

SOME PUBLIC HEALTH PROBLEMS OF WAR EVACUATION
IN THE COUNTY OF NORTHAMPTON

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INTRODUCTION

Not the least of the problems confronting the Government on the outbreak of war was that of the evacuation of mothers and young children from danger areas to places of safety.

In the view of some the scheme was ill-conceived and badly executed and indeed there has been a good deal of evidence to support these contentions.

On the other hand it is difficult to imagine what more could have been done under the conditions of emergency which prevailed. Whether or not the emergency could have been better foreseen is not the concern of a medical writer.

Sociological and psychological factors made the task of those responsible for the scheme very difficult. The family - the basic unit of society - was broken up in the evacuation areas and gravely disturbed in the reception areas. Each social group in society has its own standard of living and behaviour, but under the scheme different social classes were forced to live together. Mass migration of this character was bound to bring to light aspects of social behaviour and medical problems unprecedented in the history of the country.

The thesis now presented is an attempt to review the circumstances and more especially the results of evacuation from the medical and sociological standpoints. It is hoped that it may succeed in clarifying some administrative points which have so far remained obscure, or have at least not been brought to focus. Should this aim have been accomplished the effort expended upon the investigation will not have been in vain.

The present survey concerns an industrial area in the Administrative County of Northampton, during the first six months of evacuation. The problems discussed relate principally to the writer's own district, but a wider field has been reviewed where it was considered desirable to show the general influence of evacuation within the county.

SECTION I

THE GOVERNMENT EVACUATION SCHEME

The scheme for the transfer of certain classes of the civilian population from danger areas to the country, commenced on 1st September 1939, in accordance with the recommendations contained in the report by the Anderson Committee (1). The committee recommended that plans should include special arrangements for priority classes, so that in time of war, there should be no indiscriminate transfer of population. This involved an order of priority both as regards the classes of persons to be transferred, and the towns to be evacuated and the provisional allocation of other districts as reception areas.

The scheme was limited to four classes, but in considering any question in relation to evacuation it must be borne in mind that private arrangements were made by many individuals, while the actual extent to which this took place can only be judged by the National Registration returns. This survey of medical and allied problems therefore includes, to some extent, the influence of non-official evacuation. The non-official evacuees are persons who were transferred by private arrangements to be cared for by relations for the duration of hostilities, or who were on holiday in the district when a state of war was declared. With the suspension of the Child Life Protection sections of the Public Health Act (2) children are supervised by the Billeting Authorities and the Education Committee.

The scheme was limited to four priority classes and was entirely voluntary. Subsequent to evacuation all billeting notices became compulsory under the Civil Defence Act. The classes of persons to whom priority was given under the scheme were as follows:

- (1) School children in organised groups with their teachers, together with voluntary helpers.
- (2) Children of pre-school age accompanied by their mothers or other responsible persons.
- (3) Expectant Mothers.
- (4) Crippled and Blind Persons.

All classes with the exception of group 4 were received into the district under consideration.

There were some three million evacuees out of a population of eleven millions in the areas scheduled for evacuation. They had to be absorbed into areas considered to be reasonably safe, containing a population of some sixteen millions. It was contemplated that the reception areas would be subjected to an increase of some 25 - 30 per cent. of population, and an increase of the child population by as much as 50 per cent. in some areas.

A census of possible hostesses was taken in reception areas, and in due course the respective local authorities were informed by the Ministry of Health of the numbers expected to be evacuated to their areas. The local authorities of Higham Ferrers and Irthlingborough were informed that their accommodation was being held in reserve. This action will be shown later to have been the cause of many difficulties in billeting, and a partial failure of the scheme. Householders were more than willing to accept unaccompanied children into their homes, but many did not bargain to receive mothers and young children.

It may be stated, that in face of the tragedy of war, and the mental anguish of both evacuees and hostesses, on the whole, all concerned attempted to their utmost to adjust themselves to the new national, social and economic life. There was no panic, and no heartrending scenes at the reception centres, while it was impressive to witness the wholehearted good spirit and morale which prevailed during the anxious days of primary evacuation.

The old adage 'Pray that your flight be not in winter' fortunately was fulfilled, and evacuation took place under ideal weather conditions. What more pitiable sight could have been witnessed than parties of children complete with their hand luggage and treasured possessions, of which there was abundant evidence, being marched off to their billets in the rain!

It was of more than common interest, and not without pathos, to see small children with their favourite toys, together with the

ubiquitous gas-mask, marching off to their billets. There is no doubt that the favourite toy animal or doll was a blessing to child and hostess alike, especially during the first few nights, for without such 'comforts' many of the children had difficulty in settling down to sleep. Such toys diminished the tendency to anxiety states by exercising the maternal and protective instincts.

This transfer of adults and children was a masterpiece in mass migration in many ways, but perhaps the most interesting feature which it revealed was that many of the children were verminous. Clothing was often deplorable so that many of the hostesses provided the children with new outfits. Septic sores, known locally as 'places' were common, while impetigo and scabies were not infrequent. The latter condition did not come to light for some time as such cases were probably missed at the rather inadequate medical inspection on arrival.

It must be stated, however, on behalf of the evacuation authorities that the children had not been in attendance at school for some five weeks previous to evacuation being ordered by the Government. This factor appears to have discounted the normal work of school clinics in the evacuation areas. Regarding the other priority classes, it should be noted that there are no statutory regulations under which medical inspection may be carried out without the concurrence of the individuals concerned.

The immediate problems confronting the reception authorities resolved themselves into those concerned with unaccompanied school children, and mothers with young children. The former was the easier of the problems, while the latter was the bane of local authority officials. The adults did not adapt themselves to the new regime as rapidly or with such facility as the unaccompanied school children.

The problems of epidemiology associated with mass migration of the civilian population did not present any serious

public health problems during the period under consideration. Theoretically the increase in the child population was expected to upset the 'herd immunity' in the reception areas. Although there has been a general increase in the notification rates for infectious diseases, until the total population at risk is accurately known, the apparent increase must be regarded with caution.

The number of evacuees received in the district and county and also the numbers remaining at the end of the investigation are given in Tables Nos. I and II.

TABLE NO. I.

Summary of Immigrant Population Statistics.

	Administrative County.	District Totals.
Total available accommodation.	78,335.	9,147.
Provisional allocation.	43,365.	7,756.
Received Sept. 1939.	23,610.	3,013.
Percentage of provisional allocation received.	54.	38.
Number remaining February 29th, 1940.	*	669.
Percentage remaining February 29th, 1940.	*	22.2

* accurate figures not available.

TABLE NO. II.

DISTRICT STATISTICS.

Local Authority.	Estimated Population Mid - 1938.	No. Inhabited Houses Dec. 1938.	Available Accommodation.		Provisional Allocation by L.A.					Received September 1939.				Remaining February 1940.				Evacuation Areas.	
			No. of habitable Rooms.	No. of Persons.	Unaccompanied Children.	Teachers and Helpers.	Mothers and Young Children.	Accommodation Reserved Privately.	Total.	Provisional Allocation by Ministry.	Unaccompanied Children.	Teachers and Helpers.	Mothers and Young Children.	Total.	Unaccompanied Children.	Teachers and Helpers.	Mothers and Young Children.		Total.
HIGHAM FERRERS	3120	1025	404	1187	629	90	63	137	919	700	21	4	351	376	19	1	40	60	HOXTON SHOREDITCH W. HAMPSSTEAD.
RUSHDEN	15090	4711	21459	6957	3666	248	572	774	5260	4500	1000	100	1034	2134	437	32	24	493	WALTHAMSTOW KINGS' CROSS
IRTHLING-BOROUGH	4500	1375	6306	2003	782	81	378	156	1397	1200	203	19	281	503	85	9	22	116	HOXTON W. ISLINGTON.
TOTAL FOR DISTRICT	22810	7111	31811	9147	5077	419	1013	1067	7576	6400	1224	123	1666	3013	541	42	86	669	

SECTION II

ARRANGEMENTS FOR THE RECEPTION AND MEDICAL INSPECTION OF THE EVACUEES

(a) In Rushden Urban District.

The priority classes received at Rushden came from the Walthamstow and Kings' Cross districts of London. They were evacuated from London by train and conveyed to Wellingborough Railway station some five miles distant from Rushden. Omnibuses conveyed them from the detraining station to reception centres set up at four local schools. On arrival at the local reception centres particulars of the party's identity were obtained by the reception officers. On admission to the schools the children were allowed free access to the lavatories. Thereafter, they were assembled and provided with light refreshments. Due to the immense task at the detraining centre of marshalling the children, it is regretted that a number of school parties were broken up and dispatched to different districts. This unfortunate occurrence interfered with the children's education. Attempts to rectify this unsatisfactory state of affairs only met with partial success, while at the end of the period under consideration one school had classes in three different districts.

The children were conducted to their billets by billeting officers after having received their emergency rations which were to sustain them during the first 48 hours. This issue of food was intended to prevent heavy demands by the hostesses on the local provision stores. The majority of children brought their own supplementary rations, which consisted mainly of fruit, sandwiches and chocolate. The parties for billeting consisted of approximately 20 children.

There was no difficulty in finding suitable billets for unaccompanied children, but there must have been some emotional reaction on the children whilst they were being conducted round the streets, and being viewed by their prospective hostesses. Many of the children enjoyed the experience as was evidenced by their smiles.

If brotherly love exists, it certainly was in evidence during the period of reception and especially so when the billet was finally settled. The majority of the prospective hostesses had already decided if they had a preference for girls or boys. Girls were much more readily accepted than boys by the hostesses. Generally speaking boys were more acceptable into families who had boys of their own, but in childless homes and those where the hostesses were elderly, girls were preferred. Misfits during billeting did occur, but this aspect will be discussed in detail in a later section of this survey. A number of children came with specific instructions from their parents that they should not be separated. Billeting Officers found difficulty in billeting more than one boy in a given billet.

Medical Inspection. The outstanding feature of evacuation was the absence of adequate medical inspection. This factor had far reaching effects on the success of the scheme, on the social services in the reception areas, and on the psychology of both evacuees and hostesses. Reception authorities understood that all unaccompanied school children would be inspected and certified fit for evacuation and billeting before being sent out from the city. This, however, does not appear to have been possible during the hurried preparations which had to be made for evacuation.

Although medical inspection was not carried out in all cases by the evacuation authorities, it should be borne in mind that the parents of the child evacuees were indirectly responsible, as they showed considerable reluctance in registering their children for evacuation. Partly, as a result of this fact, evacuation authorities were faced with the insurmountable task of mass medical inspection which could not be coped with during the intense activity associated with the dispersal of the evacuees from the danger areas. In addition, the evacuation authorities had to utilise their medical and nursing staffs for duties in connection with civil defence.

In consequence of this omission, arrangements for adequate medical inspection at the reception centres were totally inadequate to deal with the problem in a satisfactory manner. The most that can be said for the Rushden district is that children were inspected for rashes and verminous conditions by the School Nurses and Nursing Sisters of the St. John Ambulance Division. Inspection itself, however carefully carried out, is unsatisfactory if facilities are not immediately available for treatment. If any doubtful cases occurred they were referred to the writer before billeting took place, while in appropriate cases advice as to treatment was given to the hostesses. The priority classes had arrived, and they had to be billeted, as no accommodation was then available for cleansing and treatment. Although the children were examined as to their cleanliness, many cases of minor infestation by lice were passed unrecognised, and as will be shown in a subsequent section, caused much anxiety and annoyance to the hostesses concerned, and the billeting authority. All children, no matter their state of cleanliness, were eventually billeted, but it took many weeks of careful inspection by the school nurse and the goodwill of the hostesses to eradicate the unwelcome louse.

In addition to unaccompanied school children, mothers with young children and expectant mothers were received. The expectant mothers did not expect to be confined for some two months. Apart from some expression of anxiety by the expectant mothers as to their welfare, and the arrangements for their confinements, there were no objective signs of panic or disorder. On enquiry, the cause of their anxiety was found to have originated at the detraining station where two mothers had to be removed to hospital; apparently the train journey had been too long for them in their pregnant state. Both these mothers were able to be billeted at a later date, and went to full term.

One family had to be isolated in the local Smallpox Hospital, as a child showed a suspicious rash presenting the distribution of smallpox. Being unvaccinated, the whole family was isolated and kept under observation. The case proved to be one of pustular urticaria.

(b) In the Borough of Higham Ferrers.

Evacuees from Hoxton, Shoreditch and West Hampstead districts in London arrived by omnibus from Rugby, some ten days after the primary exodus from the city. They were originally evacuated to Rugby by train, but had to be re-evacuated from that town as it had been removed from the reception area list.

Elaborate arrangements had been made in this reception area well in advance of evacuation and were the subject of favourable comment by the Minister of Health in the House of Commons. Detailed arrangements had been made for the reception of unaccompanied children, but, when the provisional allocations were made by the Ministry of Health, this reception authority was informed that the town was being held in reserve. This action was disastrous, so far as the success of billeting was concerned, as the prospective hostesses had fixed ideas as to the age and sex of unaccompanied children they would prefer and had made their wants known to the chief billeting officer.

In general, the evacuees, who were mothers and young children, did not relish the prospect of being billeted in a small borough for the duration of hostilities. There were many unpleasant scenes at the local school, which served as the reception centre, while the billeting officers were frantically searching for accommodation. The difficulties of billeting were found to exist amongst both evacuees and hostesses. A number refused to be billeted and returned forthwith to the danger area in the city from whence they had come.

Medical Inspection. The mothers very much resented their children being examined for rashes and vermin by the voluntary

workers. As a result of the experience gained at Rushden, arrangements had been made for cleansing at the Public Assistance Institution, but in view of the chaos which prevailed and the resentment of the mothers, no verminous children were removed for cleansing. Conditions existing at the reception centre, could at some periods be termed a rabble, while the presence of a police constable had little effect in keeping order.

(c) In Irthlingborough Urban District.

The evacuees who arrived in this district came on the same day and by the same route as those who were received at Higham Ferrers. In addition to mothers and young children, unaccompanied school children and expectant mothers were received.

Billeting was effected in an orderly, but rather slow manner, while difficulty was experienced in billeting mothers and young children. It was found impossible to billet expectant mothers, so that they had to be finally billeted in an adjoining district. Complaints from the evacuee mothers were few, but they objected strongly to their children being inspected for the presence of vermin.

Medical Inspection. In spite of protests all children were thoroughly inspected by the local medical practitioner with the help of the School Nurse and members of the Women's Voluntary Services. Children who were found to be verminous or suffering from impetigo were billeted, only after the condition had been pointed out to the hostesses, and advice given as to the best methods of treatment. It speaks very highly for the goodwill which prevailed in this district that hostesses were willing to admit to their homes children infested with vermin or suffering from septic skin conditions.

(d) Clothing.

In addition to the clothing the children were wearing on the day of evacuation, the London County Council recommended that a complete change of clothing be carried. The following outfit was suggested, but from observation and information obtained from hostesses many of the children were sent off from the evacuation areas without an adequate outfit.

Girl.

One vest or combinations.
One pair of knickers.
One bodice.
Two pairs of stockings.
Handkerchiefs.
Slip and blouse.
Cardigan.

Boy.

One vest.
One shirt with collar.
One pair of pants.
One pullover or jersey.
Handkerchiefs.
Two pairs of socks or stockings

Additional for all.

Night attire; comb; plimsolls; towel; face-cloth; tooth-brush; and if possible, boots or shoes.

(e) Food for the Journey, including Emergency Rations.

It was also recommended by the London County Council that all adults and children should carry sufficient food for the day of evacuation. The suggestions for the children's food were as follows:-

Sandwiches (egg or cheese).
Packets of nuts and seedless raisins.
Dry biscuits (with little packets of cheese).
Barley sugar (rather than chocolate).
Apple, orange.

Liquids were deliberately omitted. Bottles were not recommended to be carried by children, but water for First Aid purposes had to be carried by the teachers. Packets of food were supplied to necessitous children some hours before the time at which the school parties were expected to move off.

In addition to food for the journey, under arrangements made by the Food (Defence Plans) Department of the Board of Trade, rations were issued to the evacuees on arrival at the reception

centres. The maximum issued in any case was as follows:-

Child.

- 1 - can meat, approximately 4 ounces.
- 2 - cans of milk (one sweetened, one unsweetened).
- 2 - packets or 1 lb. of biscuits.
- $\frac{1}{4}$ lb. chocolate, or two 2d chocolate crisps.

Adult.

As above, with one extra can of meat.

Evacuees were asked to make as few purchases as possible during the first 48 hours. After that interval, it was anticipated that retail shops would have received sufficient supplies to meet the requirements of the additional population in the reception areas. In actual experience this issue of food was found to be superfluous, as the hostesses had laid in sufficient stocks of food in anticipation of evacuation being ordered by the Government.

SECTION III

ARRANGEMENTS FOR THE TRANSFER OF MEDICAL AND NURSING PERSONNEL

It was contemplated by the Ministry of Health that evacuation authorities would transfer sufficient medical and nursing personnel to the reception areas together with the evacuees, to assist in carrying on normal social services. The meagre arrangements made only after a lapse of some weeks leaves much to be desired. Inadequate staff on School and Maternity and Child Welfare services played no small part in the partial failure of the scheme. This factor delayed treatment and cleansing of children, thus prolonging the period of inconvenience experienced by the hostesses.

