take that into account in your holiday destination, and to perhaps consult your doctor before travelling so that he can give you the right advice in relation to anything you should be doing when you get there..

G.D. Assuming that you are going to one of the more popular holiday venues abroad are you likely to need special inoculation or vaccination?

J.H.C. In general, for the commonest/visited destinations such as the mediterranean, Spain and so forth there aren't so many constraints and precautions that need to be taken but clearly the further afield then this does become more pertinent. There are quite a range of immunisations and quite a lot of advice with regard to say anti-malarial tablets that one should go to the local doctor and check out before travelling there.

G.D. We are so used to a good clean and pure water supply in this country , many people are very worried about drinking tap water abroad.

J.H.C. Yes. I think unless you are confident from an informed source such as your tour guide that the water is safe where you are staying, it is advisable to only drink bottled water of a recognised brand. That is by far the safest thing to do and it should be remembered that water includes the ice in your drink and unless you know that the ice has been prepared from that same safe source then best to do without because it can also lead to water-borne problems.

G.D. You can buy water purifying tablets. What is your opinion about those.

J.H.C. Yes I think these are available and if the instructions are followed as per the manufacturers advice, they should be capable of ensuring that the water that you sterilise is safe to take, although the taste might not be quite to the palate, it should be a safe supply.

G.D. The other thing of course, that other people worry about going abroad is having upset tummies,either simply because of the change of diet or because the food particularly upsets them. How can you avoid an upset tummy and if you get one what can you do about it?

J.H.C. Well I think to minimise this, one would try and exercise dietary caution, particularly in the first few days of the holiday not to try all the exotic foods available until you have aclimatised and secondly to remember that food that is uncooked clearly has the potential to transmit infection that well cooked food doesn't have and so the same constraints in regard to water would apply to uncooked foods, fruits, vegetables, perhaps a sort of rule of thumb maybe it's a little extreme, but it's an easy one to remember, wash it, peel it, or forget it and that is quite a good way of trying to judge what is safe to take and what's not safe to take.

G.D. Should you take anything with you in case you get an upset tummy?

J.H.C. Yes, I think it is good planning to have perhaps a simple first aid kit, not only running to sticking plaster, antiseptic cream, calomine lotion for sunburn, etc. but specifically for the likelihood of a tummy upset, one can take some simple anti-diarrhoeal tablets or even better still there are little sachets readily available in the chemist called "oral rehydration salts" and these contain some essential nutrients and electrolytes such that if you are getting a bit dehydrated due to a bout of diarrhoea then these are made up and taken freely with water. It does help to keep the body in balance and help you cope readily with the problem.

G.D. Despite all of that, what if you need to consult the doctor abroad, how much of a problem is that going to be?

J.H.C. Well I think in the main tourist areas, this is something well catered for usually via your local travel agent, but it is well to remember again in the advance planning stage, that not all countries have reciprocal health care agreements with the United Kingdom and you can check this out by getting leaflet SA30 from your local DHSS office and if these conditions do not apply then holiday insurance is a good safety measure and means that you won't have any financial embarrassments or difficulties in that direction.

G.D. Dr. Cossar what about people who are holidaying in this country? You can ruin a holiday here just as easily as you can in the mediterranean .

J.H.C. Yes I am sure that's true though not quite the same difficulties with the climatic extreme or tendency to travellers diarrhoea I'm glad to say, but obviously one runs the whole gambit of change of environment perhaps the exacerbation of a hay fever tendency if you are moving to a rural area from a town area, that kind of thing.

G.D. Hay fever is one of the commonest isn't it?

J.H.C. Certainly hay fever can be quite a problem in that context, yes.

G.D. What about bites and stings?

J.H.C. Bites and stings. Well clearly it's difficult to avoid those but I think if one were to use the normal routine as at home for such incidents, namely carry the small first aid kit with some antiseptic cream, perhaps some antihistamine tablets if you are aware of bad reactions to bites, you come out in a more severe crop of spots and lumps, etc., then some antihistamine tablets, again available from either your doctor or your local chemist, are useful for counteracting this predisposition to react badly to bites, etc.

G.D. What is your advice to the hay fever sufferer returning to him or her, because their life can be made pretty miserable.

J.H.C. Well there are good preparations now available one could consult the doctor about and these would generally fall into three areas. The first would be antihistamine tablets and the newer ones are very good in that they are often taken just once or twice a day which is easy to remember. They also have less incidence of drowsiness which is one of the problems of some antihistamines so that's a useful first line. For the people who are more affected there are excellent nasal sprays that help to calm down the lining passages of the nose when the pollen floats in and tries to stimulate the reaction and also they can combine a specific agent that occupies what are called the receptor sites in the nasal lining cells such that when the pollen does come along it can't get in to stimulate the reaction. So those are two things which can be used and there are also eye drops containing the same preparation which help to counteract the watery, itchy painful eyes that can be associated. So those are three first line treatments the doctor can advise on and keep you right.

G.D. One of the earliest problems about going on holiday is actually the getting there. Now that in itself can be a traumatic experience. What would you say to people who tell you that they plan to fill the car with the luggage and the children anddrive all night to the ferry.

J.H.C. Yes I think that is a good point both for travelling in this country and for travelling further afield, try to make as much contingency planning that you are not going to overload yourself either in physical terms of too much luggage, rushing at the last minute, likely to miss connections. That can't make you relaxed at the outset and is obviously more prone to cause a mishap on the way, perhaps an accident and miss a connection and so forth. I think a good deal of planning out and careful thought so that you can make a timely start to the holiday and to start in a relaxed frame of mine not in one that you are already harrassed and stressed before you start. That can't be good.

G.D. Of course we started with the assumption that going on holiday is good for you but in fact leaving your familiar surroundings and going to foreign parts and mixing with strange people, it can be a traumatic experience . Holidays might upset people, do they?

J.H.C. Yes that's certainly a possibility. I think there to plan what you find relaxing, what sort of things you enjoy doing, a hobby, a sport, a special interest, rather than perhaps launching into the unknown because you think it might be a good idea and then finding out once you have got there it's the last place you want to be — that it is stressing you because you can't get peace to do the things that you enjoy doing. Again it comes into the area of planning , a good travel agent, taking into account your own special interests and what sort of things you are looking for, should help to avoid that situation.

G.D. Good advice. Dr. Jonathan Cossar thank you very much indeed for joining us this morning, and indeed to everyone who is going off on holiday; take care and have a good time.

Monday, 30th April, 1984

12 noon	Registration and Sherry	
1.00 p.m.	LUNCH	
CHAIRMAN:	Dr. D. Reid	
2.00 p.m.	Announcements	
2.10 p.m.	Introduction	Dr. J.J.A. Reid
2.25 p.m.	Infection through the ages	Dr. D. Dow
	Discussion	
3.15 p.m.	TEA	
3.40 p.m.	Infection and Travel	Dr. J.H.Cossar
4.00 p.m.	Advice for Travellers	Dr. E. Walker
	Discussion - opened by	Dr. G. Williams

Thursday, 1st May, 1986

CHAIR:	Dr. T.S. Wilson	
09.30 a.m.	Some Public Health aspects of viruses and cancer	Dr. C.R. Gillis
10.05 a.m.	Biological aspects of viruses and cancer	Dr. J. Paul
10.40 a.m.	Discussion	
11.00 a.m.	COFFEE	
CHAIR:	Miss L.J. Taylor	
11.30 a.m.	Hospital Infection: the surgeon's view	Mr. W.R. Murray
11.50 a.m.	Hospital Infection: problems in specialist units	Dr. A.D. Walker
12.10 p.m.	Hospital Infection: the nurse's view	Mrs. J. Wood
12.30 p.m.	Discussion - opened by	Mrs. S. Lightbody
1.00 p.m.	LUNCH	
CHAIR:	Dr. A.D. McIntyre	
2.00 p.m.	Prevention of travel hazards: catering	Mr. J. McPherson
2.25 p.m.	Prevention of travel hazards: immunisation and chemoprophylaxis	Dr. E. Walker
2.50 p.m.	Travellers' problems	Dr. J.H. Cossar
3.15 p.m.	Discussion	
3.30 p.m.	TEA	

The afternoon session will finish early to-day to allow anyone who wishes to go into Glasgow

Friday, 1st May, 1987

CHAIR:	Professor N.R. Grist	
09.30 a.m.	Travel and illness : the size of the problem	Dr. J.H. Cossar
10.00 a.m.	Travel and illness : the clinical problem	Dr. J. Gray
10.30 a.m.	Discussion	
10.45 a.m.	COFFEE	
11.15 a.m.	Travel and illness : problems with recreational water	Dr. J.A.N. Emslie
11.45 a.m.	Travel and illness: information systems	Dr. E. Walker
12.15 p.m.	Discussion	
12.30 p.m.	Closing remarks	
	SHERRY and LUNCH	

RECENT DEVELOPMENTS

ON

PROBLEMS ASSOCIATED WITH TRAVEL

to be held at

RUCHILL HOSPITAL, GLASGOW

on 11th February, 1987

CHAIRMAN : Dr D Reid

2.00 pm	Introduction	Dr D Reid
2.10	Infections of the Gastrointestinal Tract and Travellers Diarrhoea - prevention, recognition and treatment	Dr W C Love
2.45	Sexually transmitted diseases acquired abroad	Dr J Sommerville
3.20	Malaria prevention	Dr E Walker
3.40	TEA	

CHAIRMAN : Professor K A Buchan

4.00	Some interesting cases of imported infection	Various contributors
4.40	Travel Information "Systems"	Dr J H Cossar Dr E Walker
	Summing up	Professor K A Buchan

Section 63 approval has been sought.

Application to attend the course should be made on the attached form.

To: Mrs Emily Watt
Postgraduate Medical Education Office
University of Glasgow, Glasgow, G12 8QQ.

RECENT DEVELOPMENTS ON PROBLEMS ASSOCIATED WITH TRAVEL

11th February, 1987 - Ruchill Hospital, Glasgow

I wish to attend the above course.

SURNAME (BLOCK LETTERS PLEASE) .....

FIRST NAME (S) .....

ADDRESS .....

TEL NO (Day-time) ..... Health Board Cypher and No.....

DATE ..... SIGNATURE.....

RECENT DEVELOPMENTS

ON

PROBLEMS ASSOCIATED WITH TRAVEL

to be held at

RUCHILL HOSPITAL, GLASGOW

on 20th May 1987

1.45 - 5.00 pm

CHAIRMAN : Dr D Reid

Introduction	Dr D Reid
Travel Information "Systems"	Dr J H Cossar
Infections of the Gastrointestinal Tract and Travellers' Diarrhoea - prevention, recognition and treatment	Dr W C Love
Sexually Transmitted Diseases acquired abroad	Dr J Sommerville
Malaria Prevention	Dr E Walker
Some interesting cases of imported infection	Various contributors

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To: Mrs Emily Watt
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University of Glasgow, Glasgow, G12 8QQ

RECENT DEVELOPMENTS ON PROBLEMS ASSOCIATED WITH TRAVEL

20th May 1987 - Ruchill Hospital, Glasgow

I wish to attend the above course

SURNAME (BLOCK LETTERS PLEASE) .....

FIRST NAME(S) .....

ADDRESS .....

TEL NO. (Day-time) ..... HEALTH BOARD CYPHER and NO .....

DATE ..... SIGNATURE .....

Tuesday, 24th June, 1986

CHAIR : Mr P W Collier

9.15 am	Foodborne Infections and Intoxications	Dr R J Gilbert
10.30 am	**Discussion**	
11.00 am	Coffee	
11.20 am	Air-line Catering	Mr J McPherson
12 noon	Travel Related Illness	Dr J H Cossar
12.30 pm	**Discussion**	
1.00 pm	Lunch	

CHAIR : Dr A F MacLeod

2.00 pm	Laboratory Aspects of Investigation	Dr F J Bone
2.30 pm	Community Aspects of Investigation	Dr I G Jones
3.00 pm	**Discussion**	
3.15 pm	Tea	
3.35 pm	Campylobacter	Mr T G Scott
4.05 pm	Water Related Health Risks	Mr J Taylor
4.40 pm	**Discussion**	
5.00 pm	Close	

Wednesday, 1st July, 1987

CHAIR : Mr T G Scott

9.15 am	Foodborne Infections and Intoxications	Dr R J Gilbert
10.30 am	**Discussion**	
11.00 am	Coffee	
11.20 am	Gastro-intestinal Infections	Dr W C Love
11.55 am	Campylobacter	Mr C J Sibbald
12.30 pm	**Discussion**	
1.00 pm	Lunch	

CHAIR : Dr A F MacLeod

2.00 pm	Travel Related Illness	Dr J H Cossar
2.30 pm	Imported Infections	Dr G R Williams
3.00 pm	**Discussion**	
3.15 pm	Tea	
3.35 pm	Water Related Health Risks	Dr C Benton
4.05 pm	Giardiasis and Cryptosporidiosis	Dr R W A Girdwood
4.40 pm	**Discussion**	
5.00 pm	Close	

The Journal of Infection

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Infection and travel: the experience of package tourists and other travellers

D. Reid,* R. D. Dewar,* R. J. Fallon,† J. H. Cossar* and N. R. Grist‡

**Communicable Diseases (Scotland) Unit,*
†Department of Laboratory Medicine,
‡University Department of Infectious Diseases,
Ruchill Hospital, Glasgow, G20 9NB

Summary

In a survey of 2211 travellers returning to the United Kingdom 43 per cent stated that they had been ill during their stay abroad or shortly after their return. Package holidaymakers reported most illness and university personnel least. Alimentary disorders accounted for the majority of illnesses, but respiratory symptoms were recorded by 16 per cent of those who were ill. None of those tested serologically had evidence of Legionnaires' disease. The highest proportion of ill travellers had been to Tunisia, Morocco and Spain. Most of the travellers attributed their illnesses to problems associated with food, drink or excessive sunbathing.

Further efforts should be made to ensure that travellers are aware of health precautions whilst abroad.

Introduction

In recent times there has been a startling increase in the number of persons travelling around the world. The major reason for this has been the remarkable availability of air transport—in 1948 only four million persons used the world's airlines; by 1966 this figure had reached 46 million (Dorolle, 1968) and by 1975 over 400 million travellers were recorded (*Practitioner*, 1975). Another relatively new phenomenon has been the advent of the package tour; this recent method of facilitating transport and accommodation arrangements has encouraged large numbers of people to travel overseas.

This expansion in the number of overseas travellers has brought in its train a worrying increase in the frequency of illness contracted abroad (*British Medical Journal*, 1971). Moreover, the speed of travel is now much greater and this has increased the risk of travellers returning to the United Kingdom during the early incubation period of an infection with the possibility that, by the time clinical features become apparent, those infected forget to mention that they had been abroad.

In 1973, the occurrence of an outbreak of Legionnaires' disease amongst members of a package tour who had stayed in Benidorm, Spain (Reid, Grist

0163–4453/80/040365 + 06 $01·00/0

and Najera, 1978) gave an insight into some of the hazards encountered by package tourists. Because it became apparent that these travellers experienced considerable morbidity we extended these studies to other groups in order to gauge the illness risks encountered overseas.

Subjects and methods

Travellers were selected in order to obtain groups of both 'experienced' and 'inexperienced' tourists. The following personnel who had recently travelled or were about to travel were approached:

(i) Passengers on overseas flights returning to Glasgow Airport.
(ii) Administrative and clerical staff (Health Service employees and Civil Servants).
(iii) University staff.
(iv) Nursing staff.
(v) Medical staff and medical students.
(vi) Teachers.

The returning passengers at Glasgow airport had all been on package tours between May and November 1977. They were contacted at the airport by a team of investigators from the Communicable Diseases (Scotland) Unit and each traveller was given a questionnaire requesting details of age, sex, employment, country, town and hotel visited abroad, illness experienced during or shortly after returning from holiday and any factors to which they might attribute their illness. A stamped addressed envelope was given to each traveller so that the completed questionnaire could be returned to the Unit for analysis.

The administrative and clerical staff, nurses, doctors, and medical students were sought at their place of work. University staff were conveniently located via a travel agent who usually arranged their flights. These groups completed and returned travel questionnaires. Blood samples were obtained from 72 of the travellers on package tours who reported respiratory symptoms in order to ascertain if they had serological evidence of Legionnaires' Disease. They were examined as described by Fallon and Abraham (1979).

Results

Questionnaires were returned from 2211 travellers. Most (1961–89 per cent) were completed by the returning package holidaymakers who had received them at Glasgow airport on their return from holiday. Administrative and clerical staff returned 83 questionnaires (4 per cent) and the University personnel 72 (3 per cent); the remaining 95 questionnaires (4 per cent) were obtained from nurses (57), medical staff and students (30), teachers (7) and an accountant (Table I).

Table I *Travellers and reports of illness*

Group	Ill	Not ill
Package holidaymakers	874 (45%)	1087 (55%)
Administrative and clerical staff	25 (30%)	59 (70%)
University staff	17 (24%)	55 (76%)
Nurses	19 (33%)	38 (67%)
Medical staff and students	12 (40%)	18 (60%)
Teachers	3 (43%)	4 (57%)
Totals	950 (43%)	1261 (57%)

Table II *Illness experienced by travellers according to place visited*

Place	Ill	Not ill
Spain	330 (53%)	289 (47%)
Majorca	216 (38%)	347 (62%)
Tenerife	186 (34%)	363 (66%)
Tunisia	88 (83%)	18 (17%)
Ibiza	36 (51%)	36 (49%)
Greece	31 (48%)	34 (52%)
Minorca	11 (42%)	15 (58%)
France	6 (27%)	16 (73%)
Italy	3 (21%)	11 (79%)
U.S.A.	3 (27%)	8 (73%)
Canada	1 (10%)	9 (90%)
Switzerland	1 (14%)	6 (86%)
Morocco	5 (83%)	1 (17%)
Other	33 (23%)	109 (77%)

Those surveyed had visited 45 places (Table II). Spain was the most frequently visited (619 visitors; 28 per cent) followed by Majorca (563; 25 per cent), Tenerife (549; 25 per cent), Tunisia (106; 5 per cent), Ibiza (71; 3 per cent) and Greece (65; 3 per cent). Package holidaymakers accounted for 96 per cent of the travellers to Spain, Majorca, Minorca, Ibiza, Tenerife, Tunisia and Greece, whereas the other groups accounted for 82 per cent of the travellers to the remaining locations. The most represented age group was that between 21 and 30 years (613; 28 per cent) (Table III); 54 (2 per cent) were under 10 years of age and 165 (7 per cent) were over 60 years of age.

Nine hundred and fifty (43 per cent) stated that they had been ill either during their holiday or shortly after their return (Table I). Those in the 21–30-year age group were most affected by illness—55 per cent reporting symptoms. The least affected group was that aged between 51 and 60 years, 26 per cent being affected. Alimentary symptoms (usually vomiting and diarrhoea) were the most frequently encountered (80 per cent of all illnesses) and respiratory illness accounted for 6 per cent; 10 per cent of ill travellers had both respiratory and alimentary symptoms (Table III).

Table III *Age of travellers and type of illness*

Age group (years)	Type of illness: Alimentary	Respiratory	Alimentary and respiratory	Other	Alimentary and other	Respiratory and other	Not ill	Totals
<10	19	1	1	1	1	—	31	54
10–20	131	13	30	13	5	—	189	381
21–30	261	21	31	20	4	2	274	613
31–40	88	4	5	5	—	—	130	232
41–50	79	9	8	14	—	—	180	290
51–60	60	5	10	6	—	—	231	312
>60	40	—	3	2	2	1	117	165
Not known	39	5	6	4	—	1	109	164

Table IV *Category of travellers and type of illness*

Category	Type of illness: Alimentary	Respiratory	Alimentary and respiratory	Other	Alimentary and other	Respiratory and other	Not ill	Totals
Package holidaymakers	675	54	84	51	7	3	1087	1961
Administrative and clerical staff	15	1	3	4	1	1	59	84
University staff	10	3	1	3	—	—	55	72
Nurses	10	—	4	2	3	—	38	57
Medical staff and students	4	—	2	5	1	—	18	30
Teachers	3	—	—	—	—	—	4	7

Table V *Factors attributed by the travellers relating to their illness*

Factors	Group: Package holidaymakers	Others
Food problem	332	20
Drink problem*	55	6
Excess sunbathing	50	4
Food and drink problem	182	14
Food problem and excess sunbathing	36	2
Drink problem and excess sunbathing	15	2
Food problem, drink problem and excess sunbathing	24	1
Other	75	16
Not known	105	11

*A wide variety of fluids were implicated including alcohol and suspected water supplies

The group most affected was that sampled at the airport (i.e. the returning package holidaymakers): 45 per cent reported illness. Those least affected were the university personnel, 24 per cent reporting illness (Tables I and IV). Problems associated with food were blamed by 352 (37 per cent) of the travellers for their illnesses (Table V); 6 per cent associated their illness with drinking problems and 6 per cent with excessive sunbathing. Twenty-nine per cent mentioned combinations of these factors; 11 per cent other causes and 12 per cent did not know.

Of the 72 serum samples examined for evidence of Legionnaires' Disease none indicated recent infection although six had a titre of 64. These low titres may well have been non-specific reactions (Fallon and Abraham, 1979).

Discussion

Although it is possible that those tourists who had been ill might be more inclined to return questionnaires than those who remained healthy, nevertheless the study revealed that a surprising number of tourists become ill during or shortly after their visits abroad. Although the numbers are small tourists to Tunisia and Morocco appeared to be the least likely to go unscathed—83 per cent becoming ill after a visit to these countries. It appeared that the risk of illness became greater the further south one travelled from the United Kingdom.

Perhaps not surprisingly, alimentary symptoms predominated. This may have been due not only to infective agents but also to dietary indiscretion and altered intestinal flora. From the previous study (Reid, Grist and Najera, 1978) it was apparent that many tourists perhaps took too much advantage of comparatively inexpensive alcoholic drinks or of the availability of food to which they were unused. Respiratory illness either as a sole feature or in association with alimentary or other symptoms occurred in 16 per cent of the tourists. The occurrence of respiratory symptoms is harder to understand but the congregation of travellers into aeroplanes and hotels may be a contributory factor.

It was noteworthy that 15 per cent more illness was recorded by the package holidaymakers compared to the other groups sampled. Most of the package tours investigated had gone to Mediterranean locations where perhaps the risk of infection is higher. It may also be, however, that those on such tours were less experienced travellers and perhaps took greater health risks, e.g. over-indulgence of food, drink and sunshine. There would appear to be a need for better methods of disseminating health education to travellers to try and minimise these hazards.

(We thank Mrs N. Wilson, Mrs I. Tomison, Mrs E. Carragher, Mrs C. Platt, Mrs L. Steele, Miss N. Lister, Miss L. King, and Mr R. Y. Anderson for help with the survey and for secretarial assistance; Mr H. N. Battersby and the staff at Glasgow airport for their valuable support; Mr W. H. Abraham for the serological tests for Legionnaires'

Disease; and to all those travellers who gave their time to let us know of their experiences. This investigation was supported in part by the Chief Scientist Organization, Scottish Home and Health Department, Edinburgh.)

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about the risk from polio when travellers go to infected countries without being fully immunised.

ELEANOR J BELL
N R GRIST

Regional Virus Laboratory

J H GOSSAR
R D DEWAR
D REID

Communicable Diseases (Scotland) Unit,
Ruchill Hospital,
Glasgow G20 9NB

Poliomyelitis worldwide

SIR,—Dr H V Wyatt is right to draw attention (6 December, p 1564) to the problem of increased numbers of cases of poliomyelitis in several countries overseas and the possibility of travellers from the United Kingdom becoming infected. Since 1977 we have surveyed a group of airline passengers who have returned from abroad. Blood samples obtained shortly after their return showed that of 64 tested 8 (12·5%) did not have any demonstrable antibody to poliovirus types 1 or 3 (the most pathogenic types). Low titres (8) were detected in a further 10 travellers.

