days. It should not, however, be put off too long, as the bladder will then become overdistended. The extent of the bladder dullness should be watched, and if it extends more than a short distance above the symphysis a catheter should be passed. Ten grains of hexamine or half an ounce of glycerin left in the bladder will encourage subsequent micturition.

TYPHOID FEVER IN THE BASQUE REFUGEE CAMP

BY

RICHARD TAYLOR, M.B., B.S.,

Senior Medical Officer of the Camp

A unique event occurred in May of this year when large numbers of children arrived in England from the scene of the Spanish civil war. Their embarkation from the port of Bilbao and subsequent arrival by the s.s. *Habana* at Southampton have been described already in medical journals.

By May 24 over 4,000 children between the ages of 5 and 14 had arrived at North Stoneham Camp. They had lived for some months in Bilbao and surrounding villages, many of them in bomb-proof shelters and cellars, with contaminated water to drink and very little food. True to its reputation, the Bay of Biscay had been rough, and most of the children had been sea-sick. They were accompanied by 280 Spanish women teachers and fifteen Catholic priests, only four of whom could speak English. The main camp had been hurriedly organized for the reception of 2,000, and the English volunteers had only forty-eight hours' notice that 4,000 were on the way. Including the English staff it was estimated that 5,000 human beings were crowded into one large field. The care of such a large number of alimentary tracts under these conditions constituted an emergency public health problem of the highest importance.

On May 26, two days after arrival, two cases of unexplained pyrexia admitted to hospital in Southampton direct from the *Habana* were diagnosed as enteric fever. It was therefore necessary to take all precautions to prevent the spread of the disease.

Camp Organization

The medical personnel consisted of five resident doctors, a matron, six trained nurses, and about twenty V.A.D.s. The following units were organized, with telephonic communication, a medical officer being in charge of each:

1. *Headquarters marquee*.
2. *Casualty marquee*, to which was attached an Army hospital tent with twelve beds. This unit served as a camp out-patients' department.
3. *Isolation camp*, constructed a hundred yards away from the main camp, provided with a three-foot fence and patrolled. It was divided into two parts; one-half consisted of a second Army hospital marquee for observation cases, and the other half of bell tents for typhoid contacts. It was an independent unit, with its own cookhouse, latrines, and shower-baths.
4. *Moorhill*, an old country house situated four miles away, converted for use as a temporary hospital with fifty beds. Separate rooms were used to isolate suspected cases of infectious disease.

The main camp was divided into three sections. Reveille sounded at 6.30 a.m., with cheerful music from a broadcasting van. It was amusing to watch the little people folding blankets and preparing their tents with great pride and artistry for the morning medical inspection at 7 o'clock. Each child was seen by a doctor accompanied by an interpreter, and the sick were sent to the casualty tent, which acted as a medical sieve. Some were detained under observation, others sent to Moorhill, and

any case suspected of typhoid went direct to the isolation camp, where blood was collected for Widal reactions and specimen stools were obtained. Pathological material was immediately forwarded to the public health laboratories of Winchester and Southampton. Those with positive blood reactions and non-lactose-fermenting stools were admitted to the Southampton Isolation Hospital. In the early days there were hundreds of cases of febrile gastro-enteritis, due to overfeeding, and our pathological friends were kept exceedingly busy.

Sanitation

This proved to be a difficult problem. War conditions had affected the hygienic habits of the children, who deposited faeces and urine everywhere. The latrines were provided with narrow trenches, which were disinfected several times daily with chloride of lime. Hedges and ditches were treated in similar fashion and burnt out. Garbage was collected and burnt in incinerators. Some stagnant pools were drained and a stream which ran through the camp to Eastleigh was made to percolate through a chloride of lime contact-bed. The drainage system of the old manor house at Moorhill was investigated and improved. As a result of these precautions flies were exceedingly scarce.

On May 30 a boy of 12 from the main camp was diagnosed as a case of enteric, and on June 1 another case, that of a girl of 8, occurred at Moorhill. These probably were contacts from the *Habana*. Fortunately, the fear of enteric scared away thousands of curious visitors and many superfluous helpers. A police patrol closed the road to the camp and a strict pass control was organized. Lessons in camp hygiene were given to the Spanish teachers and priests. The children were fed in large marquees and forbidden to take food away. Pails of dettol solution were provided outside all food tents and kitchens. The children and camp personnel were trained to wash their hands before and after meals.

Another case of enteric occurred at Moorhill on June 4. Up to this date evacuations to various centres in England had proceeded normally, but 3,280 children were left. Naturally many medical officers of health and refugee committees hesitated to receive children from a typhoid-infected camp. Finally, Catholic organizations and convents, which had arranged to take 1,400, refused to accept them unless they were guaranteed free from the disease. As the children had by this time recovered from their under-nourishment and fatigue, more specific measures for the prevention of enteric were considered.

Inoculations

A leading article in the *British Medical Journal* of April 10, 1937 (p. 758), summarizes international opinion on the subject of the prophylactic value of typhoid inoculations, but no opinion could be obtained as to the value of vaccine treatment given in the presence of an epidemic. It is known that agglutinins appear in the blood within a week of a single subcutaneous injection of typhoid vaccine, but it is not known when an effective immunity develops. After careful thought it was decided to inoculate the whole camp with two injections of T.A.B. vaccine, at a week's interval. If any child was actually incubating the disease the attack would be precipitated. Widal reactions would not be reliable, but it was decided to diagnose from bacteriological examination of the stools.

