

the ages of 2 and 5 years, 0.15 to 0.10 gm. Neocaine in 4 c.c. of spinal fluid; and below the age of 2 years, 0.05 gm. to 0.10 gm. of Neocaine in 3 c.c. of spinal fluid.

Here is an anæsthesia that is cheap, safe, causes no pathological changes in tissue, and is the best nerve-block known. It is ideal for the surgeon in that he does not have the worry of an incompetent anæsthetist, he has a quiet patient, who is breathing quietly, with a normal or decreased blood-pressure (which means less loss of blood than under such an anæsthesia as ether) and with a perfectly relaxed voluntary musculature.

HELMINTHIC INFECTIONS IN SHILLONG.*

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Introduction.—Shortly after his arrival in Shillong, the author noticed quite a number of men reporting sick every morning who appeared to him to be suffering from effects of helminthic infections, as most of them complained of general weakness, loss of appetite and disinclination to do any work, whilst others had definite symptoms of colitis and dysentery: a dose of castor oil or magnesia generally resulted in their passing a few round-worms.

Consequently a regular examination of the stools of all troops in the garrison was carried out during the months of September to December 1929. Samples of fresh stools of 503 civilians, consisting mostly of labourers and working classes, were also examined in order to compare the incidence of helminthiasis in the troops with the civilian population as well as to reveal any local foci of infection.

The survey failed in the latter respect.

Note.—Samples of dust from—

- (a) Streets around the regimental lines;
- (b) near the building operations; and
- (c) around the latrines were also collected and examined several times in—
 - (i) dry state, and
 - (ii) in saline—but were found to be negative for helminthic ova.

METHOD.

(1) The method followed was to mix up a small quantity of fæces on a slide with normal saline and to search the whole area under the cover slip first under a 1|3rd objective and later under the 1|6th.

(2) Failing to find any ova, another slide was prepared with Gram's iodine and searched.

(3) If negative again Lane's direct centrifugal flotation method was used—thus it is very probable that only a few helminthic infections were missed, if any.

The total number of stools examined were 1,728, consisting of:—

540	..	1st Battalion.
685	..	2nd Battalion.
503	..	Civilians

1,728

Of these the total number of stools positive for helminthic infections were 1,046, i.e., 60.5 per cent.—thus most of the cases had more than one type of helminthic ova.

NOTE.

(1) It is to be noted that the percentages of infections were more in the 1st Battalion as compared to the 2nd on account of the fact of their having been stationed about a year and a half longer in Shillong—the 2nd Battalion having only arrived here in April 1929.

(2) **Ages.**—The ages of soldiers examined were between 18 and 40, that of the civilians being between 10 and 50.

GENERAL FINDINGS.

(1) A very large percentage of men were found to be suffering from *Ascaris* infection, thus out of a total of 1,728 stools examined 995 were found to contain *Ascaris* ova (see Table I). As a result of a mass treatment of one of the battalions a very large number of adult worms were passed.

(2) *Ankylostoma* is very prevalent, i.e., 22.9 per cent. of the total number examined. It is not surprising considering the system of latrines and the habits of the people as regards ablutions.

(3) *Trichuris trichiura* is quite common, i.e., 13.4 per cent. of the total number.

(4) *Enterobius vermicularis*; it was very surprising to find 47 cases of the ova of this nematode in adults, 2.7 is quite a large percentage.

(5) Eighty-nine samples of stools had *Strongyloides* larvæ in non-infective stage.

(6) The ova of *Fasciolopsis buski* were found in forty cases—this fluke is quite common here, i.e., 2.1 per cent.

(7) *Gastrodiscus hominis* was found in 56 cases; as a result of thymol treatment a large number of cases passed the worms.

(7) It is very interesting to note that four cases of *Heterodera radicolica* and three of *Bertiella satyri* were found; only amongst the civilian group.

(9) One case of *Tænia saginata* was found in a soldier who was serving on the North-West Frontier last year and arrived in Shillong a few months ago.

* Being a paper read at the Medical and Veterinary Research Section of the 17th Indian Science Congress, Allahabad, January, 1930.

The following tables are attached:—

TABLE NO. I.