It would appear that because of the greatly diminished numbers of cases of polio occurring in the United Kingdom during the past few years we may have been lulled into a mistaken sense of security as regards this disease. There is a need for further education of the public and an increased awareness by travel agents

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Reprint

Legionella pneumophila in tourists

J. H. COSSAR, M.B., CH.B.
General Practitioner
Research Assistant, University Department of Infectious Diseases and the Communicable Diseases (Scotland) Unit, Ruchill Hospital, Glasgow

R. D. DEWAR
Senior Administrative Assistant, Communicable Diseases (Scotland) Unit

R. J. FALLON, B.SC., M.D., F.R.C.PATH., F.R.C.P. (GLAS.)
Consultant in Laboratory Medicine, Ruchill Hospital, Glasgow

N. R. GRIST, B.SC., F.R.C.PATH., F.R.C.P.(ED.), M.R.C.P. (GLAS.)
Professor of Infectious Diseases, University of Glasgow

D. REID, M.D., M.R.C.P. (GLAS.), F.F.C.M., D.P.H.
Consultant Epidemiologist, Communicable Diseases (Scotland) Unit

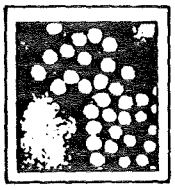


FIG. 1. (below left)—Gram's stain of Legionella pneumophila

FIG. 2. (below right)—Indirect fluorescent antibody stain, using positive patient's serum, of Legionella pneumophila

THE growth of package holidays has much increased the number of people travelling abroad. The rise in the number of air travellers—46 million in 1966 (Dorolle, 1968) to 400 million a decade later—means that more people are experiencing, many for the first time, an unfamiliar climate and diet, an experience not without the risk of exposure to unfamiliar infectious agents and possible illness. In a recent study, 43% of 2211 travellers returning to the United Kingdom reported that they were ill either abroad or shortly after return (Reid *et al.*, 1980).

Following an outbreak of legionnaires' disease among a group of package holidaymakers who stayed in Benidorm, Spain (Reid *et al.*, 1978), some publicity was generated in the media. In particular, an article appeared in a Sunday newspaper on September 11, 1977, entitled 'The Benidorm Bug', and a television current affairs programme on December 13, 1977, dealt with legionnaires' disease. This publicity stimulated considerable public interest, particularly among holidaymakers who had stayed in Benidorm and had been ill; these tourists were subsequently followed up at the Communicable Diseases (Scotland) Unit (CDSU).

Subjects and methods

Contact was initiated by tourists who telephoned or wrote to the newspaper, the television company or the CDSU. Those who volunteered information in response to the publicity were issued with a questionnaire requesting details of age, sex, employment, country, town and hotel visited abroad, illness experienced during or shortly after returning from holiday and any factors to which they might attribute their illness.

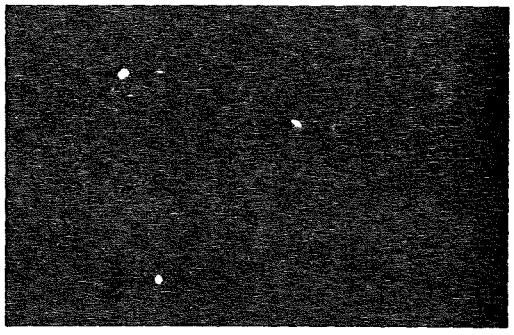


TABLE I —Distribution of tourists by age and type of illness (number (%) of cases)

Age group (years)	Respiratory alone	Respiratory and alimentary	Respiratory and other	Alimentary alone	Alimentary and other	Other	No illness	Total (%)
0-9	1	0	0	0	0	0	3	4 (1)
10-19	9	12	2	3	3	7	12	48 (13)
20-29	13	11	9	8	5	11	13	70 (19)
30-39	5	4	5	2	1	8	11	36 (10)
40-49	11	17	6	8	3	14	17	76 (20)
50-59	16	13	6	10	1	13	17	76 (20)
60+	8	13	4	4	3	14	7	53 (14)
Not known	3	0	0	2	1	2	4	12 (3)
Total	66	70	32	37	17	69	84	375

Those replying were invited to volunteer a 5ml sample of venous blood. There was an excellent response to this request and samples were collected at Ruchill Hospital, at tourists' places of work and homes, and by family doctors, particularly for those who were far away from Glasgow. At this stage all were asked about their smoking habits.

To help the family doctor, it was first established that the patient was willing to donate a blood sample, then, after the family doctor had agreed to collect the blood sample, a 'test-kit', consisting of a syringe and needle, a collection bottle and mediswab, was dispatched in a prepaid return carton. At the same time, the tourist was asked to make a mutually convenient appointment to attend his family doctor for venepuncture. This system worked well with no apparent problems, and with superb co-operation by the family doctors.

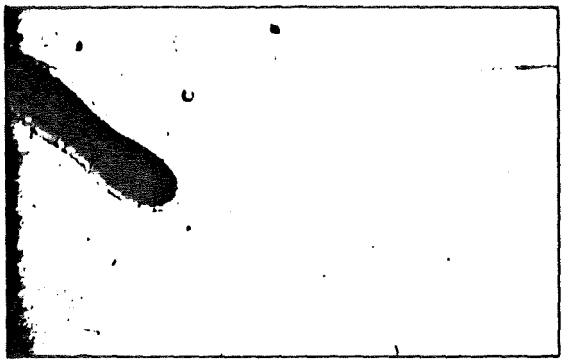
The blood samples obtained were divided: the first portion was examined for serological evidence of legionnaires' disease, as described by Fallon and Abraham (1979) at the Department of Laboratory Medicine, Ruchill Hospital, and the second at the Center for Disease Control, Atlanta, USA. In the event of discrepancy between the two results, the samples at Ruchill Hospital were re-examined; if the discrepancy in titres remained, the lower of the two laboratory results was accepted.

Results

Three hundred-and-seventy-five tourists, 151 males (40%) and 224 females (60%), completed and returned the questionnaires. Most had visited Spain (364 : 97%), 166 (44%) at Benidorm. Other countries had been visited by only 11 (3%). Illness was reported by 291 (78%) of tourists. The age distribution of the tourists is shown in table I. Most were adults, 14% over 60 years; only 1% were under ten years. Excluding the very few under ten years, the reporting of symptoms by age group ranged from 69% in the 30-39 age group to 87% in those over 60. Respiratory symptoms alone or in combination with alimentary or other symptoms were the most frequently reported (168 : 45%). The next most frequently reported were alimentary, alone or combined with other conditions (124 : 33%). Vague

TABLE II.—Distribution of tourists by country and factors to which they attributed their illness (number (%) of cases)

Factors	Country Spain (Benidorm)	Spain (other than Benidorm)	Other countries	Total (%)
Food	10	8	0	18 (6)
Drink	5	4	2	11 (4)
Excessive sunbathing	7	10	1	18 (6)
Food and drink	5	10	0	15 (5)
Food and excessive sunbathing	0	2	0	2 (1)
Drink and excessive sunbathing	3	1	0	4 (1)
Food, drink and excessive sunbathing	6	3	0	9 (3)
Other	3	7	0	10 (3)
Not known	91	109	4	204 (70)
Total	130	154	7	291



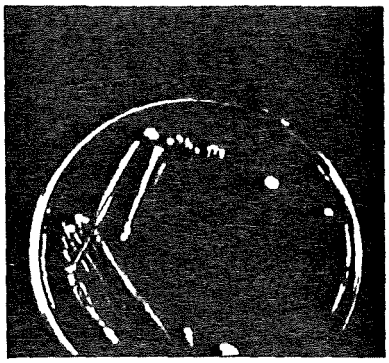


FIG. 3. (above left)—Electron micrograph of Legionella pneumophila *(× 5600)*

*FIG. 4. (above right)—*Legionella pneumophila *culture on charcoal-yeast extract agar*

symptoms such as fever, headache, dizziness, accounted for 69 illnesses (18.5%).

Factors blamed for illness (table II) included food alone (18:6%), or with other factors (26:9%), sunbathing alone (18:6%), or with other factors (15:5%), and drink alone (11:4%), or with other factors (28:10%). Most (204:70%) did not blame any particular factor. The pattern of illness and of suggested causes was similar irrespective of the holiday destination.

Of the 174 serum samples examined for antibodies to *L. pneumophila*, 15 (9%) gave a positive result, i.e., a titre of more than 256 (table III). Of those tested who stayed in Benidorm, 6 (8%) had a positive result compared with 9 (9%) of those staying elsewhere in Spain. There was no significant difference between sexes in the seropositivity rate.

Of those tested who reported respiratory symptoms either alone or in combination with other symptoms seven (7%) were seropositive (table IV), a lower proportion than the 13% seropositivity of cases with alimentary illnesses alone or in combination.

Table V shows a diminishing proportion of seropositivity with increasing age (13% in the 10-29 year age groups, 8% in those 30-49 and 3% in those over 50 years old).

The smoking habits of 146 of the tourists were determined (table VI): 59 (40%) were smokers and 87 (60%) non-smokers. Among females, non-smokers outnumbered smokers by almost 2:1; in males the ratio was exactly 1:1. Thirty-six of the smokers (61%) reported respiratory symptoms; only two smokers reported no illness (3%). Of the non-smokers a lower proportion, 46 (48%), reported respiratory symptoms and eight (9%) reported no illness. The smokers accounted for six of the 11 positive tests for legionellosis (10% compared with 6% amongst the non-smokers; table VII).

Of tourists who stayed in hotels, 74 (21%) reported no illness (table VIII) and 14 (4%) had a positive test. Among self-catering tourists, ten (34%) reported no illness and one was seropositive. Sixty-eight (19%) of tourists who stayed in hotels and one person who stayed in self-catering accommodation had illnesses which were neither respiratory nor alimentary but classified as 'other'.

TABLE III.—Results of serological test for legionnaires' disease according to place visited (number (%) of cases)

Place visited	Titre <256	Titre ≥256	Total
Spain (Benidorm)	69	6 (8)	75
Spain (other than Benidorm)	86	9 (9)	95
Other countries	4	0	4
Total	159	15 (9)	174

TABLE IV.—Results of serological test for legionnaires' disease according to reported illness (number (%) of cases)

Illness	Titre <256	Titre ≥256	Total
Respiratory (alone)	33	2 (6)	35
Respiratory and alimentary	37	4 (10)	41
Respiratory and other	17	1 (5)	18
Alimentary (alone)	15	4 (21)	19
Alimentary and other	7	1 (12)	8
Other	36	3 (8)	39
No illness	14	0 (0)	14
Total	159	15 (9)	174
Respiratory (all)	87	7 (7)	94
Alimentary (all)	59	9 (13)	68

TABLE V.—Results of serological test for legionnaires' disease according to age (number (%) of cases)

Age group (years)	Titre <256	Titre ≥256	Total
10-19	19	2 (9)	21
20-29	20	4 (17)	24
30-39	22	1 (4)	23
40-49	34	4 (10)	38
50-59	38	2 (5)	40
60+	26	0	26
Not known	0	2	2
Total	159	15 (9)	174

Discussion

A group of self-selected tourists, 78% of whom reported illness with a preponderance of respiratory symptoms, afforded a unique opportunity to search for evidence of infection with *L. pneumophila*.

Background information of seropositivity of populations to legionellosis are sparse but only 1.5% of a Nottingham population were considered by Macrae and his colleagues (1979) to be seropositive and none had a titre of more than 128. A previous study (Reid *et al.*, 1978) linked package holidaymakers to legionnaires' disease and Benidorm. Examination of a more general group of travellers (Reid *et al.*, 1980) demonstrated that legionellosis was not a frequent problem but drew attention to a preponderance of illness (including respiratory) among package holidaymakers. Although we cannot exclude the possibility of contact with *L. pneumophila* outside the context of the holiday illness reported, our finding of several of the features previously encountered in tourists with legionnaires' disease suggests that serological tests should be performed when there is a suspicious illness.

Those in the over-60 age group reported the highest incidence of illness, which is relevant to the recent promotion and growth in package holidays for the 'over-sixties'. However, the highest rate of positive serological tests was in the 20-29 age group. Unexpectedly, those reporting alimentary symptoms alone had the highest rate of positive tests, higher than those with respiratory symptoms. Those tourists who reported illness were less likely to blame external factors than those in a previous survey (Reid *et al.*, 1980), only 8% attributing their illness to food problems as compared with 37% of the earlier group.

The enquiry into smoking habits involved 39% of the tourists. Not surprisingly, 61% of the smokers recorded respiratory symptoms either alone or associated with alimentary or other symptoms, compared with 48% of the non-smokers. Only 3% of the smokers reported no illness, and the high incidence of illness among these smokers on holiday gives cause for concern and for further study.

Although the numbers are too small for significant comparison, it is of note that a higher proportion of self-catering tourists than those who stayed in hotels, reported no

TABLE VI—Tourists by smoking habit and reported illness (number of cases)

Reported illness	Smokers	Non-smokers
Respiratory (alone)	14	19
Respiratory and alimentary	14	20
Respiratory and other	8	7
Alimentary (alone)	7	10
Alimentary and other	3	4
Other	11	19
No illness	2	8
Total	59	87
Respiratory (all)	36 (61%)	46 (48%)
Alimentary (all)	24	34

TABLE VII.—Tourists by smoking habit and serological test for legionnaires' disease (number (%) of cases)

Smoking habit	Antibody titre to *L. pneumophila* serogroup 1 <256	≥256	Total
Smoker	53	6 (10)	59
Non-smoker	70	5 (6)	75
Total	123	11 (8)	134

$Chi^2 = 0.175$ (Yates correction)

TABLE VIII.—Tourists by accommodation and reported illness (number of cases)

Reported illness	Hotel	Self catering
Respiratory (alone)	61	5
Respiratory and alimentary	59	11
Respiratory and other	31	1
Alimentary (alone)	36	1
Alimentary and other	17	0
Other	68	1
No illness	74	10
Total	346	29
Respiratory (all)	151	17
Alimentary (all)	112	12

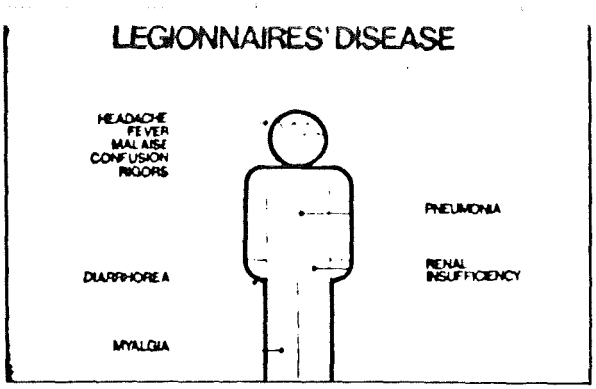
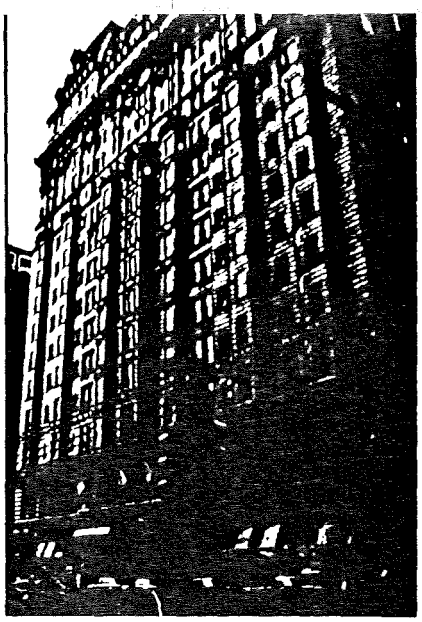


FIG. 5. (above)—Clinical features associated with legionnaire's disease

FIG. 6. (right)—'Bellview Stratford', Philadelphia, USA, the scene of the original outbreak of legionnaire's disease



illness, but other relevant factors not recorded in this survey may be different in these groups of tourists.

From this study smoking and being over 60 emerge as risk factors in illness in tourists. No correlation was demonstrated however between positive serological reactions for legionellosis, smoking habit, age, sex, or type of accommodation.

FIG. 7.—Chest x-ray of a 50-year-old male with legionnaires' disease, showing extensive consolidation of the right lung and considerable distension of the large bowel. This patient also exhibited mental confusion and diarrhoea

It should be emphasized that the group studied was self-selected, not a random sample, so that the percentages quoted cannot be regarded as valid for tourists in general but rather as directing attention to areas of possible concern. Better understanding of illness associated with travel and identification of risk factors could be of considerable benefit, both to travellers and to those in the tourist industry.

We thank Mrs N. Wilson, Mrs I. Tomison, Mrs E. Carragher, Mrs L. Steele, Mrs C. Young and Dr W. Bassili for assistance with the survey; Mr W. H. Abraham for serological tests for Legionnaires' disease; Center for Disease Control, Atlanta for collaboration with serological testing, (including Mr K. Miller for fig. 6 and Dr D. Kennedy for fig. 7), the family doctors who assisted with the collection of blood samples, and the tourists who volunteered to tell us of their experiences and donated blood samples.

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questionnaires after leaving (unpublished observations). We share the concern of Dr Schultz, and our investigations continue.

N R GRIST
J H COSSAR

Department of Infectious Diseases,
Ruchill Hospital,
Glasgow G20 9NB

D REID

Communicable Diseases (Scotland) Unit,
Ruchill Hospital,
Glasgow G20 9NB

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Emporiatrics—travellers' health

SIR,—In response to the leading article by Dr M G Schultz (28 August-4 September, p 582) we draw attention to our own emporiatric findings in recent years. Investigations of the original outbreak of legionnaires' disease among package holidaymakers in Benidorm revealed an unexpectedly high rate of illness: 65% of those in the hotel concerned had been ill, but so had 53% of similar tourists in other hotels.[1] Of travellers who contacted us as a result of publicity from this incident 78% reported illnesses, with respiratory features in 45%, alimentary symptoms in 33%, and other manifestations in 18·5%.[2] A later study of 2221 travellers from Glasgow revealed illness in 43%, mainly alimentary, with higher rates in package-deal holidaymakers than in other groups, and more illness in those who had travelled further south, especially to North Africa.[3] By contrast, illness was reported by only 19% of visitors to Scotland who returned

UPDATE
THE JOURNAL OF POSTGRADUATE GENERAL PRACTICE

Infectious Disease of the Month

5. Travellers' Infections

Norman R. Grist, Jonathan H. Cossar and Daniel Reid

"In these days of fast and frequent travel, there is no infection endemic in one part of the world which may not appear in another. . . . In this shrinking world the geographical movements of a patient constitute a vital element in his medical history".

Professor Brian Macgraith

The remarkable expansion in the number of people going abroad has increased the opportunities for more people to become infected with organisms which are not present, or at least less prevalent, in the United Kingdom. This growth in the number of travellers has been made possible by the greater availability of air transport: in 1948 only 4 million people used the world's airlines, by 1966 this figure had reached 46 million[1] and by 1975 over 400 million travellers were recorded.[2] The advent of the package tour has meant that foreign travel is now available to many more people. Over 19 million UK residents took holidays abroad during 1981.[3] Because the speed of travel has also increased, there is now the risk of travellers returning to the UK during the early incubation period of infections; thus by the time the clinical features appear the journey abroad may have been partly forgotten.

It is often difficult to obtain reliable information on measures which should be taken to try to prevent illnesses associated with travel abroad. Travel agents are very efficient at organizing holidays but often less effective in warning clients of the risks, even though several useful guides are available.

Norman R. Grist, B.SC, MB, FRCP, FRC.PATH, *is Professor of Infectious Diseases, University of Glasgow, Jonathan H. Cossar,* MB, CH.B, *is a General Practitioner and Research Assistant in the University Department of Infectious Diseases, Glasgow, and Daniel Reid,* MD, MRCP, FFCM, DPH, *is Consultant Epidemiologist in the Communicable Diseases (Scotland) Unit, Ruchill Hospital, Glasgow.*

Extent of the Problem

There is little doubt that a large number of people become ill whilst abroad or shortly after returning home. In a survey of 2,211 travellers who returned to the United Kingdom in 1977[4] 43 per cent stated that they had experienced an illness associated with their travels. Various groups were sampled: package holidaymakers reported most illnesses and University personnel least (Table 1). Those in the 21 to 30 year age group were most affected by illness (55 per cent with symptoms), and the least affected group comprised individuals aged between 51 and 60 years (26 per cent affected). This suggests that lifestyle and previous experience of the risks of travel are important. Travel to North Africa and the Mediterranean countries resulted in the highest proportion of illness in travellers (Table 2). Alimentary symptoms (usually vomiting and diarrhoea) were most frequently encountered (80 per cent of all illnesses) and respiratory illness accounted for 6 per cent; 10 per cent of ill travellers had both respiratory and alimentary

Table 1. Reports of illness by various groups of travellers.

Group	Total	No. reporting illness
Package holidaymakers	1,961	874 (45%)
Administrative and clerical staff	84	25 (30%)
University staff	72	17 (24%)
Nurses	57	19 (33%)
Medical staff and students	30	12 (40%)
Teachers	7	3 (43%)
Totals	2,211	950 (43%)

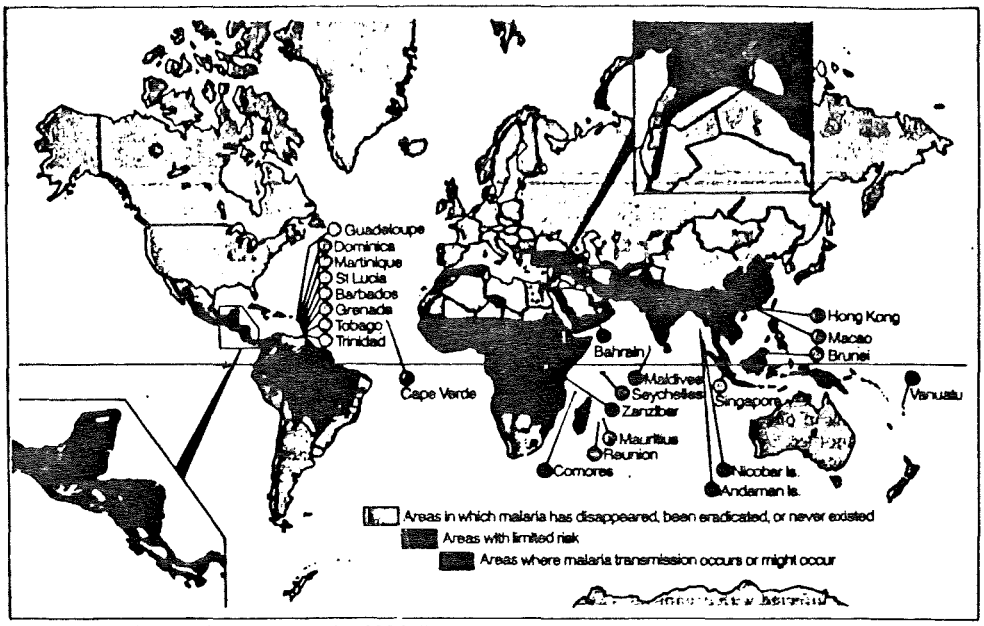


Figure 1. *World prevalence of malaria, 1979 (by courtesy of the World Health Organization).*

Table 2. Illness experienced by travellers according to place visited.

Place	No. of travellers	No. reporting illness
Spain	619	330 (53%)
Majorca	563	216 (38%)
Tenerife	549	186 (34%)
Tunisia	106	88 (83%)
Ibiza	72	36 (51%)
Greece	65	31 (48%)
Minorca	26	11 (42%)
France	22	6 (27%)
Italy	14	3 (21%)
USA	11	3 (27%)
Canada	10	1 (10%)
Switzerland	7	1 (14%)
Morocco	6	5 (83%)
Other	141	33 (23%)
Totals	2,211	950 (43%)

symptoms. Problems associated with food were blamed by 37 per cent of the travellers for their illness; 6 per cent associated their symptoms with drinking problems and 6 per cent with excessive sunbathing. Twenty-nine per cent mentioned combinations of various factors.

Areas of Risk

Different areas of the world have different hazards for travellers and it is helpful to have some knowledge of the worldwide distribution of the major tropical diseases including malaria (Figure 1) and yellow fever (Figure 2).

In general, the risk from communicable diseases to the traveller in northern Europe, North America, Australia and New Zealand does not differ greatly from that in the United Kingdom. However, those who travel to Australia and New Zealand may 'stop over' en route in places with a higher risk of infection. In southern Europe (where, of course, many tourists congregate) there is an increased danger of gastrointestinal infection, including typhoid and paratyphoid fevers. ▷

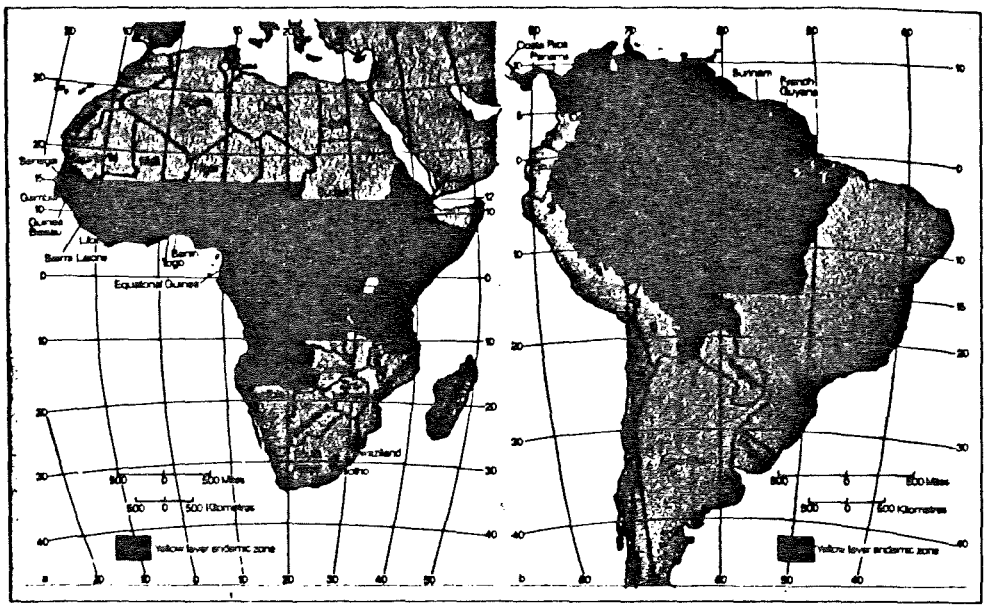


Figure 2. *Yellow fever endemic zone in* **a.** *Africa and* **b.** *America. (by courtesy of the World Health Organization).*

In many areas where infections are prevalent and where antimicrobial drugs are used excessively or are freely available without prescription, drug-resistant strains of enteric and other pathogens, sexually transmissible agents and malarial parasites are common, so that infections acquired in these areas can be more difficult to treat.

