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THE INCIDENCE OF INTESTINAL PARASITES IN DURBAN FACTORY WORKERS

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In a previous paper[1] we compared the incidence of parasites in two different areas of Durban, one of which, Cato Manor, is a notorious slum, and the other, Chesterville, is a sub-economic housing scheme. In this paper we showed that there was no significant difference in the incidence of protozoal parasites as between Cato Manor and Chesterville but, on the other hand, better housing conditions were associated with a lower incidence of helminths.

This paper records the result of a parallel test in African factory workers, the majority of whom are housed in barracks and all of whom received at least one meal a day provided by the factory at a nominal charge. A single stool specimen from each case was examined directly and by zinc-sulphate flotation. Where the identity of a parasite was in question, staining or other appropriate investigation was done.

Table I shows the results together with corresponding figures for Cato Manor and for Chesterville. The figure P shown against these two latter indicates the probability that any difference observed might have occurred by chance.

The incidence of *Trichocephalus* in the factory is not signi-

TABLE I. INTESTINAL PARASITES: SURVEY IN A DURBAN FACTORY

	This Survey		*Cato Manor*		*Chesterville*	
	No.	%	%	*P*	%	*P*
Trichocephalus trichiura	286	43·5	60·3	<·01	39·5	·17
Strongyloides stercoralis	—	—	1·0	—	0·2	—
Heterodera spp.	4	0·6	2·0	·05	2·1	·03
Hookworm *spp.*	44	6·7	5·7	·50	4·5	·09
Oxyuris vermicularis	—	—	0·6	—	0·2	—
Ascaris lumbricoides	244	37·1	50·3	<·01	26·1	<·01
Schistosoma spp.	6	0·9	1·8	·19	0·4	·32
Hymenolepis spp.	2	0·3	0·6	·45	0·4	·80
Taenia spp.	73	11·1	11·0	·95	5·3	<·01
Entamoeba histolytica	52	7·9	17·4	<·01	15·2	<·01
Entamoeba coli	265	40·3	55·0	<·01	52·7	<·01
Endolimax nana	111	16·9	27·8	<·01	26·7	<·01
Iodamoeba butschlii	34	5·2	12·1	<·01	9·7	<·01
Chilomastix mesnili	4	0·6	3·7	·73	2·5	<·01
Giardia lamblia	21	3·2	3·7	·65	4·9	·16
Monads	3	0·5	1·8	·05	0·6	·80
Coccidia	1	0·2	1·0	·11	0·6	·32
All metazoa	428	65·0	78·5	<·01	56·2	<·01
All protozoa	320	48·6	68·3	<·01	67·5	<·01
All parasites	547	83·2	92·6	<·01	82·3	·62

The figure *P* gives the probability that the observed difference may be due to chance. Where this figure is less than ·01 the difference may be considered as significant.

ficantly different from that in Chesterville, but is considerably lower than that in Cato Manor. The Hookworm *spp.* have approximately the same incidence in all three groups as have also the Schistosomes. For *Ascaris*, the factory, while better than Cato Manor, is considerably and significantly worse than Chesterville. For *Taenia spp.* with a different epidemiology, the incidence in the factory and in Cato Manor are much the same, and are both much higher than is found in Chesterville. In the over-all incidence of metazoa the factory is better than Cato Manor but significantly worse than Chesterville.

Study of the protozoa shows a different picture. The incidence of *Entamoeba histolytica* in the factory is less than half of that in Cato Manor and about 45% of that in Chesterville. A similar difference holds for all the protozoa occurring in any large numbers except for *Giardia lamblia*. The incidence of the protozoa over-all is only 70% of that in either of the two previous surveys.

Thus, though the factory shows a higher incidence of parasites than Chesterville, this is made up by an increase in the metazoa, which is partially balanced by a marked decrease in the protozoa. Table II shows the weight of infestation. It will be seen from this table and from the

TABLE II. WEIGHT OF INFESTATION

Parasitic species per patient	*This Survey* %	*Cato Manor* %	*Chesterville* %
0	16·9	7·4	17·7
1	40·4	17·8	23·9
2	21·4	27·8	26·1
3	16·0	20·9	18·1
4	3·6	14·9	10·7
5	0·8	7·8	2·9
6	0·3	2·0	0·6
7	—	1·2	—
8	0·2	0·2	—

histogram (Fig. 1) that a higher proportion of the factory workers have fewer parasites and, though multiple infestation occurs occasionally, it is by comparison a rarity. In fact, 80% of the subjects had one helminth species or less and

TABLE III. SPECIES PER PATIENT

	This Survey %	*Cato Manor* %	*Chesterville* %
Protozoa	0·64	1·23	1·12
Metazoa	0·88	1·33	0·79
Parasites	1·53	2·56	1·91

87% had one protozoon species or less. Table III gives the average number of parasitic species per patient and here we see further evidence of the relatively low incidence of protozoa.

These results are difficult to explain. It is true that the examinations were carried out at different times, but it is unlikely that there should be such a great variation for the period in question. Just why do the factory workers have more worms and fewer protozoa than the population living in the village? Generally speaking, and as is evidenced by our previous work in the comparison of Cato Manor and Chesterville the helminth population drops under conditions of good hygiene. This follows from the fact that most of the worms have to pass some period of their existence outside the human body and reinfection is necessary to maintain the

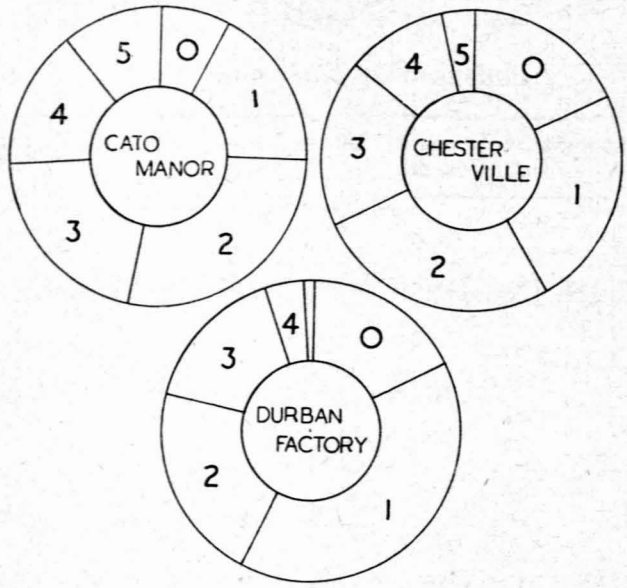

Fig. 1. Durban factory: parasite species per patient.

helminth load. Unless such reinfection is occurring outside of the factory, the figures cannot be explained.

Reinfection is not necessary for the protozoa and, in fact, other things being equal, once a protozoon has established itself in a host it will remain there and reproduce itself in the host. This is evidenced by the relatively small change in protozoa as between Cato Manor and Chesterville. There must, however, be something in the factory worker's life which is inimical to protozoa, but which does not affect the incidence of the helminth. The only factor which is apparent is the availability of a good meal.

SUMMARY

A survey has been carried out on a group of factory workers in Durban and the figures compared with those from previous surveys on Cato Manor—a slum—and Chesterville—a subeconomic housing scheme. The incidence of the protozoa is markedly lower than either of the other two surveys, whereas that of the helminths is lower than that of the slum, but higher than that of the housing scheme.

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REFERENCE

1. Elsdon-Dew, R. (1953): S. Afr. Med. J., **27**, 879.

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