In view of this rather severe criticism of the evacuation and central authorities, one might have thought that the general health and well-being of the evacuee children would have suffered severely, but from reports from other districts and the writer's own observations, the reverse was the case with the majority of children. Evacuee school teachers are high in their praise of the children's improvement in general health after a period of six months. On the other hand, the rapid homeward drift may have had a selective influence by removing from the district the less robust children who came from the poorer type of home in the city.

It was hoped that evacuation authorities would have sent sufficient medical inspectors to carry out routine medical inspections and hold treatment clinics in the reception areas. No medical inspectors were sent to the writer's district, but after a period of three weeks a School Dentist with her attendant and one School Nurse arrived in the district to assist in the care of the unaccompanied school children. The former were sent by the Borough of Walthamstow and the latter by the London County Council. Had a sufficient staff been sent from the evacuation areas, these officers would have been usefully employed in the School Medical Service and Child Welfare Scheme, thus relieving to some extent the local officers who were already overburdened by the additional responsibilities of Civil Defence.

SECTION IV

MATERNITY AND CHILD WELFARE SERVICES

(a) General Arrangements for Expectant Mothers.

Arrangements for the reception of this priority group presented special features in view of the difficulties involved. Preliminary arrangements were made by the supervising authority in consultation with the Ministry of Health and the London County Council, some months previous to evacuation being ordered by the Government.

Transport arrangements made in the London area divided into two parts the plan for the evacuation of expectant mothers. Mothers within one month of confinement were sent to a prearranged destination, while those at an earlier state of pregnancy were included among the parties evacuated during the general exodus from town to country.

The Ministry of Health took the view that the responsibility for the arrangements should rest with the supervising authority for maternity and child welfare. This involved an expansion of the County maternity and child welfare scheme. In addition to the provision of an emergency maternity hospital, the antenatal clinics were expanded to meet the needs of the emergency. The latter expansion was made in the writer's district by the addition of an extra medical officer for the first month of evacuation. After that time, the writer was able to conduct the clinics alone.

Before deciding the scale on which additional hospital accommodation should be provided, it was necessary to arrive at a figure which would give some indication of the number of beds required for expectant evacuee mothers.

It was assumed that approximately half the total of the evacuated population would be unaccompanied school children with adults in the proportion of one to ten children. The remaining half would be made up mostly of preschool children and their mothers and other relatives or voluntary helpers, and it was estimated that the proportion would be five women to three children. The proportion of

the women in the evacuated population would be $\frac{5}{8}$ of half the parties, which is equal to $\frac{5}{16}$ of the total. Assuming that all these women are of child-bearing age, the number who were likely to be pregnant was $\frac{1}{8}$, so that the maximum number likely to be confined within one year of arrival was $\frac{5}{16} \times \frac{1}{8}$, or $3/128$ or 23.4 per 1,000. The Census 1931, shows that only one woman in eight between the ages of 15 - 45 gives birth to a child in any particular year. All women who accompanied children were not of childbearing age, some were grandmothers unmarried etc., so that for a maximum figure it was safe to assume that the proportion of mothers likely to be confined within one year of arrival was 20 per 1,000 or two per cent. The number who were likely to arrive pregnant would be three-quarters of this number or 15 per 1,000 or 1.5 per cent. As a working basis with some statistical accuracy one assumed the proportion would be within the region of 1.5 - 2 per cent. It is regretted that as a result of the rapid homeward drift and the difficulty experienced in obtaining accurate information it was not found possible to test this proposition in actual practice.

(b) Emergency Hospital Accommodation.

In collaboration with the Ministry of Health, arrangements were made by the County Council with the trustees of the St. John Convalescent Home, Weston Favell, near Northampton, to equip the home as an emergency maternity hospital.

The administration of the hospital was undertaken by the County Medical Officer of Health. The existing staff managed the non-medical aspects of the hospital on behalf of the Ministry of Health. All expenses in connection therewith were made chargeable to the Evacuation account. The fees payable by the patients were based on the existing County scale of charges and were collected by the treasurers of the home.

In addition to the normal staff, who were retained, a Resident Medical Officer was appointed in consultation with the local War Emergency Committee of the British Medical Association. Retired

midwives were pressed into the service, but the majority were provided by the Central Midwives Board from the Royal Northern Hospital, London. Pupil midwives from the latter hospital were able to continue their training in the hospital. Specialist advice was provided on a voluntary basis by the County Council's consulting obstetrician. The emergency hospital was equipped and staffed to accommodate 65 cases. The accommodation thus provided proved sufficient in actual practice.

The intention was that only normal cases would be delivered in the emergency hospital, while difficult and complicated cases would be delivered in the Barratt Maternity Home some two miles distant from the emergency hospital. Cases of Puerperal Pyrexia were treated at the Northampton General Hospital, while in addition, accommodation was reserved at the Northampton Borough Isolation Hospital should additional beds be required.

Additional lying-in beds were made available at the Maternity Wards at the Public Assistance Institution, Kettering. The additional nursing staff of this hospital was also provided by the Royal Northern Hospital, London.

The expectant mothers arrived from the evacuation areas in accordance with the prearranged plans. Mothers expecting to be confined within one month of arrival were distinguished by a blue label, whilst those who were not expecting for a greater time by a pink label. Some 180 mothers of the former group were received at Northampton. Those expected to be confined within a few days were accommodated at the emergency hospital. The remainder were billeted within easy distance of the hospital. Those with pink labels arrived with the other priority groups in the county districts and were billeted in the ordinary manner. The names and particulars of such cases were collected at antenatal clinics, enquiry bureaux, and by District Nurses. The information obtained was transmitted to the County Health Department so that suitable arrangements could be made for the confinements. On receipt of such notifications of pregnancy, the mothers were visited by the District Midwives who advised

them to seek advice and guidance at the nearest antenatal clinic. When possible, arrangements were made for mothers to be re-billeted near the hospital about a week before the expected day of delivery.

In cases where such arrangements could not be made mothers were taken by car to the hospital a day or two before the expected date of delivery.

In the case of mothers accompanied by preschool children special arrangements were made in the same locality as the original billet, for the children to be billeted as 'unaccompanied children' at 10/6 per week. After the lying-in period the mothers were returned to the original billet together with their infants. A number of cases, however, returned home immediately after confinement, and did not require to be billeted. Some mothers evacuated themselves to this county for the sole purpose of their confinements, and had no intention of remaining for the duration of hostilities.

(c) Domiciliary Confinements.

It says much for the public spirit of certain householders that they were willing to accept expectant mothers into their homes. Only one mother was confined in a billet within the writer's district. The meagre allowance of 5/- per week for a period of two weeks did little to encourage domiciliary midwifery, while later an increase of this additional allowance to 10/- per week did not serve as an inducement.

Where it was proposed to have a confinement in a billet the conditions were carefully investigated by the District Midwives as to their suitability, and their recommendations sent to the supervising authority for confirmation.

(d) Antenatal Clinics.

Evacuee expectant mothers in the district attended the writer's clinic at Rushden. Some 28 mothers attended the clinic during the first week of evacuation, but the numbers rapidly diminished as many returned home within the first few weeks. It was obvious that the mothers who had been attending clinics in the

evacuation areas had been advised to attend at the clinics in the reception areas. It would have been to the mutual benefit of mothers and medical officers if the clinical records from the evacuation areas had been sent with the patients. Complaints made at the local clinic referred to the less generous scale on which milk, vitamin preparations and iron were provided.

The general physical and obstetrical condition of the mothers was very satisfactory: only one case being referred to the obstetrical consultant on account of an ovarian cyst. Tables Nos III and IV give the details of hospital confinements in the County and the district statistics.

TABLE NO. III.

Confinements in Hospitals.

Period September - December 1939.

	Weston Favell.	Kettering P.A.I.	Totals.
Admissions.	216	16	232.
<u>Births.</u>			
Male.	87.	9	96.
Female.	<u>78.</u>	<u>5</u>	<u>83</u>
	165	14	179
<u>Still-births.</u>			
Male.	1.	-	1.
Female.	<u>1.</u>	<u>-</u>	<u>1.</u>
	2	0	2
No. of mothers who left hospital undelivered.	42.	1	43.
Transferred for complications.	9.	1.	10.

Transfers for Obstetrical Complications.

- Disproportion - 3.
- Premature labour - peritonitis - 1.
- Cardiac Disease - 1.
- Eclampsia - 1.
- Fibroid obstructing labour - 1.
- Prolonged labour - 1.
- Toxaemia - 1.
- Shoulder presentation - 1.

TABLE NO. IV.

District Statistics.

	Rushden.	Higham Ferrers.	Irthlingborough
No. Registered	33	6	-
No. Confined in billets	-	1	-
" " " Hospital	4	1	-
No. returned home undelivered	29	4	-

(e) Infant Welfare Centres.

The lack of medical and nursing personnel from the evacuation authorities was responsible for the temporary closure of some centres in the administrative County.

The writer's district was fortunate in retaining the centres at Higham Ferrers and Rushden. The Irthlingborough centre had to be closed for five months, until suitable accommodation could be obtained, as the usual clinic premises had been adapted as a First Aid Post. The work of infant hygiene however was carried out on a minor scale at a temporary school clinic by the health visitor.

Additional sessions were held at the Rushden centre during the first few weeks of evacuation for the immigrant infants and toddlers, but after a period of six weeks this was found not to be justified, as the evacuees were returning home rapidly. Those remaining in the district were absorbed into the normal centre. During the first few weeks the centre at Higham Ferrers was grossly overcrowded, but, as it was apparent from the beginning that very few mothers intended remaining for any length of time in the borough, it was not considered necessary to extend the facilities already in existence. Most mothers who attended the centres had been accustomed to taking advantage of the social services in the evacuation areas. A number brought with them their record cards, which proved useful in assessing progress of the children.

At Rushden emergency supplies of liquid milk were made available by the local reception authority in order to tide mothers with young children over the preliminary period of evacuation. During the period 1st - 13th September some 267 children were supplied with a total of 2,340 pints of milk. At the end of this period when the position became more stable, all applications for free milk were submitted to the supervising authority for Maternity and Child Welfare. Many of the applications however were not submitted by the Health Visitors where it was obvious that the income exceeded the sum of 7/- per head per week. All applications were considered on their merits, as the additional expense incurred as the result of the disruption of the family unit, did not permit of the application of a strict means test. In cases where confirmation was obtained from the evacuation authority that applicants were already in receipt of free milk, such applications were granted without question.

As will be seen from Table V, applications to the supervising authority were few in number. Those refused occurred early in September, while the grounds for refusal were that the information as to means was scanty or vague.

TABLE NO. V.

District.	No. of Applications.	Granted.	Refused.
Higham Ferrers.	8	6	2
Rushden.	28	19	9
Irthlingborough.	3	3	-
	39	28	11

SECTION V

SCHOOL MEDICAL SERVICES

(a) Minor Ailment Clinics.

During the first week of September 1939, minor ailment clinics were opened by the Education Committee. Existing premises were utilised in Rushden which served in addition the adjoining borough of Higham Ferrers. Special arrangements had to be made at Irthlingborough where rooms were hired for the purpose. The absence of medical and nursing staff from the evacuation authorities presented administrative difficulties, which were to some extent solved at the expense of the local school health services.

An assistant School Medical Officer held session at Rushden twice weekly for the first six weeks of evacuation. Towards the end of October one of the Medical Officers from the Government Emergency Medical Service took over one of the sessions. At the end of December when attendances were falling off, the sessions were reduced to one per week. As no medical assistance could be procured for the clinic at Irthlingborough, the Health Visitor carried out the work of treatment, referring any doubtful cases to the Rushden clinic or to the writer. Both clinics relieved the harassed hostesses and general medical practitioners of the responsibility of treating many minor ailments associated with the rough and tumble of school life, which in the normal course of events would have been treated by the mothers themselves.

Critical examination of Table No VI shows that septic skin conditions accounted for much of the work. These conditions were, as one would naturally expect, more common amongst boys as compared with girls. It was a significant feature that these conditions were slow in healing. This lethargy on the part of the dermal cells was, in the writer's opinion, directly associated with the state of nutrition exhibited by the children. Evidence of malnutrition co-existed in the majority of cases with septic skin conditions, as evidenced by anaemia, poor muscle tone, rickets, bronchitis etc. Children treated for unhealthy conditions of mucous membranes showed evidence

side of hypo-vitaminosis, probably associated with badly balanced diets. Under treatment and good management these conditions rapidly improved while it was miraculous to observe how quickly the general physique improved with the country life.

Although these measures contributed to general improvement it must be borne in mind that the standard of living in the district is on a high level, as there are no families who could be properly termed poverty stricken. From personal observations the writer is of opinion that the children remaining in the district at the end of the period of this survey have had a lasting impression made on their general physique and personal pride. Details of the numbers and conditions treated are enumerated on Tables Nos. VI and VII.

TABLE NO. VI.

Summary of Attendances at Minor Ailment Clinics.

	Male.	Female.	Total.
1st Attendances	213	173	386
Subsequent "	303	240	543
Totals	516	413	929

MINOR AILMENT CLINICS. TABLE NO. VII.

	Rushden and Higham Ferrers.				Irthlingborough.			
	First Attendances.		Subsequent Attendances.		First Attendances.		Subsequent Attendances.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
ABRASIONS	4	2	-	1	7	2	2	5
ABSCESSSES.	7	1	9	-	2	-	4	-
IMPETIGO.	8	3	9	4	13	11	34	33
RINGWORM.	1	-	-	-	-	-	-	-
SEPTIC SKIN CONDITIONS	51	17	193	67	8	7	16	14
URTICARIA.	3	2	1	-	-	-	-	-
SCABIES.	11	16	16	46	-	1	-	2
VERMINOUS CONDITIONS.	5	9	4	3	-	16	-	32
MALNUTRITION, ANAEMIA, DEBILITY.	25	18	9	4	2	-	3	-
COLDS, SORE THROATS, BRONCHITIS.	3	3	-	-	-	7	-	-
OTORRHOEA, OTITIS MEDIA, ETC.	12	8	29	12	1	5	-	3
VISUAL DEFECTS.	7	6	-	-	1	5	-	3
CONJUNCTIVITIS, BLEPHARITIS.	5	3	3	-	1	2	1	1
ENLARGED TONSILS & ADENOIDS.	7	4	-	1	-	-	-	-
ENURESIS.	3	5	-	-	8	5	-	-
ILL DEFINED CONDITIONS.	14	12	-	7	4	3	-	2
Total	166	109	273	145	47	64	60	95

(b) Verminous Conditions.

During the World War 1914-18, one of the most striking books to appear bore the title of 'Minor Horrors of War' by P.A. Buxton. This book revealed itself as a treatise, in a popular style, on bloodsucking insects which the warriors at the front were called upon to encounter. It is something of a coincidence that during the present war there should appear a monograph dealing with the louse. The title of the book in question is 'The Louse; An Account of the Lice which Infest Man; their Medical Importance and Control', from the pen of the same author.

By none more than the members of the Public Health Medical Services is it recognised that louse control is necessary because it is the known vector of certain infectious diseases, but the incidence of infestation is a standard of personal cleanliness.

A number of reports from reception areas have been found on examination to have been grossly exaggerated and not based on actual investigations. In one large reception area in Lancashire, Brothwood (3) found the number of evacuee children with verminous heads to have been 2.5 per cent. a figure which cannot be regarded as high considering the children hailed from a city.

The writer was under the impression that all unaccompanied school children scheduled for this district would have been inspected, and if found necessary, deloused before being evacuated. In view of this fact no local arrangements were made in advance for the provision of cleansing stations. Even had such facilities been made available it would have been an impossible task to cleanse all verminous children on arrival, owing to the numbers requiring delousing, and the lack of trained staff willing to undertake this class of work.

On arrival at the reception centres inspection of heads were carried out by school nurses or voluntary helpers; but from what subsequently developed it was obvious that many cases of minor infestation by pediculi escaped their vigilance.

Systematic cleanliness surveys were conducted amongst the native and immigrant children as soon as the schools reopened. Details of the inspections carried out during the period of the survey show that 2.5 per cent. of the native children and 7.8 per cent. of immigrant children were found to have defects. Examination of Table No. VIII. shows that the majority of cases noted were due to the presence of nits.

The outstanding feature of school medical inspections for many years in the district has been the low percentage of children found to be verminous. The numbers were so insignificant that the school nurses had no difficulty in keeping contact with all cases. The figure of 2.5 per cent. already quoted must be regarded as in part due to the dissemination of lice amongst the native population by the evacuee children.

A week or so elapsed before complaints were made in any number by the hostesses. The explanation in the majority of cases being that the hostesses in the district were unfamiliar with the louse, while it would not be straining one's powers of credulity to say that there are many women in the district who had never seen a louse or a nit in their lives. The writer is convinced that this fact was the principal reason for much mismanagement in detecting the presence of vermin.

It would not be correct to assume that this state of affairs was confined to the child evacuees, as a number of adult evacuees served as sources of reinfestation for the children.

It was obvious to the writer, within the first week of evacuation, that the louse was presenting a public health problem of no small magnitude. It is regretted that cleansing stations were not established in every district by the Education Authority, who, although not the reception authority are responsible for the cleanliness of children in attendance at school. It should be stated, however, on behalf of the responsible authority that within a

few days of reception all billeting officers were circularised with the information that cleansing facilities were available at Public Assistance Institutions. This appeared to meet the case in theory, but in actual practice was a failure. The difficulty experienced by the reception authorities was to find personnel who were experienced in this type of work and willing to undertake the actual cleansing. As the institution available for cleansing was some three miles distant from my largest reception area, transport was expected to be provided by the Women's Voluntary Services, but it was found impossible to enlist their help to transport verminous children to the institution. This reluctance on the part of the members of this voluntary service was understandable, when one recognises the fact that the louse in the district is so rare as to be a curiosity, better avoided at all cost.