Behaviour on Holiday

Relaxed attitudes and reduced inhibitions are natural elements of holiday enjoyment. The holidaymaker may thus accept risks which would be avoided in normal life, such as experimentation with unfamiliar food and drink. Alcohol may potentiate the happy state and lead to neglect of precautions against mosquito bites or of regular antimalarial prophylaxis, and to acceptance of risk of exposure to sexually transmitted diseases. Narcotic drug abuse can have similar influences in addition to the risk of hepatitis B from intravenous drug injections.

Clinical Features

The returning traveller may present with almost any symptoms, ranging from the most exotic tropical disease to exacerbation of pre-existing pathology. In practice the diagnosis is less daunting and appropriate history taking is the key. As well as the complete recording of symptoms, the history should include the countries visited, the climatic aspects, the lifestyle during and the nature of the foreign travel, and the precautions taken with regard to diet, drink, pretravel immunizations and prophylactic drugs such as antimalarials and the duration of their use. The value of these details is apparent when one considers, for example, the diagnostic challenge presented in the differential diagnosis of 'pyrexia' in a young athletic female student who has just returned from a month's summer caving expedition in Southern Algeria, and that in an obese, middle-aged male smoker, who has been celebrating a Burn's Supper on a one-week holiday to Moscow in January.

The vast majority of travellers who present at the

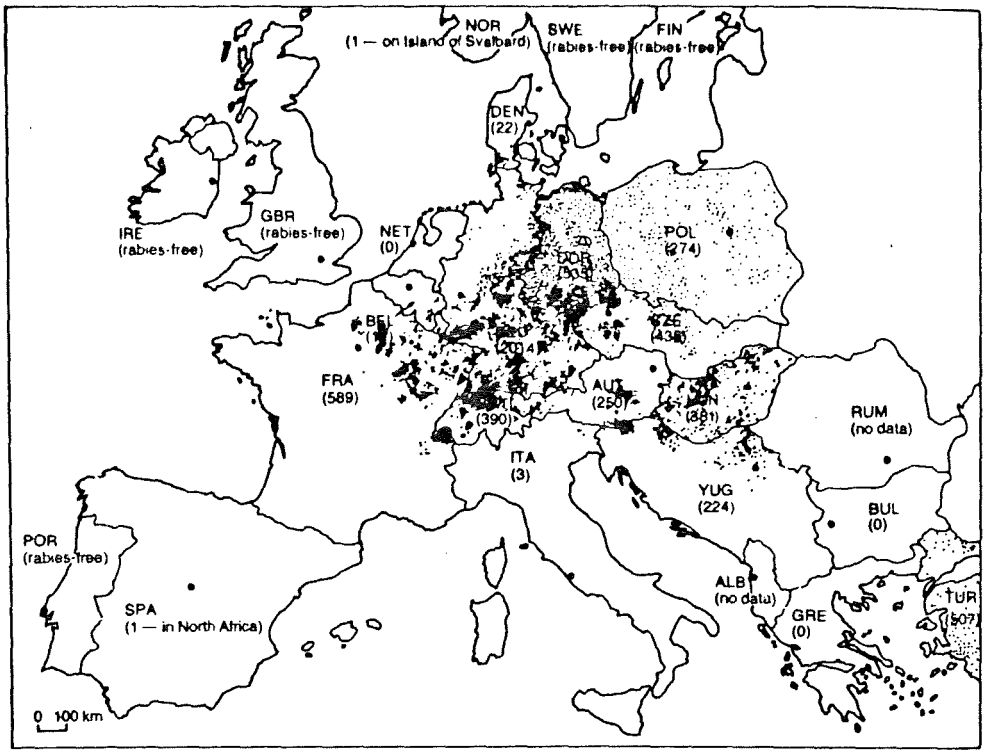


Figure 3. *Animal rabies cases in Europe: 5,645 cases were reported in the first quarter of 1980. (Data from WHO Collaborating Centre for Rabies Surveillance and Research, Tubingen, Germany.)*

surgery are returning from their annual vacation, usually on a Mediterranean 'package' type of holiday between May and October. The commonest symptoms are alimentary, but respiratory or almost any other clinical features may present themselves. These symptoms tend to develop during the holiday but become less troublesome towards the end and usually do not necessitate a visit to the doctor either abroad or in this country. The most seriously ill travellers are usually transferred directly to hospital on their return; the less seriously ill consult their family doctor.

Alimentary symptoms range from mild cramping abdominal pains to vomiting with frank diarrhoea, occasionally with blood or mucus. Respiratory symptoms vary from a mild sore throat to dyspnoea, chest pain and breathlessness. Combinations of several of these symptoms are not uncommon. Other symptoms can be concomitants, such as pyrexia, myalgia and headache. Bearing in mind the preceding history, an awareness of the diagnostic possibilities is the best guide to accurate diagnosis and appropriate further management.

Whilst it would be unreasonable to expect the family doctor to diagnose a rarity such as Lassa fever, the increasing number of travellers to more widespread destinations and the attendant publicity that this has attracted in both the medical and lay press, makes it prudent to be familiar with the possible symptoms and presentation of diseases such as malaria, typhoid, rabies (Figure 3) and Legionnaire's disease. This is also not without medicolegal significance. Such awareness will facilitate early referral to hospital for definitive diag-

nosis and treatment, both of the commoner diseases associated with travel and the rarities. Diagnostic pitfalls to be kept in mind include the possible presentation of typhoid with constipation, of malaria with diarrhoea, hepatitis, confusion or even coma, and the possible acquisition of sexually transmitted and non-exotic diseases such as tuberculosis while far from home.

Precautions

Where possible, the traveller should consult his doctor two months before departure and find out the health risks and specific precautions from a checklist (e.g. *Protect Your Health Abroad*, Leaflet SA35, published by the DHSS) and from the travel agent or embassy of the country to be visited. It is particularly important to complete routine immunization of young children, especially if the journey will be outside Europe, North America, Australia or New Zealand.

Malaria is a growing and potentially lethal hazard of visits (or even stop-overs) in many areas of Africa, Asia, Central and South America, especially in children, and even people returning to these countries after a few years' residence in nonmalarial areas can be at serious risk and require prophylaxis (Figure 4). In addition to avoiding mosquito bites by keeping limbs covered if outdoors after sundown (preferably staying indoors at night) and sleeping in screened accommodation or under a mosquito net, chemoprophylaxis is advisable, to be started before, continued during and for one month after the visit.

Figure 4. *Malaria notifications in Scotland and England and Wales, 1970 to 1980.*

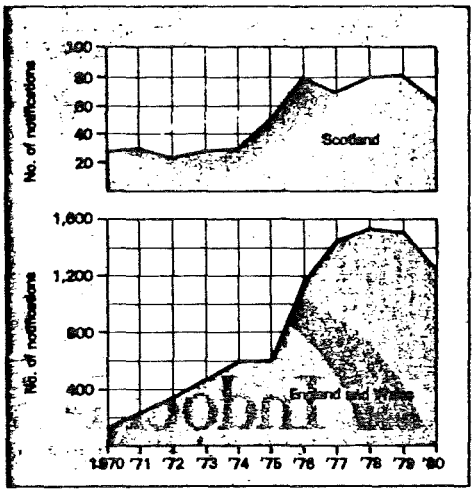


Figure 5. *The typical rose spots in a case of typhoid.*

Traveller's diarrhoea is a risk in many hot climates and developing countries, especially if one is 'living rough' or indulging in elaborate gastronomic experiences. Complete avoidance of hazardous food and unsafe water (including ice in drinks), plus good luck, is the best precaution. Chemoprophylaxis by streptotriad is recommended by Turner[7] and may be worth considering where the journey is of particular importance (e.g. an essential business trip).

Other infections which may enter by the oral route whenever hygiene or sanitation are imperfect and where traveller's diarrhoea is a significant risk include the following:

Typhoid (Figure 5)

This is a real risk in many warm (including Mediterranean) countries, and many of the strains are not now susceptible to antibacterial drugs. Immunization is well worth while, by two doses of monovalent vaccine which can be given intradermally for subsequent booster doses. Protection will not withstand high-challenge doses but suffices for normal levels of contamination.

Poliomyelitis (Figure 6)

This is a serious risk in many warm countries. Immunization is recommended for all age-groups. It need not be repeated every trip or every year, but a complete course should be known to have been completed, and an additional immunization (usually live oral) may be wise

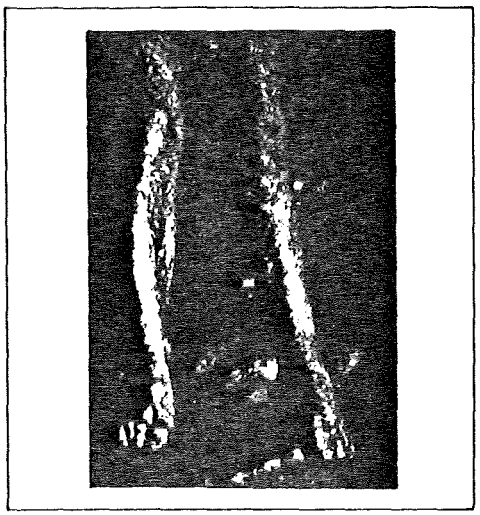


Figure 6. *The muscle-wasted limb of polio. There is a serious risk in many warm countries (courtesy of Dr John Woodward).*

at intervals of 10 years or so. One dose of oral vaccine before the trip will often complete the immunity of an adult traveller whose immunization history may be uncertain. If the traveller to a country where polio is endemic has not had a booster dose in the previous three years this should be carried out.

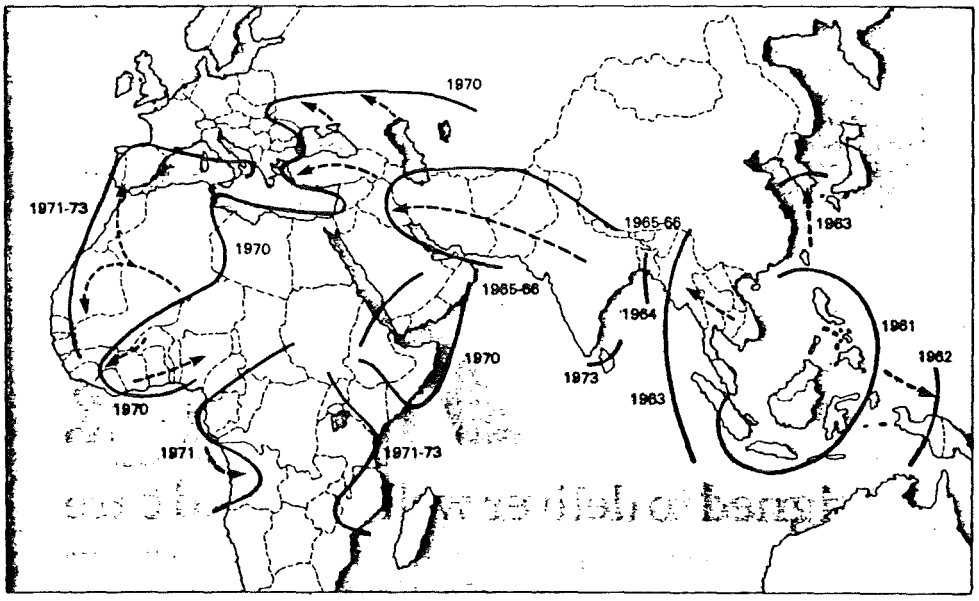
Hepatitis A

This endemic infection, which is widespread in Mediterranean countries, is an increasing risk to travellers from north-west Europe who may not have acquired active immunity from natural infection. One intramuscular dose of normal human immunoglobulin gives amazingly complete passive protection for 5 to 6 months,[1] and is wise before prolonged visits or for those intending to 'live rough', or travel or work in areas away from modern, sophisticated facilities.

Cholera (Figure 7)

Cholera is also a risk in many of the same areas, especially from contaminated water or seafood, although recent strains may also spread from other food

Figure 7. *The global spread of cholera 1961 to 1973 (courtesy of the World Health Organization).*



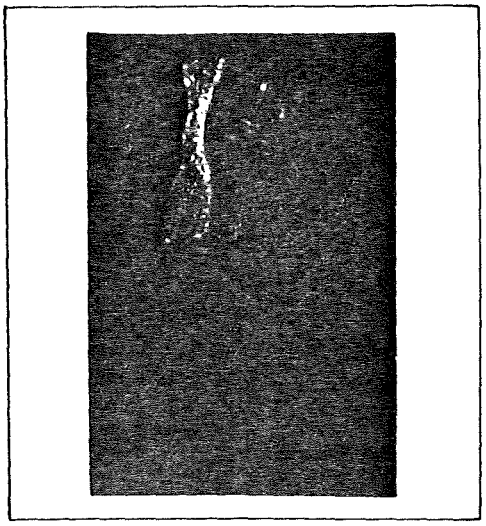


Figure 8. *Jaundice in yellow fever. Complete, long-lasting protection can be attained from one injection of live attenuated vaccine (courtesy of Dr E. T. W. Bowen).*

items contaminated by carriers or from excremental pollution. Two doses of vaccine provide modest protection for a few months, but possession of the certificate of vaccination is of more value than the actual degree of protection!

Yellow Fever (Figure 8)

Yellow fever is only a risk in endemic tropical areas where vector mosquitoes and vertebrate reservoirs of infection coexist. As for malaria, mosquito bites should be avoided. One injection of live, attenuated vaccine given at one of the authorized centres gives complete, long-lasting protection. Vaccination should be repeated every 10 years.

Smallpox

Smallpox is no longer a hazard. Since world-wide eradication, smallpox vaccination is unjustifiable on medical grounds (except for a few special risk categories) and should no longer be administered.

Rabies

Rabies is not usually considered a risk to the average traveller, but the continued presence of rabies and the growing number of travellers who find themselves in frightening contact with actually or potentially rabid animals, especially cats or dogs, has created an increasing demand for advice and postexposure prophylaxis (active, sometimes also passive) from returning travellers. Contact with animals of unknown status should be avoided, and immediate washing of a bite or scratch is important together with advice from the nearest hospital or doctor. Prophylactic active immunization is very expensive and is recommended only for naturalists, veterinarians and other travellers likely to be in dangerous contact with infected animals.

Sexually Transmitted Diseases

These are often a hazard to the relaxed or adventurous traveller, and infections acquired in many countries overseas may be resistant to conventional antimicrobial therapies. Discretion, avoidance of exposure, or use of protective sheaths and immediate postexposure washing are advisable. Hepatitis B should be recognized as one of the hazards of intimate and sexual contact.

Drug Culture

Intravenous drug abuse may be one of the new experiences explored in holiday mood. The risks of many types of infection and notably of hepatitis B are considerable, especially to novices (not yet experienced and immune) and 'old lags' with depressed immunity.

General Precautions

A small first-aid kit including insect repellents should be taken. Personal hygiene is important, especially washing hands before handling food. Bottled water is not always safe. Boiling or the use of sterilizing tablets should render it safe; milk should be pasteurized, sterilized or boiled before use. Raw and lightly cooked foods can be unsafe, but freshly cooked foods are usually safe. Overexposure to sun should be avoided. The tourist should not over-exert himself in a hot climate, especially within the first few days after arriving, and should drink plenty of fluid, possibly take extra salt, and wear light clothing. □

We thank Mrs N. Wilson and Mrs C. Young for help with the preparation of this paper. Dr E. Walker and Mr K. Miller kindly provided Figure 4.

Special Acknowledgement

The picture of the boy with measles on the first page of this article is taken from *A Colour Atlas of Infectious Diseases* by courtesy of Dr R. T. D. Emond and Wolfe Medical Books.

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Illness amongst Travellers to Scotland: A Pilot Study

Robert D Dewar
Senior Administrative Assistant
Jonathan H Cossar
General Practitioner, Research Assistant
Daniel Reid
Consultant Epidemiologist
Communicable Diseases (Scotland) Unit
Ruchill Hospital, Glasgow G20 9NB
Norman R Grist
Professor
University Department of Infectious Diseases
Ruchill Hospital, Glasgow G20 9NB

Summary
In a survey limited to the relatively small number of travellers who booked accommodation at tourist information offices in the West of Scotland, 19% of 355 multi-national visitors to Scotland stated that they had been ill during their visit. Respiratory symptoms accounted for 27% of the illnesses and alimentary symptoms 25%. There was a small preponderance of illness amongst females in the 20–39 age group. No correlation was demonstrated between illness, the visitor's country of origin or smoking habit.

Further studies involving larger numbers are required to evaluate the higher proportion of reported illness which was noted amongst business travellers and also amongst those who did not stay in hotel accommodation.

Introduction

In 1980, it was estimated that 12·9 million tourists came to Scotland of whom 1·2 million were from overseas[1]. Each spent an average of five nights in Scotland. There is already a considerable amount of information relating to the illness of Scottish travellers abroad[2], but there is less information about the health experiences of visitors to Scotland.

During the peak tourist season, over the summer months of 1980, the Communicable Diseases (Scotland) Unit (CDSU) and the Infectious Diseases Department of Glasgow University investigated the experiences of travellers to Scotland using methods applied to Scottish travellers abroad over the past five years.

Subjects and Methods

At the beginning of 1980, the CDSU established a most helpful liaison with the City of Glasgow District Council, and the Leisure, Recreation and Tourism Departments of Argyll and Bute District, Cunninghame District and Strathclyde Region. It was agreed that a standard questionnaire[3] and a covering explanatory letter would be distributed to as many visitors to Scotland as possible (language difficulties permitting) who made enquiry at or booked accommodation through the Tourist Information Offices of the above authorities. A pre-paid return envelope was supplied and the travellers were requested to post the completed questionnaire before they left the United Kingdom.

Results

There were 355 completed forms returned from the study period of June–September 1980. One hundred and seventy four of the respondents were male, of whom 27 (16%) reported illness; 172 of whom 40 (23%) reported illness were female. The remaining nine of unknown sex were well (Table I).

The age group 20–29 years was the largest accounting for 30% of the travellers; 29% were over 50 and only 3% were under 20 years of age. Reports of illness were most prevalent in those under 40 years of age. Of the 67 (19%) who reported illness, respiratory illness alone accounted for 27% and alimentary illness alone for 25% of the illness. Alimentary upset alone or with other symptoms featured in 42% of the illnesses, respiratory symptoms in 37%; 25% of illness featured neither alimentary nor respiratory symptoms (Table II).

Factors to which travellers attributed their illness included food (14 reports), drink (11) and various other factors including weather in 26 (Table III).

The travellers originated from elsewhere in the United Kingdom in 97 (27%) instances; 76 (21%) came from the USA (Table IV). The Commonwealth countries of Australia, Canada and New Zealand accounted for a further 105 (43%). The remainder ranged from 25 (7%) travellers from the European Economic Community to three (1%) from the Middle East.

Of the 60 (17%) travellers who were smokers, 10 (17%) reported illness. Fifty-seven (19%) of the non-smokers reported illness.

Excluding the rest of Western Europe group the recorded prevalence of smoking per country/groupings of countries ranged from no smokers among 27 travellers from New Zealand to two smokers among seven (29%) from the Far East; the UK, USA and Australia all recorded similar proportions of smokers amongst the travellers at 15%, 16% and 14% respectively.

The reports of illness by country of origin ranged from 25% (24/97) for the UK and 20% for the USA down to 11% for Scandinavia.

The accommodation used by the travellers is shown in Table V. Most stayed in hotels, or boarding houses/bed and breakfast accommodation. The prevalence of illness was lowest (15%) in those who stayed in hotels and highest (26%) in those who camped or caravanned.

The reasons for visiting Scotland were mainly for holidays (90%) or holiday and business (5%) (Table VI). Illness was reported in 31% of the business travellers, 19% of the holiday visitors and 13% of those who combined business and travel.

Discussion

The limitations of a study of this nature must be recognised from the outset. Contact with the traveller from the aspect of sample selection presents a challenge especially as the subject of illness on holiday is unlikely to be a promotional feature with any tourist organisation. The sample number is therefore relatively limited and is representative only of the travellers who made bookings whilst visiting the tourist information offices in the West of Scotland. Although these 355 visitors represent only a small proportion of the number of persons receiving questionnaires (1,565) and of the estimated total of 12·9

million visitors to Scotland in 1980[4], nevertheless the information which they supplied is of help in outlining the pattern of illness in travellers to Scotland.

The overall 19% of reported illness compares with 43% in a group of 2,211 Scottish travellers returning from abroad[2]. A statistically significant excess of illness was recorded amongst females (Table I) most notable in the two age groups with the highest illness rates viz., the 30–39 (24% of the total reports of illness; and 45% of the females affected) and the 20–29 age group (23% of all illness; 44% of the females affected). It is of interest that the over-60 age group did not record the highest attack rate of illness as was noted in a self-selected group of 375 UK travellers returning from abroad[3].

The type of illness reported did not show any preponderance of one kind or another. Indeed the remarkably similar attack rates of respiratory, alimentary and other illnesses (each 5%) contrast with the excess of alimentary symptoms recorded in Scottish travellers returning from abroad (80% of all illnesses)[2].

The travellers attributed their illness to a wide range of factors which did not highlight any particular area for concern. That 'the weather' was quoted either alone or in combination in 26 out of 76 reports illustrates the subjective importance accorded to the climate by travellers.

It is of interest that only 17% of these travellers smoked, and accounted for 15% of illnesses. This survey showed no correlation between smoking habit and incidence of reported illness amongst travellers to Scotland. A correlation was previously shown between smoking and reports of respiratory illness in UK travellers who had been abroad[3]. This would suggest that factors other than smoking alone accounted for the reports of illness in the latter group.

Unexpectedly the group of travellers who took self-catering holidays, camped or caravanned had a relatively high attack rate of illness which deserves further study in future enquiries.

The preponderance of holidaymakers in our survey (95% compared with 38% in Scottish Tourist Board statistics) (Table VI) is probably due to the location of the questionnaire distribution points at tourist bureaux which are likely to be visited less frequently by business travellers than holidaymakers. Likewise the relative excess of visitors from outside the UK (Table IV) probably reflects their greater need to consult the tourist bureaux for accommodation advice, etc. Also as the questionnaire is written and completed in English the completed reports show a relative excess from English speaking countries and those such as Scandinavia where English is widely taught.

In conclusion, travellers to Scotland appear to fare rather better than Scottish travellers abroad in terms of experience of good health. Nevertheless the fact that 19% reported illness does not give ground for complacency but rather for further surveillance and study. This survey also illustrates the value of liaison with tourist authorities in exploring areas of mutual interest to elucidate patterns of illness to the benefit of the health of future travellers to Scotland.

Acknowledgements.
We should like to thank the Chief Scientist Organisation, Scottish Home and Health Department, Edinburgh for financial assistance in this study. For secretarial assistance we appreciate the help of Mrs I Tomison, Mrs N Wilson, Mrs C Young, Miss K Chalmers, Mrs L Kidd. The authors also gratefully acknowledge the assistance of Miss M Sinclair and staff of the City of Glasgow District Council Information Bureau, and the staffs of the Leisure, Recreation and Tourist Departments of Argyll and Bute District, Cunninghame District, and Strathclyde Region. Our sincere thanks are also due to all the visitors to Scotland who took the time and trouble to complete the questionnaire.