A list giving the number and percentages of various helminths in Shillong out of a total of 1,728 samples of stools examined.

TABLE NO. II.

The helminths found in 1st Battalion.

TABLE NO. III.

The helminths found in 2nd Battalion.

TABLE NO. IV.

The helminths found in stools of 503 of civilian population.

Note.—A graph is also attached for comparison of the above three groups—giving the number and percentage of each helminth.

TABLE NO. I.

Numbers and percentages of various helminths in Shillong.

	Percentage.
Total number of stools examined for ova of helminths ..	1,728
Total number containing helminths	1,046 60.5
Number containing <i>Ascaris</i> ..	995 57.5
Number containing <i>Ankylostomes</i>	397 22.9
Number containing <i>Trichuris trichiura</i>	243 13.4
Number containing <i>Enterobius vermicularis</i>	47 2.7
Number containing <i>Strongyloides larvæ</i>	89 5.1
Number containing <i>Gastrodiscus hominis</i>	56 3.2
Number containing <i>Fasciolopsis buski</i>	40 2.1

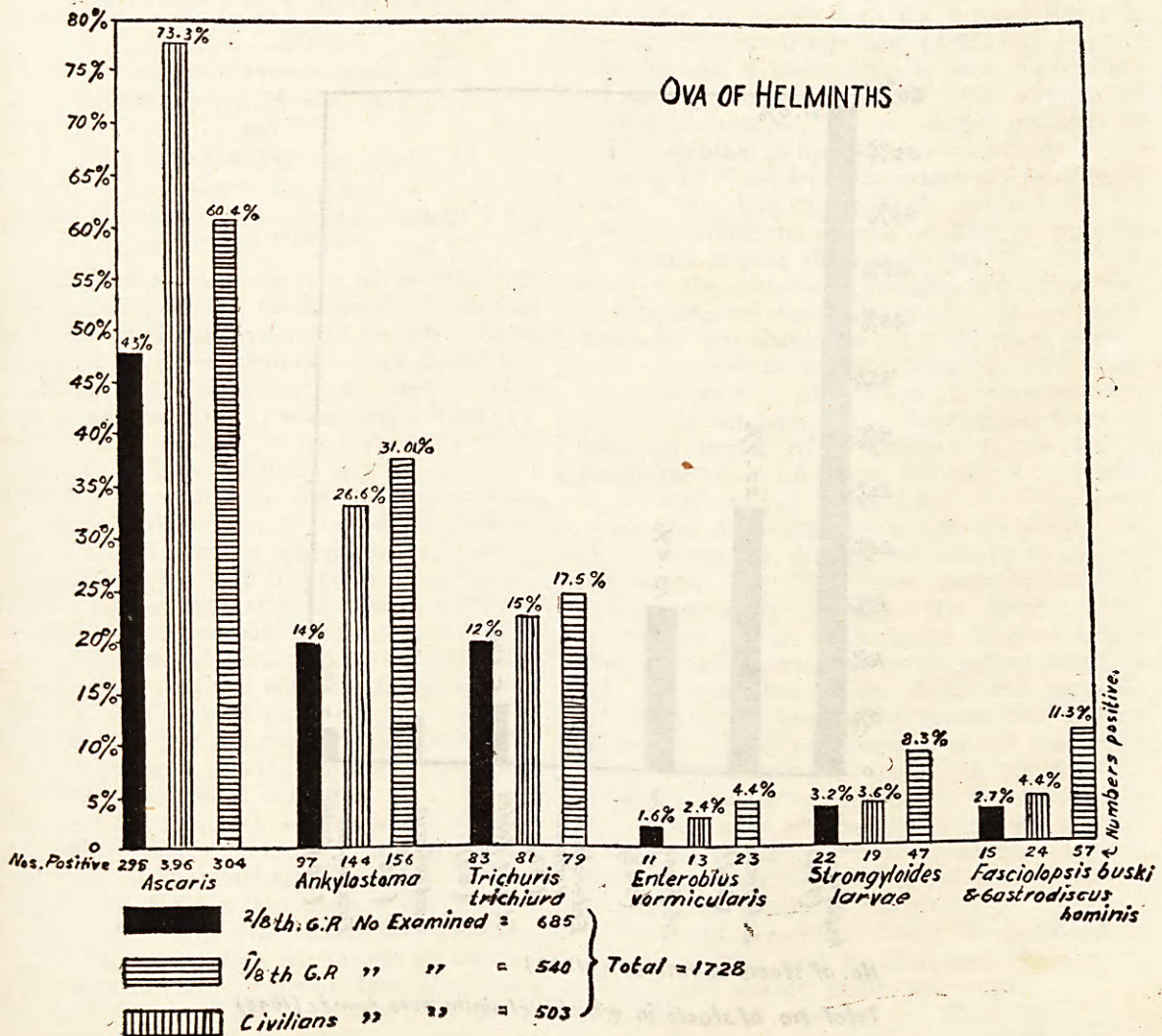


TABLE NO. II.

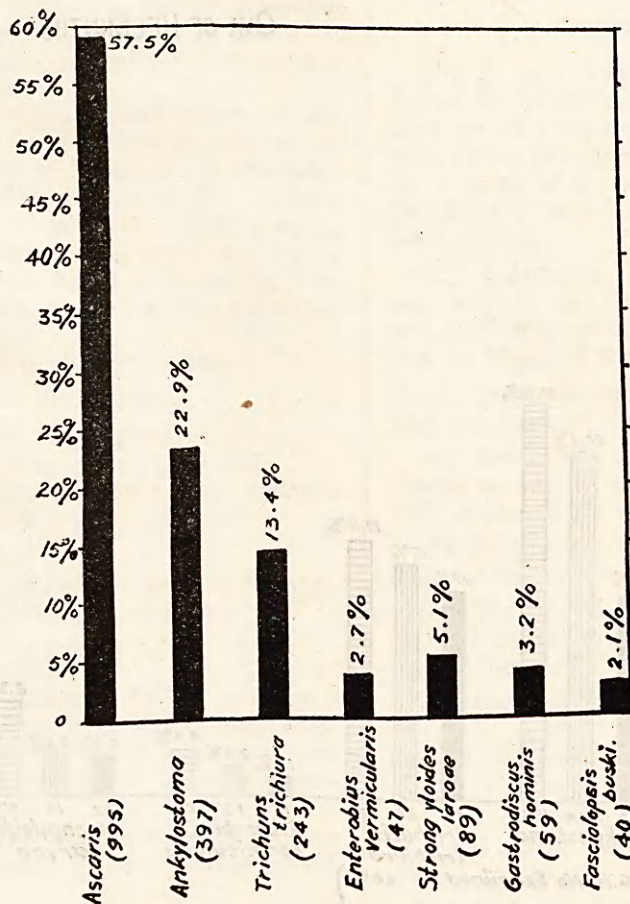
Helminthic infections in 1st Battalion.

	Percentage.	