In the interval, while appeals were being made to the evacuation authorities for the necessary skilled help, a number of the verminous children were cleansed at school clinics, while many hostesses attempted the cleansing themselves. Apart from the abhorrence the hostesses had towards the louse they were very anxious to cleanse the evacuee children, not only for their peace of mind, but also for the safety of their own children. As most of the hostesses were without experience in delousing, their efforts were soon discounted by recurrences.

This was the chaotic state of affairs in the district until the arrival of a London County Council school nurse, who was fully alive to all aspects of delousing, having had special experience in this work in cleansing stations as operated by the evacuation authorities. The reopening of schools, together with systematic cleanliness surveys of both native and immigrant children initiated the proper cleansing of the children.

Records of verminous conditions were made, and where necessary written instructions were sent to the hostesses and mothers, setting

out a simple and effective method for cleansing. The majority of hostesses and mothers accepted the advice in the spirit of helpfulness in which it was offered. In the case of children with minor infestations where the hostesses failed to carry out cleansing personal visits by the school nurse met with some degree of success. Children with major infestations were conveyed to the Public Assistance Institution and cleansed by the school nurse.

INSPECTION. Table No. VIII. gives the results of the cleanliness surveys amongst the native and immigrant school population.

In considering the table, it should be borne in mind that the figures quoted do not show the original incidence of uncleanliness amongst the population, as the surveys were only carried out after a period of school closure. Nits are easiest to identify on the hair, while in addition, head gear should also be inspected and, if from a verminous child, should be sterilised to prevent reinfestation.

In searching for nits it should be remembered that they are found close to the scalp, while the site of election is immediately behind the ears. In the present survey, if nits were found no differentiation was made between live nits and nit shells. During the survey the persons of the children were examined for the presence of *Pediculus corporis* and the general state of cleanliness.

METHODS OF DELOUSING. - The actual measures adopted varied with the degree of infestation present. Boys were sent to have their hair cut short after delousing; this had the effect of diminishing the possibility of reinfestation. This precaution was recognised by our ancestors, who shaved the scalp and wore a wig. This ancient custom is the basis of the military practice of cutting the hair short, particularly on active service.

(1) Paraffin Oil. - In view of the irritating effects of this oil on the scalp it was recommended that an emulsion made with equal parts of paraffin and olive oils be applied to the hair overnight. A rubber bathing cap or towel to be worn to protect the pillow.

TABLE NO. VIII.

UNCLEANLINESS SURVEY.

Number of children examined and classification.

SCHOOL.	NATIVE.							IMMIGRANT.										
	1	2	3	4	5	6	7	Total No. inspected.	Percent- age defect- ive.	1	2	3	4	5	6	7	Total No. inspected.	Percent- age defect- ive.
	1	1091	-	-	36	-	-	-	1127	3.17	829	-	1	50	-	7	-	887
2	540	2	1	27	-	3	-	573	5.75	333	1	2	33	-	11	-	380	12.37
3	1371	-	2	31	-	2	-	1406	2.49	265	-	1	7	-	1	-	274	3.28
4	330	-	-	4	-	1	-	335	1.76	534	1	2	43	2	21	-	603	11.44
5	796	2	1	12	-	2	-	813	2.09	743	1	-	24	-	7	-	775	4.12
6	311	-	1	-	-	-	-	312	0.31	167	-	-	2	-	2	-	171	2.34
7	576	-	1	22	-	5	-	604	4.63	86	-	-	9	-	4	-	99	13.12
8	1419	-	-	24	-	4	-	1447	1.93	137	-	-	10	-	-	-	147	6.79
9	243	-	-	2	-	-	-	245	0.81	-	-	-	-	-	-	-	-	-
10	873	-	-	17	2	-	-	892	3.13	481	-	3	49	4	12	-	549	12.36
11	589	1	-	9	-	-	-	599	1.68	182	-	1	7	1	-	-	191	4.7
TOTALS	8139	5	6	184	2	17	-	8353	2.56	3757	3	10	234	7	65	-	4076	7.82

1. Clean.

2. Dirty but no nits or vermin.

3. Septic skin condition.

4. Nits.

5. Nits and septic skin condition.

6. Nits and vermin.

7. Nits and vermin and septic skin condition.

On the following morning the hair to be shampooed with soft soap, and while still wet to be combed with a fine toothed comb. The use of vinegar was not recommended, as it has been recognised for some years that exposure to 10 per cent. acetic acid for several days has no effect on the cement attaching the nits to the hair. Very thorough combing of the wet hair was stressed with the object of getting rid of all nits and their shells. Actual combing should not be necessary if the liquid applied is an efficient insecticide. As there are many different grades of paraffin normally on the market, and as it is fairly certain that the constituents vary with the brand, failures may be recorded with particular brands of oil.

(2) Essential Oils. Sassafras oil held the field during the first week of evacuation until the local supplies were sold out. This oil acted as a psychological balm on the hostesses, but was successfully employed if followed by a thorough shampooing and combing of the hair. An essential oil such as this is to be regarded as a stupefying agent and only acts as an insecticide if brought into actual contact with the louse or nit. In view of this fact any hostess who used this oil was recommended to rub the oil well into the scalp.

(3) Disinfectants. Liquor Cresol Saponatis or Lysol, two teaspoonfuls to the pint of warm water, applied to the hair as a compress for thirty minutes, followed by a shampoo and thorough combing proved an efficient method. Carbolic lotion 1 - 40 applied in a similar manner for twenty minutes followed by the application of methylated spirit and thorough combing also had many successes.

(4) Methylated Spirit. It has been shown by Mellanby (4), that one can kill lice and nits with 70 per cent pure ethyl alcohol, or a mixture of seven parts methylated spirit with three of water. Not more than three ounces is required for a child's head, while for a boy with short hair half this quantity may suffice. The liquid is poured over the head, taking care to wet the hair behind the ears

and at the back of the neck, or it may be applied as a compress. The low surface tension ensures that all nits are well wetted. A rubber bathing cap is put on for an hour. After removal the hair dries in a few minutes, and need not of necessity be washed. This method commended itself to certain hostesses, as delousing could be carried out without neighbours realising that the child was verminous, thus preventing any modern social stigmata. Diluted methylated spirit is not highly inflammable and as the time of application is short it is to be preferred to paraffin applications. This method is only applicable to the intact scalp, as it produces a burning sensation when sores are present.

(5) Borax and Soft Soap. One part of powdered borax with two parts of soft soap made into a paste with water and applied to the hair in the form of a shampoo and allowed to act for twenty minutes gives excellent results when applied by an experienced operator. The hair is then combed towards the vertex with a fine toothed steel comb while the hair is still wet. It is a most convenient and cheap method for clinics where a number of children are being cleansed at the same time.

The psychological reactions of verminous children were marked as many were 'pitched from pillar to post' and held up to ridicule. The writer was forcibly struck by the dejected appearance of children brought for cleansing to the clinics. Ignorance regarding vermin and the facility by which they are spread amongst children gave rise to much unhappiness. The irate hostesses in many instances expressed their willingness to incur penalties under the Billeting Regulations, rather than tolerate their infested guests. An iniquitous practice occurred during the first two or three months of evacuation where billeting officers transferred verminous

children to fresh billets without disclosing the fact to the unsuspecting hostesses. Much friction arose as the result of this practice which delayed and increased the time necessary to cleanse the child population. The louse was certainly out of its element in the writer's district and was the direct cause of at least one case of hysteria where the hostesses' child had been infested from an evacuee. The time taken to cleanse the child population in the district was three months.

(c) Scabies.

Medical inspection of elementary school children in the county for the past decade has shown that the incidence of infestation by the *Sarcoptes scabiei* is exceedingly low and reflects very favourably on the high standard of cleanliness characteristic of the school population in the area. Out of a total of 12,739 medical inspections carried out during 1938, scabies was only recorded in some 14 cases.

Under such peace time conditions, the advent of this type of skin infestation presented practical problems to medical practitioners and Health Departments. Cleansing stations are not available in peace time, so that special arrangements had to be made to deal with the condition. Careful investigation amongst the evacuees showed that the cases with one exception were confined to the immigrant children. It may be safely stated that the infestation was brought to the district by the children from the evacuation areas, and did not result from contact with the native population.

Scabies was frequently missed or diagnosed wrongly by both medical practitioners and householders. Many cases masqueraded as eczema or septic spots for many weeks before the condition was correctly diagnosed. In some of the county districts heated arguments occurred between practitioners and experienced school nurses from the evacuation areas, while treatment in some cases was very unsatisfactory. Efficient treatment was not available for some time, as hospital staffs did not appear to understand the basis of treatment, while reinfestations were common as the result of inefficient sterilisation of clothing and bedding. Some cases had to be detained in hospital for periods up to six weeks.

In one's own district, the cases were found to be without a common origin in the evacuation areas. In an outbreak investigated in one of the other county districts all the cases were found to have been evacuated from the same street in London. It is interesting to note that this condition contributed to the breakdown of the scheme, and was the cause of a number of children being taken home

by their parents. A London Borough complained that children had been returned home because they were suffering from scabies. On investigation four children were found to have been sent home because they were suffering from this condition. The local medical practitioner who diagnosed the cases recommended the billeting officer to send them home as there were no local facilities for treatment. This decision was doubtlessly influenced by the hostesses and the billeting officer who were not aware that the cases could have been treated in the district. These persons did not appear to be cognisant of the fact that school clinics had been established for the treatment of such cases or that arrangements could have been made for treatment at a Public Assistance Institution.

In the writer's own district cases were treated by the medical practitioners under the scheme for the medical treatment of unaccompanied school children. Refractory cases were referred by them to the school clinic where arrangements were made for cleansing at the Public Assistance Casual Wards. Disinfestation of bedding and clothing was undertaken by the Health Department. Towards the end of December 1939, institutional accommodation became available for grossly infested cases. Less severe cases continued to be treated at the school clinic.

METHOD OF TREATMENT. The treatment of scabies in reception areas, for obvious reasons, demands firstly that it should be ambulant and inexpensive and secondly that the sarcopticide used should not irritate the skin or produce dermatitis.

In view of the unsatisfactory results and the incidence of post-therapeutic dermatitis associated with the traditional sulphur ointment method, the Danish treatment was adopted as the method of choice. This method was introduced to this country from Copenhagen by Lamholt (5), some twenty years ago. It was claimed for this method that a single inunction produced a cure within 24 hours, and

that relapses were never seen. The sarcopticide used was that introduced by Ehlers and Marcussen (6). The higher sulphides of potassium are the active constituents in the ointment, which on application to the skin produces a high concentration of sulphuretted hydrogen.

Major Infestations. Grossly infested children were treated as out-patients at a Public Assistance Institution. The child received an ordinary cleansing bath and after soaking in the bath for 15 minutes was dried, and the Danish ointment rubbed into the skin, with the exception of the face and scalp, special attention being paid to the affected parts. The ointment was allowed to dry on the skin for 15 minutes, then the child was dressed in the clothing he was wearing when treatment commenced, and returned to his billet. On the following day he was given a hot cleansing bath by his hostess, and clean underclothing provided. The infested underclothing was boiled and the bedding disinfected by pressure steam at the disinfecting station. In certain cases camp-beds were provided for children undergoing treatment. Treated cases were kept under surveillance by the school nurse for some weeks in order to detect any reinfestations.

Minor Infestations. Children with only a few lesions on the hands or wrists or who suffered minor reinfestations were treated at a school clinic in order to avoid transport difficulties.

Results of Treatment. The ultimate results obtained were satisfactory but the claims of Lamholt regarding recurrences were not obtained. A number of cases were successfully treated by one application of the Danish ointment, but the majority required three or four applications to effect a cure. The period taken to obtain the desired result varied from 3 - 14 days. The Danish method was a decided improvement on the traditional sulphur method which was used in an institution in another part of the county. Here post-therapeutic dermatitis was common, while some cases required a period of six weeks residence to effect a cure.

The general increase in the incidence of scabies throughout the country which has occurred since evacuation was ordered, has focussed attention on the condition, with the object of finding a simple, inexpensive and effective treatment which will yield a high percentage of cures and not give rise to skin irritation or dermatitis. Kissmeyer (7), of Copenhagen has re-introduced a method which he claims to be practically ideal, having successfully treated 8,000 cases. The whole treatment takes less than one hour, is ambulatory and seldom gives rise to irritation of the skin or dermatitis. The sarcopticide used is benzyl benzoate, which was first introduced some 28 years ago by Ludvig Nielson. The method consists of anointing the body with a lotion consisting of equal parts of soft soap, isopropyl alcohol and benzyl benzoate, following a preliminary hot cleansing bath. The whole body is well wetted by brushing on the lotion and allowing to dry for five minutes. Following a further application of the lotion and gentle drying with a towel the patient resumes the clothes he wore before the treatment started. Twenty-four hours later a second bath is taken and clean clothes put on. It is claimed for this method that it is ambulant, cheap, effective and gives rise to no serious post-therapeutic dermatitis. This method does not appear to have gained much ground in this country. From information obtained from colleagues who have tried this method it is unlikely that it will become popular, as considerable smarting is produced by the application of the lotion. The smarting may be so severe that the patients will not return for further treatment.

(d) Impetigo contagiosa.

This extremely contagious streptococcal infection of the skin has been indicated as one of the commonest skin diseases associated with evacuee children. From one's own observations there are grounds for doubting the incidence of alleged infections. The term impetigo has been loosely applied by billeting officials and hostesses to any eczematous condition of the skin. One case of the

disease could become the talk of a town. Many alleged cases of impetigo were actually infective eczema of the face or limbs, which is more common and often mistaken for genuine impetigo. As eczema of this type is aggravated by mercurial preparations, this confusion may add to the supposed group of refractory impetigo.

Genuine Impetigo contagiosa mainly affects the exposed parts such as the face and hands. The initial lesion is a small clear vesicle, which has extremely thin walls, being situated between the horny and mucous layers of the skin. Purulent exudate exudes freely from the base of the ruptured vesicle, which on drying forms a crust with a "stuck on" appearance. The condition is spread by inoculation and may be associated with Pediculosis capitis. With scalp infections, the occipital glands may become inflamed and break down, making diagnosis difficult. Infective eczema is characterised by its symmetry. The lesions are smaller and more numerous than genuine impetigo, while frequently the eyebrows are simultaneously and equally involved. A number of alleged cases of Impetigo contagiosa conformed to these characteristics. The number of cases treated at clinics for impetigo was thirty-five, a number which does not call for alarmist reports.

Treatment.

Crusts were dried up by the application of calamine lotion, and subsequently removed with warm olive oil. The raw surfaces were treated with dilute white precipitate ointment, Lassar's paste or zinc oxide Elastoplast. The latter method was of value during the early weeks of evacuation when clinics had to work at full pressure. As many of the children affected were suffering from secondary anaemia, due either to dietary deficiencies or chronic sepsis, they were given malt, cod liver oil and Parrish's food. The time taken to effect a cure was 10 - 14 days.

(e) Nocturnal Enuresis.

One of the medical revelations which became apparent within the first 48 hours of evacuation, was the undue prevalence of bed-wetting. Mothers are very reticent about bed-wetting in their own children, and until the children were evacuated the secret was so well guarded that the high incidence could not be even guessed.

The voluminous literature on the subject, together with the manifold methods of treatment and management, seem to show that our knowledge is in reverse relation to the frequency of its occurrence. Within recent years many writers have stressed the importance of psychological factors in the pathogenesis of enuresis, and many are inclining more and more to this viewpoint. The literature shows almost as many causes as articles written.

By enuresis, is meant, the repeated involuntary discharge of urine, after the age of two and a half years, in spite of careful training (8). It is a frequent symptom in childhood, and may be associated with a great many conditions of diverse origins, and therefore it is essential to investigate each case individually and to deal with it in relation to the cause rather than the effect.

Accurate information as to the incidence of the complaint is not available in this country for school children. Batty (9) investigating the incidence in nursery schools in Lancashire found 5 per cent. of children attending nursery schools to be suffering from this complaint. Investigations carried out by a group of Liverpool workers (10) in a reception area showed that 9 per cent of the evacuee children were enuretics. In addition, boys were more often affected than girls and the younger more than the older ones. This preponderance of males has never been satisfactorily explained. In the present survey the writer estimates conservatively that 12 per cent. of evacuee children were bed-wetters at some period in the reception areas. Many of the cases cleared up spontaneously once the children were comfortably settled in their billets and the excitement of the change in environment worn off.

In view of the far reaching effects on the success of the scheme, it will be convenient to review the aetiological aspects as applicable to evacuees as a class. This question of enuresis is fraught with many difficulties and requires very careful consideration. Specific reference will not be made regarding organic causes, but it is interesting to note that Campbell (11), investigating 700 cases from the urological aspect found an amazing variety of pathological conditions in the genito-urinary tract.

SYMPTOMATOLOGY - The bed may be wet once or several times during the night. Micturition before going to bed appears to have little influence on the symptom. The child does not usually awaken after the urine has been voided. Friedell (12) observed that in a considerable proportion of enuretics, the concentration of the urine is lower during the night than during the day, a reversal of the normal condition.

