attempts—to isolate the Newcastle disease virus until an outbreak in factory B in December 1963.

An infective agent as a causal factor was again obscured by the absence of outbreaks of fowl pest among the chickens handled. The final method used in the isolation and identification of the Newcastle disease virus is described.

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Helminth Infestations in Immigrant Children

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During the past decade the city of Bradford has become the home of about 12,000 Commonwealth immigrants. At first the majority of newcomers were men who worked to support families they had left behind in Pakistan and India, but recently an increasing number have been joined by their wives and children. In January 1965 it was decided to invite all immigrants to have their children medically examined before admission to school. In addition to a general physical examination and an educational assessment, haemoglobin estimation, tuberculin-testing, and examination of the stools for pathogens and ova were done for each child. Subsequently a similar form of examination was carried out on all children of immigrant origin who had previously been admitted to our schools.

This paper is concerned with the results of our examination for the ova of intestinal parasites. We were principally interested in three questions: first, the rate and type of infestation of children from different parts of the Commonwealth; secondly, the possibility of cross-infestation in this country; and, thirdly, the effect of a period of residence in this country on infestation rates.

Altogether 419 immigrant children applying for admission to school between 1 January and 1 June 1965 and 898 already in schools were examined. The results include 100% of children arriving in Bradford, the parents, without exception, agreeing to the examination.

Method

Each child was given a small screw-cap bottle and spatula and was asked to bring a fresh stool sample to the examination. Bacteriological examination was done on the day of receipt, 5-10% formalin solution was added to the bottle, and the examination for ova was completed within a week of receipt.

The examination for helminth eggs involved a single "direct smear," a small quantity of faeces being emulsified in a drop of water and examined under a coverslip.

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Results

Five types of ova were detected in the samples: they were hookworm (*Ancylostoma duodenale* and/or *Necator americanus*), whipworm (*Trichuris trichiura*), roundworm (*Ascaris lumbricoides*), dwarf tapeworm (*Hymenolepis nana*), and beef tapeworm (*Taenia saginata*).

The total incidence is shown in Table I. The types of multiple infestations found are given in Table II. The rates of infestation according to area of origin are given in Table III. The effects of age and sex are shown in Figs. 1-3.

TABLE I.—Incidence in 1,317 Children

No infestation	1,072 (81.4%)	Dwarf tapeworm	36 (2.7%)
Hookworm	103 (7.8%)	Beef	1 (0.1%)
Whipworm	51 (3.9%)	Mixed infestation	34 (2.6%)
Roundworm	20 (1.5%)		

TABLE II

Roundworm and whipworm	15
Hookworm and dwarf tapeworm	7
" " whipworm	6
Roundworm and hookworm	4
" " dwarf tapeworm	2
	34

Cross-infestation in the United Kingdom.—The following infestations were found in children born in the United Kingdom to immigrant parents.

Case 1.—A boy aged 6 of Indian parents had a dwarf-tapeworm infestation. He had never left the United Kingdom.

Case 2.—A girl aged 5 of Indian parents had a roundworm infestation. She had never left the United Kingdom.

Case 3.—A boy aged 5 of West Indian parents had a hookworm infestation. He had never left the United Kingdom.

Cases 4-6.—Two boys and a girl of West Indian parents each had a whipworm infestation. They had all visited the West Indies four and five years previously.

Case 7.—A boy aged 6 of Pakistani father and European mother had a mixed infestation with roundworm and whipworm. He had stayed in Pakistan for six months in 1963.

Effect of Residence in Great Britain.—The incidence of infestation in children who arrived in this country in different years is shown in Figs. 4 and 5. Those in whom the year of arrival was uncertain have been excluded from these results.

Discussion

Careful examination of a direct smear is a reliable method, practicable in most circumstances. It is probable that we have failed to detect a few light infections with hookworm which might have been found had we been able to examine multiple samples or to use concentration methods. Shrivastav (1954) found that the method was 65.6% accurate as compared with combined direct and concentration methods, and our results presumably underestimate the incidence to this extent.

