The traveller returning from a visit to a distant country and developing an infection is not a new feature of British life. In 1348 the Black Death, which was brought to England by travellers from the Middle East, killed half the population of this country. Until relatively recently, however, foreign travel was principally the prerogative of the wealthy (often accompanied by a personal physician) or of government employees such as servicemen or civil servants. These groups usually had ready access to advice on the health hazards of visiting unfamiliar countries, and their own medical services staffed by clinicians with expertise in tropical medicine. Tours were almost invariably prolonged and return journeys by sea were of a duration that exceeded the incubation periods of most common infections. An infected patient usually recovered or died before the ship arrived at the home port. Finally, infectious diseases were, at one time, accepted as part of everyday life; the diagnosis of typhoid fever in a recently returned traveller has not always merited a mention on the front page of The Times.

The aeroplane has brought about a revolution in travel. Commercial airlines carried over 4 million passengers in 1949 and over 600 million in 1978 (30 million passing through Heathrow Airport) and for 1980 the figure is likely to be 900 million. It is now possible to circumnavigate the world in 48 hours, and, because of cheap packaged tours, holidays abroad are no longer restricted to the privileged few. A recent survey of air travellers returning to Glasgow showed that almost half had been ill while abroad or shortly after return, most illness occurring in holiday-makers.

School-children whose parents live and work in tropical countries can return home at each vacation, while large-scale immigration from the Indian sub-continent and East Africa has led to constant travel between the UK and former British colonies. Today, commercial organisations rely more on brief visits by representatives to foreign countries than on large expensive overseas organisations.

Improved diagnostic techniques have led to the recognition of certain previously unknown infections—notably Lassa fever and related illnesses, and Legionnaires' disease. These are uncommon, but have attracted excessive attention in the media.

The increase in notifications of malaria in England and Wales is a good example of infection acquired abroad by unsuspecting travellers unaware of (or unconcerned by) the hazard (Table 1). Infections caused by Plasmodium vivax often have relatively prolonged incubation periods of 9 to 12 months which lead to difficulties in diagnosis.

Another health hazard of travel is the ready access in many countries to 'across the counter' medicines. In Spain a woman was given a chloramphenicol-containing cough elixir that subsequently caused a fatal aplastic anaemia, and a young man was supplied with oral dexamethasone by a chemist in Majorca whom he had consulted about a rash. On return to Birmingham his chickenpox eruption and systemic upset were so intense that the GP suspected smallpox.

The diagnoses in 104 recently returned travellers admitted to East Birmingham Hospital during the first nine months of 1980 are shown in Table 2. Of interest are the two groups of patients with self-limiting pyrexia and undiagnosed (travellers') diarrhoea. Some of the former group had been given antibacterial and/or antimalarial therapy by a GP before admission, thus obscuring the diagnosis. It is important to remember that cotrimoxazole (Septrin; Bactrim) is active against malarial parasites as well as many bacteria, including Salmonellae. Its 'blind' prescription to recent travellers can therefore suppress a number of infections. Patients with diarrhoea for which no obvious cause can be found often have giardiasis and frequently respond to a course of metronidazole.

A knowledge of the incubation periods of infections contracted during travel, especially in tropical and subtropical countries, can be of help when a clinician is faced with a patient recently returned from overseas (Table 3).

The returned traveller may consult a doctor for two reasons. He may request a 'medical check-up'—either on his own initiative or at the suggestion of his firm or organisation. Time and unnecessary expense can be saved by adopting a policy similar to that outlined in
Table 2. Diagnoses in recent travellers admitted to East Birmingham Hospital between 1st January and 30th September, 1980.

| Diagnosis                        | No. of cases |
|----------------------------------|--------------|
| Malaria                          | 112          |
| traveller's diarrhoea            | 26           |
| Hepatitis                        |              |
| Virus A                          | 14           |
| Virus B                          | 4            |
| Non-A/Non-B                      | 2            |
| Enteric fever                    |              |
| Typhoid                          | 15           |
| Paratyphoid                      | 1            |
| Other salmonellae                | 8            |
| Giardiasis                       | 5            |
| Undiagnosed fever                | 5            |
| Mixed intestinal infections (bacterial + parasitic) | 4 |
| Legionnaires' disease            | 4            |
| Intestinal helminth infection    | 3            |
| Campylobacter enteritis          | 2            |
| Infected insect bites            | 2            |
| Typhoid carrier                  | 1            |
| Brucellosis                      | 1            |
| Onchocerciasis                   | 1            |
| Tuberculosis                     | 1            |
| Amoebiasis                       | 1            |
| Encephalitis (?arbovirus)        | 1            |
| Rabies contact                   | 1            |
| Rubella                          | 1            |
| Shigella flexner dysentery       | 1            |
| Total                            | 216          |

Table 3. Usual incubation periods of some imported infections.

| Incubation Period | Illness                        |
|-------------------|--------------------------------|
| Short (1-7 days)  | Diphtheria, Cholera, Bacillary dysentery, Yellow fever, Dengue fever |
| Intermediate (8-21 days) | Malaria, Typhoid fever, Typhus fever, Poliomyelitis, Viral haemorrhagic fevers (Lassa etc), Smallpox/monkeypox |
| Long (more than 21 days) | Virus hepatitis, Leishmaniasis, Trypanosomiasis (Gambiense), Schistosomiasis |

1 Benign tertian malaria may present for up to 12 months, or longer, after departure from endemic area.
2 Virus A hepatitis may occasionally have a shorter incubation period (2-6 weeks with mean of 4 weeks).