Nocturnal enuresis, i.e. involuntary bed-wetting, is to be distinguished from voluntary bed-wetting or factitious enuresis. This is usually a spite mechanism or a means of attracting attention or a relapse to the suckling stage. These relapses are not uncommon in children when a new baby is born to the family. Factitious enuresis may occur when a child is too lazy to leave the bed or is afraid of the dark, if the bedroom is too cold, if the chamber-pot is inaccessible, or in a household where the standards of hygiene are low.

The psycho-analytical literature considers enuresis as a masturbatory equivalent, as sexual trauma or as a desire to return to the suckling stage. Enuresis is not infrequently observed in children previously continent, following a severe illness. In these cases the symptoms may be based on the child's desire to retain the special attention of the parents which he had during his illness. It is frequently possible to obtain a history of enuresis in the parents or a sibling.

Faecal incontinence was observed in a small number of enuretic boys. Unlike enuresis, it occurred more frequently during the day. Faecal incontinence is ordinarily more amenable to treatment than enuresis. In boys who soil because of carelessness adequate time for defaecation in the morning, is usually sufficient to cure the condition, although occasional relapses often occur. Children with enuresis often present personality difficulties, but it is not clear whether these are more frequent than in non-enuretics. The bed-wetter may develop feelings of inferiority and a sense of guilt if he is shamed because of the habit. Bed-wetting usually disappears spontaneously after the twelfth to fourteenth year, although it may persist into adult life.

PATHOGENESIS - There are three main factors to be considered in the analysis of enuretic patients, namely, (1) 'irritable bladder', (2) training in cleanliness, and (3) the psychological inter-relationship between the child and his environment. Though enuresis may take place when only one of these mechanisms is operative, frequently two or all three are of aetiological significance in the same patient.

(1) 'Irritable bladder'. In this group of cases, enuresis is ordinarily continuous from infancy, thus differing from enuresis with a psychological basis, in which vesical control is developed in the normal way and wetting only occurs after a free period of years. The term 'pollakiuria' is used to denote this type of case in which incontinence is associated with abnormal urgency and frequency. Enuresis in pollakiuric individuals is usually persistent, occurring regularly night after night and year after year. This is in contrast to psychological enuresis where the wetting is irregular with longer or shorter free intervals. Such children are difficult to train and are often three or four years of age before vesical control is established. Because of this difficulty in training, psychological conflicts are more

frequent than in normal children. The condition is familial and on making enquiry into this type of case the information elicited from the mother is to the effect that the child's father was a bed-wetter. This fact is often revealed to the mother by her mother-in-law. A psychological factor ordinarily complicates the clinical features. The agitation and concern of the child lest he wets the bed serves to aggravate the condition, and nervous tension thus increases his difficulty.

(2) Faulty Training This is one of the commonest causes in the aetiology, particularly when there is irritable bladder. Delayed training is the fault of the mother and may lead to enuresis when the maturing child's warning of a full bladder are disregarded. Odium (13) states that this faulty training in ordinary cleanliness is one of the most common causes of the condition. Gill (14) also discussing the problem in 97 cases of bed-wetting amongst evacuee children from London, states that the common factor for practically all cases is the low social standard of the parents. In addition he found that two thirds of the children were below the average in their school attainment. The writer is in full agreement with both these writers, while in addition believes that the influence of good homes did little to ameliorate the condition.

As the child grows older, the habit of automatic urination in response to desire and without regard to the circumstances becomes fixed so that training should be directed towards breaking this undesirable habit, and directed towards the introduction of a conditioned reflex. Training should be undertaken towards the end of the ninth month, for, as the child grows older independence and negativism become more fixed, so that training is resisted and resented.

Parents with low standards of personal hygiene who were themselves enuretics in childhood, are likely to be more lax than other parents. This toleration of the condition is probably their wish to protect the child against the mental anguish they themselves

suffered from critical parents. Occasionally the reverse state of affairs may be found, and the mother becomes overzealous with her ritual in teaching her child.

A number of difficulties may arise as a result of the child's difficult trainability. A hostesses' censorious attitude may give the child a sense of inadequacy, arousing in him a state of negativism, so that wetting out of spite occurs. The constant fear of bed-wetting may become an obsession and lead to a state of nervous tension which make a bad situation a great deal worse.

(3) Psychological Enuresis - Though psychological factors influence to some degree the severity of the condition, they are probably of primary importance in only a few cases. These factors however, play an important secondary rôle in the pathogenesis of enuresis.

One of the most common behaviour patterns which give rise to this condition is that in which the child wets the bed as an attention-getting or spite mechanism; the symptom being directed against a neglectful or over authoritative parent or hostess.

When enuresis is based primarily on a spite or attention-getting mechanism, the clinical picture differs from that in children with irritable bladder. Vesical control is usually established during the second year, and the child usually remains dry for several years. Usually between the fourth and eighth years, occasionally sooner or later, the child starts to wet. Wetting usually only occurs during the night, is unaccompanied by urgency or frequency and is irregular. The child may wet for several weeks, then stop suddenly for a time and start again.

MANAGEMENT AND TREATMENT - The treatment of enuretic patients requires an understanding of the factors underlying the condition and the influence of the symptoms on the personality of the child. Enuretic children evacuated to this area were treated by a combination of training and applied psychology. It was recommended

that there should be no restriction of fluids during the day. Fluids taken with the evening meal to be the minimum and thereafter no fluids until the next morning. The child was to sleep in a warm and well ventilated bedroom; the bedclothes to be warm and during cold weather a hot-water bottle to be placed in the bed. A chamber-pot of suitable size to be placed within easy reach of the bed where the child could see it easily. The child was made to urinate immediately before going to bed, while some two hours later was thoroughly awakened and not allowed to return to bed until he had emptied his bladder. Hostesses were urged to assume an unemotional attitude towards the symptom. This advice was, in many cases, ignored by the hostesses and ridiculed by billeting officers, so that instead of a sympathetic, yet firm attitude being adopted, enuretic children rapidly began to be regarded as public nuisances. Severe censure or shaming only served to agitate the children and make them apprehensive. Such a condition should not be discussed within children's hearing and any mention or urinary mishaps tactfully avoided. The condition should be taken as a matter of course, and the child encouraged and reassured when improvement begins.

SUGGESTION - The physician's personal belief that he can effect a cure should be assumed in every case no matter the therapeutic measures adopted. His personality definitely plays a large part in all cases, and the opportunity should be taken to discuss the condition with the child in private.

DRUGS - The writer had had no experience of the value of the reputed cures, such as belladonna, calcium or ephedrine, as prescribing is not undertaken at Health Centres. Good management should be the principal method used, and any drug prescribed regarded as an addition. Belladonna which has been the recognised drug for the condition for many years has a definite value in those cases with irritable bladder. To be effective it should be given in large doses. Calcium and ephedrine have been used with comparative

success within recent years. Cohen (15) using calcium combined with vitamin D, successfully treated 18 cases in a series of 48. The cases had an age grouping of 5 - 15 years, while the results were scattered throughout the group. Ephedrine was tried by Brookfield (16) in a series of 38 cases, for which he claimed success in ten cases and improvement in a further 14 cases.

REWARDS - In addition to good management, some degree of success was recorded locally by the reward of a penny for each week during which the child kept a dry bed. Hostesses were recommended to give the child a calendar on which it could mark the dry nights. This method gives the child impressive evidence of improvement.

(f) Residential Nursery Schools.

Where pre-school children are evacuated without their mothers, particularly heavy responsibilities fall on the shoulders of both evacuating and reception authorities. It is regretted that there was a complete lack of co-operation between the authorities responsible for sending four nursery schools to this administrative County. There was no pre-arranged plan for evacuation indicated to the local supervising authority, which shows that the evacuating authorities did not fully appreciate the heavy responsibilities they were asking the reception authority to assume. There was no liaison between the authorities and it was only by chance that the schools were discovered.

Under these most unsatisfactory conditions, it will be convenient to review some of the principles which should have been taken into consideration previous to evacuation.

(1) The Problem of the Young Child - The three fundamentals required for the adequate care of the young child are: (a) a high standard of physical and mental hygiene; (b) medical supervision and the treatment of those who fail to progress within normal limits; (c) well balanced diets.

(a) A healthy way of life, under conditions that ensure normal physical development, together with favourable environment, is essential for spontaneous growth, while it is the right of every child born to receive from the nation the requisite suitable conditions. The abolition of the slum and the provision of well-built, clean and well ventilated houses needs no emphasis from the writer. Sound sleep in well ventilated dwellings, sunlight, physical activity and exercise are all indispensable.

The interaction of physical and psychological states is at its maximum during the first decade of life. Unhealthy physical states can retard the normal development of intelligence, while unsatisfactory emotional states can hinder physical development. Emotions of anxiety, a feeling of insecurity, loneliness, jealousy

or over-indulgence may interfere with normal physical growth from the nervous tension which it induces. Such unhappy emotional states discount to some extent the value of a well balanced diet and rob the child of peaceful sleep with its health giving and growth promoting properties. Children who are emotionally dependent, frequently make themselves ill in order to get the love and continuous attention that their ill-health awakens in others. Many children who do not develop normally, as well as those who revert to infantile states, are found to have their origin in the psychological states rather than physical. Mental, emotional, and physical health must be properly balanced for healthy growth to proceed.

(b) Growth and susceptibility to infectious diseases being at their maximum during the pre-school period of life, make it of importance that medical inspection should be frequent and thorough. The number of neglected minor ailments, and the incidence of preventable infectious diseases are far too great, and could be reduced if treatment were made available and prophylactic inoculation more widely adopted. The present facilities for treatment are inadequate and centres are urgently needed where such treatment would be provided free. If such clinics were available much time and expense in travelling would be saved. Mothers though self-sacrificing in the case of serious illness, are apt to underestimate the importance of treating minor ailments. Many minor ailments are regarded by mothers as inevitable accompaniments of childhood and do not take steps to obtain adequate treatment if difficulties or expenses are involved. They are prone to use home remedies or proprietary preparations. The extent to which the latter are used can be judged by the multiplicity of 'cure alls' on the market. Medical inspection and treatment by themselves cannot bring about healthy growth, while any scheme that consists only of health visitors, medical inspections and minor ailment clinics is unlikely to promote normal physical growth, though they may succeed in limiting acute illness.

(c) Burnet and Aykroyd (1935) in their report to the Health Organisation of the League of Nations stated that 'deficiencies in important nutrients are a common feature of modern diets and that these deficiencies usually occur in the protective foods (foods rich in minerals and vitamins) rather than in the energy-giving foods (proteins, fats and carbohydrates)'. The evidence that diet is ill-balanced or inadequate is manifest in the prevalence of rickets, scurvy, poor muscle tone, dental caries, anaemia, chronic fatigue, poor elasticity of skin and subnormal growth are the obvious objective symptoms. Infant Welfare Centres do not as a rule have a high percentage of attendances of children between two years and the age of entry to school. There is therefore a gap in health supervision as provided by supervising authorities. The Chief School Medical Officer reported (1934) that this lack of supervision during this period is largely responsible for the high incidence of defects in school children found by medical inspection among the entrants. It is necessary to prevent this ill-health by procuring improved feeding for the pre-school child. This may be attained by extending the Infant Welfare services forward or the school services backwards to this age, and by increasing the knowledge and means of poor parents for the better feeding of their offspring. It appears that the Child Welfare services should take on the responsibility for the pre-school child. It is during the pre-school age that there is greatest need to maintain the resistance of children at the highest level against the ravages of infectious diseases. Diseases such as measles, whooping cough and scarlet fever, where they do not kill, often leave the child with some chronic disorder which has a profound influence on the child's future medical history.

(2) The Place of the Residential Nursery School in Reception Areas.

Premises adapted for use as nursery schools are poor substitute for well designed nursery schools, but in deciding the suitability or

otherwise of proposed premises in reception areas, there are certain essentials which must be available.

The premises selected must have gardens or such should be within convenient distance. If possible, playrooms and rest rooms should be of the open-air type. The floor space in bedrooms should be adequate so as to diminish the danger of spray borne infections.

Four nursery school parties were evacuated to the county from London. Accommodation was found for the parties in adapted premises at country mansions. These parties were only discovered by chance as no advance arrangements had been made with the Maternity and Child Welfare authority for their reception. In some cases insufficient care was taken by the evacuation Nursery School authorities for the safe disposal of the children. Only one nursery party will be described which presented a public health problem of considerable interest.

The Shoreditch Day Nursery, which is a voluntary organisation was evacuated to Wakefield Lodge, Potterspury on 26th September 1939. The school on evacuation became in fact a residential nursery school. It was accommodated in certain stable rooms and part of the staff quarters of the main house.

The premises consist of six bedrooms, on the first floor and a rest room and play room on the ground floor. A former servants' hall is used as a dining room. Sanitary offices consist of two baths and five water closets. Water is obtained from a deep well. Drainage is to a cesspool and main electricity is laid on. The premises did not lend themselves to the provision of adequate fire precaution measures, as the bedrooms opened on to a corridor with a 'dead end'. A canvas chute was eventually provided as a means of escape from the bedroom corridor. The staff employed consists of a matron and two nurses with additional help from Nursing Auxiliaries who give the equivalent time of four full time voluntary helpers. The staff have no experience in the management of a residential school, and have no experience in the nursing of

The sudden change over of this nursery school from that of a day organisation to that of a residential school, together with the inadequate training of the nursing personnel was responsible for the mismanagement of this outbreak of whooping cough. The cost to the Evacuation account amounted to £500, a sum which would possibly have been much less had adequate precautions been taken early in the outbreak.

SECTION VI

MEDICAL TREATMENT AND CARE OF NECESSITOUS PERSONS

(a) Unaccompanied Children.

For the purpose of eligibility to benefit under the scheme administered by the Local Medical War Committee an 'unaccompanied child' is a child who is boarded by the Government with a householder who receives payment for board and lodging at the rate of 10/6 or 8/6 per child. Generally speaking, this means that every child who is not accompanied by its parents or guardian under the same roof is an unaccompanied child within the meaning of the scheme. There are, however, certain additional children, who, although accompanied by a parent under the same roof, are regarded as unaccompanied children, as the parent has been evacuated as a helper rather than as a parent.

The scheme provides for the establishment of a separate 'Evacuation Fund' account to be kept by the Northampton Town and County Medical Bureau, to receive all monies from the Government and make all payments thereout for expenses, remunerations and distributions in connection with the scheme, expenses and remunerations incurred in administering the scheme to be a first charge on the funds.

The sum which the Local Medical Bureau receives is at the rate of 10/- per head per annum. The amount paid is intended to cover the cost of attendance and the provision of medicines.

The Local Medical Bureau made arrangements for supplies of 'Medical Treatment Cards' to be issued to the Billeting Officers. The cards were issued, only on the application of the child or householder in whose house the child was billeted. The card contained provision for the patient's name and address of billet, the signature of the practitioner who provided the treatment, together with the date of the first treatment in any quarter. Each treatment card is effective for all treatment during one quarter of the year and a new card has to be issued for any treatment in a different quarter.

The scheme also allows of free choice of medical practitioner. Table No.IX gives the numbers of children treated in the writer's district together with the gross capitation fees paid.

TABLE NO. IX.

Medical Treatment of Unaccompanied Children.

Local Authority.	1st Quarter.	2nd Quarter.
Higham Ferrers.	10	10
Rushden.	238	156
Irthlingborough.	35	14
Total.	283	180
District Total.	463	
Capitation Fee actually paid.	16/7.96d.	10/8.3d.

The Local War Emergency Committee has Power to determine any question arising under the scheme, and to make the necessary variations occasioned by any action of the Government.

(b) Mothers and Pre-school Children.

Special provisions for the treatment of this class of official evacuee were not made by H.M. Government under the Evacuation Scheme, apart from that already in existence for necessitous persons such as is provided by Public Assistance Committees.

Persons who were unable to afford medical attention, applied to the Relieving Officer who issued a medical assistance note to be handed to the District Medical Officer. All treatment and medicines were provided by District Medical Officers who are under contract with the County Council.

As will be seen from Table No.X the number of persons who made application were few in number, but, it must be borne in mind that many infants received advice and treatment at Infant Welfare Centres or School Clinics.

Statistics are not available for Irthlingborough, as the local medical practitioner, who is also the District Medical Officer provided treatment and medicines free of charge to necessitous evacuee persons in the town.

TABLE NO.X.

Higham Ferrers and Rushden.