The Lister Institute sent 2,500 c.cm. of vaccine and prepared further quantities for the second dose, 1 c.cm. of which contained 500 million *B. typhosus*, 250 million paratyphoid A, and 250 million paratyphoid B. Doses were graduated according to age, small children of 5 receiving a first dose of 0.2 c.cm., while those of 14 and adults received 0.5 c.cm. On June 6, 7, and 8 all the children, including typhoid contacts, and the camp staff were inoculated at the rate of over 1,000 a day. The children had intense faith in the procedure, and neglected cinema

and games to face the needle. Reactions were moderate, with a rise of temperature and malaise for twenty-four hours. A few severe reactors were admitted to the hospital tent, but there were no septic arms. A week later a second double-strength dose was given, checked by a card index system, and by this time the camp was exceedingly typhoid-conscious. Preparations were made in local fever hospitals for large numbers of patients, but no more cases occurred. Two cases were admitted with non-lactose-fermenting stools, but these proved not to be enteric.

It is interesting clinically to note that all the typhoid cases suffered from roundworms. The onset of enteric was sudden, with pyrexia and loose stools, and the Widal reaction was positive to a dilution of 1 in 250 on the same day. All five patients were extremely ill, but recovered under the kindly care of Dr. Thompson of the Southampton Fever Hospital.

Summary

For the following reasons conditions were ideal for the spread of typhoid fever:

1. All the children were under-nourished and many were suffering from vitamin-deficiency diseases. They had lived for three months on a diet of rice and beans.
2. The camp was overcrowded. Efforts were made to space out the numbers in the bell tents, but families and friends often crowded together when night had fallen. It was quite a common thing to find some tents with two or three inmates and others with sixteen and eighteen.
3. For the first two weeks sanitary conditions were appalling. During the Spanish War the children had lost all hygienic control. Faeces, urine, and garbage were deposited in and around the tents, hedges, and ditches.
4. Typhoid contacts sent to the isolation camp resented their imprisonment. Their small friends dodged the guards to visit them.

The incidence of typhoid fever is not high in the Basque Province, and there is no reason to suppose that they had developed an immunity. Sufficient time has elapsed for it to be stated that no cases have occurred except the five diagnosed. It is therefore claimed that mass inoculation prevented a typhoid epidemic. The Basque children are now widely scattered over England, Scotland, and Wales, and the main North Stoneham Camp is closed. The foregoing description of the typhoid outbreak is only a fraction of the routine medical work carried on there. It might be necessary in the future to care for our own children in emergency conditions of war, when the experience gained from these unfortunate refugees would be most valuable.

Altogether about 7,000 children have been evacuated to France, Belgium, Russia, and Mexico. It will be of great interest to compare notes of the incidence and treatment of infectious diseases from our medical colleagues of those countries when they become available.

I would like to express my thanks for the excellent team work of the medical staff, trained nurses, and the V.A.D.s; to Dr. Cronk of Winchester and Dr. Maurice Williams of Southampton for arranging the pathological investigations; to Dr. Garrett and his sanitary staff of Eastleigh; and to the St. John Ambulance Brigade of Eastleigh.

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In the reports of the administration of the Stockholm hospitals, just published, reference is made to the constantly increasing use of blood transfusions. A blood donors' register was established in 1934 and the persons listed there, who are periodically examined, have been called on in ever-increasing degree since then. Last year the number of transfusions from these persons was 672.

THE GENERAL PRACTITIONER AND PREVENTIVE MEDICINE

ADDRESS BY SIR KAYE LE FLEMING

The subject for discussion at the tenth annual Health Education Conference, held at the London School of Hygiene and Tropical Medicine on October 1, was "Health Education and the General Practitioner." The following is an abstract of the opening address by Sir Kaye Le Fleming, M.D., Chairman of Council, British Medical Association.

Machinery of the Health Services

I am going to put before you, quite shortly, the views that I think are held by a very large number of general practitioners on the subject which I have to open, which I think might as well be phrased as "the position of the general practitioner in preventive medicine"; because public education in health matters is one of the most important aspects of preventive medicine.

Before discussing the position I would ask you to consider the machinery by which the great health services of this country are run. The Minister of Health devises legislation, which is put before Parliament; and we do not think, perhaps, from the point of view of the doctor, that Parliament is particularly well educated in medical matters. But in our democratic machinery health legislation is evolved at the centre.

The next step is to pass on the machinery to the local health authorities. Local health authorities sound a very important bit of machinery, but I am not sure that by taking a collection of individuals and calling them a local health authority you can make them authorities in health matters. One of the inevitable sacrifices that we must make in the cause of democracy is to have popularly elected bodies dealing with highly technical subjects. Local health authorities are as a rule very good administrators, who, putting it quite baldly, know very little about health matters. The Ministry recognizes this, and in order to help them they are supplied with a medical officer of health. He is the direct link between the central health administration and the local health authority, and a very important link indeed. In my view he lacks that measure of independence that he deserves. He must advise his local health authority, and if he is to do his duty well he must at times give them advice that they do not like; and if the local authority can entirely disregard his advice such an arrangement cannot be in the best interests of the public health.

Contact with the Homes of the People

The machinery is a central machinery and lacks contact with the homes of the people. How is the health education to reach the homes of the people? One thinks, first of all, of the Press. I am not concerned to discuss to-day that factor in health education, but it is a great misfortune and one which I hope will be remedied, that the Press should not have ready access to the best considered opinion of the medical profession. The other great factors, of course, in reaching the homes of the people, are doctors and nurses. Let me deal with the doctor. I would be the first to admit, and deplore, the fact that the education of the doctor in preventive medicine is wholly insufficient.

The respect paid to preventive medicine in health education to-day is lip service only. The unfortunate student has to pass examinations. He is taught and he is examined by specialists who are extremely adept at their job; and he is taught to diagnose and treat disease. His sole object is to get through examinations. Speaking generally, neither his teachers nor his examiners have any close acquaintance with the machinery of public health