It is also appreciated that the method is qualitative, and though most of the children have had no symptoms referable

TABLE III.—Rate of Infestation Among Immigrants from Different Areas.

	Total Examined	Not Infested	Hookworm	Whipworm	Roundworm	Dwarf Tapeworm	Beef Tapeworm	Mixed Infestations
Pakistan								
North Pakistan ..	279	214	40	1	5	12	1	6
Karachi ..	48	39	2	1	—	2	—	2
E. Pakistan ..	5	3	—	—	—	—	—	—
Quetta ..	3	3	—	—	—	—	—	—
Afghanistan ..	2	1	—	—	—	—	—	1
Kashmir ..	168	130	31	—	—	6	—	1
India								
Punjab ..	179	149	20	3	—	4	—	3
Bombay ..	90	74	1	3	3	8	—	1
Gujarat ..	39	34	—	1	2	1	—	1
United Provinces ..	10	10	—	—	—	—	—	—
Other parts ..	27	24	1	—	1	1	—	—
Malaya ..	7	2	—	1	—	—	—	4
Fiji ..	3	3	—	—	—	—	—	—
West Indies								
Jamaica ..	55	26	4	13	3	—	—	9
Dominica ..	30	13	—	15	—	—	—	2
St. Kitts and Nevis ..	16	6	—	7	2	—	—	1
Other islands ..	8	5	—	2	1	—	—	—
Africa								
Kenya ..	45	43	2	—	—	—	—	—
Tanzania ..	8	8	—	—	—	—	—	—
Uganda ..	7	6	—	1	—	—	—	—
Malawi ..	5	4	—	—	—	1	—	—
Other parts ..	6	5	1	—	—	—	—	—
United Kingdom ..	277	270	1	3	1	1	—	1

to worm infestation it has been assumed that even relatively mild infections are harmful and therefore worthy of treatment (W.H.O., 1964).

If it be accepted that all infestations require treatment then an overall incidence of 18.6% among immigrant children clearly indicates a need to examine all these children and presumably also the adults.

Bradford has attracted a higher proportion of Asian immigrants than elsewhere, and this has obviously affected the incidence of infestation. Nevertheless, a high proportion of West Indian children are also infested, particularly with whipworm, and strongyloidiasis has also been reported among them (Bias *et al.*, 1962). The incidence among Asians in this series cannot be regarded as characteristic of the Indian subcontinent as a whole, since the majority of our immigrants have arrived from the relatively small adjacent areas of North Pakistan, Kashmir, and the Punjab, where hookworm is the predominant infestation. We would not agree with Patel (1954) that the Punjab and Kashmir are, for practical purposes, free of hookworm, but we found only one case among children arriving from Gujarat and Western India. Very few immigrants have arrived in this city from the areas of Eastern and Central India that he describes as having a high incidence of infection.

Hookworm appears to be relatively uncommon in children in the younger school-age groups but becomes increasingly

FIG. 3.—Percentage infestation of West Indian children, both sexes (109 cases).

FIG. 1.—Percentage infestation of Asian boys (637 cases).

FIG. 2.—Percentage infestation of Asian girls (223 cases).

FIG. 4.—Incidence of hookworm and other infestation in Asian children.

FIG. 5.—Incidence of whipworm infestation in West Indian children.

common with age. This tendency is clearly indicated in Figs. 1 and 2. The greater incidence of this condition among male children is well known and also, shows in our series. In the case of whipworm, however, infestation rates appear to be approximately the same irrespective of the ages of the children examined.

As stated above three (1.1%) children born in the United Kingdom to immigrant parents had certainly become infested in this country, and four others might have become infested here but are more likely to have become infested in visits to their parents' homeland. The risk of cross-infestation in these children must be much higher than in children born in the United Kingdom to English parents because they live in greater social proximity to infested immigrants arriving here.