<u>Week.</u>	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.
<u>No.</u>	2.	11.	10.	10.	10.	10.	10.	8.	6.	2.	2.	-	-	-	-	-	-	-

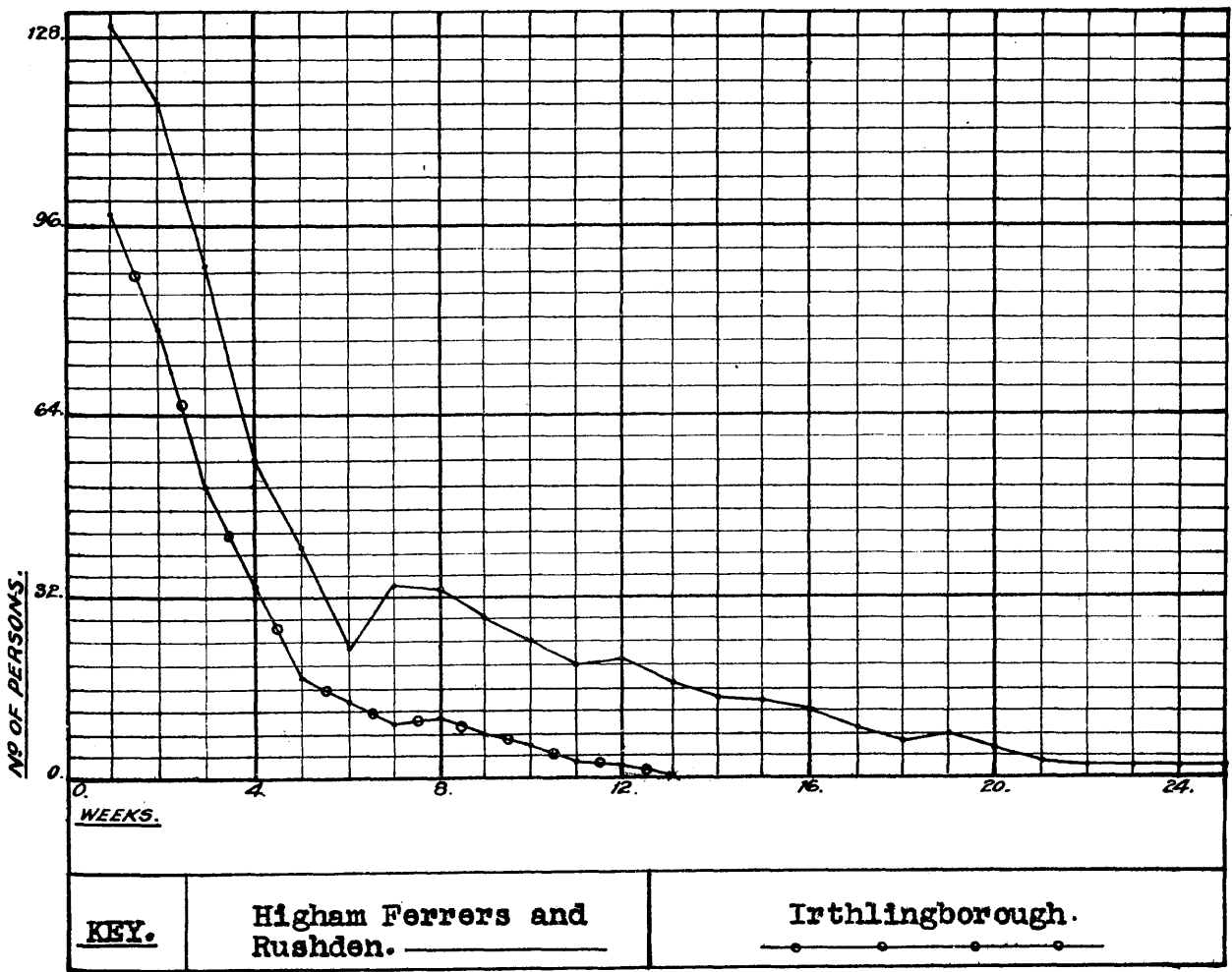
(c) Financial Assistance for Destitute Persons.

Under the Government Evacuation Scheme the Ministry of Labour and National Service Exchanges were empowered to afford financial assistance to persons who, for some reason associated with evacuation, were financially embarrassed. Monetary grants were made to such persons on the basis of 10/- for each adult and 3/- for each child per week, for the first two weeks of evacuation, while contact was being established with the husband or other person responsible for maintenance. Any money the applicants had in their possession was taken into account. After the preliminary period of difficulty all applications were referred to the Unemployment Assistance Board, who adjusted payments in accordance with scale and individual circumstances. The application of a 'means test' by the board added to the causes for the drift back to the danger areas.

Fig No.2. shows the number of persons in receipt of payments week by week.

FIGURE NO.2.

Payments made by the Ministry of Labour.



SECTION VII

THE EPIDEMIOLOGICAL ASPECTS OF EVACUATION

This aspect of evacuation, at first, gave rise to some concern, in view of the fact that the native population has for some considerable time enjoyed comparative immunity to the common infectious diseases.

From the epidemiological standpoint the rural areas in the Administrative County mainly consist of semi-isolated communities where immigration and emigration are at a minimum. This statement, however, requires some modification, as the village schools usually provide for the education of children from several villages, but, even in spite of this the county districts can be well demarcated. The influx of city children into such areas was expected to influence the herd immunity in the village populations. The term 'herd immunity' was coined by Topley (17), as expressing the resistance of a population to the spread of infection. The level of herd immunity depends on the distribution of resistance to infectious diseases amongst the individuals who make up the herd. The transference of children from evacuation to reception areas does not necessarily mean that there would be a disturbance in the epidemic equilibrium, provided that there was no overcrowding in billets and that both areas were in the same epidemic state. Comparable migrations take place each year during the annual exodus from the cities to the seaside resorts.

There are two distinct epidemic dangers in reception areas. The evacuated children may introduce infectious diseases among the less immune native populations, while on the other hand rural conditions may expose the evacuated children to infections to which they are non-immune. The dangers to the native children, are primarily measles, whooping cough and other fevers which may not have been prevalent in their area for some time. Further, in rural areas there is danger of water borne infections caused by carriers among the evacuated children. The evacuated children themselves may be

assumed to possess greater immunity to the usual children's infectious diseases than the natives. For them the main risks are water and milk borne diseases to which they are relatively non-immune.

Where children are sent to small circumscribed areas, the effect may be different, for if such a town has been free from endemic infections for some time, the herd immunity may be low, and the risk of infection correspondingly high. A special case is the small community relatively protected from diphtheria by artificial immunisation. In some areas there are chronic carriers of diphtheria and the acquired immunity from such carriers may be sufficient to protect the population from diphtheria. On the other hand children coming from an area where diphtheria is endemic to an 'unsalted' community will probably include some chronic carriers who may disseminate infection among the non-immune population.

The risk of diseases not spread by the buccal spray, will depend mainly on the state of the sanitation, and hence the sparsely populated rural areas are more likely to suffer. The main water borne risks are fevers of the enteric group and bacillary dysentery. Both may also be spread by milk, as may be scarlet fever, diphtheria undulant fever and tuberculosis. Under conditions such as these, it will be convenient to review in some detail the factors influencing infection, together with the state of immunity of both native and immigrant children.

(a) Infection.

The entrance of organisms into the tissues and their multiplication therein, constitutes infection. The essential feature is that there is interaction between two living agents dependent on several factors, all of unknown value. These are:- (1) the dosage; (2) the virulence of the infecting organisms; (3) the resistance or previous experience of the recipient's tissues and body fluids; and (4) specific dietetic factors.

(1) The Dosage. - This is important, but there are very few organisms of such high virulence that one or two bacteria will produce disease. It is only by the method of passage that such organisms as the Pasturella and tubercle bacillus can be raised to such a high degree of virulence that a few organisms will produce disease in animals. High dosage of C.diphtheriae in Schick immune individuals may be sufficient to overcome the immune state as indicated by the response to diphtheria toxin.

The minimum dose which will produce infection - Minimum Lethal Dose - is very difficult to define, as natural resistance to infection varied from animal to animal and from man to man.

(2) Virulence. Virulence is the power of a micro-organism to produce disease within the host. This depends on the power of the organism to produce toxins, as well as its invasive power. The former acts as a protoplasmic poison, while the latter is the power of the organism to live, penetrate and multiply in the tissues or body fluids of the host.

(3) The Resistance.-Cobbet (18) expands Calmette's Law of tuberculosis into the following, 'Peoples are more resistant to the attacks of infectious diseases of their own countries and districts than to that of foreign diseases with which neither they nor their ancestors have been accustomed to come in contact'. Hirzfeld and Brokman (19) examined fifty families to determine the relationship of the results of the Schick test to the blood groups. They found that sensitiveness to diphtheria toxin is to some extent, inherited in correlation with the blood group. As the latter is a constitutional property, sensitiveness to diphtheria toxin cannot entirely depend on external factors, but, must also be constitutional.

The total population at risk do not always succumb to infection. In the case of diphtheria, there is strong support for the view that susceptibility diminishes with age. On the other hand, Friedemann (20), has shown that there is an increased resistance in the very

young by means of the Schick test. He has shown that the Schick positive rate for infants up to three months is 12 per cent, while this percentage rises to 98 by the end of the twelfth month. The diphtheria question is complicated, but it appears that clinical infection is avoided by the influence of sub-clinical infections; i.e. small infective doses which gradually produce an active immunity. This state was propounded by Adami (21), under the term, 'sub-infection' which he regarded as an invasion that is symptomless and clinically unrecognisable; invasion without infection. Nevertheless a 'sub-infection' may produce a degree of infection with a change in the individuals immune state to the specific infecting organism. With a fuller understanding of immunology the term 'sub-clinical infection' is to be preferred.

The experience of Kinloch, Smith and Taylor (22) at Aberdeen regarding susceptibility to diphtheria according to social status, showed that the poorer classes of children from the East end of the City, were less susceptible to diphtheria than their more fortunate West end brothers. The probable explanation of this lessened susceptibility, is that the more crowded the conditions under which they live, the more likely they are to receive sub-clinical infections. The summation of these infections appears to be sufficient to prevent them from actually contracting clinical infection, provided the rate of reception is sufficient to maintain their level of immunity above that of being Schick positive.

(4) Specific Dietetic Factors. During the World War 1914-18, malnutrition played a significant part in the increased mortality and morbidity in Germany and Austria. The shortage of fats, required for the manufacture of high explosives was acute, and this dietary deficiency played a part in lowering resistance to infection. The Chief Medical Officer of the Ministry of Health reported in 1923, that the most sensitive indicator of malnutrition is, without doubt, the death rate from tuberculosis, and its relation to underfeeding

was brought into glaring relief by the fortunes of war. The Prussian public health authorities remarked in 1919, that the special characteristic of the mortality from tuberculosis in that year, was the increased mortality at young ages. Browning (23) states that regarding dietetic factors, there is no evidence that excess of any constituent, such as a vitamin, beyond what is required for a properly balanced diet, will confer benefit in the nature of increased resistance to infection.

(b) The State of Immunity.

Immunity means increased resistance to infection, which is developed as a result of an attack of infectious disease artificially or naturally produced. This acquired immunity is termed active, while, that produced by giving the serum of an actively immunised animal is termed passive. The latter is the basis of serum therapy, which is now reaching its limits of usefulness. The principles of immunity were carried out before bacteria were proved and accepted to be the cause of infectious diseases. The classical example was the introduction of Vaccination by Edward Jenner, who in the summer of 1798, published his 'Enquiry into the Causes and Effects of Variola Vacciniae'. Lister also played a part in the development of the subject, as he observed that putrefaction was slower in fresh blood serum than in decaying organic matter.

The implantation of organisms, capable of producing disease, sets up a series of events. The contagium vivum produces toxins which are carried into intimate contact with every cell of the body by the blood stream. If there is no cellular response, the result is death. Cellular response to the toxin takes the form of the production of antibodies, which have the power to combine with and neutralise toxins, so as to prevent cellular damage. The extent of the cell response determines the limits of the bacterial attack. The response to a dose of antigen is greater on the part of the animal which has had experience of the same antigen on a previous occasion, as well as the

degree of natural immunity to the specific antigen. This fact is of importance, when dealing with a very toxic antigen, while in addition, this may be the explanation of the permanent immunity characteristic of certain diseases, e.g. typhoid. Where natural immunity exists to an antigen, such as diphtheria toxin, the antitoxic response is rapid. This phenomena is of importance in the commercial production of diphtheria antitoxin. Horses which have a high degree of natural immunity to diphtheria toxin are the most economic proposition. It is highly probable that permanent changes take place in the cell as the result of infection, while the power to elaborate specific antitoxin is never completely lost to the individual.

It is not sufficiently appreciated that the clinical cases of infectious diseases are the outward manifestations of an epidemic state. All the members of a community which has had previous experience of a given infectious disease at periodic intervals, do not fall victims to the infection, by manifesting clinical symptoms of the disease. In urban areas, where sporadic cases of scarlet fever occur, the writer is of opinion, that the community has acquired a degree of herd immunity resulting from previous infections either clinical or sub-clinical. Dudley (24), has shown at the Greenwich Naval School, that when the herd immunity falls below a certain level, cases of diphtheria make their appearance.

When herd immunity is high and kept at a safe level by the occurrence of sporadic cases, the possibility of a severe epidemic is small. Where, however, epidemic diseases, such as measles, have been absent for a period of years, and the number of susceptibles high, populations may be decimated. When measles was carried to the Faroe Islands, from Copenhagen in 1846, after an absence of 65 years, von Jurgensen (25), informs us it attacked 6,000 out of a population of 7,782 persons and no one escaped who had not the disease in 1781, or previously. When measles was introduced into the Fiji Islands in

1875, by their Chief on his return from New South Wales, the disease was spread throughout the islands, and the native population was reduced by some 40,000. This appalling death rate is usually ascribed to the high degree of susceptibility among the native population, but, it has been suggested of recent date by Pickles (26), that the death rate was due, not so much to its being a new disease but on account of the lack of nursing facilities. As whole families fell victims simultaneously, the very necessities of life could not be provided. The controls were the members of the police force, whose conditions of living were entirely different, and who showed a death rate not above normal. The absence of adequate nursing facilities during the pandemic of influenza during 1918-19 may have been a factor contributing to the high death rate.

(c) The Epidemic State.

The onset of infection is dependent on at least three factors, all of unknown value, and this has led to the non-appreciation of the fact, that not everyone exposed to infection, and presumably infected to some degree, succumbs to the infection. It is well recognised that innumerable persons are exposed to infection, but some remain apparently uninfected. A certain percentage infected do not develop a clinical attack. George and Gladys Dick (27) carried out investigations into the rôle of the streptococcus in scarlet fever and their results give some experimental evidence of the existence of an epidemic state. They also claim to have fulfilled Koch's postulates and affirmed the aetiological rôle of the streptococcus in scarlet fever. The organism used in their experiment was a mannite fermenter, which is not the predominant type in the faucial lesion. Five volunteers were carefully selected, so as to exclude the possibility of spontaneous infection; their throats were swabbed with a culture of streptococci, obtained from a secondary abscess, on the finger of a nurse suffering from a typical attack of scarlet fever. Three of the volunteers developed no symptoms, one

developed a sore throat only, while the fifth developed a clinical attack of the disease with rash and sore throat. The experiment was carefully controlled by swabbing five other volunteers with a Berkfield V., filtrate of the same culture. Further proof of this state, the writer has proved on himself by means of the Dick Test. During the period 1928-38, the Dick Test was carried out at intervals of one to two months on the flexor aspects of both arms, and occasionally on the legs, and although exposed in fever hospitals, for some four years, to numerous cases of scarlet fever and other strains of streptococci, the test remained persistently negative, although the writer has never suffered from scarlet fever. The Dick test, therefore, is a measure of the testee's exposure to infection. The writer was more than interested to note that this state was recognised some thirty-four years ago, when an Inspector from the Local Government Board, conducted an enquiry into an epidemic of Cerebro-spinal meningitis at Irthlingborough (28). The notable feature of this epidemic was the occurrence about the same time of a series of cases of an anomalous illness, which for the most part, occurred among persons who had been in direct personal relation, either with one of the cases, or with those fatally attacked.

From proof of this character, the writer is convinced that an epidemic state exists amongst the population. Experimental proof is also available in the case of artificially and naturally infected animals. The rat and mouse can be infected with *Trypanosoma lewisi* and *Spirillum minus* respectively, but do not suffer from the infection. In a similar manner an epizöotic of plague does not produce disease in the rat. Previous to the advent of modern immunology, it was accepted as firm belief, that the clinical cases were the epidemic, while the state of affairs is that such cases are only evidence of the epidemic state.

(d) The Rôle of Droplet Infection.

Flügge (29), showed tuberculosis to be disseminated by droplet infection and his followers confirmed that, in infections of the nose, mouth and naso-pharynx and respiratory membranes, infection could be coughed or sneezed from the buccal cavity in the form of droplets. The droplets are both visible and palpable, while some persons are more offensive than others, especially when excited and speaking rapidly. Flügge and Laschtschenko (30), showed that, if the mouth was washed out with a culture of *Bacillus prodigiosum*, the bacteria could be recovered at a distance of some 9 metres in front of the mouth, while the culture plates remained sterile at a distance of some 15 centimetres. The effective distance, depends on the influence of air currents, but the particles must eventually fall to the earth, under the influence of gravity.

The effectiveness of the buccal spray is also influenced by the size and constitution of the particles. The size is controlled by cellular content, moisture and surface tension, Droplets of saliva, being smaller than those coughed out, will have a more effective range, while the power to invade the host will be dependent on the virulence and dosage of the pathogen. Flügge showed that droplets of saliva may float in the air for some 5-6 hours. Droplets of saliva are less likely to be infective, as compared with mucoid particles from the respiratory tract. The larger the droplets, the less effective the range, so that the power to infect diminished rapidly with distance. Any small particles reaching the host, will contain only small doses, while if the host has any previous experience of the causal agent, infection will depend on the immune state of the recipient.

Stallybrass (31), has noted that, in the case of mumps, the morbidity among school children progresses slowly, until an outbreak of catarrh causes sneezing and coughing. The rapid effect of the buccal spray is soon evident with a rapidly progressing epidemic.

Enquiry into the causes of return cases of scarlet fever has, in some cases, been shown to be due to an attack of coryza in the recovered cases, accompanied by sneezing and coughing.

(e) Immunity in the native population.

(1) Virus Diseases.