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Table I: Travellers by Age/Sex and Health Experience

Age group (years)	Male		Female		Sex not known	Total	
	Total	Unwell	Total	Unwell	All well		(Unwell %)
0–9	2	0	1	1	1	4	(42)
10–19	4	2	4	2	0	8	
20–29	50	7	58	18	0	108	(23)
30–39	22	4	23	7	0	45	(24)
40–49	29	2	16	1	0	45	(7)
50–59	25	3	25	4	0	50	(14)
60+	30	8	25	4	0	55	(22)
Not known	12	1	20	3	8	40	(10)
Total	174	27*(16%)	172	40*(23%)	9	355	(19)

*P 0·1 (Chi squared Yates correction).

Table II: Distribution of Travellers by Age and Type of Illness

Age group (years)	Resp. alone	Resp. & Aliment.	Resp. & other	Aliment. alone	Aliment. & other	Other	No illness	Total	(%)
0–9	0	0	0	0	0	1	3	4	(1)
10–19	0	1	0	1	0	2	4	8	(2)
20–29	6	1	3	3	5	7	83	108	(30)
30–39	4	0	1	4	0	2	34	45	(13)
40–49	1	0	0	2	0	0	42	45	(13)
50–59	4	0	0	3	0	0	43	50	(14)
60+	2	1	0	3	3	3	43	55	(15)
Not known	1	0	0	1	0	2	36	40	(11)
Totals (%)	18 (5)	3 (1)	4 (1)	17 (5)	8 (2)	17 (5)	288 (81)	355	(100)

Table III: Distribution of Travellers according to Factors to which they Attributed their Illness

Factor	No.	Totals
eating	6	
eating and drinking	4	
eating and travel	1	
eating and weather	2	
eating, drinking and weather	1	eating : 14
drinking	1	
drinking and exercise	1	
drinking and travel	1	
drinking and weather	1	
drinking and other	1	
drinking, travel and weather	1	drinking : 11
exercise	0	
exercise and travel	2	exercise : 3
travel	3	
travel and weather	6	travel : 14
weather	14	
weather and other	1	weather : 26
other	7	other : 9
not known	14	
Total	67	

Table IV: Travellers by Countries of Origin, Smoking Habit and Health Experience

Country of Origin	Smokers		Non-Smokers		Total	STB*	
	Total	Unwell	Total	Unwell	(%)	$\times 10^3$	(%)
UK	15	4	82	20	97 (27)	11,700	(91)
USA	12	1	64	14	76 (21)	247	(2)
Australia	6	0	38	8	44 (12)	99	(1)
Canada	9	2	25	4	34 (10)	87	(1)
New Zealand	0	0	27	4	27 (8)	22	
EEC (except Eire)	7	3	18	0	25 (7)	369	(3)
Scandinavia	4	0	14	2	18 (5)	64	
Rest of West. Europe	4	0	6	1	10 (3)	135	(1)
South Africa	0	0	6	1	6 (2)	27	
Middle East	0	0	3	1	3 (1)	—	
Far East	2	0	5	1	7 (2)	—	
Not known	1	0	7	1	8 (2)	149	(1)
Totals	60	10 (17%)	295	57 (19%)	355	12,900	

Table V: Travellers by Accommodation Type and Health Experience

Accommodation type	Well	Unwell	Totals (%)	STB[4] (%)
1. Hotel	85	15	100 (28)	19
2. Boarding house/Bed & Breakfast	72	22	94 (26)	10
3. Self-catering	12	4	16 (5)	5
4. Camping/Caravanning	25	9	34 (10)	15
5. Not known/Other	94	17	111 (31)	51
Total (%)	288 (81)	67 (19)	355 (100)	100

Table VI: Travellers by Reason for Visit and Health Experience

Reason for visit	Well	Unwell	Total (%)	STB[4] (%)
Holiday	261	60	321 (90)	38
Business	9	4	13 (4)	18
Holiday and business	14	2	16 (5)	—
Other	4	1	5 (1)	
Total (%)	288 (81)	67 (19)	355 (100)	100

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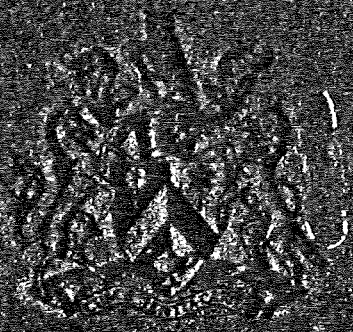

Travel and health: illness associated with winter package holidays

JONATHAN H. COSSAR, MB
ROBERT D. DEWAR
DANIEL REID, MD, MRCP(Glas), FFCM
NORMAN R. GRIST, B SC, FRC PATH, FRCP(Ed), MRCP(Glas)

SUMMARY. A survey of 263 people who had winter package holidays abroad revealed that 21 per cent of the travellers had been ill. Forty-eight per cent of those who had been unwell reported an alimentary upset and 26 per cent reported respiratory symptoms. Illness was recorded most frequently by travellers to countries in the Mediterranean region.

More readily available advice or information would be useful in reducing the amount of illness associated with package holidays.

Introduction

THE past two decades have seen remarkable changes in the number and destinations of holidaymakers. Before this time, the annual holiday was taken mainly in the United Kingdom. The development of the package holiday industry during the 1960s and 1970s in countries such as Spain, Italy and other areas around the Mediterranean resulted in a rapid increase in the number of people taking their holiday in places with warm sunny climates.

The modern ease of travel is not without its hazards. A survey carried out during the summer and autumn of 1977 among travellers returning to this country revealed that 43 per cent had suffered from an illness at some time during their trip.[1]

People travel abroad mainly during the summer months. Package holidays, however, are available throughout the year. This survey, which was carried out among holidaymakers returning to Scotland during the latter half of January 1980, attempted to gauge the frequency and type of illness experienced by people taking a winter package holiday and to compare their illness rates with those travelling in the summer.

Jonathan H. Cossar, General Practitioner and Research Assistant, University Department of Infectious Diseases (Scotland) Unit, Ruchill Hospital, Glasgow; Robert D. Dewar, Senior Administrative Assistant, Communicable Diseases (Scotland) Unit; Daniel Reid, Consultant Epidemiologist, Communicable Disease (Scotland) Unit; Norman R. Grist, Professor of Infectious Diseases, University of Glasgow.

Method

Questionnaires issued by the Environmental Health staff of Renfrew District Council invited the passengers to provide information on age, sex, smoking habit, country visited, hotel, and any illness experienced during their holiday or shortly after their return to this country. For ease of reply, a prepaid envelope was enclosed, addressed to the Communicable Diseases (Scotland) Unit.

Those who replied and gave a history of illness were invited to volunteer a 5 ml sample of venous blood. This blood was subsequently collected by the method described by Cossar and colleagues[2] and examined for serological evidence of legionnaires' disease, as described by Fallon and Abraham,[3] at the Department of Laboratory Medicine, Ruchill Hospital.

Results

Questionnaires were returned by 263 tourists—115 (44 per cent) males and 148 (56 per cent) females (Table 1). Overall, 54 tourists (21 per cent) reported illness. A total of 942 questionnaires were distributed (Table 2).

Table 1. Distribution of tourists by sex and reports of illness. (Percentages in parentheses.)

	Well	Unwell	Total
Male	87 *(76)*	28 *(24)*	115 *(44)*
Female	122 *(82)*	26 *(18)*	148 *(56)*
Total	209 *(79)*	54 *(21)*	263 *(100)*

Table 2. Response rate and passenger arrivals at Glasgow airport for the study period 21–31 January 1980. (Percentages in parentheses.)

Returned completed questionnaires	Total number distributed	Passenger arrivals, non-schedule flights
263 *(28)*	942 *(100)*	8,311*

*Estimated figure from Statistics and Landings Department, Glasgow Airport (BAA).

Table 3. Distribution of tourists by country visited and reports of illness (Percentages in parentheses)

	Well	Unwell	Total
USSR	44 *(88)*	6 *(12)*	50 *(19)*
Austria	35 *(80)*	9 *(20)*	44 *(17)*
Malta	45 *(79)*	12 *(21)*	57 *(22)*
Tunisia	30 *(68)*	14 *(32)*	44 *(17)*
Majorca	34 *(87)*	5 *(13)*	39 *(15)*
Tenerife	21 *(72)*	8 *(28)*	29 *(11)*
Total	209 *(79)*	54 *(21)*	263 *(100)*

Table 3 shows that 94 tourists (35 per cent) visited cold countries—the USSR and Austria. The warmer destinations were largely in or near the Mediterranean. Reports of illness ranged from 12 per cent of those visiting the USSR to 32 per cent of those visiting Tunisia.

The distribution of tourists by country visited and reports of illness is shown in Table 4. The figures recorded per country show prominence of reports of alimentary illness except for Malta, which showed a preponderance of respiratory complaints, and Tunisia (36 per cent of illnesses with respiratory features).

The distribution of tourists by age group indicated that 24 (9 per cent) were less than 20 years old, with other age groups fairly evenly represented (Table 5). Reports of illness ranged from 6 per cent in the over 60 years age group (3/49) to 33 per cent in the 21-30 years age group (17/51) and 32 per cent in the 31-40 years age group (12/37). These latter two groups accounted for 54 per cent (29/54) of the total reports of illness.

Sixty-seven tourists (25 per cent) stated that they smoked, 55 (82 per cent) of whom remained well (Table 6). Of the 12 smokers who reported illness, six had an alimentary upset, two a respiratory complaint, two both alimentary and respiratory problems, and two had other vague disorders. Ten of these tourists provided a serum sample, all of which proved negative in tests for evidence of contact with *Legionella pneumophilia*. No statistically significant difference was noted between the type of illness reported by smokers and non-smokers.

Factors to which the tourists attributed their illness are shown in Table 7. Drink was blamed in 23 (43 per cent) reports of illness.

Discussion

In 1977 11.5 million UK residents visited abroad; by 1980 this number had risen to 17.5 million, an increase of 52 per cent (international passenger survey conducted by OPCS and the Department of Trade). This surge in numbers was accompanied by a wide geographic expansion of the countries visited and the development of a

Table 4. Distribution of tourists by country visited and type of illness (Percentages in parentheses.)

	Alimentary	Respiratory	Alimentary and respiratory	Other	No illness	Total
USSR	4	1	0	1	44	50
Austria	3	1	3	2	35	44
Malta	5	6	0	1	45	57
Tunisia	6	4	1	3	30	44
Majorca	4	1	0	0	34	39
Tenerife	4	1	0	3	21	29
Total	26 *(10)*	14 *(5)*	4 *(2)*	10 *(4)*	209 *(79)*	263 *(100)*

Table 5. Distribution of tourists by age group and type of illness (Percentages in parentheses.)

Age group (years)	Alimentary	Respiratory	Alimentary and respiratory	Other	No illness	Total
<10	1	1	0	0	5 *(71)*	7 *(3)*
10-20	2	1	1	0	13 *(76)*	17 *(6)*
21-30	6	5	1	5	34 *(67)*	51 *(19)*
31-40	7	2	1	2	25 *(68)*	37 *(14)*
41-50	3	2	1	2	29 *(78)*	37 *(14)*
51-60	4	1	0	1	40 *(87)*	46 *(17)*
60+	2	1	0	0	46 *(94)*	49 *(19)*
Not known	1	1	0	0	17 *(89)*	19 *(7)*
Total	26	14	4	10	209 *(79)*	263 *(100)*

Table 6. Distribution of tourists by smoking habit and reports of illness (Percentages in parentheses)

	Well	Unwell	Total
Smoker	55 (82)	12 (18)	67 (25)
Non-smoker	154 (79)	42 (21)	196 (75)

Table 7. Distribution of tourists according to factors to which they attributed their illness (Percentages in parentheses)

Factor	Number of tourists
Food	5 (9)
Food and excessive sunbathing	2 (4)
Food and drink	11 (20)
Drink	12 (22)
Excessive sunbathing	4 (7)
Exercise problems	2 (4)
Other	8 (15)
Not known	10 (19)
Total	54 (100)

virtual 'all year round' package holiday industry. Earlier investigations have shown that holidays abroad are associated with unexpectedly high rates of illness,[4] with exposure to less common infectious agents[2] (for example, legionellosis) and with higher rates of illness in those travelling further south.[1] In an endeavour to continue monitoring this situation, package holidaymakers were questioned in January 1980 about their health experience so that comparative analyses with previous data could be attempted.

The return rate of 28 per cent, while disappointing, probably reflects the unpopularity of the topic of illness among holidaymakers. A number of those who reported illness included casual comments on their questionnaire, which suggests that they may have felt a greater obligation to complete and return the form than those who remained well. This altruism towards fellow holidaymakers does not seem unnatural. The return rate from the summer holidaymakers[1] is not known but as the distribution of the standard questionnaire was the same in method, location and target population there seems no reason to suspect that the percentage of non-returners would be significantly different. The questionnaire was also used in a study of summer tourists to Scotland in 1980, when a return rate of 23 per cent was recorded.[5]

The enquiry represented 3 per cent of the non-scheduled passenger arrivals at Glasgow Airport during the study period. Overall, 21 per cent of those who returned questionnaires had been ill at some time during their winter holiday abroad compared with 45 per cent of summer package holidaymakers surveyed in 1977[1] and 19 per cent of summer tourists to Scotland in 1980.[5] Alimentary symptoms were reported by 10 per cent of the winter travellers and respiratory symptoms by a further 5 per cent. Among the summer package holidaymakers previously studied, 32 per cent reported alimentary symptoms and 3 per cent respiratory symptoms, while summer visitors to Scotland reported similar proportions (5 per cent) of alimentary, respiratory and other symptoms. Holidaymakers in the age group 21-30 years had the highest illness rate in both winter (33 per cent) and summer (55 per cent) package tours whereas summer visitors to Scotland reported the highest illness rate (24 per cent) in the 30-39 years age group.

In this study, smoking did not emerge as a risk factor in relation to holiday illness. This correlates with the experience of summer tourists to Scotland, but contrasts with the experience of a self-selected group of tourists returning from abroad in whom smoking and being over 60 years of age emerged as risk factors.[3]

The percentage of tourists reporting illness increased the further south and hotter the country visited, Austria being the only apparent exception to this pattern. This resembled the experience of the summer package holidaymakers. In both studies those visiting Tunisia seemed to fare less well, recording the highest attack rates. The winter package holidaymakers were forthcoming in attributing the influential factor in their ill-health, 22 per cent implicating drink as opposed to food, which the summer package holidaymakers blamed more frequently (37 per cent).

In conclusion, a package holiday abroad taken in the winter months seems to carry less risk of holiday illness than a comparable summer package holiday but slightly more risk than a summer holiday in Scotland. This may be due to a number of variants, among which are perhaps the differing lifestyles of those undertaking a winter holiday, the climate or other factors. In common with summer package holidays abroad, the risk of illness appears greater the further south one travels, with alimentary illness the predominant hazard and the 21-30 years age group at most risk. This may reflect a more adventurous outlook adopted by the latter group, especially in relation to eating and drinking habits while abroad, or perhaps a relative inexperience of holidays abroad.

The problems of illness associated with travel have recently been accorded increased professional recognition by the introduction of the term emporiatrics (Greek *emporos,* one who goes on board ship as a passenger, plus *iatrike,* medicine).[6] The information in this paper may be of help in formulating medical advice given by the general practitioner as to where and when a patient should travel abroad, particularly if there is a pre-existing health problem. Patients with a tendency to gastrointestinal illness, such as peptic ulceration, irritable bowel syndrome, diverticulitis or ulcerative colitis, contemplating a holiday abroad should be made aware of the apparent advantage of a winter holiday to a more northerly country with cooler weather in minimizing the risks of a gastrointestinal upset. This awareness may

also be advantageous to the frail elderly who cannot tolerate a prolonged episode of gastrointestinal upset. For holidaymakers in these groups there may be justification for prescribing an antidiarrhoeal for use abroad at an early stage if required.

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Address for correspondence

Dr J. H. Cossar, Research Assistant, University Department of Infectious Diseases, Ruchill Hospital, Glasgow G20 9NB.

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which may be an artefact of catching up with accelerated registration forms) and open verdicts (+ 52). The numbers of deaths from transport accidents and accidents outside the home remained at a similar level.

In the September quarter 1982 the total number of accidental and violent deaths (4,423) was lower than for the equivalent quarter in 1980 (4,611). There were decreases in deaths from transport accidents (– 107), accidents in the home (– 86), suicides (– 86 persons; – 5 males, – 81 females), and open verdicts (– 8). There were increases in accidental deaths outside the home (+ 84), and homicides (+ 27).

Source: *OPCS Monitor* 1983; DH4 83/1. June 1983.

Legionellosis

Jonathan H. Cossar, Ronald J. Fallon, Norman R. Grist and Daniel Reid

It is salutary to realize that infectious diseases are still being discovered and that some of them are both common and serious. Legionnaires' disease was named after the outbreak which caused many severe and fatal pneumonic illnesses among veterans of the American Legion attending a convention in a Philadelphia hotel in 1976.[1] Long and intensive investigations eventually unmasked as the cause a previously unknown bacterium which was very difficult to culture and detect by standard methods. Tests on materials saved from earlier outbreaks, for which no cause had been identified, showed serological reactions with the newly discovered germ and incriminated it as the cause of these as well. Thus an outbreak of pneumonia with three fatalities affecting a group of package holidaymakers returning from Benidorm to Glasgow in 1973 was subsequently shown to be caused by Legionnaires' disease.[2] Since then this infection has been found in many countries of the world,[3,4] causing a wide range of clinical responses from silent to lethal.

Further investigations, using special techniques and reagents, have revealed a previously unsuspected large group of organisms with a growing number of species and serogroups. With this new knowledge the concept of 'legionellosis' is now commonly accepted.

This fascinating story, recorded in headlines and television programmes as well as in scientific meetings and publications, is still incomplete—medical detection and scientific exploration in our own time—and many surprises may yet lie around the corner.

Jonathan H. Cossar, MB, CH.B, is a General Practitioner and Research Assistant in the University Department of Infectious Diseases and the Communicable Diseases (Scotland) Unit, Ronald J. Fallon, B.SC, MD, FRCP, FRC.PATH, is Consultant in Laboratory Medicine in the Department of Laboratory Medicine, Norman R. Grist, B.SC, MB, FRCP, FRC.PATH, is Professor of Infectious Diseases in the University of Glasgow, and Daniel Reid, MD, MRCP, FFCM, DPH, is Consultant Epidemiologist in the Communicable Diseases (Scotland) Unit, Ruchill Hospital, Glasgow.

Epidemiology

Although Legionnaires' disease came to light as the result of spectacular outbreaks, mainly involving people staying in hotels, sporadic, unpredictable cases are also common. The epidemiological pattern is usually of an explosive onset with the number of cases rapidly increasing, typical of a common-source type of infection (Figure 1). It is likely that about a

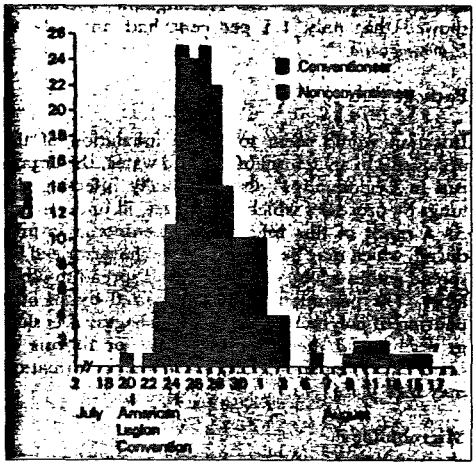

Figure 1. Histogram showing the explosive outbreak of Legionnaires' disease in Philadelphia in 1976.[1]

third of the cases of Legionnaires' disease are associated with outbreaks.[5] Person-to-person spread is extremely uncommon.

There is a preponderance of cases during the late summer and autumn, with about twice as many males affected as females. Susceptibility is general but the disease is rare in those under 30 years of age.[6] Illness is reported more commonly in older people, and the average age of patients is 50 to 60 years. Increasing age, being immunocompromised, smoking and possibly alcohol are predisposing factors. Legionnaires' disease has been linked with overseas travel,[7,8] and about a third of seropositive subjects in one study[9] had a history of being abroad within the incubation period of the illness.

Legionella pneumophila has been isolated from many environmental sources—mud,[10] water from air-conditioning units,[11] creeks,[12] cooling towers,[10] shower heads,[13] piped supplies and taps in hospitals and hotels.[14] The organism may survive for at least a year in tap water.[15]

Spread of Legionnaires' disease within a hospital can occur,[16,17] and the complexity of hospital water supply systems and the presence of compromised patients may be important factors.

Legionnaires' disease is a common cause of community-acquired pneumonia. In a study in Nottingham MacFarlane and his colleagues[18] found that it was the second commonest cause of pneumonia (the pneumococcus being the commonest) in patients admitted to hospital—19 (15 per cent) of 127 adult patients. By contrast, serological screening of 2,023 healthy subjects in the Nottingham population showed that only 1.5 per cent had antibody to *L. pneumophila*.[19]

Pathogenesis

Infection would seem to be by inhalation of the organisms in an aerosol of infected water, the organism in Legionnaires' disease usually infecting the lungs by processes which are, as yet, ill understood. As a result of this infection a pneumonia is produced, which may be severe, and is characterized by spread within a lobe of the lung and spread to other lobes. The pneumonia is characterized by an outpouring of polymorphs and macrophages; it is slow to resolve and there is a tendency for fibrosis to occur during repair. Occasionally abscess formation may take place.

Microbiology

Legionellosis is caused by members of the Legionellaceae, a group of Gram-negative rods (Figure 2) usually bearing flagella and which are found in aquatic habitats. There are 23 designated serogroups and species, the commonest pathogen being *Legionella pneumophila;* most cases are caused by serogroup 1.

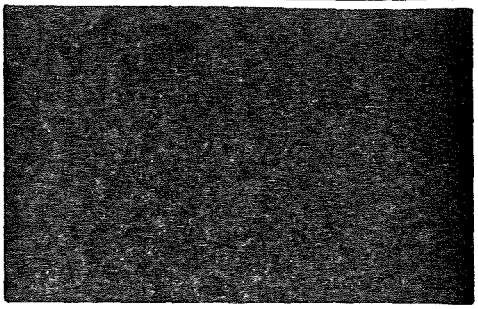

Figure 2. Legionalla pneumophila—*Gram's stain, showing Gram-negative rods.*

Legionellas may be found in sputum, blood and pleural fluid early in the disease, and at this stage legionella serogroup antigen may be detectable in urine. Legionellas have occasionally been isolated from other extrapulmonary sites, but the significance of these findings is as yet unknown. Antibody is produced after about the eighth day of clinical disease, although production may, in some cases, be delayed for several weeks. An IgM response is common, with IgM tending to be produced later in the disease. Cases have been reported, however, where only an IgG antibody response was detected. Sputum production is usually scanty in legionella infections and it may be difficult to isolate the organism from this or from blood, although now that a satisfactory commercially available culture medium is available (buffered charcoal yeast extract agar with added alpha-ketoglutarate, Oxoid CM655L with supplement SR110) attempts should be made to isolate the organism. Invasive techniques such as transtracheal aspiration, fibreoptic bronchoscopy with bronchial washing or brush biopsy or lung biopsy have yielded positive results. The presence of legionellas in respiratory secretions or biopsy material may be demonstrated by the direct fluorescent antibody test.[20] Assays for urinary antigen have been developed but are not yet commercially available.

In view of these difficulties, diagnosis in life is usually made by the demonstration of specific antibody, preferably with paired sera so that a rise of more than fourfold in antibody may be demonstrated. The main antibody detection test used at

present is the indirect fluorescent antibody test (IFAT) where a rise in titre to a level of at least 128, or a static titre of at least 256 in the presence of compatible clinical disease is regarded as being diagnostic.[20] A recently described microagglutination test also gives an early and reliable indication of infection.[21] Both in this test and in the IFAT a low level of antibody in an acute phase serum should alert the laboratory to the possibility that the patient has a legionella infection.

Clinical features

The concept of Legionnaires' disease as epidemic, commonly fatal (between 10 and 25 per cent mortality during outbreaks), predominantly pneumonic and diagnostically perplexing has evolved[22] following the initial outbreaks, with the recognition of sporadic cases[23] and seropositive asymptomatic individuals. In common with other diagnostically challenging illnesses a high level of suspicion in compatible clinical circumstances is the key to early diagnosis and successful treatment.

The cases which present are likely to become unwell fairly rapidly and, in the elderly, those severely affected or with compromised immunity continue to deteriorate quickly in the absence of effective diagnosis and treatment. The hypothesis that an endotoxin-like agent causing multiorgan damage is produced during the course of the illness,[24] is helpful in rationalizing the varied clinical presentation.