Perhaps the most unexpected case was that of hookworm occurring in a child born in the United Kingdom to West Indian parents. Inquiry revealed that the boy was more than usually inclined to play in soil and also that he was left for long periods with minimal supervision while his mother was at work. Nevertheless it does indicate that hookworm ova can embryonate even in the climatic conditions of Northern England. Two other cases have been recorded (Buckley and Pester, 1965), indicating that further investigation is needed.

The effect on worm infestation of residence in Great Britain varies according to the particular helminth concerned. In the case of hookworm it is clear that the degree of infestation diminishes gradually, and we found very little in children who had been here for four or more years. The longest period of survival in our series is in a child who arrived in this country in 1957 and whom we presume not to have been infested since arrival.

The same does not appear to be true of other infestations, and, in the case of whipworm in particular, the rates are as high after five years' residence here as they are among children

who have newly arrived. Whipworm was found in children who had been in Great Britain for 6, 8, and 12 years respectively, and roundworm also has been found in a child resident here for eight years. Of the 36 cases of dwarf tapeworm in our series the rate of infestation appears to diminish with residence in Great Britain, though it is possible that limited cross-infestation is taking place.

Summary

A total of 1,317 children of Commonwealth immigrants have been examined for intestinal helminth infestation. A stool was examined from a single direct smear, and 18.6% of the children were found to be infested. The rate of infestation with different parasites is recorded, as is the country of origin of the immigrants. The incidence of hookworm and whipworm at different ages is compared.

Seven cases of infestation in children of immigrants born in the United Kingdom are recorded, and three of these children had never been outside the United Kingdom. The proportion of children infested with hookworm seems to diminish proportionately to the time they have been resident in Great Britain, but this is not the case with whipworm infestation.

We wish to thank Dr. J. Douglas, Medical Officer of Health, Bradford, for his interest and encouragement.

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Psychiatric Referrals from Courts and Prisons*

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The introduction of the Mental Health Act, 1959, has brought an increase of prison referrals to consultant psychiatrists. The increase is more apparent in some areas than others, and there is a great variation in the numbers of court referrals seen and treated in different psychiatric hospitals. Factors involved are multiple and reflect the changes since the 1959 Act, including changes of policy in psychiatric hospitals. In a previous study West, Bearcroft, and Smith (1960) showed that men were remanded in custody rather than on bail for psychiatric reports and on social rather than psychiatric grounds; the number of men remanded on bail to psychiatric out-patient departments is still small (Scott, 1964). Because of the precise catchment area of most psychiatric hospitals, it is possible to assess the psychiatric morbidity of the mentally disordered in conflict with the law from those remanded in custody for a psychiatric report. The catchment area of Long Grove Hospital is the East End of London and it has a particularly heavy load of psychiatric referrals from the courts; most of these are men remanded in custody.

In the course of one year (1963) 146 men were referred to me for examination and report to the courts or Home Office; the handful of female offenders are not considered in this study. These 146 men represented 139 individuals; a description is made in terms of diagnoses, offences and criminal background, the recommendations to the courts, and the ultimate decisions of the courts. Their disposal by the courts and their outcome are correlated with various social and personal factors. The psychiatric assessment was recorded at the time of the initial interview where possible, and additions and confirmation were obtained later, especially in those admitted to hospital. Those offenders who were referred to hospital were mostly admitted to Long Grove Hospital under my care.

Rollin (1963) described a series of admissions from the courts to Horton Hospital in 1961. He then held the view that the fivefold increase in male offenders admitted in a year to Horton Hospital following the Mental Health Act presented a serious social problem. He discussed such factors as the number of immigrants into this country, both coloured and white, who are chronic psychotics on arrival, and the increased freedom allowed to patients by the Mental Health Act, 1959. He believed that the major source of psychiatric offenders was the mental hospital.

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