(a) Smallpox. - The Chief Medical Officer of the Ministry of Health stated that during 1938, eighteen cases of small-pox were reported, and of that number nine were of the major type, one of which proved fatal; the remainder were of the minor type. It is, therefore, clear that although the number of cases notified in the county during the past decade (Table XII) have been of small magnitude, there should be no relaxation in vigilance. This is especially true in this county, where cases of the minor type occurred in 1930-31-32. The cases occurred in the Kettering Rural and Rushden Urban Districts. Although the disease has been absent during the past eight years, a case was reported in an adjoining county in February 1938. During school medical inspections, the writer has been forcibly struck by the fact, that, to find a child who has been vaccinated is a decided rarity. Parents in this county, are very much averse to vaccination and take full advantage of the 'conscience clause' provisions of the Vaccination Act 1907, which, when put into operation in 1908, had the immediate effect of more than doubling the number of exemptions through England and Wales. Examination of Table XI. (32), shows that the popularity of vaccination has fallen to a very low ebb in the county while there is added to the population each week some thirty susceptible individuals.

TABLE NO. XI.

ADMINISTRATIVE COUNTY OF NORTHAMPTON.

Year.	Total Live Births.	Number successfully Vaccinated.	Number of Conscientious Objectors.	Unsuccessful vaccinations or unaccounted for.
1930	2,991	550	2,344	297
1931	2,924	333	2,359	232
1932	2,742	298	2,224	220
1933	2,665	246	2,205	214
1934	2,688	252	2,144	292
1935	2,881	267	2,280	334
1936	3,047	285	2,359	403
1937	3,104	262	2,317	525
1938	3,184	273	2,347	564

It is impossible to state what proportion of the total population in the county have been vaccinated, as re-vaccinations are voluntary. There are no official records of the numbers re-vaccinated, while such vaccinations refer mainly to persons who desire to enter a service, in which successful re-vaccination is a condition of entry. Under conditions such as these, where the number of persons successfully vaccinated, must be at a low indeterminate limit, the number of persons susceptible to small-pox must be correspondingly high. Should a case be reported, there would be an immediate rush for primary and re-vaccinations. Such vaccination panic would put a severe strain on the medical services; while this would be doubly acute should practitioners be required to undertake service in connection with Civil Defence. The other factor to be reckoned with in connection with primary vaccination in adolescents and young adults is that of post-vaccinal encephalitis. The Vaccination Order, 1930, directed in substitution of previous instructions, that, in all cases of vaccination and re-vaccination, the public vaccinator should

vaccinate by a single linear incision or scratch not more than $\frac{1}{4}$ " long merely through the epidermis. Even in spite of this modification in technique, cases still continue to be reported. The Ministry of Health reported eight cases during 1938, all occurring in young adults with the exception of an infant one month old. The case mortality was 50 per cent.

(b) Chickenpox. - The maximum incidence of this disease occurs during the sixth year of life, while by the age of ten years practically all children have had the disease. The importance from the evacuation point of view, is the differential diagnosis from mild smallpox, especially in a community where vaccination is much in disfavour. Two cases of scabies and one of pustular urticaria amongst the evacuees presented some of the features of mild smallpox. The distribution of the skin lesions were suggestive, but it was noticed that the children suffering from scabies had been efficiently vaccinated. The history in the former cases and isolation for 48 hours in the latter, made the diagnosis clear. The writer is of the opinion that the disease should be made notifiable for the duration of hostilities.

(c) Influenza. As immunity to this disease is fleeting it is reasonable to assume that the total native and immigrant population are susceptible. The infection has not been completely absent from the county since 1930, as shown by the notifications of acute influenzal pneumonia. The notifications of pneumonia must, however, be interpreted with caution, as the number of cases notified are not strictly covered by existing regulations.

Following upon a period of inclement weather from mid-December 1939, until February 1940, the district had a visitation by two virulent infections of influenzal type. This disease is not notifiable, but, its incidence was so marked that factories were severely depleted of operatives, while in some schools the attendances were as low as 30 per cent. These diseases may be classified as (1)

mild febrile influenzal cold and (2) coryza accompanied by laryngitis.

(1) The onset was sudden with pain in the limbs, headache and moderate fever with temperature of 100-101°F. with a corresponding increase in the pulse rate. There was congestion of the respiratory mucous membranes with an irritating unproductive cough. The duration of the infection was about a fortnight, while convalescence prolonged the disability to three weeks.

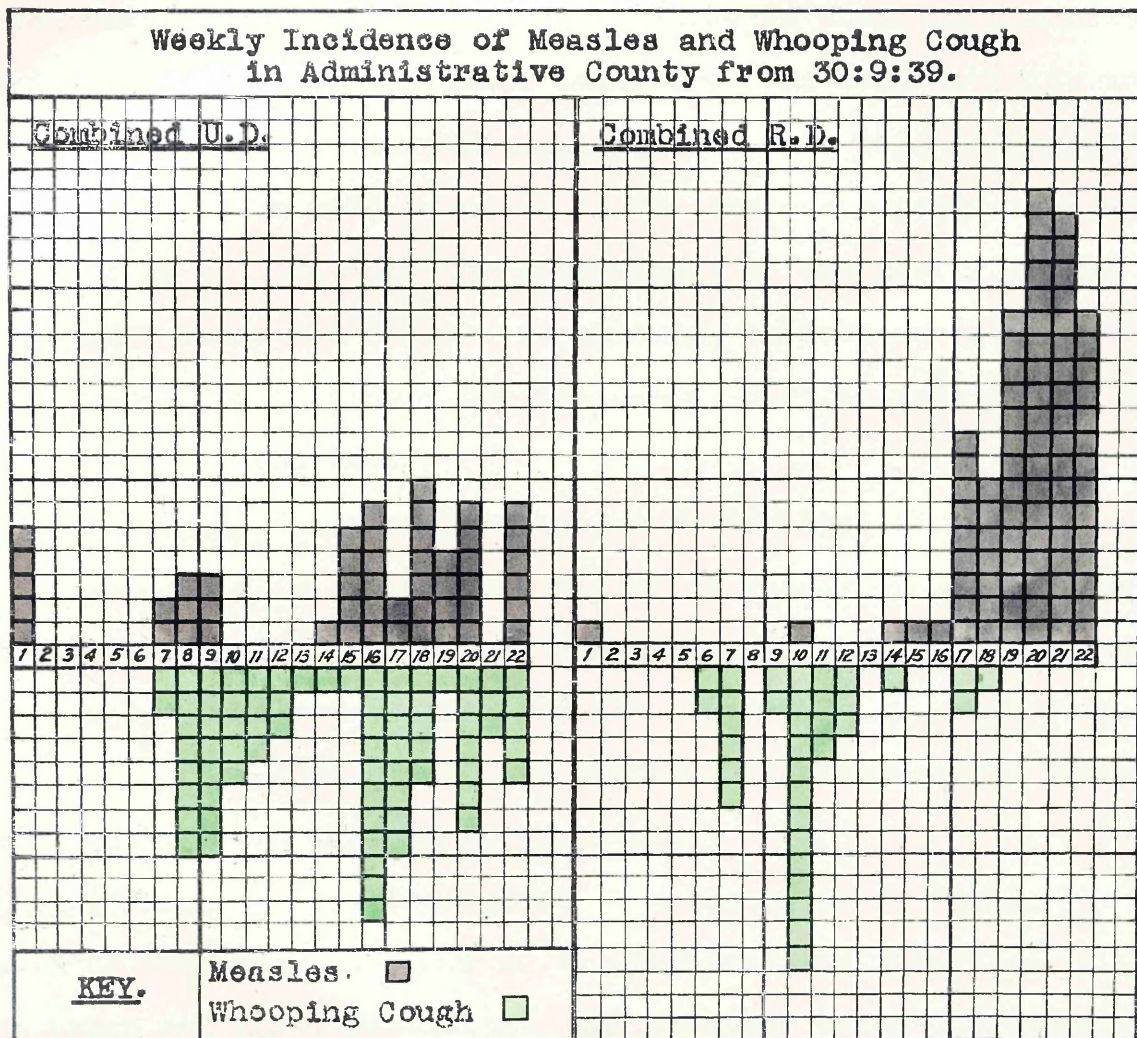
(2) The onset was sudden with high temperature (100-102°F.) prostration, headache, pains in the limbs, marked congestion of the fauces and cervical adenitis. These lasted approximately three days, and were followed by increased congestion of the mucous membranes and tonsillitis. The faucial lesion lasted some two days, followed by acute tracheitis and laryngitis. Later a hacking cough and loss of voice followed. After a period of two to three days the laryngitis began to clear, followed by the expectoration of viscid purulent sputum. In all, the acute symptoms lasted some 10 days, while the convalescence extended the period of disability to three weeks.

(d) Mumps. Few children escape infection during school life, but the disease can be satisfactorily controlled by school exclusion.

(e) Measles. This highly infectious disease of childhood was, together with whooping-cough, made notifiable under the Public Health Act. During the period since evacuation took place the number of cases notified in the county has not been great, as will be seen from Figure No.3. On account of the rapidity of the homeward drift of pre-school children, the number of susceptible immigrant children has been reduced to an insignificant number. Although some 50 per cent of unaccompanied school children remained in the district, the writer is of opinion that the majority of school children from the city have already had measles. It was not found practical to differentiate the native from the immigrant notifications. As this is a 'measles year', arrangements have been completed for domiciliary

treatment, and visiting by district nurses, where this service is requested by the practitioner in attendance. With a view to effective control and treatment, the London County Council has generously offered to supply convalescent measles serum for evacuees under five years of age. Written permission for the administration of such serum has been obtained by the evacuated school teachers.

FIGURE NO.3.



The hospitalisation of cases with complications, presents difficulties in view of the inadequate isolation hospital facilities available in the county. The writer is convinced that during an epidemic, such accommodation is of vital necessity, as measles can be one of the most serious diseases of childhood.

(f) Rubella. - In view of the benign nature and short duration of this disease no public health problems were likely to arise. This disease appeared in epidemic form about the middle of January 1940, affecting

persons in the second and third decades as well as school children. As the disease is at present not notifiable the full extent of the epidemic cannot be assessed.

(2) Bacterial Diseases.

(a) Scarlet Fever. - Insufficient and inadequate isolation hospital accommodation will only allow of serious cases being admitted to hospital. In addition the absence of sufficient cubical accommodation, gives rise to difficulties in hospital administration, as it is impossible to isolate cases from the same locality together, thus increasing the risk of complications. It will be generally agreed, that even mild cases among the immigrant population should be isolated in hospital for the convenience of the host. Figure No.4. shows that while the disease is endemic, in both rural and urban areas, that the incidence has increased, particularly in the rural areas since evacuation.

(b) Diphtheria. - Although isolation in hospital of all cases is impossible in this county, the writer is firmly of the opinion that hospital treatment should be afforded to all cases of diphtheria. In view of the serious nature of the disease, and its possible sequelae, all cases amongst the evacuees in the writer's district were isolated and treated in hospital.

A sharp rise in the number of cases notified within the first month of evacuation (Figure No.4.) was evenly distributed throughout the Urban and Rural districts. On the other hand, the majority of scarlet fever notifications were received from the Rural districts.

Modern methods of diphtheria prophylaxis is an aspect of preventive medicine which is sadly neglected in this county, but, when the acceptance rates for vaccination are considered (Table No.XI) it will be appreciated that modern propaganda would have little prospect of success.

(c) Whooping-cough. - Like measles this disease is one of the most deadly for children under five years of age. The incidence of the disease since compulsory notification was introduced is shown on

Figure No.3. but, these notifications must be regarded as being incomplete as many parents fail to call in medical assistance. As in the case of measles, domiciliary treatment is available on request.

(d) Tuberculosis. - The tuberculosis question is one of considerable difficulty, as until evacuation, a number of schools in the writer's district were being supplied with raw milk. As the incidence of gland and bone tuberculosis is at its maximum during school life steps had to be taken to protect immigrant children accustomed to pasteurised milk. On these grounds it appears reasonable to assume that county children are tuberculised, while their city cousins would be exposed to the risk of milk infected with the tubercle bacillus. All milk supplied to schools for native and immigrant children is now pasteurised and controlled by the phosphatase test.

(e) Cerebro-spinal Fever. - During inter-epidemic periods, this disease is mainly confined to young children, but experience during the last war showed an increased prevalence amongst the adult population. During the quinquennium 1914-18, 6450 cases were notified in England and Wales of which 5,725 proved fatal. This coincided with a total of 4,238 cases and 1,928 deaths of non-civilians in the Home Commands of the Army for the same period. This previous experience, together with the fact that notifications of some magnitude continue to be recorded for the country as a whole, since the 1931-33 epidemic together with increased notifications since the outbreak of the present war, suggests that we are approaching another period of epidemic prevalence. Under ordinary conditions, this disease is one in which sub-clinical infections are very numerous; the clinical cases occurring among those extremely susceptible or those subjected to heavy dosage. Glover (33), noted that if overcrowding occurred in a military unit which had not been previously overcrowded, two events took place. First, there was a rise in the percentage of

carriers, usually within a fortnight, reaching a maximum by the third week, terminated by the 'warning rise'. Secondly, when the carrier rate exceeded 20 per cent, clinical cases soon made their appearance.

The transmission of the meningococcus, from person to person, take place through the agency of the buccal spray. It will be appreciated that overcrowding in billets was to be avoided at all costs. Examination of Table II shows there was no necessity for overcrowding on the standard of one person per habitable room, while the rapidity of the homeward drift steadily reduced the number of evacuees in billets.

(f) The Rôle of the Carrier

Ledingham and Arkwright (34), defined a carrier as 'an individual outwardly healthy, or at the most suffering from a trivial complaint'. A Departmental Committee (35), of the London County Council, further specifies the condition as 'a carrier is an individual who harbours a pathogenic organism, but, does not himself suffer from the disease', while they made, in addition, a very important distinction regarding diphtheria carriers. As a result of modern clinical and bacteriological knowledge they defined 'a diphtheria carrier is an individual who harbours a virulent strain of the bacillus, as the result of either a clinical attack or a contact infection'. This definition is of much importance in connection with the epidemic state and the epidemiology of diphtheria.

There are no records in the literature, of individuals harbouring an avirulent strain of *C. diphtheriae* acting as a reservoir of infection. Carriers who are proved to have an avirulent strain by guinea pig inoculation, cannot be regarded as carriers capable of transmitting infection. A virulent strain, may become avirulent, while there are no records of the reverse process taking place. It is difficult, to evaluate the full epidemiological significance of this fact, but, it appears feasible to assume that this factor plays some, as yet undertermined, part in the production of the

Schick negative state. In view of Dochez, Mills and Kneeland's work (36), on influenza, there are grounds that when sub-clinical infection of an individual takes place, the casual organism only remains in its full toxigenic state for a limited period. With lapse of time, the power to produce toxin is lost to the casual organism. Working with Pfeiffer's bacillus, in inoculation colds in chimpanzees they found that after the development of an inoculation cold, the "S" form of the bacillus was present in the upper respiratory tract, while in health, there was a reversion to the "R" form.

Types of Carrier. - The writer only recognises two main types of carrier; associated with spray-borne infections, (a) convalescent carriers; (b) healthy or contact carriers. Normally a patient tends to get rid of pathogenic bacteria early in convalescence but, if any anatomical abnormality or pathological condition is present in the respiratory tract, alimentary tract, accessory sinuses etc., the disappearance tends to be delayed. The bacilli, then, persist during and after convalescence and may give rise to fresh cases of the disease. Such a person is termed a convalescent carrier.

An apparently healthy person, may become infected with pathogenic bacteria, but, owing to natural or artificial immunity, does not contract the disease. In the production of contact carriers, several factors are concerned: (a) the opportunity for, and the amount of infection; (b) the local conditions, at the usual site of infection under which the bacilli may survive. The number of contact carriers, varies with the type of community; e.g. in a sparsely populated district opportunities for the spread of infection are limited; while on the other hand in a closed community, such as a residential school, they are numerous and frequent. Under such conditions, the following events may ensue:- (a) if a person is immune, (1) he may harbour the bacilli for a short period of time or (2) the bacilli may persist, and he will then become a chronic or persistent carrier. (b) If the person is not immune; (1) he may contract the

infectious disease or (2) he may receive sub-clinical infective doses, and thus develop 'natural' immunity.

Since immune persons do not contract 'clinical infection' after infection, it is obvious that the greater the number of immunes in a closed community, the higher the carrier rate tends to become. At certain intervals, as in acute infections of the respiratory mucous membranes, e.g. the common cold, the number of bacteria in the naso-pharynx may increase. The inflammatory products, acting as a suitable pabulum, may be responsible for the greater dissemination of the casual organisms by means of the buccal spray. For example, in the case of diphtheria, the proportion of carriers may temporarily increase, but, there would not be an outbreak of diphtheria within a closed community, provided all members thereof are completely immunised. On the contrary, repeated doses of virulent diphtheria bacilli are of value, to the immune individual in maintaining his level of immunity.

(g) Epidemiological Experience in the Administrative County
before and after Evacuation.

The acreage of the administrative County is 578,947, and the estimated population at the middle of 1939, was 221,400. The following table gives the yearly incidence of infectious diseases for the decennium 1930-39. The figures for each year represents the total number of cases notified for the combined Urban and Rural Districts.

TABLE NO. XII.

Combined Urban Districts.