'Viral' symptoms

The overall clinical spectrum (Figure 3) is usually of an initial 'viral'-type illness with malaise, myalgia, headache, a rapidly rising fever with rigors and a dry, unproductive cough.[22,25,26] Progressively severe symptoms occurring within a few days include chest pain—often pleuritic in type, vomiting, diarrhoea, abdominal pain and distension. Central nervous system findings include confusion, delirium, dysarthria and clouding of consciousness inappropriate to the height of the fever. Further prognostically unfavourable complications are disseminated intravascular coagulation, gastrointestinal bleeding, rhabdomyolysis, respiratory failure, encephalopathy, shock and renal failure.

Examination

Initial clinical examination reveals an acutely ill, febrile (over 39°C) patient with râles and a relative bradycardia. With progression of the disease the

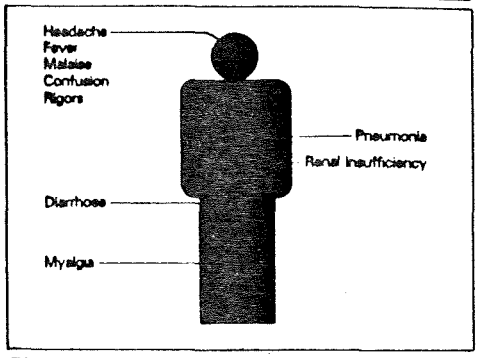

Figure 3. Clinical features associated with Legionnaires' disease.

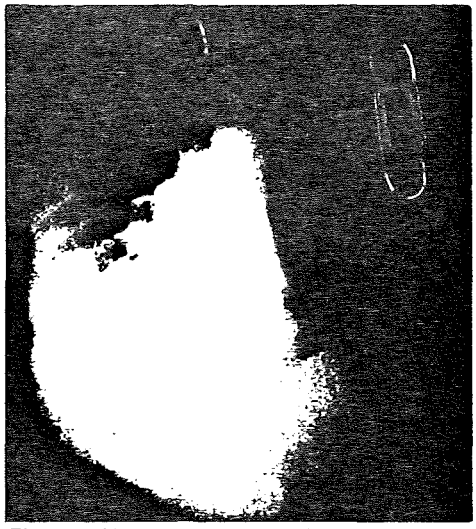

Figure 4. Chest x-ray of a 50-year-old male with Legionnaires' disease showing extensive consolidation of the right lung and considerable distension of the large intestine. This patient also exhibited mental confusion and diarrhoea.

chest x-ray shows changes from patchy localized consolidation to multilobular involvement with massive bilateral consolidation (Figure 4).[25,25] Pleural effusion is minimal or absent. Other findings recorded include a moderate leukocytosis, proteinuria, haematuria, hyponatraemia, hypophosphataemia, abnormal liver function tests[22,23,25,26] and elevated kinase of skeletal muscle origin.[24] ▷

Management

The consensus of opinion that erythromycin (Erythrocin) is the most effective antibiotic is based on laboratory and clinical evidence and the fact that the mortality rate is lowest when this drug is administered.[1] The dosage given varies from 2 to 4 g daily orally or intravenously depending of the severity of the illness.[3] When Legionnaires' disease is suspected in a seriously ill patient with pneumonia, an effective antibiotic regime is to combine rifampicin with erythromycin. Supportive treatment for end-organ failure along with symptomatic treatment where indicated will also be required in some patients.

As further knowledge accumulates on the epidemiology, bacteriology, pathology and the mechanism of the multisystem involvement in Legionnaires' disease, the diagnosis and treatment will be made easier.

Prevention

Because it is well recognized that environmental sources are important reservoirs of infection it is of value to obtain appropriate advice in order to deal effectively with any ecological problems. Measures such as continuous chlorination and raising the temperature of the water supply to 55 to 60°C have been shown to be useful.

Early recognition

Reporting cases to the local Health Authority is also important so that early recognition of outbreaks can be achieved and effective measures taken. □

Acknowledgements

We thank Mrs N. Wilson, Mrs C. Young, Mr K. Miller (for Figure 3) and Dr D. Kennedy (for Figure 4) for their help with the preparation of this paper. Figures 2, 3 and 4 first appeared in the *Practitioner* and are reproduced by courtesy of the Editor.

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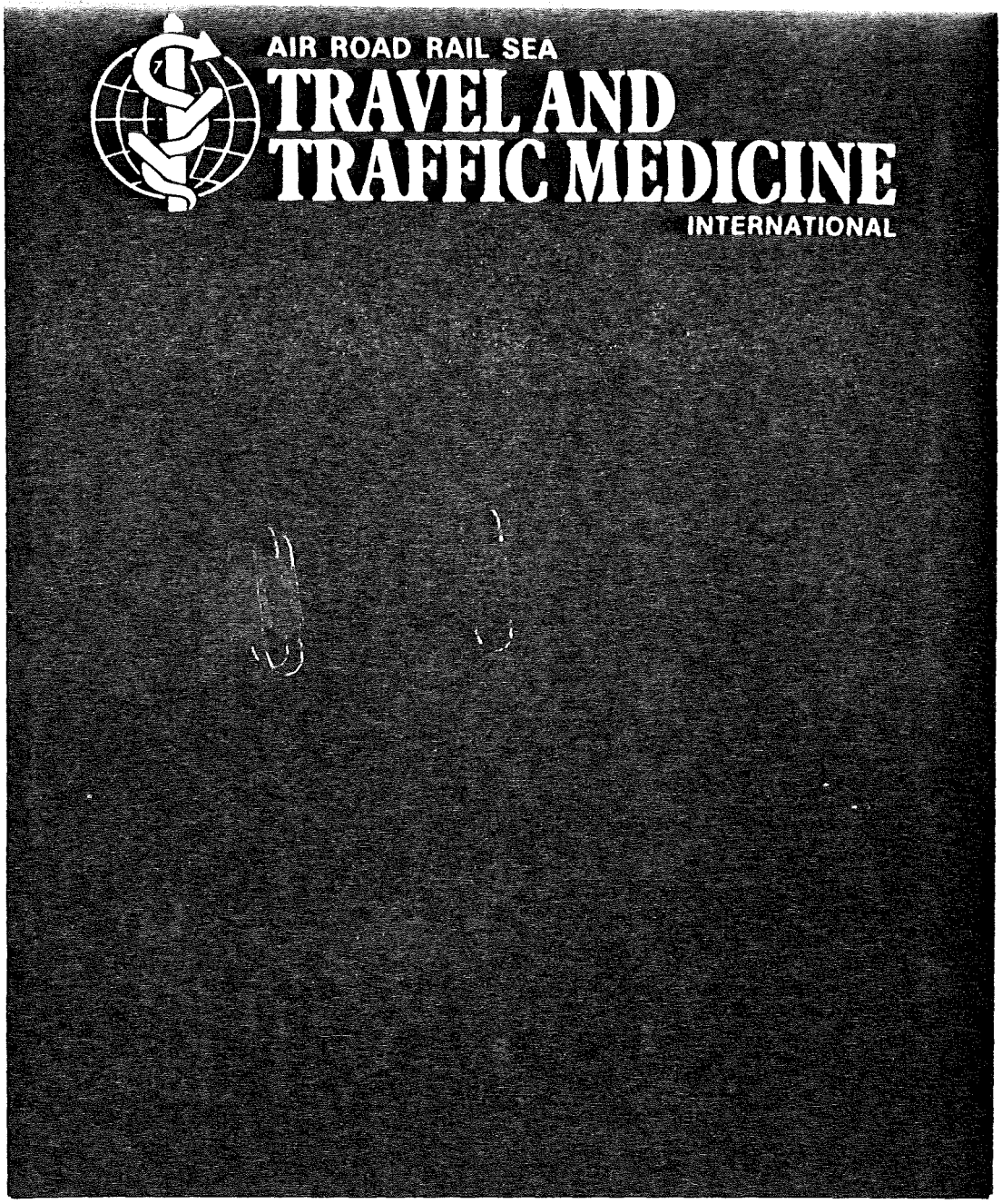
Practical points

- **Legionnaires' disease is fatal in 10 to 25 per cent of cases during outbreaks.**
- **Erythromycin is the most effective antibiotic.**
- **Legionnaires' disease is a common cause of community-acquired pneumonia.**


AIR ROAD RAIL SEA
TRAVEL AND
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INTERNATIONAL

Rapid Response Health Surveillance of Scottish Tourists

J. H. COSSAR, R. D. DEWAR, R. J. FALLON, D. REID, E. J. BELL, M. H. RIDING, N. R. GRIST

SUMMARY

Following the death of a Scottish tourist from typhoid fever who had recently visited Malta, a study was carried out on the health of 141 of the 182 members of the party who stayed at the same hotel during June 1981 and to ascertain their susceptibility to typhoid and polio. Forty per cent of the group reported illness with alimentary symptoms accounting for 30 per cent of the illnesses. Forty-five per cent of the 40 travellers screened for typhoid serology showed evidence of previous immunization. Two of these demonstrated an antibody pattern which could possibly indicate infection but no clinical evidence of infection was reported. Poliomyelitis antibody studies on 40 travellers revealed that 20 per cent appeared to have poor protection against poliovirus serotype 1. This emphasizes the importance of further monitoring and encouragement of poliovaccination in travellers to areas of endemic poliomyelitis.

Travel and Traffic Medicine International 1984 2 1 23–27

The numbers of business and holiday travellers abroad continue to expand. United Kingdom Department of Trade figures show a 65 per cent increase between 1977 and 1981; from 11.5 to 19 million. Ever more widespread destinations ensure a greater relative challenge from a wider range of infectious agents as well as a greater absolute risk due to the increased numbers of travellers. The speed and frequency of modern travel now mean that it is quite possible to return to the United Kingdom within the incubation period of many infections.

In July 1981, a 61 year old man developed typhoid fever shortly after his return from a holi-

J. H. COSSAR, MB ChB, General Practitioner, Research Assistant, University Department of Infectious Diseases and the Communicable Diseases (Scotland) Unit, Ruchill Hospital, Glasgow, G20 9NB, UK.
R. D. DEWAR, Senior Administrative Assistant, Communicable Diseases (Scotland) Unit.
R. J. FALLON, BSC, MD, FRCPath, FRCP (GLAS). Consultant in Laboratory Medicine, Ruchill Hospital, Glasgow.
D. REID, MD, MRCP (GLAS), FFCM, DPH. Consultant Epidemiologist, Communicable Diseases (Scotland) Unit.
E. J. BELL, PhD, MRCPath. Head of Enterovirus Reference (Scotland) Laboratory, Regional Virus Laboratory, Ruchill Hospital, Glasgow.
M. H. RIDING, BSc, Research Assistant, Enterovirus Reference (Scotland) Laboratory, Regional Virus Laboratory, Ruchill Hospital, Glasgow.
N. R. GRIST, BSc, FRCPath, FRCP (ED), MRCP (GLAS). Professor of Infectious Diseases, University of Glasgow.

Correspondence to Dr J. H. Cossar.

day in Malta. He was admitted to hospital but died despite appropriate treatment. Further enquiry confirmed that other cases of typhoid infection had occurred at the same hotel in June 1981.

The tour company operators who organized holidays at the hotel in June 1981 were contacted and were most co-operative in supplying a comprehensive list of names and addresses. This article describes the follow-up enquiry into the health of these Scottish tourists who stayed at the hotel at the same time as those who developed typhoid.

Table 1
Total number of tourists and response rate

	Totals
No. of questionnaires distributed	182 (100)
Returned, completed questionnaires	141 (77)
Serum sample requests	116 (64)
Serum samples received	46 (26)

(Numbers in brackets are percentages)

Subjects and methods

A standard questionnaire (Cossar *et al* 1982) and a covering explanatory letter were sent to the 182 tourists whose addresses were supplied by the tour operators. For ease of reply a pre-paid envelope was enclosed, addressed to the Communicable Diseases (Scotland) Unit where the survey forms were analysed and the collated results checked using an ICL 1505 computer.

Those who replied were asked if a 5 ml sample of venous blood could be taken. This was subsequently collected as previously described (Cossar *et al* 1982). Each sample was divided and examined for antibodies to *Legionella pneumophila* (Fallon and Abraham 1979), to *Salmonella typhi* using a standard agglutination technique (Cruickshank *et*

Table 2
Tourists by age/sex and health experience

Age group (years)	*Male*		*Female*			
	Total	*Unwell*	*Total*	*Unwell*	*Total*	*Unwell*
0–9	2	1	2	1	4	2 (50)
10–19	2	0	8	4	10	4 (40)
20–29	12	8	13	10	25	18 (72)
30–39	6	2	5	2	11	4 (36)
40–49	2	0	11	3	13	3 (23)
50–59	20	7	25	8	45	15 (33)
60+	17	5	6	3	23	8 (35)
Not known	3	1	7	1	10	2 (10)
Total	64	24 (38)	77	32 (42)	141	56 (40)

(Numbers in brackets are percentages)

Table 3
Distribution of tourists by age and type of illness

Age group (years)	*Respiratory*		*Alimentary*		*Other*	*No illness*	*Total*
	alone	*and alimentary*	*alone*	*and other*			
0–9	0	0	2 (50)	0	0	2	4 (3)
10–19	0	0	3 (30)	1	0	6	10 (7)
20–29	0	0	14 (56)	3	1	7	25 (18)
30–39	1	0	3 (27)	0	0	7	11 (8)
40–49	0	0	2 (15)	1	0	10	13 (9)
50–59	1	1	10 (22)	2	1	30	45 (32)
60+	2	0	6 (26)	0	0	15	23 (16)
Not known	0	0	2 (20)	0	0	8	10 (7)
Totals	4 (3)	1 (1)	42 (30)	7 (5)	2 (1)	85 (60)	141 (100)

(Numbers in brackets are percentages)

Table 4
Factors to which 56 tourists attributed their illness

Factor	No	Common factor Totals
Eating	13 (23)	eating 23
Eating and drinking	5 (9)	
Eating and weather	3 (5)	
Eating, drinking and weather	2 (4)	
Drinking	4 (7)	drinking 12
Drinking and weather	1 (2)	
Weather	6 (11)	weather 14
Weather and other	1 (2)	
Travel	1 (2)	travel 2
Travel and weather	1 (2)	
Other	1 (2)	other 2
Not known	18 (32)	
Total	56 (100)	

(Numbers in brackets are percentages)

al 1975; except that the incubation temperature used was 50°C) and to polioviruses. The modified micro-metabolic inhibition test (Kyriazopoulou and Bell 1972) was used to estimate neutralizing antibodies to each of the three types of poliovirus. As in our previous surveillance studies, all serum titrations were started at a dilution of 4 (ie 8 in final serum virus mixtures) which were incubated for three hours at room temperature followed by overnight incubation at 4°C. All tests were carried out in parallel with British Standard poliovirus antisera types 1, 2 and 3. As these results became available they were passed to the subjects' general practitioners; poliomyelitis vaccination was recommended where titres of <8 (negative) or 8 (borderline negative) were recorded.

Results

Completed questionnaires were returned by 141 (77 per cent) of the 182 tourists; 40 volunteered a blood sample (table 1).

There were 64 male and 77 female tourists of whom 32 per cent were aged 50 to 59 years; 24 (38 per cent) of the males and 32 (42 per cent) of the females reported illness (table 2). Reports of illness were highest in the 20 to 29 age group (72%).

Altogether 49 (35 per cent) tourists reported alimentary symptoms either alone or combined with others (table 3). These accounted for 88 per cent of the total reports of illness. Those reporting alimentary symptoms ranged from two (15 per cent) of the 40 to 49 age group to 14 (56 per cent) of the 20 to 29 age group. There were five reports of ill health which included respiratory symptoms.

Eighteen (32 per cent) of the 56 tourists did not attribute their illness to any particular factor but 13 implicated food (table 4); altogether 28 blamed food or fluid.

Forty-one (29 per cent) of the tourists smoked (table 5); 25 (16 per cent) of these smoked 20 to 29 cigarettes per day, and the age group 40 to 49 years recorded the highest percentage of smokers (46 per cent). Smokers were no more ill than non-smokers.

The results of serological examination for evidence of immunization against typhoid are shown in table 6. Blood samples were obtained from 40 tourists, of whom 23 showed no evidence of immunization. Of those with antibodies to somatic (O) antigens, only one had not got antibodies to flagella (H) antigens. Only two patients showed an

Table 5
Age and smoking habits of 141 tourists

Age group (years)	<10/dy	10–19/dy	20–29/dy	30–39/dy	40+/dy	Cigar/pipe	Non-smokers	N.K.	Total
0–9	0	0	0	0	0	0	4 (100)	0	4
10–19	0	1	0	0	0	0	9 (90)	0	10
20–29	0	1	4	0	0	0	20 (80)	0	25
30–39	0	0	2	1	0	0	8 (73)	0	11
40–49	0	1	4	0	0	1	7 (54)	0	13
50–59	2	2	10	3	0	0	28 (62)	0	45
60+	1	1	2	0	0	1	17 (74)	1	23
Not known	0	1	1	0	2	0	5 (50)	1	10
Totals	3 (2)	7 (5)	23 (16)	4 (3)	2 (1)	2 (1)	98 (70)	2 (1)	141

(Numbers in brackets are percentages)

Table 6
Antibodies to *S typhi*

		Flagella (H) antibody titre							
		<20	20	40	80	160	320	640	Totals
Somatic (O) antibody titre	<20	22	4	4	1	1	1	1	34
	20	1	1	2	0	0	0	0	4
	40	0	0	0	0	0	0	0	0
	80	0	0	0	0	0	2	0	2
	Totals	23	5	6	1	1	3	1	40

antibody pattern which might suggest possible infection rather than immunization. Both had 'O' antibodies at a titre of 80 and 'H' antibodies at a titre of 320.

Sera from 40 tourists (20 male and 20 female) who responded to the request for a blood sample were tested for the presence of poliomyelitis antibodies. Their ages ranged from 18 to 76 years, with 33 (83 per cent) aged over 40 years (table 7); 75 per cent of all those studied had antibodies to all three poliovirus types. Of the 40 tourists, 20 per cent had no detectable antibody to poliovirus type 1, 10 per cent none to type 2 and 7.5 per cent none to type 3. Two travellers were triply negative; both were females, one aged 19 and the other 56 years.

No evidence of legionellosis was detected in the tested sera.

Discussion

Increasing numbers of travellers to ever more distant holiday destinations mean that more tourists, both experienced and inexperienced, are exposed to a greater variety of infectious agents. This risk of illness whilst abroad or shortly after returning home, led the Communicable Diseases (Scotland) Unit, the University of Glasgow Department of Infectious Diseases, the Department of Laboratory Medicine at Ruchill Hospital, and the Regional Virus Laboratory to mount a collaborative study of illnesses associated with travel. These have been in progress for the past decade and it has been possible to establish a system which facilitates regular monitoring of the health experience of returning Scottish travellers, and also to mount a specific enquiry into groups of travellers identified as being 'at risk' after an alert about a possible health problem. Since 1977 we have been able to study the health of travellers by an interdisciplinary approach involving the environmental health departments of Renfrew District and Edinburgh City, the British Airport Authority, Glasgow City Public Relations Department, the Leisure, Recreation and Tourism Departments of Argyll and Bute District, Cunninghame District and Strathclyde Region, the Scottish Tourist Board, the Common Services Agency, various Glasgow companies and travel agents, the Consumers' Association and travellers' family doctors.

This arrangement enabled studies to be carried out into the frequency, severity and types of illness experienced by tourists and other groups of travellers (Reid *et al* 1980), and to compare the experience of different age groups (Reid *et al* 1980, Cossar *et al* 1982 and 1983, Dewar *et al* 1983), those with different social habits, eg smoking (Cossar *et al* 1982 and 1983, Dewar *et al* 1983), and different occupations (Reid *et al* 1980). We also compared illness rates at different times of the year (Cossar *et al* 1983) and in travellers to different countries (Reid *et al* 1980, Cossar *et al* 1983, Dewar *et al* 1983). Serological studies were also carried out for evidence of contact with unusual pathogens, eg *L pneumophila* (Cossar *et al* 1982).

The present group of travellers was selected for study as they had been at risk of typhoid infection, a

Table 7
Polio antibody status of 40 tourists

Age group (years)	*No examined*	*Without antibody*	*With antibody to One type*	*Two types*	*All three types*
10–19	2	1 (50)	0	1 (50)	0 (0)
20–29	3	0	0	2 (67)	1 (33)
30–39	2	0	0	0	2 (100)
40–49	7	0	0	0	7 (100)
50–59	17	1 (6)	0	1 (6)	15 (88)
60+	9	0	1 (11)	3 (33)	5 (56)
Total	40 (100)	2 (5)	1 (2.5)	7 (17.5)	30 (75)

(Numbers in brackets are percentages)

case having been confirmed in a fellow tourist. All stayed at the same relatively isolated beach hotel in Malta at the same time. The proportion (40 per cent) which reported illness out of the 141 who returned the questionnaire is similar to the 43 per cent who reported illness in a group of 2 211 Scottish travellers returning from abroad (Reid *et al* 1980). The excess of illness recorded amongst females was not statistically significant. Those reporting alimentary symptoms alone accounted for 30 per cent of the tourists compared with 32 per cent of summer package tourists studied in 1977 (Reid *et al* 1980), ten per cent of winter tourists in 1980 (Cossar *et al* 1983), and five per cent of summer visitors to Scotland in 1980 (Dewar *et al* 1983).

Most illness (72 per cent) was reported by the 20 to 29 year age group, a finding similar to that in previous surveys of both winter (33 per cent) and summer (55 per cent) package tourists. Although the numbers were small (14) it is notable that 45 per cent of those aged under 20 years reported illness.

In this investigation smoking did not emerge as a risk factor in relation to holiday illness. This corroborates the experience recorded by winter package tourists and summer tourists to Scotland. It is of interest that 76 per cent of the 20 to 40 year age group were non-smokers as compared with 58 per cent in the 40 to 60 year age group. This suggests that the anti-smoking campaign may be making a greater impact on younger age groups.

Problems associated with food emerged as the main reason given by the travellers for their illness. This was also the experience reported by the previous study of summer package tourists.

Eighteen (45 per cent) of the 40 tourists screened for typhoid serology showed evidence of immunization, four with 'H' antibodies ≥320. Two of these had 'O' antibodies at a titre of 80 but no clinical evidence of infection was reported to us.

From this investigation of visitors to Malta, it was disturbing to find that 20 per cent appeared to be poorly protected against infection with poliovirus serotype 1, the serotype most frequently encountered in outbreaks of paralytic disease. Indeed one in four of those tested had no detectable antibody to one or more poliovirus type and were therefore at risk. Looking at the age distribution of those studied it is possible that the older tourists had never received polio vaccination after its routine introduction in 1962, and may never have encountered polioviruses in the wild state. It is hoped that this problem may be resolved with the routine immunization of younger age groups.

The results of the poliovirus antibody investigations on these tourists emphasize the importance of continued monitoring. Those travelling to areas where poliomyelitis is known to be endemic should be encouraged to take one poliovaccine booster if they have not had one within the last four years, and two boosters one month apart if they completed a course of immunization more than four years ago.

Conclusion

This article details the results of a co-ordinated inter-disciplinary response to a risk of typhoid infection amongst a specific group of Scottish tourists returning from abroad. It supports the findings of earlier investigations that such summer tourists have roughly a 40 per cent risk of developing a complaint of ill health, albeit often of a minor nature, whilst on holiday. As with winter tourists an alimentary upset is most likely, and the most vulnerable group is that aged 20 to 29 years.

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Surveillance of hepatitis B virus infection in Scotland, 1973–1982

By T. I. AKO

Department of Community Medicine, University of Glasgow, Ruchill Hospital, Glasgow G20 9NB

E. A. C. FOLLETT

Hepatitis Reference Laboratory, Regional Virus Laboratory, Ruchill Hospital, Glasgow G20 9NB

R. D. DEWAR, J. H. COSSAR AND D. REID

Communicable Diseases (Scotland) Unit, Ruchill Hospital, Glasgow G20 9NB

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SUMMARY

Since 1973 epidemiological surveillance of laboratory-confirmed hepatitis B virus infection has been undertaken in Scotland. During the ten-year period, 1973–82, 2893 persons with laboratory evidence of infection were reported and the number increased by almost threefold between the beginning and the end of this time. Males accounted for 66% of the patients and intravenous drug abuse was the most commonly encountered risk factor. The low risk to laboratory staff is confirmed, but among National Health Service hospital staff nurses accounted for 54% of those reported.

Since 1973 epidemiological surveillance of laboratory-confirmed hepatitis B virus infection has been undertaken in Scotland. The mainstay of this programme has been the weekly reporting by the virus laboratories, on a voluntary basis, of details of hepatitis B infections to the Communicable Diseases (Scotland) Unit at Ruchill Hospital, Glasgow.