Total number of stools examined for ova of helminths ..	546	
Total number containing helminths	409	75.7
Number containing <i>Ascaris</i>	396	73.3
Number containing <i>Ankylostomes</i>	144	26.6
Number containing <i>Trichuris trichiura</i>	81	15.0
Number containing <i>Enterobius vermicularis</i>	13	2.4
Number containing <i>Strongyloides larvæ</i>	19	3.6
Number containing <i>Gastrodiscus hominis</i>	13	2.4
Number containing <i>Fasciolopsis buski</i>	11	2.0

TABLE NO. III.

Helminthic infections in 2nd Battalion.

	Percentage.	
Total number of stools examined for ova of helminths ..	685	
Total number containing helminths	311	45.4
Number containing <i>Ascaris</i>	295	43.0
Number containing <i>Ankylostomes</i>	97	14.0
Number containing <i>Trichuris trichiura</i>	83	12.0
Number containing <i>Enterobius vermicularis</i>	11	1.6
Number containing <i>Strongyloides larvæ</i>	22	3.2
Number containing <i>Gastrodiscus hominis</i>	6	0.8
Number containing <i>Fasciolopsis buski</i>	9	1.3



No. of stools examined = (1728)

Total no. of stools in which Helminths were found = (1046)

TABLE No. IV.

Helminthic infections in civilian population consisting mainly of labourers and working classes.