Table 4. Programme for travellers requesting medical 'check-up'.

| Illness abroad and well on return | Stool culture microscopy Blood Hb and ESR Eosinophil count Liver function tests Malaria CFT E. histolytica FAT Schistosoma FAT (if indicated) |
|------------------------------------|----------------------------------------------------------------------------------------------------------|
| No illness abroad and well on return | Nil required but report symptoms should they occur |
| Illness abroad and well on return | Admit to hospital for investigation |

preferably more, specimens of fresh stool, monitoring of temperature, collection of blood for culture and microscopy for malaria, and (if indicated), filaria and trypanosome parasites. Delay in diagnosis and therapy is often avoided by admission to hospital, and the necessity for repeated out-patient attendances is frequently obviated.

The second reason for seeking medical advice is the development of illness after return, and the common presenting features are fever, diarrhoea, rash, jaundice and, rarely, cerebral symptoms. There may often be two or more of these features present simultaneously. Some of the commoner causes are listed in Table 5.

Table 5. Returning traveller — presentation of important infections.

| Pyrexial Illness | Diarrhoal Illness |
|------------------|-------------------|
| Malaria          | Bacillary dysentery |
| Typhoid fever    | Salmonella enteritis |
| Typhus fever     | Ameobic dysentery |
| Tuberculosis     | Giardiasis |
| Filarisis        | Cholera |
| Visceral leishmaniasis | (Schistosomiasis) |
| Trypanosomiasis  | Arbovirus infection |
| Brucellosis      |                  |
| Cerebral Symptoms | Typhoid fever |
| Malaria          | Typhus fever |
| Trypanosomiasis  | Cutaneous leishmaniasis |
| Rabies           | Larva migrans |
| TB meningitis    | Arbovirus infections |
| Arbovirus encephalitis | Leprosy |

The Febrile Patient

It is of paramount importance to consider the possibility of malaria, especially in an expatriate recently returned from Africa who is most likely to have the malignant (falciparum) form of the disease that can be rapidly fatal. One negative blood film does not exclude malaria; if in doubt treat with chloroquine, but quinine or Fansidar should be given if the patient has returned from an area...
where chloroquine-resistance is known to occur, such as south-east Asia to the east of India (including Bangladesh), Central and South America, and certain parts of East Africa, especially Kenya and Tanzania.

If the patient does not have malaria, the next diagnosis to consider is typhoid fever (Table 6). Blood cultures should be taken and, if typhoid seems likely from the clinical picture, treatment started with co-trimoxazole or chloramphenicol. Bone marrow examination can sometimes be useful in patients with undiagnosed febrile illness who have recently returned from tropical countries. It may confirm the diagnosis of Kala-azar (visceral leishmaniasis) or of typhoid fever, in which blood cultures can be negative in patients who have already been given antibiotics.

If a viral haemorrhagic fever (Lassa fever, Marburg disease or Ebola virus disease) is considered on epidemiological grounds, for instance recent return from West or Central Africa, advice should immediately be sought from an Infectious Diseases physician. There has undoubtedly been an over-reaction in the UK to these infections. Although they can be fatal, their infectivity appears to be low and they are very rarely imported into this country. Over the past two years we have investigated 20 patients suffering from febrile illnesses that developed within 21 days of arrival from West or Central Africa. None had viral haemorrhagic fevers. The majority had falciparum malaria, a condition requiring urgent treatment which can be delayed by over-zealous attention to the possibility of Lassa fever. When postulating a diagnosis of Lassa fever or related disease, factors to be considered include whether or not the patient has taken malarial prophylaxis and continued for at least four weeks after return, the nature of the symptoms, e.g. sore throat (common in Lassa fever, but not in malaria), and the place of recent residence in Africa—the viral haemorrhagic fevers are endemic in certain rural areas but are unlikely to be the cause of fever in a person who has lived in a European hotel in a city.

Amoebic liver abscess may be a cause of undiagnosed fever and can usually be demonstrated by ultrasonography.