On receipt of a laboratory report of hepatitis B infection at the Unit a standard form to record epidemiological information is sent to the reporting laboratory (or other appropriate source of information, e.g. the clinician or community medicine specialist concerned) and an endeavour made to obtain relevant details (e.g. possible source of infection – recent surgical operation, blood transfusion, dental procedure, immunization, drug abuse, the patient's occupation and any other appropriate information). The form is then returned to Ruchill Hospital.

The criterion for the inclusion of a case in the surveillance scheme was based on the demonstration of hepatitis B surface antigen (HBsAg) in a single serum specimen. Although other markers (e.g. hepatitis B e-antigen and its antibody (HBeAg and anti-HBe) and hepatitis B core antibody (IgG and IgM)) were often subsequently sought by investigating laboratories, these were not considered

Table 1. *Hepatitis B infection according to Health Board area of residence*

Year	Argyll and Clyde	Ayrshire and Arran	Borders	Dumfries and Galloway	Fife	Forth Valley	Grampian	Greater Glasgow	Highland	Lanarkshire	Lothian	Orkney	Shetland	Tayside	Western Isles	Unspecified	Total
1973	10	15	—	1	5	7	17	53	4	14	31	—	—	6	—	4	163
1974	8	7	—	3	2	8	14	61	—	27	27	—	—	6	—	4	163
1975	9	15	—	—	6	5	24	81	9	15	38	1	1	21	—	—	225
1976	5	16	—	2	2	6	55	114	13	14	59	—	—	18	1	—	305
1977	11	11	1	3	—	7	48	98	10	14	48	—	—	18	1	—	270
1978	11	8	—	8	—	5	38	79	13	27	51	—	—	26	1	—	267
1979	7	7	1	4	3	5	56	77	20	34	57	1	—	13	—	—	285
1980	17	6	1	5	5	6	34	93	15	38	83	—	2	24	—	—	329
1981	10	9	1	3	2	13	37	113	30	28	113	1	1	60	—	—	421
1982	13	6	2	5	6	14	51	138	12	18	117	—	1	74	—	—	457
Total	101	100	6	34	31	76	374	907	126	229	624	3	5	266	3	8	2893

essential for inclusion in the programme. During the ten-year period under review various laboratory tests have been used (immunodiffusion, complement-fixation, immuno-electro-osmophoresis and reversed passive haemagglutination), but more recently, positive radio-immunoassay or enzyme immunoassay were the usual laboratory tests reported. Because entry to the surveillance scheme was based primarily on laboratory findings, the patients reported here consist of both those who had clinical features of hepatitis and those in whom serological evidence of infection was an incidental finding. The data obtained between 1973 and 1982 have been analysed with particular reference to the period 1979–82, when a more detailed study has been undertaken.

Laboratory evidence of hepatitis B virus infection was obtained from 2893 persons in Scotland between 1973 and 1982; 38 % were asymptomatic. During this period there was a sustained (almost threefold) increase in the number of reports. There was a slight lessening in the trend between 1977 and 1978, but this was followed by an increase which is still occurring. Analysis of the cumulative monthly reports for the ten-year period showed that there were between 195 and 270 cases in each 4-week period, with no evidence of seasonal clustering. Most of the reports related to persons living in urban areas, especially Glasgow (31 %) (Table 1).

The more detailed epidemiological analysis for the four-year period 1979–82 is given in Tables 2 and 3. Of the 1492 cases reported during this time full information was available for 1332; 784 patients (59 %) presented with explicit clinical features of hepatitis of various degrees of severity. The remaining 548 (41 %) were incidental findings made during the screening of potential blood donors, routine blood tests on ante-natal patients or following laboratory tests in patients presenting with other conditions. The majority of reports related to adolescents or adults: 42 % were aged between 15 and 24 years and 45 % between 25 and 59 years. Males

Table 2. *Hepatitis B infection according to possible source of infection in 488 patients*

Possible source	Number (%) of reports
Intravenous drug abuse	385 (78)
Tattooing or ear-piercing	20 (4)
Occupational	41 (8·5)
Homosexual contact	16 (3)
Blood products	5 (1)
Other	21 (4·5)

Table 3. *Hepatitis B infection in National Health Service staff*

	1979	1980	1981	1982	Total
Physicians	1	1	1	3	6
Laboratory Technicians	1	1	—	—	2
Nursing Staff	4	4	5	9	22
Hospital Porter	—	1	—	—	1
Domestic Staff	—	1	1	2	4
Dentists	2	1	2	—	5
Pathologist	—	1	—	—	1
Total					41

accounted for 67 % of the reports. A specified probable source of infection was given in 488 instances (Table 2). By far the commonest source implicated was intravenous drug abuse (78 %); 20 (4 %) had a recent history of tattooing or ear-piercing and 16 (3 %) were homosexual contacts. Forty-one (8·5 %) patients were National Health Service staff (Table 3); nursing staff accounted for 22 (54 %) of these.

During the past decade various social and cultural changes have occurred in the United Kingdom and elsewhere which have affected the natural history and importance to the community of hepatitis B virus infection. The increase in intravenous drug abuse, especially in the urban environment, has been of prime importance in causing infection, especially among young adults. On the other hand, screening procedures have resulted in greater safety of blood and blood products for transfusion and there is even greater awareness among laboratory personnel of the need to observe precautions when handling infected material. The recent availability of hepatitis B vaccine should further produce benefit in diminishing the number of infections in susceptible groups.

Although the risk of hepatitis B infection to hospital staff previously experienced, especially in renal units (Public Health Laboratory Service, 1976; Marmion *et al.* 1982), is now fortunately very much smaller, nevertheless it would appear that nursing staff are at some risk – 22 cases were reported in Scotland during the period 1979–82. Laboratory staff, on the other hand, are now much less vulnerable – only two cases were noted, and this finding correlates with that of the surveys organized for the Association of Clinical Pathologists by Professor Grist (Grist, 1976, 1978, 1980, 1981, 1983), when an abrupt drop in hepatitis was reported after 1974,

suggesting improved safety consciousness and bench techniques among laboratory workers.

A national laboratory-based surveillance scheme to detect cases of hepatitis B has many drawbacks: increased interest in the disease may in turn produce an increase in the number of notified cases, and more sensitive laboratory techniques may be developed which will produce more positive reports. However, an enquiry by the Public Health Laboratory Service (Polakoff & Tillett, 1984) which assessed the validity of laboratory reports as indicators of incidence of hepatitis B in England and Wales showed that there was a high rate of laboratory identification and reporting of infection and that evidence of bias was not found. It is only by active surveillance using laboratory and epidemiological results that correct and rational decisions can be made in order to identify high-risk groups and subsequently control infection.

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TRAVEL MEDICINE
INTERNATIONAL

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Illness Associated with Travel

A TEN YEAR REVIEW

J. H. COSSAR, D. REID, N. R. GRIST, R. D. DEWAR, R. J. FALLON, M. H. RIDING, E. J. BELL

SUMMARY

A cumulative review of illness experienced by 4 127 travellers over the past decade shows an overall attack rate of 47 per cent. Alimentary symptoms predominated; 27 per cent of travellers had these alone and a further 9 per cent had other symptoms associated with their gastrointestinal disorder.

Higher attack rates were associated with package holidays, inexperience of travel, smoking, summer travel, travel further south, and younger age (particularly those aged 20 to 29 years).

Serological studies of 470 travellers showed that 20 per cent had incomplete immunity to poliomyelitis. Twenty-five per cent of those tested (312 travellers) had serological evidence of typhoid immunization, and 1.9 per cent (out of 760 travellers) had antibodies to *Legionella pneumophila*.

The continuing exponential growth in numbers of international travellers to increasingly widespread destinations stresses the importance of improved pre-travel health education.

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'Travel in the younger sort, is part of education; in the older, a part of experience.'
(Francis Bacon, 1612)

J. H. COSSAR, MB, ChB, General Practitioner, Research Assistant, Communicable Diseases (Scotland) Unit, Ruchill Hospital, Glasgow G20 9NB, UK. D. REID, MD, FRCP(Glas), FFCM, DPH, Consultant, Communicable Diseases (Scotland) Unit, Ruchill Hospital, Glasgow. N. R. GRIST, BSc, FRCPath, FRCP(Ed), FRCP(Glas), Professor Emeritus, University of Glasgow. R. D. DEWAR, Senior Adminstrative Assistant, Communicable Diseases (Scotland) Unit, Ruchill Hospital, Glasgow. R. J. FALLON, BSc, MD, FRCPath, FRCP(Glas), Consultant Microbiologist, Ruchill Hospital, Glasgow. M. H. RIDING, BSc, Research Assistant, Enterovirus Reference (Scotland) Laboratory, Regional Virus Laboratory, Ruchill Hospital, Glasgow. E. J. BELL, PhD, MRCPath, Head of Enterovirus Reference (Scotland) Laboratory, Regional Virus Laboratory, Ruchill Hospital, Glasgow.

Little did Bacon realize how relevant his comment would be in 1985. International tourism affords the opportunity for education and widening of experience and is currently the world's fastest growing industry, continuing to expand even in times of world economic recession. Increased personal affluence, the refinement of the package holiday industry, and the desire to experience adventure, a different climate, culture, topography or to pursue a specific sport or hobby have all contributed to the increase in the numbers of tourists throughout the world.

The exchange of technical expertise around the world has resulted in more Europeans working in tropical countries now than during the peak 'colonial' days (Anonymous 1975). There continues to be an annual net migration of several million workers across international boundaries, in particular from the lesser to the more highly industralized countries.

World on the move

Refugees, obliged to migrate in their millions to seek safety and food, form a significantly large 'at

risk' group. Military exercises or intervention in a geographically distant country necessitate foreign travel for another group. To meet the demand for travel, service industries such as catering, hotel chains, travel agencies and transport systems have had to expand internationally so that further groups of workers become part of the 'world on the move'.

The trend and scale of international travel both globally and from a United Kingdom perspective is shown in Table 1. In the 33 years from 1949 to 1982 international tourists increased thirteen-fold from 19 to 244 million (WTS 1983, UN 1950; 1962; 1971). During the same period the numbers of scheduled air travellers increased twenty-four fold (ICAO) and visits abroad by UK residents increased twelve-fold (UN; HMSO 1971, 1982). Also during this time there was a shift in the proportion of UK residents travelling outwith Europe from 8 per cent of 1.7 million to 15 per cent of 20.6 million (UN; HMSO 1971, 1982) (a twenty-three fold increase), the ratio of sea to air travellers reversed from 3:2 to 2:3 and the package holiday proportion of travellers rose to 54 per cent (UN; HMSO 1971, 1982).

In summary, these statistics show ever increasing numbers of travellers to ever more widespread destinations using predominantly air transport. In addition, owing to the speed and frequency of modern travel, it is now more possible than before for the traveller to return within the incubation period of many infections.

Medical and epidemiological effects

This travel phenomenon not only produces economic, cultural and social repercussions but also medical and epidemiological consequences, such as the 1471 cases of malaria with 12 deaths confirmed in Britain in 1982 (PHLS 1982).

In 1973 an outbreak of pneumonia with three fatalities in a group of package holidaymakers returning from Benidorm, Spain, to Glasgow, Scotland, was subsequently attributed to Legionnaires' disease (Reid *et al* 1978). This example of travellers returning with a then-unknown disease which presented diagnostic difficulties and delay in the home country motivated our collaborative study of illnesses associated with travel. The study was conducted by the Communicable Diseases (Scotland) Unit (CDSU), the University of Glasgow Department of Infectious Diseases, and the Department of Laboratory Medicine and the Regional Virus Laboratory, both at Ruchill Hospital, Glasgow. Over the past decade we have established a system to monitor the health experience of returning Scottish travellers and also make specific enquiries into groups of travellers identified as being 'at risk' following an alert about a possible health problem. This article presents an overview of the first ten years of the research programme.

Subjects and methods

Analysis was made of the information provided by travellers on a 20-item standard questionnaire (Cossar *et al* 1982), recording personal and travel data including dates of travel, reasons for travel, type of accommodation, pre-travel health status, smoking habits, symptomatic complaints with date of onset and duration, causal factors for the illness, and whether the help of a doctor or hospital was required. Questionnaires were returned to CDSU in a prepaid reply envelope.

Travellers were selected for investigation of their specific health experience whilst abroad and also to study the risk of illness amongst various groups such as package holidaymakers to Benidorm, Spain (Reid *et al* 1978), different occupational groups and travellers to different countries (Reid *et al* 1980), a highly self-selected group of tourists at risk of contact with *Legionella pneumophila* (Cossar *et al* 1982), summer visitors to Scotland (Dewar *et al* 1983), winter package

Table 1
Growth in international travel

	1949 (millions)	*1960 (millions)*	*1970 (millions)*	*1982 (millions)*
Total numbers of international tourists	19	72	201	244
Total numbers of air travellers throughout the world	31	106	386	758
Total visits abroad by United Kingdom residents	1.7	6.0	11.8	20.6
	%	%	%	%
Visits by United Kingdom residents (to Europe; to rest of world)	92:8	94:6	89:11	85:15
Mode of travel used by United Kingdom residents (sea; air)	—	60:40	43:57	42:58
Package holiday proportion of visits abroad by United Kingdom residents	—	30	30	54

holidaymakers (Cossar *et al* 1983), tourists to Malta at risk of typhoid infection (Cossar *et al* 1984), and package holidaymakers to Romania (Grist *et al* 1985).

We were most fortunate to have the interdisciplinary help of other professional groups, including the environmental health departments of Renfrew District (Reid *et al* 1978; 1980; Cossar *et al* 1983; Grist *et al* 1985) and Edinburgh City (Grist *et al* 1985), the British Airport Authority (Reid *et al* 1978; 1980; Cossar *et al* 1983; Grist *et al* 1983), Glasgow City Public Relations Department (Dewar *et al* 1983), the Leisure, Recreation and Tourism Departments of Argyll and Bute District, Cunninghame District and Strathclyde Region (Dewar *et al* 1983), the Scottish Tourist Board (Dewar *et al* 1983), the Common Services Agency (Reid *et al* 1980), various Glasgow companies and travel agents (Reid *et al* 1978; 1980; Cossar *et al* 1984), the British Broadcasting Corporation (Cossar *et al* 1982), a Scottish Sunday newspaper (Cossar *et al* 1982), and travellers' family doctors (Cossar *et al* 1982; 1983; 1984; Reid *et al* 1980; Grist *et al* 1985).

A number of those replying from several of the studies (Cossar *et al* 1982; 1983; 1984; Reid *et al* 1980; Grist *et al* 1985) were invited to volunteer a 5 ml sample of venous blood. On receiving a positive response to this request, we contacted the traveller's family doctor and despatched a 'test kit' comprising syringe, collection bottle and mediswab in a pre-paid return carton. We received excellent co-operation from both the travellers and their family doctors.

The serum samples thus collected were divided into portions for various antibody titres to be measured, such as poliomyelitis (Cossar *et al* 1984; Grist *et al* 1985), typhoid (Cossar *et al* 1984; Grist *et al* 1985) and *L pneumophila* (Cossar *et al* 1982; 1983; 1984; Reid *et al* 1980; Grist *et al* 1985). The serological methods were described in the publications.

Results

Of 4127 respondents, 1937 (47 per cent) gave a history of illness with response rates ranging from 21 to 77 per cent (Table 2). The attack rates ranged from 19 per cent in 355 summer visitors to Scotland in 1980 and 21 per cent in 263 winter package holidaymakers in 1980, to 75 per cent in 370 summer package holidaymakers to Romania in 1981 and 78 per cent in 375 tourists who selected themselves for study by writing or telephoning to the CDSU after media publicity on Legionellosis and travel in 1977.

Table 2
Travellers and reports of illness

Group	*Year*	*Response Rate*	*Unwell*	*Well*	*Totals*
Package holidaymakers (Benidorm, Spain)	1973	—	158(63)	93(37)	251
Package holidaymakers (Bendidorm, Spain) ('control group')	1973	—	82(51)	79(47)	161
Package holidaymakers and other travellers	1977	—	950(43)	1261(57)	2211
Legionella pneumophila study in tourists	1977	—	291(78)	84(22)	375
Typhoid 'at risk' tourists (Malta)	1981	(77)	56(40)	85(60)	141
Package holidaymakers (Romania)	1981	(56)	279(75)	91(25)	370
Winter package holidaymakers	1980	(28)	54(21)	209(79)	263
Visitors to Scotland	1980	(21)	67(19)	288(81)	355
Totals			1937(47)	2190(53)	4127

(Percentages in parenthesis)

There is a trend to higher rates with travel further south and to some extent further east (Table 3), and this remains true both in summer and winter. Examples of this trend are the summer attack rates of 83 per cent reported by tourists to Tunisia and Morocco and 75 per cent for Romania, and the rate of 32 per cent reported by winter tourists to Tunisia and Morocco. Attack rates in general are substantially lower in winter (21 per

Table 3
Illness experienced by travellers according to place visited

Country	*Summer*		*Winter*	
	Total	*Unwell*	*Total*	*Unwell*
Scotland	355	67(19)		
Austria			44	9(20)
Switzerland	7	1(14)		
France	22	6(27)		
Canada	10	1(10)		
Romania	370	279(75)		
USSR			50	6(12)
Italy	14	3(21)		
Greece	65	31(48)		
Spain	2604	1303(50)	68	13(19)
Malta	141	56(40)	57	12(21)
Tunisia and Morocco	112	93(83)	44	14(32)
USA	11	3(27)		
Other	153	40(26)		
Totals	3864	1883(49)	263	54(21)

(Percentages in parenthesis)

Table 4
Age of travellers and type of illness

Age group (years)	Alimentary	Respiratory	Alimentary and Respiratory	Other	Alimentary and Other	Respiratory and Other	Total Unwell	Totals
0–9	38(37)	3	5	4	5	—	55(53)	104(3)
10–19	154(31)	23	46	25	23	2	273(54)	504(12)
20–29	334(35)	45	49	45	45	14	532(55)	962(23)
30–39	125(31)	17	12	18	13	6	191(47)	406(10)
40–49	120(23)	25	28	31	18	6	228(44)	521(13)
50–59	115(20)	27	25	21	14	6	208(36)	583(14)
60+	63(17)	13	18	19	9	6	128(34)	374(9)
Not known	162(24)	72	63	19	5	1	322(48)	673(16)
Totals	1111(27)	225(5)	246(6)	182(4)	132(3)	41(1)	1937(47)	4127(100)

(Percentages in parenthesis)

cent average) than in summer (49 per cent average).

Table 4 shows the highest attack rates in the under-40 age groups with 54 per cent of the 10 to 19-year age group reporting illness and 55 per cent in the 20 to 29-year age group. Thereafter attack rates show a progressive diminution with increasing age. There was no significant difference between males and females.

Twenty-seven per cent of the travellers reported alimentary symptoms alone, predominantly diarrhoea and vomiting. Altogether alimentary symptoms affected 36 per cent (77 per cent of all who reported illness). The highest attack rate for alimentary problems, 37 per cent without other system involvement (46 per cent altogether), was in the 0 to 9-year age group.

Of 761 samples tested for antibodies to *L pneumophila*, 15 (1.9 per cent) showed a titre of ≥256. Those with positive results had responded to nationwide publicity in the news and on television highlighting Legionnaires' disease in holidaymakers in Benidorm. They were therefore highly self-selected with histories of respiratory illness whilst on holiday in Spain.

Of the 312 sera tested for antibodies to *S typhi*, 79 were positive, although the titre levels were low, except in 22 travellers with 'H' antibodies at a titre of 160 or greater (Table 5). No serum had an 'O' titre greater than 80. Three sera showed antibody levels which could be diagnostically confusing, two having 'O' titres of 80 and 'H' titres at 320, and the other an 'O' titre of 40 and an 'H' titre of 640.

Four hundred and seventy serum samples collected during the period 1979–1982 were tested for poliovirus neutralizing antibody (Table 6). The ages of the travellers ranged from 15 to 83 years; 55 per cent were aged 30 to 60 years. Eighty per cent were considered immune to poliovirus infection but some in each age group were susceptible to at least one serotype, and two completely lacked antibody. Antibodies to poliovirus types 1 and 3 were those most frequently absent; 8 per cent and 11 per cent respectively of the travellers had no detectable antibody to these types, while 4 per cent had no antibody to poliovirus type 2.

Table 5
Antibodies to *S typhi* in 312 travellers

		Flagello (H) antibody titre							
		<20	20	40	80	160	320	640	Totals
Somatic (O) antibody titre	<20	233	16	18	8	9	6	0	290
	20	5	2	2	4	1	0	0	14
	40	1	0	0	0	2	0	1	4
	80	1	0	0	0	0	2	0	3
	160	0	0	0	0	1	0	0	1
	Totals	240	18	20	12	13	8	1	312

Table 6
Polio antibody status of 470 travellers

Age group (years)	Numbers examined	Without antibody*	With antibody to One type	Two types	All three types†
10–19	23	1(4)	1(4)	3(13)	18(78)
20–29	119	0	5(4)	21(18)	93(78)
30–39	66	0	2(3)	11(17)	53(80)
40–49	91	0	3(3)	7(8)	81(89)
50–59	100	1(1)	7(7)	14(14)	78(78)
60+	71	0	4(6)	12(17)	55(77)
Totals	470(100)	2(<1)	22(5)	68(14)	378(80)

*At a titre of <8.
†At a titre of ≥8.
(Percentages in parenthesis)

Excluding the highly selective *L pneumophila* study, 47 per cent of 294 smokers were unwell compared with 39 per cent of 835 non-smokers. This difference is statistically significant ($P<0.01$).

Discussion

Recognition of the importation of infection by travellers is not new, as attempted control by quarantine was introduced in Europe in 1377 (Bruce-Chwatt 1973). The problem continues to evolve with the eradication of some diseases in different parts of the world, and a change of emphasis in relation to others such as hepatitis, the viral haemorrhagic fevers, and legionellosis. It is compounded by the scale and speed of modern travel.

Examples of this changing pattern are recent reports of brucellosis in American student travellers to Spain (Arnew *et al* 1984) and the effect of time-zone changes on psychiatric morbidity (Jauhar and Weller 1982). Whereas in 1950 there was a report of 18 cases of smallpox with six deaths in Glasgow (Anderson *et al* 1951), the World Health Organization Smallpox Eradication Programme later achieved its objective in 1977 (Evans 1982). The problem was also highlighted by a Royal Society/Royal College of Physicians of Edinburgh Symposium (1982), editorials in the *British Medical Journal* (Schultz 1982) and the *Journal of the American Medical Association* (Schultz 1984), and the publication of the first issue of this journal, *Travel Medicine International* in 1983.

Whilst travellers' diarrhoea and other minor ailments are unlikely to generate the same emotive international public health concern as some of the more newsworthy infectious diseases, there is a growing awareness of the impact of these problems on the business efficiency and holiday enjoyment of the afflicted traveller, not least by the travellers themselves. Surveillance studies such as those described here may reveal epidemiological patterns which may lead to better health education and advice for the prospective traveller.

This type of study is obviously limited by uncertainties as to whether the sample is representative and by the lack of controls. Evaluation is helped by comparisons with the findings of other contemporary workers in this field.

A 30 per cent attack rate was recorded in a study of travellers' diarrhoea in 16 568 randomly selected Swiss travellers (Steffen *et al* 1983). The highest attack rates were 37 per cent in the 20 to 29-year age group and 57 per cent in travellers to North Africa. A study of 2 665 randomly selected Finnish travellers showed an attack rate of 48 per cent for all types of illness, highest (54 per cent) in those travelling to North Africa (Peltola *et al* 1983). These observations are similar to our own findings, including the highest attack rates (69 per cent) in visitors to North Africa.

The largely identical methods used in our component studies encouraged comparative rather than absolute analysis. From studies of the highest attack rates, an 'at risk' profile can be defined (Table 7). In addition, the risk of contracting illness with an alimentary component is more than three times greater than that for all the other illnesses combined. The fact that smokers (Grist *et al* 1985), inexperienced travellers (Reid *et al* 1980) and younger age groups (Reid *et al* 1980; Cossar *et al* 1983; 1984; Grist *et al* 1985) are at greater risk suggests that the biggest single common risk denominator is that of lifestyle whilst abroad.

Table 7
'At risk' profile

Package holidaymakers	>other travellers
Inexperienced travellers	>other travellers
Travellers further south, particularly North Africa	>other travellers
Summer travellers	>winter travellers
Younger age groups (specifically 20–29 years)	>older age groups
Smokers	>non-smokers

Two hundred and thirty-three tourists (75 per cent of those tested) had no evidence of successful immunization against *S typhi* despite the fact that it is recommended for most holiday countries in Southern and Eastern Europe, Africa and Asia, and that the majority of visits (13 million; 63 per cent) carried out by British travellers in 1982 were to these destinations (HMSO 1982). In only three travellers could the agglutination reaction be interpreted as indicating possible current infection; two with an 'O' titre of 80 and an 'H' titre of 320 and, less likely, the other with an 'O' titre of 40 and an 'H' titre of 640. The latter would be more suggestive of recent immunization.