	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.	1938.	1939.
Small-pox.	3	5	1	-	-	-	-	-	-	-
Scarlet Fever	293	352	256	124	210	208	212	122	117	76
Diphtheria.	313	90	36	27	73	61	78	14.	21	37
Enteric Fever.	26	8	1	11	-	8	32	8	1	7
Erysipelas.	66	42	11	44	81	50	37	42	37	46
Pneumonia.		121	13	78	117	110	85	114	95	87
C.S.F.	3	1	2	-	3	3	2	2	1	2
Tuberculosis Respiratory.	114	107	97	84	84	84	103	85	85	80
Tuberculosis Non-pulmonary.	38	25	16	21	18	16	16	26	25	27
Acute poliomyelitis.	18	2	4	1	-	5	3	2	-	-
Encephalitis Lethargica.	2	2	-	2	1	-	1	1	-	-
Dysentery.	-	-	-	-	-	-	-	-	1	-

Combined Rural Districts.

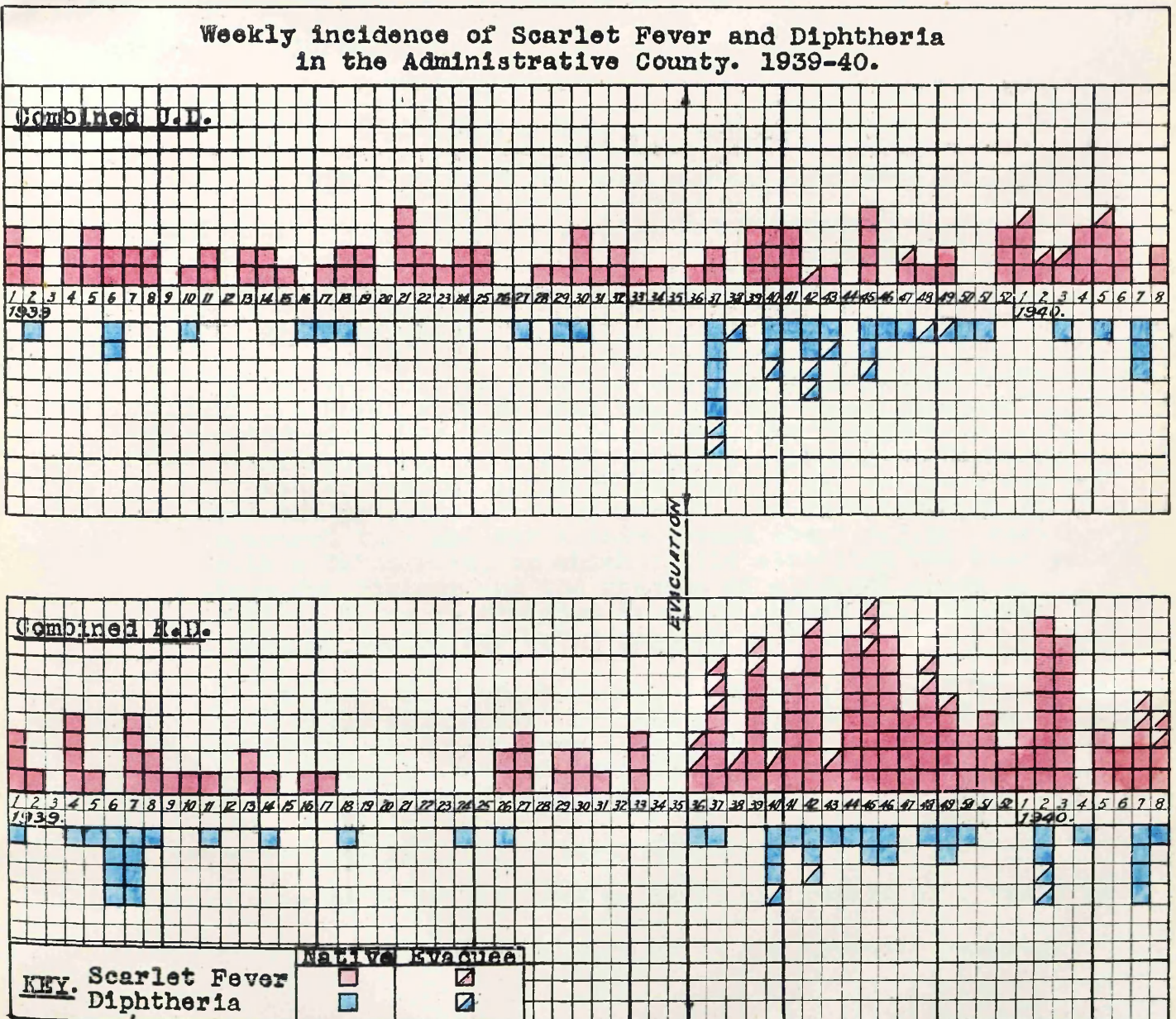
	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.	1938.	1939.
Small-pox.	-	-	-	-	-	-	-	-	-	-
Scarlet Fever.	214	135	180	177	332	420	222	147	99	126
Diphtheria.	106	65	23	12	52	63	66	56	59	36
Enteric fever.	16	7	11	86	2	13	9	3	3	1
Erysipelas.	46	34	35	39	50	37	31	24	21	24
Pneumonia.	-	79	93	97	153	91	59	75	64	78
C.S.F.	-	-	-	2	2	-	-	3	3	1
Tuberculosis Respiratory.	106	91	92	70	79	66	63	82	63	59
Tuberculosis Non-pulmonary	36	32	20	20	25	22	22	44	23	20
Acute poliomyelitis.	1	2	5	2	-	3	1	-	2	-
Encephalitis Lethargica.	1	-	-	1	1	-	-	1	-	-
Dysentery.	-	-	-	-	-	-	-	1	-	-

Critical examination of Fig.No.4. for certain specified infectious diseases shows that, during 1939, there was a definite increase in the weekly incidence of notifiable diseases following reception. In the case of scarlet fever there was a greater incidence in the rural districts as compared with the urban districts. It appears reasonable to assume that this difference can be accounted for by the low level of herd immunity in the less densely populated areas. If, on the other hand, the increase had been amongst the immigrant population, one may assume that the local herd immunity must have been on a higher level or that infection was either derived from the native population or was introduced to the districts by the immigrants themselves.

As already mentioned, the weekly notifications for measles and whooping cough cannot be taken as the total incidence of these diseases.

FIGURE NO.4.

Weekly incidence of Scarlet Fever and Diphtheria in the Administrative County. 1939-40.



During the third quarter of the year 1939, the incidence of infectious diseases was at a low level, while for the previous quarters, notifications showed the distribution to have sporadic characteristics. In the writer's district no cases of diphtheria or scarlet fever had been notified for some six weeks previous to reception, while a week elapsed before the first notification was received.

Certain features of the scheme favoured the prevention of spray borne infections. The reception of fewer evacuees than were expected, the rapid drift back - which facilitated billeting and prevented overcrowding - the delay in opening schools for three weeks and the double-shift system of education, increased the time spent in the open air and allowed the native children to acquire sub-clinical infections by strains of organisms indigenous to the immigrant children.

(h) District Epidemiology.

(1) Scarlet Fever - No cases of this disease have been notified in Higham Ferrers since reception, while two cases only were notified in Irthlingborough.

Clinical Outline of Cases.

1. Maureen B., aged 10, an evacuee, billeted at No.29 Manton Road, with two natives and two other evacuees returned to her home on 30.12.39. She returned to Irthlingborough on 1.1.40. and was notified on 22.1.40, as a case of scarlet fever on account of her clinical history and the presence of desquamation. On investigation it appeared that she had a sore throat about 8.1.40, together with a faint rash, to which little attention had been paid. From the history and the absence of clinical cases of scarlet fever in the town it would appear that she was infected during her brief sojourn at home.

2. Terance B. aged 10 years, a native living at 17, Hayway, with eight others was notified on 31.1.40. The date of onset was stated to have been 28.1.40. No direct communication could be traced between this and case No.1. They attended different schools.

Both cases were of mild type, while complications were absent.

The first case is to be regarded as being the result of a visit to London, while the second appears to be of the sporadic variety.

Three cases were notified in Rushden, amongst the native population, which on investigation were found to have no connection with the immigrant population. The days of sickening for the Rushden cases are given on Figure No.5. together with those for diphtheria.

FIGURE NO.5.

RUSHDEN.																																
1939-40	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
SEPT.																																
OCT.																																
NOV.																																
DEC.																																
JAN.																																
FEB.																																
<u>KEY</u>	Diphtheria										Native										Evacuee											
											□										☑											
Scarlet Fever																				☑												

(2) Diphtheria - So far, Irthlingborough has enjoyed complete immunity to clinical diphtheria, while only one case has been notified in Higham Ferrers; this case occurred in one of the natives.

In Rushden district, diphtheria made its appearance in sporadic form, during the second week of reception. A common local source of infection could not be traced, but, in view of what transpired later, it would appear that infection was due in some cases to the reception of evacuees, even although the first case was not notified for thirteen days after reception.

Clinical Outline of Cases.

1. Master O., aged 10, an evacuee, billeted at No.11 Westbourne Gardens with five other occupants attended at the local Minor Ailment Clinic on 13.9.39, complaining of sore throat. The clinical features were those of a moderate diphtheritic infection, with membrane covering both tonsils and extending forwards on to the pillars of the fauces; toxæmia was moderate

in degree; cervical adenitis slight, but no marked foetor. He was given 24,000 units antitoxin and removed to hospital. No secondary cases occurred in the billet.

2. Miss M., aged 10, an evacuee, billeted at No.4, Essex Road, with four other occupants developed diphtheria on 21.9.39. The faucial lesion and systemic disturbances were more severe than case No.1. Membrane covered both tonsils and extended forwards on to the soft palate; cervical adenitis was marked; toxæmia severe and foetor marked. There was a blood-stained purulent nasal discharge with excoriation of the upper lip. She was given 60,000 units antitoxin and removed to hospital.
3. Master B., aged 6, a native, living at 135 Newton Road with four other occupants, developed diphtheria on 7.10.39. The clinical features were similar to case No.1. He was given 30,000 units antitoxin and nursed at home. He appears to have been infected by case No.5.
4. Miss W., aged 12, a native, living at "Emgate", Blinco Road, with four other occupants. The clinical features were those of a moderately severe diphtheria with membrane covering both tonsils; cervical adenitis slight and toxæmia moderate. She received 16,000 units antitoxin and was nursed at home. She also appeared to have been infected by case No.5.
5. Master N., aged 12, an evacuee, billeted at No.148 Cromwell Road, appeared at a local surgery on 1.11.39, complaining of a blood-stained discharge from one nostril. His nose was swabbed and he was given 8,000 units antitoxin and isolated in his billet. The swab proved positive for *C.diphtheriae* and he was removed to hospital. On investigation it was found that he had been playing with cases Nos.3 and 4, while as he had the nasal condition for some six days previously he appears to have been responsible for infecting two native children.
6. Violet E., aged 7, an evacuee, billeted at 114 Westfield Avenue, was visited by her mother on 22.11.39. The foster-mother informed her that the child had been ill since 19.11.39. but she had not called in medical assistance as she knew of the mother's intention to visit and considered that the child could await her arrival. The child was removed by motor coach to London and taken to see Dr. A., who immediately gave serum. She was seen by the doctor on the following morning and notified as diphtheria. Information from the evacuation area stated that the child was very ill, with bull neck and nasal discharge.
7. Ernest A., aged 17, a native living at 115, Washbrook Road, developed diphtheria on 6.11.39. One tonsil was covered with membrane. He was given 16,000 units antitoxin and nursed at home. Unfortunately he had to be removed to hospital for appendicetomy on 16.11.39. and made an uneventful recovery.
8. Master P., aged 8, an evacuee billeted at 147 Westfield Avenue with six other occupants was notified on 28.11.39. The clinical features were slight; both tonsils were spotted, while the swab was positive. He was given 8,000 units antitoxin and removed to hospital, where he made an uneventful recovery.

9. Miss F., aged 9, an evacuee billeted at 37 St. Margaret's Avenue, with three other occupants, was notified on 8.12.39. One of the local practitioners was called in by the foster mother as the child had a sore throat. Clinically she had a mild attack of diphtheria with a small patch of membrane on one tonsil; glandular infection and toxæmia was slight. She was given 8,000 units antitoxin and removed to hospital the following morning. The delay in removal was due to the fact that the foster mother would not allow the child to be removed without the mother's permission.
10. Miss B., aged 21, a native, living at 12 Albion Place, with six other occupants, was notified on 1.2.30. The diphtheritic infection was severe; membrane extended over both tonsils, hard and soft palates; cervical adenitis was severe and toxæmia marked. She was removed to hospital together with case No.11.
11. Miss B., aged 17, sister of case No.10, appears to have been infected by her sister as they had been sleeping together. This case was discovered when the writer called at the house to see case No.10. Both tonsils were covered with membrane, but she was not aware of this fact, although she had been feeling unwell for the previous four days.

SECTION VIII

SOME CAUSES OF THE HOMEWARD DRIFT

This reception area is one where there exists, even in peace time, a vital social problem associated with the employment of women in the boot manufacturing industry. This factor has played a significant part in the partial collapse of the scheme.

Out of an estimated population of 23,000, in the writer's district, some 7,300 persons are employed in the boot and shoe factories. Many single and married females are normally employed in the trade, but as an indirect result of war, many married women have returned to their former places at the work bench.

During normal times, children from families where both parents were employed in the factories were cared for by grandparents or farmed out during factory hours to be cared for by neighbours. With the return of married women to the factories, this practice has increased. Under prevailing conditions the additional burden of evacuees imposed on householders who are employed, created difficulties in connection with the provision of meals and the supervision of the evacuee children.

The personal equation was the deciding factor in the success or failure of billeting. Only too often small allowance was made for the individual, his habits, emotions, prejudices and complexes. The evacuee children were found to be happiest in homes about their own social level. Complete success rarely attends any voluntary measure and certainly not one demanding such a degree of self sacrifice and stoicism as evacuation. Much harm was done by the carping attitude of those who spread alarmist rumours, and who uttered advice which served to excuse those who found their duty difficult, and were glad of any means of saving their faces.

A perusal of newspaper correspondence during the early weeks of evacuation, would have suggested that all evacuee children were

thieving, lying vagabonds who wilfully destroyed property, and that their parents were alike dirty and lazy.

Domestic troubles usually had their origin in the children. One evacuee mother for instance complained bitterly that her hostess did not hold with breast feeding her infant as advocated by her London Child Welfare Officer. Bed-wetting was a common source of friction. Some evacuee mothers took especial care to conceal the fact from the hostess. A number of hostesses had good reasons for complaint, as it was not uncommon for the mother to make the child's bed in the morning, without disclosing the fact that the bed had been soiled. It was only when the smell of decomposing urine became apparent, that the condition was discovered by the hostess. Associated with bed-wetting, in a small number of cases, was the soiling of beds by children who had deficient control over their bowels. Both these conditions could perhaps have been excused to some extent until the shock of evacuation had been overcome, and the strangeness of the new environment worn off. The limit of tolerance was reached however, when the bedroom floor was used as a latrine, and the wall paper as a toilet roll. The writer witnessed a child aged four, defaecate on the floor of a hospital ward, even although a toilet was within easy reach. The shock of sudden changes in environment can hardly be advanced as a feasible excuse for this low standard of infant hygiene. The child's mother herself habitually urinated in bed. These conditions were certainly not of a temporary character, as the patients were detained in hospital for a period of 14 days, and during that time there was no improvement in their standard of hygiene.

Absence and mistrust of the husband were contributing factors in a number of cases who returned home within the first few weeks of evacuation. The non-receipt of remittances from husbands caused much anxiety, although the Ministry of Labour and National Service assisted destitute mothers by monetary grants. Certain destitute women made successful applications for married women's orders against their husbands at Wellingborough Matrimonial Court, on the grounds

of neglect to provide reasonable maintenance. Fear for the safety of the husband, or other members of the family who had been evacuated elsewhere, often turned the balance in favour of home.

Closely associated with the breaking up of the 'family unit' was the statement that the husband had now two rents to pay instead of one. This was not an accurate statement of fact, as under the scheme, shelter, sanitary accommodation and cooking facilities had to be provided by the hostesses, whilst the evacuee women had only to provide sustenance. A number of evacuee women were apparently not fully conversant with the principles of the scheme, and were under the impression that they had been sent to reception areas for a holiday at the expense of the Government. These were some of the excuses put forward by the evacuee women, but by careful interrogation one came to the conclusion that in many cases the real cause was homesickness and the disturbance of the family unit.

Evacuees had been accustomed to a lavish standard of social service, where income scales for the provision of free milk, butter and eggs were more generous as compared with those applicable in a county where real poverty is uncommon. The homeward drift of unaccompanied children was often due to the action of over-anxious parents and their attitude towards the scheme. They arrived on Sundays by omnibus or motor car from the city to visit their children. These visits, which were often unexpected, had an unsettling effect on both children and hostesses. It would have been to the mutual advantage of all parties concerned, and a contribution to the success of the scheme, if visits had been postponed until the Christmas vacation. By that time children would have become adjusted to their new mode of living and had reasonable time to become acclimatised to their new environment.

Hostesses who had difficult children billeted on them soon found their own 'unofficial' method of disposing of their unwelcome guests. In some cases where children were troublesome or uncleanly

in their habits, the hostesses took matters into their own hands and communicated with the parents regarding their difficulties. The usual result, and that which the hostess desired, was for the parents to arrive on the following Sunday morning to take the children back home. For example, a boy with congenital syphilis, who was giving much trouble to his hostess by persistent bed-wetting and general misbehaviour, was taken home by his parents as the result of a letter sent to them by the hostess. The child was un-billetable, and although the matter was originally taken up with the Ministry of Health, no solution could then be found by that central authority. Another case concerned a boy of 10 who indulged in masturbation, with consequent anxiety to his hostess and who was taken home by his parents when a complaint was made by the hostess.