	Percentage.	
Total number of stools examined for ova of helminths ..	503	
Total number containing helminths ..	326	64.8
Number containing <i>Ascaris</i> ..	304	60.4
Number containing <i>Ankylostomes</i> ..	156	31.01
Number containing <i>Trichuris trichiura</i> ..	79	17.5
Number containing <i>Enterobius vermicularis</i> ..	23	4.4
Number containing <i>Strongyloides</i> larvae ..	47	8.3
Number containing <i>Gastrodocus hominis</i> ..	37	7.3
Number containing <i>Fasciolopsis buski</i> ..	20	3.9

THE VALUE OF THE ANTIMONY TEST IN THE DIAGNOSIS OF KALA-AZAR.

Part II.

THE FINGER PRICK BLOOD TEST.

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Introduction.—From the time of the discovery of the antimony test for the diagnosis of kala-azar (1927) the great sensitiveness of the reaction was appreciated by its originators. They found that the reaction was obtained in fairly high dilutions of the serum and quite apparent and definite precipitation was obtained in dilutions of 1 in 10 to 1 in 20. Chopra, Gupta and Basu (1927) described a simple test for the diagnosis of kala-azar which could be performed with a drop of blood, obtained from a finger pricked with a needle, and diluted with a solution of potassium oxalate. Although the series of cases of both kala-azar and controls on which this test was tried were small, these workers came to the conclusion that the results obtained with this simple test ran practically parallel with those obtained with the serum test and that the reaction had great possibilities in giving a simple, rapid and economical test for the diagnosis of kala-azar.

Napier (1929) carried out a series of observations with the finger prick test in the Out-patient Department of the Calcutta School of Tropical Medicine and Hygiene but did not obtain satisfactory results. The present authors, therefore, very carefully went into the details of the test and carried out a large series of observations with different dilutions of the blood and the reagent, the diluted blood with corpuscles in suspension

and without. It is unnecessary to describe the details of this work here and we will confine ourselves to some of the salient facts which will help the practitioner to understand and perform this test. Throughout the whole of the research our object was to evolve a simple and rapid test for the diagnosis of this disease. We wished specially to avoid the puncture of the vein to obtain blood so that the test could be carried out by the bed-side or on a large scale in the kala-azar treatment dispensaries in an area where the disease is prevalent. We are very grateful to Dr. L. E. Napier, in-charge of the Kala-Azar Research, for his kindness in giving us access to his patients in the wards of the Carmichael Hospital for Tropical Diseases as well as the Out-patient Department. But for his help and co-operation it would not have been possible for us to carry out the present observations.

TECHNIQUE.

The original technique of this test was published in the August number of the *Indian Medical Gazette*, 1927, and after subsequent observations we have made certain alterations in this technique which is now as follows:

A drop of blood from the pricked finger is received in a small test tube (3/8th inch internal diameter and 2 inches long is most convenient) containing ¼ c.c. of a 2 per cent. solution of potassium oxalate. If a larger quantity of oxalate solution is used, a correspondingly larger quantity of blood from the finger will have to be taken. The drop can easily be received into the tube containing the oxalate solution by pressing its mouth against the finger with the drop of blood in the centre and inverting the tube. The oxalate solution thus takes up the drop of blood, which is then shaken to get a thorough admixture. The corpuscles are allowed to settle down and this usually takes about 10 minutes or a quarter of an hour. The supernatant fluid is taken by means of a capillary pipette and is transferred to a miniature test tube 4 to 5 mm. in diameter and 2 inches long. A 4 per cent. solution of urea-stibamine is then allowed to run slowly along the side of the tube as in case of the serum test. The heavy antimony solution rapidly permeates through the diluted blood serum and in case of kala-azar blood a coarse flocculent precipitate is seen appearing slowly in the whole column of the fluid. As has been already pointed out in the serum test dilution method, the flocculent character of the precipitate is the true criterion of positivity. A non-flocculent precipitate or haziness in the solution or even a granular precipitate should not be considered as giving a positive reaction. According to the physical character of the precipitate we class the results as follows:—

(1) *Positive reaction.*—Here the precipitation is very definite and its flocculent character is distinct and evident to the naked eye.

(2) *Doubtful reaction.*—In these cases there is usually some haziness after the addition of the