Although British poliovirus immunization schemes are approaching their objective of eradication, serological studies have shown a pool of susceptible individuals who have not received a full course of poliovaccine and/or been exposed to poliovirus (Codd and White 1977; Roebuck and Chamberlain 1982; Bell 1974). These individuals

are vulnerable when travelling abroad to areas where poliomyelitis is still endemic and constitute a potential source of future infection by importation of the virus. The poliovirus immune status of the travellers in this study may be an underestimate since current methods equate the presence of detectable antibody with protection of the individual. When no antibody is detectable, immunological memory alone may be a sufficient defence (Salk 1984). Nevertheless, it was disturbing to find that 20 per cent of the air travellers tested lacked one or more poliovirus antibody, most often those to the serotypes (types 1 and 3) frequently associated with paralytic disease. Those travelling to areas where poliomyelitis is known to be endemic are encouraged to take one poliovaccine booster if they have not had one within the last ten years (HMSO 1984).

Conclusion

We have shown that those travelling abroad are vulnerable to minor illnesses, predominantly alimentary, with an attack rate of over 40 per cent. These illnesses are more likely to affect smokers, and younger and less experienced travellers, detracting from their business efficiency and enjoyment. The travel trade and the medical profession share an increasing joint responsibility towards this growing army of travellers, both in vigilance towards those who become unwell after travel abroad, and also in promoting relevant pre-travel health education.

In view of the predicted rise in the numbers of international tourists to 480 million by 1990, with travel to the developing regions expected to show the highest growth rate (around 10 per cent — almost double the world average, *Tourism Compendium 1981*), there seems no better time for action than the present.

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ILLNESS ASSOCIATED WITH A PACKAGE HOLIDAY IN ROMANIA

N.R. Grist, J.H. Cossar, D. Reid, R.D. Dewar, R.J. Fallon, Miriam H. Riding and Eleanor J. Bell

University Department of Infectious Diseases, Communicable Diseases (Scotland) Unit, Enterovirus Reference (Scotland) Laboratory and Department of Laboratory Medicine, Ruchill Hospital, Glasgow

Summary. *A study of 370 holidaymakers returning from Romania revealed that 279 (75%) reported illness. Alimentary symptoms predominated and were recorded either alone or along with other symptoms by 71 per cent of the tourists. The highest illness rate (82%) occurred in those under 39 years of age and those over 60 years had least illness (38%). Most of the tourists attributed their illnesses to the supply, handling or preparation of food and drink.*

Twenty-six (21%) tourists had serological evidence of typhoid immunisation out of 121 from whom blood samples were obtained. Most of the tourists studied (85%) were immune to poliomyelitis.

Key words: Traveller, holiday, questionnaire, alimentary illness, typhoid, poliomyelitis, surveillance.

THE vast increase in the number of travellers to foreign countries in particular for holiday pursuits has brought about a heightened awareness of the importation of illness from abroad.

In recognition of this problem the Communicable Diseases (Scotland) Unit (C.D.S.U.), the University of Glasgow Department of Infectious Diseases, the Department of Laboratory Medicine and the Regional Virus Laboratory at Ruchill Hospital, have been monitoring illness in travellers over the past decade. The programme has been developed so that a system of rapid response surveillance (1) can be instituted when reports are received about illness in returning travellers.

During August and September 1981, many reports of ill health in Scottish holidaymakers returning from Romania were transmitted to the Environmental Health Departments of the City of Edinburgh and Renfrew District. The C.D.S.U. was thereafter contacted and a joint enquiry mounted.

Subjects and methods

Flights returning from Romania to Edinburgh and Glasgow Airports carrying possible 'at risk' holidaymakers were identified and met at the airports by members of staff of the local environmental health departments. At Edinburgh airport all such arriving passengers were issued with a landing card which required the completion of name, address, and disembarkation details. A list of names and addresses compiled from this source enabled a standard questionnaire (2) and explanatory letter to be sent to the holidaymakers. At Glasgow airport all similarly identified returning passengers were issued directly with the standard questionnaire.

Questionnaire respondents over the age of 16 years were invited to volunteer a 5 ml sample of venous blood. This was subsequently collected as described by Cossar *et al.* (2). Each sample was divided into three portions. The first was examined for serological evidence of legionellosis as described by Fallon and Abraham (3), the second and third for immunological evidence of typhoid vaccination and serological evidence of immunity to poliomyelitis, as described by Cossar *et al.* (1). The survey forms were analysed at the C.D.S.U.

Requests for reprints to: Dr J.H. Cossar, Communicable Diseases (Scotland) Unit, Ruchill Hospital, Glasgow G20 9NB.

Results

Six hundred and fifty-five questionnaires were sent out and 370 (56%) were completed and returned. Of these respondents 128 (35%) supplied a blood sample for serological tests.

One hundred and fifty-seven (42%) of the respondents were male of whom 121 (77%) reported illness; 213 (58%) were female, 158 (74%) reporting illness (Table I). Except for the over 60 years age group which recorded a comparatively low 38 per cent, illness by age group varied within a narrow range. Eighty-three per cent were affected in age groups 0 to 9 and 10 to 19 years.

The age distribution of the tourists and the type of illness they experienced is shown in

Table I. Travellers by age/sex and health experience.

Age group (yr)	Male Total	Male Unwell	Female Total	Female Unwell	Total	Unwell
0–9	12	10	18	15	30	25 (83)
10–19	10	9	30	24	40	33 (83)
20–29	31	29	65	48	96	77 (80)
30–39	29	23	16	14	45	37 (82)
40–49	25	19	34	25	59	44 (75)
50–59	27	20	26	19	53	39 (74)
60+	16	6	13	5	29	11 (38)
Not known	7	5	11	8	18	13 (72)
Total	157	121 (77)	213	158 (74)	370	279 (75)

(percentages in parentheses)

Table II. Alimentary upset alone predominated accounting for 58 per cent of reported illness and 44 per cent of the tourists. Two hundred and sixty-one (94%) of all the reports of illness included alimentary symptoms, involving 71 per cent of the tourists.

Alimentary symptoms alone were most common in the 0 to 9 years age group (53%) and least common (28%) in those aged over 60 years. Alimentary combined with other symptoms ranged from 1 (3%) in the over 60 age group to 14 (35%) in the 10 to 19 age group. Altogether illness with alimentary symptoms accounts for 100 per cent of the reports of illness in the 50 to 59 years age group affecting from 71 to 78 per cent of age groups up to 59 but only 34 per cent of older persons. Respiratory symptoms affected only nine (2-4%) of these travellers.

All tourists who had been ill volunteered information about factors to which they attributed their illness (Table III). Only 20 (7%) answered 'factor not known' whereas 85 per cent (238 tourists) implicated an alimentary factor. Altogether 342 reports suggested food or drink alone or in combination with other factors as the cause of illness.

One hundred and twenty-six (34%) of the travellers were smokers, approximately half of whom smoked over 20 cigarettes per day (Table IV). Non-smokers predominated in the 20 to 29 age group (68; 71%), the 60+ age group (19; 65%) and the 10 to 19 age group which includes only three years of the legal age for smoking. Illness was recorded by 80 per cent of smokers and 75 per cent of non-smokers.

Thirty-three of the 121 sera tested for antibodies to *Salmonella typhi* were positive although the levels were low, none of the antibodies to somatic antigen being of a significant level (Table V).

Sera from 107 tourists were tested for the presence of polio antibodies (Table VI). Their ages ranged from 18 to 83 years, with 54 per cent in the age group over 40 years. Eighty-five per cent of them had antibodies to all three poliovirus types. Of the 107 tourists 4 per cent had no detectable antibody to poliovirus type 1, 5 per cent had none to type 2 and 8 per cent none to type 3.

No antibodies to legionellas were detected in the 123 sera tested.

Discussion

This group of tourists attracted attention because of numerous reports of ill health to environmental health authorities. The response rate of 56 per cent compares favourably with most of our previous studies—

Table II. Distribution of travellers by age and type of illness.

Age group (yr)	Resp. alone	Resp. & aliment.	Resp. & other	Aliment. alone	Aliment. & other	Aliment., resp. & other	Other	No illness	Total
0–9	0	2	0	16 (53)	4	1	2	5	30 (8)
10–19	0	1	0	14 (35)	14	1	3	7	40 (11)
20–29	0	2	0	42 (44)	28	3	2	19	96 (26)
30–39	1	0	0	21 (47)	12	2	1	8	45 (12)
40–49	1	0	0	26 (44)	14	2	1	15	59 (16)
50–59	0	0	0	27 (51)	11	1	0	14	53 (14)
60+	0	1	1	8 (28)	1	0	0	18	29 (8)
Not known	0	0	0	8 (44)	4	1	0	5	18 (5)
Totals	2 (0.5)	6 (2)	1	162 (44)	88 (24)	11 (3)	9 (2)	91 (25)	370 (100)

(percentages in parentheses)

Table III. Distribution of travellers according to factors to which they attributed their illness.

Factor	No.	Common factor totals	
eating	103 (37)	'eating':	234
eating and drinking	97 (35)		
eating and exercise	2 (0.5)		
eating and travel	4 (1)		
eating and other	16 (6)		
eating and weather	5 (2)		
eating, drinking and other	2 (0.5)	'drinking':	108
eating, drinking and weather	3 (1)		
eating, drinking, weather and other	1		
eating, drinking, exercise and weather	1		
drinking	4 (1)		
other	14 (5)	other:	34
weather	4 (1)	weather:	16
weather and other	1		
exercise	1	exercise:	3
exercise and weather	1		
not known	20 (7)		
Total	279 (100)		

(percentages in parentheses)

proportion of the group and their concern is emphasised by their contacting the environmental health authorities. Their illness rate (75%) is well above the average 44 per cent recorded in our six previous studies (1, 2, 4-7), involving 3,757 tourists.

Two hundred and eleven (57%) of the travellers were aged under 39 years and recorded the highest illness rate of 82 per cent; the 29 (8%) aged over 60 years escaped relatively unscathed with an illness rate of 38 per cent. This compares with the 21 to 30 years age group who recorded the highest illness rate in both winter (33%) and summer (55%) package tourists previously studied, and the 30 to 39 years age group in summer visitors to Scotland (24%), confirming that younger age groups appear to be more at risk. Similarly an investigation by Steffen *et al.* (8) of traveller's diarrhoea in 16,568 returning air travellers reported a higher diarrhoea rate in those aged under 30 years

Table IV. Travellers by age and smoking habit.

Age group (yr)	<10/dy	10-19/dy	20-29/dy	30-39/dy	40+/dy	cigars/ pipe	Non-smokers	N.K.	Total
0-9	0	0	0	0	0	0	30 (100)	0	30
10-19	0	4	2	0	0	0	34 (85)	0	40
20-29	4	11	12	0	0	0	68 (71)	1	96
30-39	3	4	9	1	2	2	24 (53)	0	45
40-49	1	7	11	4	1	2	32 (54)	1	59
50-59	2	9	9	2	0	1	28 (53)	2	53
60+	1	5	0	1	1	2	19 (65)	0	29
Not known	1	3	4	1	0	4	4 (22)	1	18
Totals	12 (3)	43 (12)	47 (13)	9 (2)	4 (1)	11 (3)	239 (65)	5 (1)	370

(percentages in parentheses)

Table V. Antibodies to *S. typhi* in 121 tourists.

		Flagella (H) antibody titre						
		<20	20	40	80	160	320	Totals
Somatic (O) antibody titre	<20	88	5	6	4	2	1	106
	20	3	0	0	3	1	0	7
	40	3	0	0	0	2	0	5
	80	1	1	0	0	0	0	2
	160	0	0	0	0	1	0	1
	Totals	95	6	6	7	6	1	121

summer tourists to Malta in 1981 (77%) (1), returning winter tourists in 1980 (28%) (4) and summer tourists to Scotland in 1980 (21%) (5). Illness affected a notably high

compared with those aged over 39 years. Perhaps younger age groups represent less experienced travellers more likely to be self-indulgent in relation to unusual food and drink or excessive intake. This is supported by the preponderance of reports blaming food and drink as the source of the illness (238; 85%). From the copious subjective information volunteered under the 'other comments' section of the questionnaire, there was no doubt amongst the travellers that their problems originated in the area of food and drink supply, handling and preparation.

In keeping with a food or drink related problem there, the 261 reports of ill health

Table VI. Polio antibody status of 107 tourists.

Age group (yr)	No. examined	without antibody	one type	with antibody to two types	all three types
10–19	6	0	0	0	5 (100)
20–19	27	0	0	4 (15)	23 (85)
30–39	15	0	0	2 (13)	13 (87)
40–49	23	0	1 (4)	3 (13)	19 (83)
50–59	19	0	0	3 (16)	16 (84)
60 +	14	0	0	2 (14)	12 (86)
Not known	4	0	0	1 (25)	3 (75)
Total	107 (100)	0	1 (0.9)	15 (14)	91 (85)

(percentages in parentheses)

which included alimentary symptoms accounted for 94 per cent of illness reports. These compare with alimentary symptoms in 32 per cent of summer package tourists studied in 1977 (6) 19 per cent of winter tourists (4), 5 per cent of summer visitors to Scotland (5), and 30 per cent of summer tourists to Malta (1) in our previous investigations. Although the numbers were small (39) it is of concern that 53 per cent of those aged under ten years suffered an alimentary complaint.

Package holiday brochures reveal definite economic advantages in direct holiday flights to certain eastern European countries. This along with the advantage of a convenient local airport is likely to attract those with larger families including young children, as well as bringing a foreign holiday within the means of more people including less experienced travellers. Our investigation suggests that these are the very groups who are more vulnerable to illness, alimentary in particular.

The remarkably high number of reports of alimentary illness may in part be attributable to the tourists visiting a relatively new holiday resort which was less well equipped to cater for groups of tourists than well established resorts. Also to some extent the tourist visiting a recently promoted resort is pioneering contact with an unfamiliar and perhaps wider range of environmental infectious agents. The hazards of such contact are already documented (2, 5, 6) in relation to the more familiar holiday destinations but the relative lack of information about less well known resorts may lull the tourist into a false sense of security.

In this investigation smoking did not emerge as a risk factor in relation to holiday illness corroborating the experience of three previous studies (1, 4, 5).

Taking the presence of flagella antibodies as probable evidence of immunisation, a maximum of 26 (21%) tourists had been immunised at some time out of the total of 121 studied. This may be regarded as unsatisfactory but on the other hand no tourists had serological evidence which would support, beyond doubt, a diagnosis of salmonella infection.

This paper details the results of co-ordinated inter-disciplinary surveillance of a group of Scottish tourists returning from Romania, in response to their contact with environmental health authorities. It supports the findings of earlier investigations that the most prevalent illness in tourists is an alimentary upset affecting the younger age groups, but it also highlights the particular problems of this group of tourists who recorded a high attack rate from alimentary illness. Although most of the tourists were satisfactorily immune to poliomyelitis, the presence of a small proportion without antibody to one or more poliovirus types indicates that a few are at risk, especially when visiting countries where bowel infections are so obviously actively circulating. There is little serological evidence that DHSS recommendations on typhoid immunisation are adopted by many tourists.

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SHORT REPORTS

Do travel brochures give adequate advice on avoiding illness?

There has been a spectacular growth in the number of travellers world wide over the past 35 years (table) and the World Tourism Organisation predicts that the number of international tourists will reach 480 million by 1990. Travel to the developing regions is expected to show the highest growth rate (about 10%—almost twice the world average).

Growth in international travel

	1960	1984	Increase since 1949
Total No of international tourists[4]	69×10^6	312×10^6	× 12
Total No of air travellers throughout the world[5]	106×10^6	841×10^6	× 27
Total visits abroad by United Kingdom residents[3]	6×10^6	$22{\cdot}1 \times 10^6$	× 13
Visits by United Kingdom residents[3] (to Europe : rest of world)	94%:6%	88%:12%	× 12:× 20
Mode of travel used by United Kingdom residents[3] (sea:air)	60%:40%	37%:63%	-
Proportion of package holiday visits abroad by United Kingdom residents[3]	30%	59%	-

Studies of illness in travellers show attack rates of 30% to over 50%, varying with age, lifestyle, season, and country visited.[1] Attacks usually comprise a mild diarrhoeal upset which rarely results in more than a minor self limiting inconvenience, but more serious illnesses acquired abroad—for example, malaria[2]—continue to be recorded. We have conducted a survey assessing the measures taken by the travel trade to address this problem and protect the health interests of their clients.

Methods and results

We collected 64 travel brochures from the public display of an established independent travel agency in the city centre of Glasgow. The brochures represented all the main tour operators and carriers covering destinations throughout the world, including cruises, and were readily available to prospective holidaymakers from the west of Scotland. Brochures were categorised according to the season of the advertised vacation and the destination. We classified health information as "specific" when it included details of specific immunisation recommendations or of particular environmental or climatic conditions in the holiday destination relevant to maintaining good health. "General" health information recommended seeking further advice from the family doctor, local health department, or embassy of the country to be visited.

Twenty one of the 64 brochures studied (33%) carried no health information for travellers. Brochures covering all year round travel (23; 36%) included the highest proportion (83%) with health information. The smallest group of brochures (19; 30%) covered winter travel and had the least health information (53%).

The largest number of brochures (29; 45%) related to European travel and included the lowest proportion with health information for travellers (38%), none of which was specific for the travel destination. Worldwide travel was covered by 15 brochures (23%), all of which carried health information but only four with specific advice. Altogether 36 brochures (56%) carried general and 7 (11%) specific health information.

Ten of the brochures covered cruise ships, nine sailing all year round and five to worldwide destinations. There was no health information in three of these brochures but all stated that qualified medical and paramedical personnel accompanied the cruise.

Comment

Most people going abroad from the United Kingdom travel on inclusive package holidays.[3] Hence the attitude of package tour operators towards the health of their clients while abroad is of prime importance.

In view of the amount of illness associated with travel it gives cause for concern that a third of the 1985 brochures analysed carried no health advice for travellers. Winter travellers and travellers to Europe were likely to have even less guidance (47% and 62% of brochures, respectively, without health advice). "Specific" health advice was inconsistent. Some brochures carried general recommendations on immunisations, dietary caution, and the use of antimalarial tablets; others were both more and less specific for the same destination country. Reciprocal health arrangements with the National Health Service were mentioned occasionally.

That all the brochures carried promotional information to help travellers insure against medical misfortune while abroad shows that tour operators are aware of health needs. Given this discrepancy when viewed against the inadequacies and inconsistencies in the health information in the brochures studied, there seems to be common ground where health educators and the medical profession could collaborate with the travel trade for the benefit of all concerned.

The help of Mrs N Wilson, Mrs L Kidd, Messrs Donald Mackenzie (Travel) Ltd, and the Scottish Health Education Group is much appreciated.

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Communicable Diseases (Scotland) Unit, Ruchill Hospital, Glasgow G20 9NB
D REID, MD, FRCPGLAS, director
J H COSSAR, MB, CHB, research associate
T I AKO, MB, MPH, research assistant
R D DEWAR, senior administrative assistant

Correspondence to: Dr Cossar.

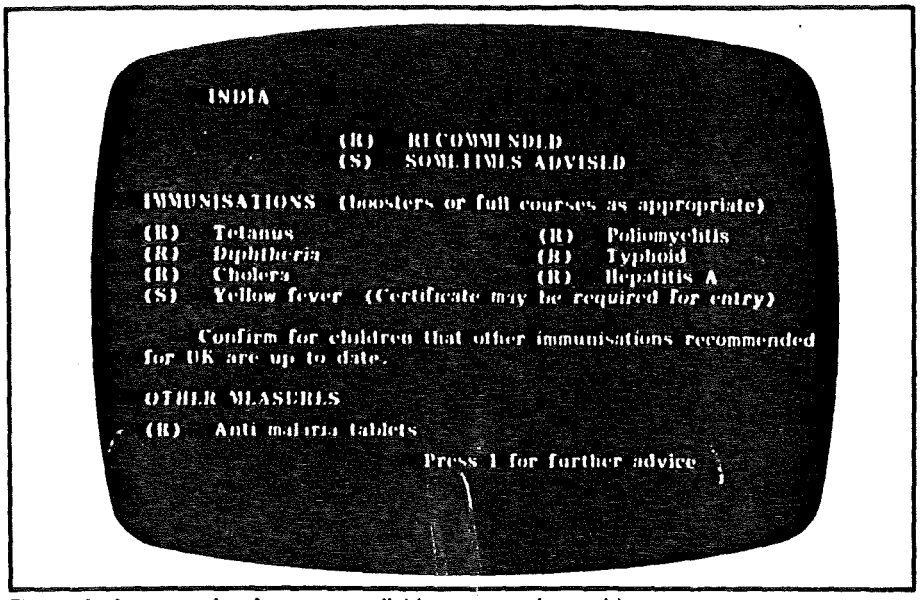

Figure 1. *An example of a page available to general practitioners.*

Computerized advice on malaria prevention and immunizations

Sir,

Dr Campbell suggests (February *Journal*, p.70) that there is a need for continually updated information about suitable antimalarial drugs for travellers and that this could be provided via general practitioners' computers. This service has recently been made available on a data base compiled by the Communicable Diseases (Scotland) Unit and installed by the Scottish Poisons Bureau Information Service on their mainframe computer. An example of one of the pages available is shown in Figure 1. General practitioners who have access to a terminal or computer with a modem (such as that which links with Prestel) can register to use the service by contacting the Communicable Diseases (Scotland) Unit (telephone 041-946 7120).

The service covers recommended immunizations and malaria prophylaxis and is updated directly from the Communicable Diseases (Scotland) Unit on the basis of advice from various sources including the World Health Organization, the Department of Health and Social Security, the Malaria Reference Laboratory, embassies and drug companies. Information about the administration and availability of both commonly used and the more unusual vaccines is also provided. Direct feedback is encouraged so that the information can be improved and answer the most frequent questions. A modified version of the data base will be made available soon to other interested parties such as airlines, travel agencies and businesses.

E. WALKER
J.H. COSSAR
R.D. DEWAR
D. REID

Communicable Diseases (Scotland) Unit
Ruchill Hospital
Glasgow G20 9NB

Not all travellers need immunoglobulin for hepatitis A

Viral hepatitis A occurs endemically in most parts of the world, especially where there is overcrowding,[1] and studies on the prevalence of antibody to hepatitis A in Europe have shown higher concentrations among those who live in Mediterranean countries.[2-6] It is an infection often associated with travel: in West Germany and Switzerland over 60% of acute cases have a history of recent travel abroad,[7] and in the west of Scotland 20% of cases are in returning travellers.[8] The beneficial effect of human normal immunoglobulin in preventing hepatitis A has long been recognised,[9] and it is commonly given to intending travellers to countries where there might be increased exposure to hepatitis A.[10] The dramatic upsurge in the number of people travelling from Britain—22·1 million visits abroad were made by British citizens in 1984, 12% to destinations beyond Europe[11]—has increased the need to protect travellers from hepatitis A.

Do all such travellers need immunoglobulin? A random serum survey of 511 travellers predominantly from the west of Scotland conducted between 1979 and 1983 showed that 64% already had antibodies to hepatitis A—30% of those aged 10-19 rising to 89% of those over 60 (personal observations). This is similar to the prevalence reported in random testing of blood donors in 1980 from the same area and in comparable age groupings.[12] Thus many intending travellers already possess antibody and are presumably not at risk from hepatitis A.

Added to this is the question of expense. An injection of normal immunoglobulin costs £3-£9 depending on the manufacturer and dose (250 mg intramuscularly for six weeks' protection and 750 mg for six months' protection[13]); and in certain circumstances a fee of £3.45 may be claimed by doctors from the health board.[14] Last year the West of Scotland Blood Transfusion Service distributed 1249 phials, most to immunise prospective travellers (Scottish National Blood Transfusion Service, personal communication). When this cost is balanced against that of antibody testing (from £8 down to £4 depending on laboratory throughput (Hepatitis Reference Laboratory, Glasgow, personal communication) there is a distinct economic benefit in selective screening before immunising as opposed to immunising the putative traveller at risk. Using such information, Larouze *et al* have devised a formula that enables the cost benefit to be calculated.[15] This benefit accrues with increasing age in the traveller, length of stay abroad, and frequency of visits abroad; implementing a screening policy also minimises unnecessary immunisation and makes for effective use of a limited resource.

JONATHAN H COSSAR
Research associate
DANIEL REID
Consultant epidemiologist

Communicable Diseases (Scotland) Unit,
Ruchill Hospital,
Glasgow G10 9NB

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REPORT ON THE VISIT OF DR. JONATHAN H. COSSAR

(C.D.S.U.) TO THE WORLD HEALTH ORGANISATION

24TH - 26TH SEPTEMBER, 1984

Monday, 24th September.