The Patient with Diarrhoea

Stool culture and microscopy are the principal diagnostic aids in these patients. Sigmoidoscopy with rectal biopsy

### Table 6. Typhoid fever — England and Wales. January 1978-June 1980.

| Recent travel abroad to: | Cases |
|--------------------------|-------|
| Indian sub-continent     | 369   |
| Mediterranean countries  | 84    |
| West Africa              | 27    |
| Middle East              | 14    |
| Other                    | 52    |
| No recent travel abroad  | 69 (11%) |
| Total                    | 615   |
can be helpful, especially in amoebic infections. Stool microscopy is frequently negative in patients with giardiasis, a diagnosis which must be considered in every returned traveller with persistent diarrhoea—if in doubt treat with metronidazole. *Entamoeba histolytica* fluorescent antibody test is of value in invasive amoebiasis. There is a similar test for schistosomiasis.

The Patient with Jaundice

Virus hepatitis is the usual cause of jaundice in the returning traveller. It may be due to Virus A but is often caused by Virus B infection, which is common in tropical countries. Virus B hepatitis can be contracted by blood transfusion, from non-disposable needles and by sexual transmission (especially by homosexual practices). Other sexually acquired infections that may be contracted during travel include syphilis, gonorrhoea and amoebiasis (the ‘gay bowel’ syndrome). Although amoebiasis commonly affects the liver it is an unusual cause of jaundice.

The Patient with a Rash

The rash may be ‘acute’ or ‘chronic’. Infections causing acute skin lesions include enteric fever (‘rose spots’), typhus fever (eschar) and certain virus diseases that can produce haemorrhagic eruptions. These include the arenavirus infections (*Lassa* fever, etc.) arbovirus infections (dengue) and smallpox. The last naturally acquired case of smallpox occurred in Somalia in 1977 but the related infection monkeypox is endemic in Central Africa.

More indolent skin lesions occur in cutaneous leishmaniasis, fungal infections, tuberculosis and leprosy. Biopsy of the skin lesion may be required for diagnosis.

The Patient with Cerebral Symptoms

Tuberculous meningitis is occasionally diagnosed in recently arrived immigrants from Asia. Outbreaks of meningococcal infection, which are common in hot countries, may involve travellers.

Encephalitis in returned travellers may be due to rabies or an arbovirus infection (e.g. Japanese B encephalitis) or to African trypanosomiasis (‘sleeping sickness’).

Prevention of Diseases of Travel

As many recent travellers seeking medical advice will go abroad again, the opportunity for giving advice on the prevention of diseases of travel should not be missed. Advice on immunisation and malaria chemoprophylaxis is given in Table 7.

The choice of antimalarial agent will depend on the country or countries to be visited. Chloroquine 300 mg once a week or proquanil 100-200 mg daily is sufficient for the Indian sub-continent and much of Africa. For south-east Asia, Central and South America and East Africa, Fansidar (pyrimethamine plus sulphadoxine) one tablet weekly, or Maloprim (pyrimethamine plus dapsone) one tablet twice a week, is indicated.
Human normal immunoglobulin for protection against Virus A hepatitis in non-immune subjects is desirable for overland travellers in tropical countries and for those going to live in primitive circumstances. The same applies to rabies vaccine, which is especially recommended for those going to remote areas without ready access to medical care.

*This article is based on a paper read at the Conference on Infection in Britain Today held at the Royal College of Physicians in November 1980.*

### The Privies of Paris

John Ayrton Paris was fond of the rhetorical question. ‘How can it happen’, he wrote in 1813, ‘that in Britain, a country distinguished above all others for the unceasing jealousy and circumspection with which everything that even remotely interests the life and comfort of the subject is scrupulously regarded, a science so peculiarly calculated to control the disorders of the social system, to rescue innocence from infamy or death, and to lead to the detection and punishment of crime, should for so long a period have been imperfectly appreciated and utterly neglected?’

The science was medical jurisprudence which Paris considered had only just reached that point of certainty which could render it into law. He divided the science into forensic medicine and medical police, that is the regulation of public health by law. He saw problems in this, as ‘The spirit of British liberty and independence not only resists the perpetual intrusion of authorities, so necessary in other countries for the preservation of public health, but insures, without the aid of legal enactments, all the benefits which can accrue from domestic cleanliness and attention.’

Paris was scornful of ineffective foreign legislation, quoting a French royal ordinance of 1819 that contained 34 articles governing the building of privies, compelling householders to undertake ‘most expensive and troublesome building or repairs’. The ordinance did not apply to those who installed ‘Messrs Fauche-Borel’s Patent Movable Inodorous Convenience of whose advantages almost all the learned Societies of Europe have reported most favourably’. ‘We have noted’, wrote Paris, ‘this decree to show what importance the French Government attaches to this subject and upon this occasion it is impossible to withhold those feelings of national pride and exultation which the contemplation of this subject must afford us; we have in our own metropolis no less than 200,000 privies of which only 10,000 are water closets. In Paris the number does not exceed 70,000 and yet with all the cumbrous enactments which that government has passed for their regulation how far inferior they are in cleanliness and how far greater are the effects of their effluvia when compared with similar establishments in our city. The truth is that the most elaborate system of medical police will never be so effective as the spirit of cleanliness which is so characteristic of this great and free people.’