Tuberculosis played a small, but not insignificant Public Health problem associated with the homeward drift. Some months previous to evacuation, confidential lists of all houses, which the Tuberculosis Officer considered unsuitable for billeting, were supplied to Chief Billeting Officers. It is regretted that full use was not made of this information, with the result that in certain instances billeting took place in houses where there were cases of open phthisis.

The number of houses in the district considered to be unsuitable for billeting was 69, and billeting took place in four instances only. These cases came to light when the Tuberculosis Nurse was making visits to ascertain if any billeting had actually taken place. Three of the cases presented special difficulties, and were only solved after some considerable time. The fourth case still remains while the local authority is powerless to rectify this most unsatisfactory state of affairs. This case concerns an evacuee boy aged 10, billeted with a tuberculous householder, to whose son of 21 he has become closely attached. As moral suasion did not have any effect on the situation, the facts were communicated to the Ministry

of Health. In the meantime however, the host had made arrangements with the boy's parents to have him privately billeted for the duration of hostilities, so that this child is now, with the concurrence of his parents, exposed to the risk of spray-borne infection.

How far these factors influenced the homeward drift the writer was unable to assess, but, in this connection circumstantial proof was not lacking. Table No.XIII gives the particulars of the homeward drift of unaccompanied school children during the first eighteen weeks of school attendance while the numbers of the priority groups remaining in the county and district are given on Tables I and II.

TABLE NO. XIII.

HOMEWARD DRIFT OF UNACCOMPANIED CHILDREN.

Week	Rushden U.D.C.			Borough of Higham Ferrers			Irthlingboro' U.D.C.			Totals for districts.		
	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total
1st	571	468	1039	19	34	53	93	134	227	683	636	1319
2nd	573	478	1051	19	34	53	92	133	225	684	645	1329
3rd	568	462	1030	20	35	55	89	130	219	677	627	1304
4th	553	437	990	19	34	53	81	125	206	653	596	1249
5th	529	412	941	19	32	51	70	111	181	618	555	1173
6th	517	388	905	19	32	51	66	102	168	602	522	1124
7th	510	361	871	19	32	51	65	99	164	594	492	1086
8th	491	359	850	19	30	49	60	90	150	570	479	1049
9th	489	346	835	19	29	48	58	88	146	566	463	1029
10th	473	333	806	19	29	48	60	88	148	552	450	1002
11th	462	325	787	16	29	45	57	85	142	535	439	974
12th	444	312	756	16	27	43	54	82	136	514	421	935
13th	432	296	728	15	25	40	53	78	131	500	399	899
14th	412	275	687	12	24	36	50	74	124	474	373	847
15th	394	268	662	12	23	35	47	71	118	453	362	815
16th	370	247	617	11	24	35	45	69	114	426	340	766
17th	355	237	592	11	24	35	42	68	110	408	329	737
18th	348	233	581	11	26	37	42	68	110	401	327	728
(a)	12.4	13.05	25.4	0.44	0.44	0.88	2.8	3.66	6.5	15.66	17.1	32.8
(b)	60.9	49.8	57.2	57.9	76.4	69.8	45.0	50.7	48.5	58.72	51.6	55.2

(a) Average number of children who returned home each week.

(b) Percentage of children remaining at end of 18th school week.

SECTION IX

PSYCHOLOGICAL EFFECTS OF EVACUATION

Psycho-neurasthenic states are prevalent among the evacuees and hostesses. As already stated, there was no apparent evidence of fear or panic, during reception, but, in order to understand the emotional states resulting from evacuation, it is necessary to seek the psychological basis of anxiety states. This emotion is much in evidence amongst the population during periods when the country is at War. Much of the psychological shock sustained by evacuees and hostesses in reception areas, had, as its genesis a sudden, although not unexpected, sense of insecurity. This emotion amongst the immigrant and native sections of the population had far reaching effects on all classes, while the full effect will not become apparent for some considerable time to come.

It is necessary to differentiate the emotions of fear and anxiety. Fear, may be defined as one of the primitive animal instincts associated with painful stimuli caused or precipitated by impending danger. The stimuli are received via the sensory receptors. An individual in danger of being run over by a vehicle, perceives the image of the vehicle via the retina to be transferred to the visual cortex. Automatically, phenomena of association with danger, are set up with the accompanying emotion of fear, and the motor phenomena of escape. The latter is activated by means of the motor cortex, while in addition a train of impulses are set up which put the endocrine glands into action under the control of the pituitary. These changes put the body on a 'fine trigger', ready for sudden muscular effort. The sensory pattern set up, returns to the cortex and so to consciousness. This constitutes what we recognise as an emotion; in this case, fear. The reactions to environmental danger associated with fear are fairly constant in their form, since their pattern is inherently facilitated, and therefore innate. The pattern set up as the result of exposure to sudden danger is to be regarded as one of the primary instincts for self-preservation.

The infant at birth can experience fear, but probably not anxiety, as this depends on previous experiences, as well as thought and reflection. We do not experience anxiety when a squadron of enemy bombers appear overhead in the sky, but only when we think that they might be there. It is the attempt at mental preparedness, in view of what the individual expects to happen, which produces the emotion of anxiety. In other words the anxiety pattern is acquired as the result of phantasy. It is not innate and therefore is not so well facilitated as fear. During reception, and since the evacuation scheme has been in operation, the emotion of anxiety has had a definite psychological effect on the population exposed to the risk of aerial attack in both evacuation and reception areas. Anxiety has had its greatest effect on the population who have reached the age of appreciating the evil effects of war; while this is accentuated in the case of wives and mothers, who have husbands or sons on active service.

Unaccompanied school children are affected in varying degrees by this sense of insecurity associated with the breaking up of the family unit, the influence of which, cannot be fully estimated over a period of weeks or months. Evacuation for school children has been loosely described in various quarters as a great adventure. This statement is contrary to the intention of H.M. Government and in contradistinction to the fundamental principles of the scheme. Children were evacuated from danger areas, to those of less danger so that risk to life and limb should be reduced to a minimum. The state is more properly termed experience, where children are subjected to changes in social habit and environment. The social status of individual children, together with environment was suddenly but not without warning, transformed in some cases, from a slum dweller to that of a district where social habits and general environment are on a different scale.

The absence of parents, together with social changes, produced psychological effects on the children, which generally speaking from the point of view of individual children is for the better. Although

the writer is firmly convinced of the child's right, to enjoy the security of the family unit, it cannot be denied that where home influences are poor, the change to a better environment will have beneficial effects on the national psychological constitution. This statement only applies to children who have passed the infant school stage, as up to the age of seven years, the writer is convinced that parental love is essential for the proper development of the emotional life of the child. The sympathetic association of mother and child, cannot be substituted. Where perfect mutual understanding exists between mother and child, the net result is the proper moulding of the child's emotional life. One sees too often at school medical inspections, the 'only' child, who has been doted over by anxious parents. Not only do such children embarrass their parents when making social intercourse, but, they are a nuisance to themselves, as soon as they begin to make contacts at school. The instincts of self-assertion and independence do not develop until they have fallen foul of their less genteel companions. Evacuees, as a class, have not the mental make of the 'only' child. They appear to have been brought up, or perhaps in some cases, have brought themselves up, with a spirit of independence and self reliance. These two attributes had much to do with the successful evacuation of school children from the evacuating areas.

Home influences whether they be due to economic reasons, or a poor standard of upbringing, together with poor environmental hygiene associated with the slum, make for rapidity in adaptation to a new environment. Children accommodated themselves rapidly and easily to the new conditions of living. The writer has also noted repeatedly in isolation hospitals, children detained for some months who soon forgot their mothers, and on being returned failed to recognise them. Children who are subjected to good environmental surroundings, are well fed and cared for, develop real affection for those who provide these conditions. This affection, of evacuee for host, is not uncommon, and the writer can foresee difficulties

arising when the time comes for the children to be returned to their parents. After the preliminary shock of evacuation the children have reacted in an astonishing manner, to the advantages of regular meals, good food, decent clothes and respectable dwellings. This power of adaptation, exhibited by school children, has shown itself by a marked improvement in their standards of hygiene, but the ultimate results of the environmental changes on this generation, when grown to manhood, still remain to be seen. The emotion of anxiety was apparent amongst the adult evacuees and this in the writer's opinion was the result of breaks in the family unit. This class of evacuee were mostly of child-bearing age, with or without young children. The family ties appeared to be very strong, a state of affairs which one naturally expected. Women of this class did not adapt themselves readily to the new environment and social scale, and returned home on the flimsiest excuses. How far this aspect of the homeward drift was influenced by the absence of aerial attack is difficult to determine. The necessity for the Lighting Restrictions gave rise to a 'black-out neurosis' which allowed much time to ponder over domestic matters at home. Under the Billeting Regulations the householder is only required to provide sleeping accommodation, cooking and sanitary facilities for the adult evacuees with or without young children. Much domestic friction resulted from difficulties in connection with the free use of the home and the care of the children. It will be appreciated that the prepaid meter for gas and electricity produced some friction where the evacuees were not particularly welcome.

The psychological effects on the hosts themselves were numerous and extremely difficult to solve. Couples who had brought up their own families rather resented being burdened with further responsibilities of a young mother and children, or an expectant mother. Old couples resented the dislocation of their routine mode of life by the introduction of young children into their homes. Even middle aged people said that they were past bothering with children.

Continued discontent amongst such people eventually led to the billet being written off the Billeting Lists. Chronic invalids suffering from such conditions as chronic bronchitis, asthma, cardiac disease, prolapsus uteri etc., developed a definite anxiety neurosis. Some were certified by their medical attendants as being unfit to attend to evacuees on the ground that their health was being seriously impaired by the additional responsibilities. A few cases so certified were investigated by Billeting Tribunals and a number of appeals were upheld.

SECTION X

CONCLUSIONS

1. It has taken a war and the gross disruption of society during the evacuation of September 1939, to bring to light many of the cryptic medical and social problems associated with the low standards of family life prevalent amongst the poorer classes of the cities in the country. The marked difference between the social classes has been thrown into relief, so that perhaps one half of the community now realises how the other half actually lives. The writer's remarks on the homeward drift gives only a few examples which can be recorded with prudence. There are, however, many other problems of sociology and sexology which one does not feel disposed to record without having a fuller knowledge of the details of the cases. The scheme made clear that the general standard of cleanliness and personal hygiene leaves much to be desired in the evacuation areas. The adverse influence of the slum home, where hygienic standards are often low, cannot be assessed too highly. The foul and obscene language of some children and their absolute disregard of property has horrified the middle classes in the reception areas. Those responsible for the scheme did not take sufficient account of the habits, traditions and prejudices of the evacuees. A detailed consideration of the national policy towards evacuation is not the concern of a medical writer when the main topic for discussion is the medical aspect of the scheme. The factual conditions found in this survey are, in general, capable of wider application. Official concern at the obvious failure of evacuation has been expressed merely in petty items of amelioration.

2. The evacuation of young children and mothers was a shoddy affair with almost no preparation and no explanation of what might be expected, either to the mothers or the unsuspecting hostesses. The meagre provision made for medical examination or inspection in the evacuation areas resulted in children being sent out from the

city in states of uncleanliness, which would have warranted their exclusion from school. Whilst full responsibility for this omission cannot be wholly attributed to the school authorities in the evacuation areas, it shows that the social services provided under the Education Act, only serve to keep within reasonable bounds the uncleanly conditions associated with poor environmental hygiene. Much could be done to mitigate these conditions by strengthening the powers of Education Authorities. Although the arrangements made by the reception authorities were inadequate to deal with the cleansing of children in a satisfactory manner, it is difficult to imagine what more could have been done under the circumstances. Making full allowance for the number of children who were cleansed prior to the opening of schools and making a conservative estimate, not less than 15 per cent. of children arrived in uncleanly states.

3. Medical and nursing assistance from the evacuation areas was most unsatisfactory, and showed clearly that no proper attempt had been made by the authorities to send staff in proportion to the number of persons evacuated. In fact, there was no amicable arrangements made in advance of evacuation to send staff in proportion to the number of persons evacuated.

4. The general arrangements made for the confinement of expectant mothers was satisfactory and worked well in actual practice. It was obvious, however, that the majority of mothers admitted to the lying-in beds came for the sole purpose of being confined and had little or no intention of remaining in the reception area for the duration of hostilities. The arrangements made for domiciliary confinements were ill-conceived and did not recognise the fact that a confinement in the normal course of domestic life disturbs the even tremor of family routine. The inducements offered to the hostesses by way of compensation in no way encouraged domiciliary midwifery. Thus, with the exception of one isolated case, confinements did not take place in billets

in the writer's district. Services provided by the Maternity and Child Welfare authority in a county where the incidence of poverty is at a low ebb do not in ordinary times necessitate the provision of free adjuncts to nutrition on an extensive scale.

The application of the county scale of income to evacuees precluded many expectant mothers and young children from obtaining the free milk, to which they had been accustomed to receive in the evacuation areas. The temporary provision of free milk to children under five years of age helped to tide mothers over the initial difficult period while they were attempting to adapt themselves to the new mode of life in a county district.

5. Skin infestations and infections revealed the low standards of personal hygiene amongst the evacuees, and the need for widening the powers of school authorities. The influx of verminous children to areas, where the school population during peace can be placed in a high category of cleanliness resulted in an increase of the number of native children infested with vermin. Many cases of scabies, at least for the first three months of evacuation, masqueraded as eczema or septic spots. It is suggested that the traditional sulphur method of treating scabies should be discarded and replaced by the Danish method. The claims made out for the latter method were not borne out in practice, but the method is one which recommends itself as an advance in treatment and very suitable for school clinic practice. The incidence of Impetigo contagiosa was much less than alarmists would have us believe, while it is pointed out that it is frequently misdiagnosed. Infective eczema, is perhaps, most commonly labelled impetigo. It is also pointed out that whilst mercurial ointments are specific for impetigo, infective eczema is aggravated by these preparations. The most trying behaviour problem was that of nocturnal enuresis. The writer expresses the opinion that the majority of cases were due to faulty training associated with low standards of infant hygiene and adverse environmental conditions. The treatment of

individual children was unsatisfactory, while it is suggested that the condition is one which should yield to improved standards of parental and infant hygiene, and the betterment of environmental surroundings, by the eradication of slum dwellings.

6. A residential nursery school is described and some general principles stated for the proper upbringing of young children. The premises selected for this school party were not altogether suitable and in some ways did not ensure the safe disposal of the children. Nursery schools should only have been evacuated to premises which adhered to reasonable hygienic standards, whilst the staff must be fully trained to undertake the proper training, nurture and treatment of young children. The outbreak of whooping-cough makes clear the case for adequate floor space, and suitable means for isolation, and early diagnosis of cases of infectious diseases. The outbreak also made clear the necessity for medical supervision and the provision of a staff alive to the dangers of spray borne infections.

7. The medical treatment and care of unaccompanied children, and necessitous mothers and young children by general practitioners worked well in practice. It is noted, however, that the actual numbers treated by the District Medical Officers on behalf of the Public Assistance Committee were few in number. The monetary allowances made by the Ministry of Labour and National Service Exchanges helped to tide a number of mothers over a difficult period. A number of evacuees, however, returned home when payment was stopped by the application of a 'means test'.

8. No serious epidemic of infectious disease occurred during the investigation sufficient to give rise to any cause for anxiety. The infectious diseases notified were those propagated through the agency of the buccal spray. The brunt of the infections fell on the native children so far as diphtheria and scarlet fever is concerned. The distribution of the cases amongst the native and evacuee children is shown graphically for these two diseases,

whilst it is noted that scarlet fever was more prevalent in the rural as compared with the urban districts. The rapid homeward drift of evacuees did not allow the actual population at risk to be ascertained so that the cases quoted can only be regarded as a partial explanation of the incidence of the diseases. It was not found practical to differentiate the natives from the evacuees in the case of measles and whooping-cough owing to the difficulties of notification and visitation. There was no evidence to show that the apparent increase in the incidence of infectious diseases was due to overcrowding in the billets. Certain features of the scheme favoured the prevention of spray borne infections. The rapid homeward drift, the delay in the opening of schools, and the double shift system of education, increased the time spent in the open air and allowed the children to acquire immunity to 'foreign' strains of organisms by sub-clinical infections.

9. From factual evidence it seems clear that many of the emotional difficulties amongst the evacuees and native population could have been avoided, if there had been established at the inception of the scheme a central authority in each reception area ready to offer advice on all problems associated with evacuation. Voluntary organisations, such as the Womens Voluntary Service did much to ameliorate many of the petty difficulties, but, there was a definite need for the appointment of trained social and moral welfare workers as well as probation officers. If the central authority had made use of medical psychologists in drawing up the scheme, the reception authorities could have been made aware of the habits, prejudices and traditions of the priority classes. The evacuee school teachers were the people who did much to mitigate the social difficulties associated with billeting, as they were in touch with the children and formed a link between the home in the evacuation area and the billet in the reception area. The school teachers and the voluntary helpers should have had guidance by means of lectures with discussions in the handling of children's and hostesses' difficulties, so that they could have mitigated or prevented psychological damage to the coming generation: as the future of the Empire is in the children.

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