9.30 a.m.. An introductory meeting with Dr. A. Vessereau. General information on travel and health was exchanged. Recent reports of ill-health in travellers visiting Portugal were discussed.

Details regarding the departments and individuals to be visited were expanded upon.

10.00 a.m.. Dr. I.D. Carter gave a most interesting and detailed summary of the work of W.H.O. in relation to the Primary Health Care programme (Alma-Ata 1978) and the strategies for Health for All by the Year 2000. There are some common governing principles between this programme and the promotion of good health in travellers. For example the traveller's individual responsibility and participation in the planning and implementation of his health care whilst abroad and during travel; gaining the confidence and support of other professional groups such as the travel trade; also due regard has to begiven to prevailing economic, public/environmental health, and socio-political factors in the country(ies) visited.

11.00 a.m.. Mr. G. Ozolins detailed his department's work in the promotion of environmental health. Discussion focussed on aspects of community water supply and sanitation, W.H.O. guidlines for drinking-water quality, environmental health in rural and urban development and housing, and drinking water control in small community supplies. These topics have implications for travellers, notably in travel to third world/underdeveloped countries.

1.30 p.m./

1.30 p.m.. Dr. R.M. Henderson is predominantly involved with immunisation programmes in children in the third world countries. Discussion included the relevance of promoting polio immunisation in travellers in the context of life-long immunity following a primary immunisation course.

2.30 p.m.. Trachoma and other causes of blindness in underdeveloped countries are the main interest of Dr. B. Thylefors and his department. With improved socio-economic conditions there has been a general decline of this problem over the past two decades quite apart from the effect of specific eradication programmes. The traveller is therefore unlikely to encounter this problem unless visiting relatively remote and underdeveloped areas of third world countries. This may become more noticeable with the popularisation of "adventure" holidays involving safari trips to the interior regions or living in "native" conditions and sharing close contact with the local population.

Despite these comments it is unlikely that the returning traveller will suffer much more than a prolonged and very irritant conjunctivitis or an episode of haemorrhagic conjunctivitis, both of which are essentially self-limiting and respond to general symptomatic treatment without further complication. They are thus likely to pass unrecognised by the primary care physician. An awareness of the problem and its avoidance through basic personal hygiene targeted on "at risk" groups of travellers will minimise this problem.

An interesting historical note is the prevalence of trachoma in Europe up until a century ago having been imported both by the Crusaders and during the Napoleonic campaigns ("Egyptian" eye), declining with socio-economic improvements alone, the last trachoma hospital closing in 1947 in Northern Finland.

4.00 p.m./

4.00 p.m.. Mr. Unakul outlined his work in advice, planning and technical expertise in relation to water supply and sanitation monitoring and control. There is no specific remit within WHO linking this work to countries or areas involved with tourism although a specialised committee can be formed at short notice on receiving a request for help with such a problem.

Tuesday, 25th September

10.00 a.m.. Dr. E. Onori gave details of the extensive work and excellent documentation provided by WHO in their malaria control programme. Clearly there is no shortage of up to date information provided but there remains a problem of disseminating the correct information to the prospective traveller in a timely, efficient, accurate and inexpensive way. This is an area which ideally lends itself to a computerised service (JAMA 251; 8 p.1026-27).

11.00 a.m.. Discussion with Dr. S.K.Litvinov considered the topic that there is no specific group within WHO concerned with monitoring the health of the traveller. Specific programmes such as the control of diarrhoeal diseases are of interest as they are likely to benefit the traveller as well. A global programme of Salmonella surveillance is also being undertaken.

2.30 p.m.. Dr. S.K. Noordeen detailed the overall situation of leprosy in the world. He confirmed that this is not a problem for the short-term traveller and even the rela tively longer periods spent in endemic areas by missionary and other medical workers is not a major hazard.

3.30 p.m.. Aspects of food and water safety including its role in air travel were discussed with Mr. R.F. Davies. There was agreement that with the global numbers of travellers and tourists, greater cognisance of the health problems experienced by this group of people was merited at both the national and the international level. With the recruitment of other international and national groups who have a vested/

vested interest in the health of travellers, more effective dissemination of health education and advice could be achieved.

Wednesday, 26th September.

10.00 a.m.. Dr. A. Smith is concerned with the problem of insect and rodent control in international travel. As well as the aspect of importing/exporting vectors between countries there is considerable interest in airports themselves. Some large international airports may cater for 1 million meals per day. Such vast quantities of food and refuse added to the numbers of people in transit exemplifies the attractions of an airport and its environs to disease carriers. A further problem is the presence of vast "shanty" towns within the confines of the airport in many third world countries. Clearly the potential for the transmission of food and waterborne disease to travellers at international airports is cause for concern and vigilance.

11.00 a.m.. The preparation of the Weekly Epidemiological Report is conducted through the offices of Mme. J. Rossel. Assistance has also been provided in the revision of the W.H.O. booklet, Immunisation Requirements and Health Advice for International Travel. In producing this booklet a compromise has to be achieved between the statutory requirements, giving comprehensive details on all illnesses associated with travel, and a manageable size with acceptable production costs. This may also be an area where collaboration with other international organisations, who have a common interest in the health of the traveller and may be independently producing similar information (such as I.A.T.A., W.T.O., I.L.O., F.A.O. and National Tourist Boards), could be of mutual benefit in pre-travel health education and the economic use of resources.

1.30 p.m.. Mr. Hogan outlined the W.H.O. five year programme dealing with the control of diarrhoea which is exclusive to the developing countries. There are three parts to this a) oral rehydration therapy, b) the development and field trials of new vaccines such as for typhoid, cholera and rota-viruses,and c) the evaluation of the safety and efficiency of drug/

drug treatment. Monitoring of salmonella infections is taking place in countries involved in the programme. There is no established programme of monitoring salmonellosis in returning travellers in the developed countries. The traveller is likely to benefit from the research findings and implementation of the diarrhoeal control programme but is unlikely to be considered per se as having any contribution to make in terms of research interest. Including the migrant worker and the political refugee in the definition of traveller complicates the exclusion of "travellers" from this programme.

2.00 p.m. The problem of collecting meaningful statistics from member countries world-wide was discussed with Mr. L. Ray. The conflict of interest between national politics and collecting epidemiological data also applies to monitoring and investigating illness in international travellers.

3.00 p.m.. Dr. F. Käferstein confirmed the interest of his department in improving the hygiene of food handling and preparation in making a major contribiton to food and waterborne illness. There is currently in preparation an advisory handbook on this topic. It is hoped to distribute this widely with the assistance of other interested groups such as the W.T.O. and national tourist authorities with the aim of improving staff awareness and training in the catering industry. It may also be possible to encourage national hotel grading bodies to include this area within their inspection controls and assessment criteria. Such measures should have a direct bearing on these illnesses occurring in travellers.

4.00 p.m.. Viral respiratory illnesses were discussed with Dr. Sobeslavsky. It is difficult to effect any realistic control measures for these illnesses in travellers. Considering the wider field of viral illnesses in travellers these are likely to be reduced by the implementation of the various programmes already mentioned.

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I also wish to record my appreciation for the generosity of Mr. A.R. Miller in providing funds for this visit through The Miller Fellowship.

THE BRACKENBURY AWARD 1984

(Final Report)

Project Title : A study of illness amongst package tourists and other travellers, and a study of the serological evidence of immunity to poliomyelitis and to other pathogens.

Purpose and Background to Research Project:

Interest in the problem of infection among "package" and other tourists was generated in Scotland in 1973 after the deaths from Legionnaires' disease of three members of a "package tour" to Spain from Glasgow (Reid, Grist and Najera, 1978). The detailed investigations of this incident brought to light considerable morbidity (34 per cent) among the tourists. Subsequent investigations by workers at Ruchill in collaboration with various other interested parties in different parts of Scotland (e.g. consultants with patients recently returned from abroad, community medicine specialists, the British Airport Authority at Glasgow Airport, Renfrew District Council, Glasgow District Council and various tour operators) allowed a preliminary assessment to be made of the hazard of Legionnaires' disease to the traveller (Grist, Reid and Najera, 1979) and of the risk of infection in general to those going abroad (Reid, Dewar, Fallon, Cossar and Grist, 1980).

A grant from the Chief Scientist Organisations in March 1978 allowed the appointment of a part-time Medical Officer (Dr. J.H. Cossar) to further these studies. Initially research was concentrated on the data already collected and this in turn influenced the direction of further studies detailed in the bibliography references (APPENDIX).

Investigations/...

Investigations continued resulting in data collection on 9,300 travellers requiring detailed analysis and comparisons with the results from the 4,127 tourists already studied in detail. It was also planned to carry out a cumulative analysis on all the data and to look at various factors such as, the experience of different groups of travellers, illness related to country visited, illness related to the season, illness in different years, illness and smoking habit, the immunity of travellers to poliomyelitis, the immunity of travellers to tetanus, and the immunity of travellers to typhoid.

These studies are to help determine the vulnerability to illness whilst travelling in relation to age group, experience of travel, life style, time of year, country visited, immunity to infection and pre-existing health status. Assessment can then be made of the effectiveness of current pre-travel information, advice and the existing communications system.

An approach was made to the Scottish Health Education Group in order to examine jointly, the effectiveness of Health Education in the prevention of travellers' illnesses and to suggest methods of improving the current situation.

In 1984 funding was sought from the Brackenbury Award with the objective of recruiting a data preparation operator to enter both the retrospective and the prospective data into a computer. This was to facilitate the production of an accurate and rapid analysis, real, comparative, and cumulative, both of the data already collected and of the future data from the in-patient and general practice studies.

Interim/...

Interjm Report Update:

The main direction of the research over the past year has been in consolidating and organising the information already collected with the objective of compiling an accurate database. With the fuller use of computer analysis techniques it is hoped to retrieve the maximum useful information from the returned questionnaires and to further the evaluation of the problem of illness associated with travel.

Initially just over 2,000 questionnaires were entered on the departmental ICL 1500 computer. On 28th January 1985, a junior clerkess (Miss Denise Walne) was recruited to assist with questionnaire data processing. Her post was funded by the Brackenbury Award. During the 14 week part-time employment spent by Miss Walne at Communicable Diseases (Scotland) Unit 6,950 questionnaires were coded ready for entry on to the computer. In addition 3,250 of these forms were entered and stored on the new departmental computer (ITL). This leaves a balance of 3,700 questionnaires to be stored.

It is envisaged that thirteen tabulations of questionnaire data (see APPENDIX) will provide the optimum information display. Programs for the first three tables have been completed for the ICL. However at present there are difficulties in data retrieval from this computer.

In addition the installation and use of new technology is not without difficulty and this also affects the prompt analysis of and results from input data. An insight to this situation is afforded in some enclosed minutes from the Unit data processing meetings (APPENDIX). I am obliged to have the help of Mr I Cocket from the C.S.A. Computer Unit in addressing this problem and he is hopeful that the data tabulations will be available by October.

Other/...

Other Developments:

Since September 1984, the Scottish Health Education Group has been actively involved both in further development and funding of the research. An information brochure for distribution to intending travellers has just been test marketed, and discussion is to take place on a proposed travel health symposium. (Correspondence relevant to this subject is contained in the APPENDIX). This is an example of positive feedback to the consumer from the research.

During September 1984, I was privileged to visit the World Health Organisation in Geneva to exchange information on illness associated with travel with various groups who have a shared interest in this work. In June 1985, I visited the Centers for Communicable Diseases, Atlanta and Johns Hopkins University, Baltimore, to exchange information with other groups who have a common interest in this research. These trips were made possible through the generosity of the Miller Fellowship. Reports on these visits are contained in the APPENDIX.

A further survey on the health of returning travellers is planned for July 1985. The questionnaire has been revised to include enquiry into any health precautions taken prior to travel, such as immunisations (see APPENDIX).

In conjunction with the Scottish Health Education Group it may be possible to conduct a local advertising campaign prior to the departure of this proposed survey group enabling a comparison to be made with travellers in previous studies. This may give an insight into the value of such an advertising campaign.

A/...

A joint publication with the Scottish Health Education Group is planned (detailed below).

Update on publications (copies in APPENDIX).

Surveillance of hepatitis B virus infection in Scotland, 1973-1982.
Ako, T.I., Follett, E.A.C., Dewar, R.D., Cossar, J.H., Reid, D.
Journal of Hygiene 1984, 93:233-236.

This study of 2,893 persons with laboratory evidence of infection reported in Scotland during the period 1973-82 will be most helpful in setting a perspective for looking at the laboratory evidence of hepatitis infection in travellers. Studies on the serum already collected of the prevalence of viral hepatitis markers in travellers have already commenced.

Illness associated with a package holiday in Rumania.
Grist, N.R., Cossar, J.H., Reid, D., Dewar, R.D., Fallon, R.J., Riding, M.H., Bell, E.J.
Scottish Medical Journal (in press)

This paper details the health experience of 370 holidaymakers with a high proportion of reported illness (75%). The editor's revised publication date is July 1985.

Illness associated with international travel: a ten year review.
Cossar, J.H., Reid, D., Grist, N.R., Dewar, R.D., Fallon, R.J., Riding, M.H., Bell, E.J.
Travel Medicine International 3.1.1985:13-18.

This/...

This is a cumulative review of illness experienced by 4,127 travellers over the past decade.

Travel brochure health information survey.
Reid, D., Cossar, J.H., Ako, T.I., Dewar, R.D. et al.
(1st draft).

This paper outlines the real and projected growth in numbers of travellers worldwide, summarises the problem of illness associated with travel, details the deficiences in pre-travel health information in the 64 current travel trade brochures studied, and proposes a collaborative approach to this subject involving the travel trade, health educators, and the medical profession.

EMPORIATRICS

REPORT ON VISITS TO

C.D.C. ATLANTA

&

JOHNS HOPKINS MEDICAL SCHOOL

BY

DR. JONATHAN H. COSSAR

3rd - 6th JUNE, 1985

3rd & 4th June, 1985.

CENTERS FOR DISEASE CONTROL - ATLANTA

Meetings and conversations with:

Dr. B. Music, et al - Global EIS

Dr. M. Schultz, et al - Quarantine Division

Dr. D. Hopkins, et al - Global status of dracunculiasis

Dr. R. Tauxe - Enteric diseases (ships/aeroplanes)

Dr. Thakur - Surveillance operations

Dr. Gregg - MMWR surveillance

Monday, 3rd June.

General orientation detailed the structure, function and relationship of CDC to central government and other health agencies. Comparison was made between an ill patient accepting medical intervention and a community threatened by an outbreak of infection permitting epidemiological intervention. Whilst such a situation is of limited value for that specific episode, the assistance provided by the community, private/commercial concerns, and individuals, can be harnessed both in solving that problem and making future contingency plans.

Attendance at the weekly report meeting of Global EIS gave an insight into the involvement of the division with worldwide epidemiological problems and of the interaction between EIS staff, fieldworkers, and groups travelling to and from the USA e.g. Peace Corps Volunteers.

Time was available between scheduled meetings for informal discussion which ranged over the wide field of emporiatrics. Considerable interest was expressed in the surveys undertaken by the Communicable Diseases (Scotland) Unit (CD(S)U) on the health of the returning traveller, at present no comparable studies are ongoing in the USA. There are distinct similarities between the UK and US traveller. Both business and vacation travel/

travel is continuing to expand both in terms of numbers and in worldwide destinations, although detailed US statistics were not available for comparison with those from the Business Monitor Annual Statistics (HMSO) in the UK. The US traveller is also susceptible to travellers' diarrhoea ("turista"), particularly on visits to Mexico, perhaps the comparable experience is the UK traveller visiting North Africa. Travel to the less developed countries in Central and South America, Africa, Asia and the Far East exposes the US traveller to the full spectrum of tropical diseases and to a sanitation infrastructure which is in sharp contrast to that in the home country or in Northern Europe.

It is debatable whether there is less awareness of these hazards amongst US travellers compared with their UK counterparts. It has been speculatively (if not contentiously!) suggested that knowledge and experience gathered during the British colonial era, the time of early explorers, and missionaries, familiarises schoolchildren exposed from an early age to the details of this heritage, with the concept of hazardous/exotic disease in foreign lands. To redress the balance, anecdotally in my role as primary care physician in Glasgow I see two to three US citizens per month - unwell whilst on vacation. I have been impressed by the first-aid kit, drugs and high standard of health documentation carried by these travellers.

Tuesday, 4th June. /

Tuesday, 4th June

The weekly team report meeting within CDC under its remit of WHO designated Collaborating Center for Research, Training and Control of Dracunculiasis provided the forum for exchange of information between research and laboratory workers, desk officers for different countries/areas and team workers returning to and embarking from the US. Considerable excitement was generated by the anecdotal comment from fieldworkers that pools inhabited by frogs are associated with areas free from dracunculiasis and vice-versa. Independently research workers are studying frogs parasitised by Guinea worm larvae and had noted that this appears to be an "end stage" cycle. The two groups were previously unaware of the mutual significance of these findings.

In the US with the success of the measles vaccination programme cases of measles are now exclusively imported, thereafter substantiated by serology then reported, as occurs with poliomyelitis in the UK. The disease recording system at CDC which forms the basis of the Morbidity and Mortality Weekly Report (MMWR) is similar to that for the Communicable Diseases Scotland (CDS) weekly report. In the Scottish report dysenteries and sexually transmitted diseases detail those contracted abroad usually naming the country visited; malaria is simiarly reported both by CDS and CDC, and measles in like manner only in the MMWR.

The/

The expanding use of modern technology is in evidence in the production methods used for the MMWR. It is written on word processors at CDC and the final copy sent to the printer on floppy disc. Thus the "galley proof" stage and its contribution to errors is eliminated, with both time and manpower savings. Future developments will enable case reporters to register the data using standard coding procedures directly on to a computer memory bank via the telephone; this can then be downloaded and checked at CDC on a daily basis.

Caribbean cruising is a popular vacation pastime and cruise ships mainly call at just two US ports in the Gulf of Mexico. CDC by thorough monitoring of sanitation procedure aboard these ships exercise control over the sanitation standards on board. A weekly "Summary of latest inspection results of international cruise ships" is produced, made available and readily consulted, both by travel agents and prospective travellers. This publicity with its inherent commercial implications maintains an almost salutory control over the sanitation standards operated on these ships. Daily reports of diarrhoeal illness on board are logged and CDC contacted once a certain threshold attack rate is exceeded. This procedure is subject to random inspection. When an outbreak occurs the ship may be boarded or met by investigators from CDC, crew and passengers interviewed and samples and swabs taken. This is essentially an interventionist role only, as there are logistic and other difficulties in extending this to a regular surveillance programme.

Responses/

Responses from other travel carriers (such as airlines) to contact from CDC regarding outbreaks of infection vary from indifference to overreaction (suicide by a company president). This is a field where regular surveillance is crucial to the best health interest of the traveller but which is a potential minefield of personal, commercial, corporate, national, multi-national, military and political reactions and interactions.

On account of factors mentioned earlier and the high esteem in which MMWR is held, editorial policy endeavours to be as factual as possible, providing guidelines but avoiding policy comment. Even so problems can arise, e.g. an interpretation put on a recent statement of the higher incidence of AIDS in Haitians had a profound effect on the tourist trade in that country with a consequent loss of desperately needed foreign currency.

5th & 6th June, 1985.

JOHNS HOPKINS SCHOOL OF HYGIENE & PUBLIC HEALTH

Meetings and conversations with:

Dr. E. Diamond (Professor) - Department of epidemiology

Dr. B.F. Polk (Associate Professor) - Infectious diseases epidemiology

Dr. H.R. Fischman (Associate Professor) - " " "

Dr. S.A.J. Goings (Associate Professor) - " " "

Dr. A. Vernon (Mellon Fellow) - Department of epidemiology

Dr. H. Goodman (Professor, Director) - Tropical medical center immunology and infectious disease department

Dr. T. Baker (Professor) - Department of international health

(Telephone conversation with Dr. S. Sears - Department of epidemiology)

Wednesday, 5th June

I was privileged to be included as an observer at a global epidemiology working group meeting held at the Uniformed Services University of the Health Sciences, Bethesda, Maryland. From time to time numbers of US servicemen are distributed throughout the world and the services support a well developed epidemic intelligence service. It is recognised that the latter can be up to two months ahead of the rest of the world's epidemiological intelligence, particularly in the field of malaria resistance. It would be helpful to other agencies to harness this most useful information source without prejudicing military security.

Details were given of the assistance given to refugee camps in Somalia in cholera control. The major problem was the constant influx of new infected refugees as opposed to chronic carriers. The proximity of the camp to a major township also represented an epidemiological threat and the remit of the support group was to assist with camp relocation. It was reported that the logistic key to successful assistance was efficient transportation of expert personnel in the remote environment. The refugee population quickly mastered the construction methods for a safe sanitation infrastructure for the camp and in view of this it was a pity that the support group had been given neither the training nor remit to disseminate the principles or oral re-hydration therapy. This is relatively simple to communicate, can be effected with local resources, and is likely to significantly reduce mortality rates.

It/

It was apparent from the informative papers presented at this joint meeting that there is scope for epidemiological interaction between these two groups, in particular information exchange, which would be of mutual benefit.

Thursday, 6th June

The results from travel health surveys as from any survey are influenced by response rates and by comparison with valid control groups. The health experience of non-responders remains an interesting unanswered question. These comments are equally applicable to serological studies. In the pursuit of epidemiological "purity" consideration of potential study groups requires careful evaluation. For example, the appeal of a pre- and post travel survey of a readily accessible group from the military is of limited control value in view of the narrow age range, medical pre-selection, physical fitness training, regular health surveillance, dietary control and atypical environmental exposure.

It would be of interest to study other groups such as airline personnel and to make comparison between ground and regular aircrew from the aspect of incidence of respiratory infection. The relative close confinement of passengers in aircraft and the re-circulation of the same de-humidified air provides an optional environment for an explosive type outbreak of respiratory infection such as occurred with an influenza outbreak during a flight to Alaska. To study passengers in transit per se and temporally relate any respiratory problems, is a most difficult exercise.

Gaining/

Gaining the assistance of passenger carriers such as airlines and corporate groups with employees resident and commuting overseas presents difficulties. There is always concern that any findings or publicity will be commercially harmful and also inhibition in case involvement causes additional expenditure. Whilst this attitude is understandable it hampers research into the subject of illness associated with travel by affecting survey studies and funding sources.

There are additional study factors specific to the USA compared to the UK. Many international gateway airports have to be considered. Differentiation has to be made between gateway, final destination and onward travel airports before studying groups of travellers. The descriptive term "abroad" which in the UK equates to travel overseas requires a different definition for the US citizen such as "travel to a country beyond/outside mainland USA". Postal sera collection as carried out in Scottish studies would need modification on account of greater distances, climatic extremes, and different organisation of postal and health services.

Any survey programme attempting to deal with these aforementioned factors will need substantial funding from the outset to facilitate a successful study. It does not seem unreasonable that those likely to derive benefit from such a programme should contribute towards funding, viz. tour operators, travel agents/companies, multi-national corporate groups, passenger carriers, travel health insurers, and travellers themselves. Convincing these groups of the benefits from such activity requires astute publicity and marketing. The/

The development of travel clinics offering pre- and post travel health advice, information and treatment both for groups and the individual is likely to be a most positive influence in promoting this concept.

The involvement of other global organisations such as the WHO would help in increasing international awareness of the problem of illnesses associated with travel. Comment relevant to this statement is contained in the accompanying paper - Visit of Dr. Jonathan H. Cossar (C.D.S.U.) to the World Health Organisation 24th - 26th September, 1984.

SUMMARY

In both the USA and in the UK illnesses associated with travel are becoming increasingly important due to the expansion in numbers of travellers and in world-wide destinations. The vacation traveller, business traveller, travel trade and military personnel are all at risk from unfamiliar pathogens when outside the home country. This hazard is compounded by the speed of modern travel and increased by lack of or inaccurate pre-travel health advice.

Ill health in the traveller and the importation of infection will be minimised by co-operative information exchange and research funding between the medical profession (epidemiologists and primary care physicians), the travel trade, multi-national organisations and the military.

Monitoring of, and research into emporiatrics in the USA and the UK are likely to follow alternative approaches on account of differences in scale, geography, funding and administration, but both share a common aim which is mutually supportive.

A discussion paper is enclosed which makes a case for involving WHO in disseminating information about this problem in an international context.

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cc: Dr. D. Reid
Professor N.R. Grist
Mr. R. Dewar
Mr. S. Mitchell
Mr. A.R. Miller
Mr. M. Raymond
Dr. J. Emslie