

stools sent for fat analysis from patients with active, convalescent, or suspected sprue. Two-thirds of the stools examined had over 25 per cent of fat; pallor of the stool and the presence of fatty-acid crystals were commoner in stools of high fat content, but 34 out of 102 stools with increased fat showed neither pallor nor fatty-acid crystals. Chemical analysis is therefore needed to determine with certainty whether a stool contains an excess of fat.

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### THE POSITION OF THE VERMIFORM APPENDIX

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THE vermiform appendix is notorious for the inconstancy of its position. With its base attached to the cæcum, it may occupy almost any position, like the hands of a clock, both in the sagittal and the coronal planes relative to the cæcum. This variability of its position is easily explained on the basis of an unequal development of the different parts of the original infantile cæcum. The appendix is first recognized when the proximal part of the cæcum grows out of all proportion to the distal end, which consequently retains its undeveloped form and lumen. At this stage the appendix must necessarily be attached to the lower end of the cæcum, in about its middle. The left half of the cæcum ceases to grow, or grows very little, while the right half grows enormously; this is the asymmetrical shape of the cæcum in the adult. The appendix which was, previous to this change, attached below at the junction of the right and the left halves of the cæcum, now appears to be attached to the left of the cæcum, because this junction has shifted to the left. Next, due to the rapid growth of the anterior wall of the cæcum as compared with the posterior, the appendix may be pushed gradually backwards behind the terminal ileum and cæcum (Wakeley, 1933). Thus, on the accelerated or retarded growth of the walls of the original cæcum depends the ultimate position of the appendix in the adult.

The various positions of the appendix were described by Treves (quoted by McGregor, 1943) by likening the appendix to the hand of a clock. Treves (Wakeley, 1933) thought that the splenic position in which the appendix

lies behind the terminal part of the ileum, with its tip directed towards the spleen, was the one met with in the majority of people, a view also shared by some modern authorities (Massie, 1944). Wakeley (1933) however held the contrary view, maintaining that the splenic position was the least common.

In table I are set out the results of analysis of a study of 591 appendices in Indians. Of these, 405 were seen at operation in cases of appendicitis in the Mayo and Sir Ganga Ram Hospitals, Lahore, and the rest (186) in the dead bodies used for dissection purposes in the dissection halls of the King Edward Medical College, Lahore, and the Dow Medical College, Hyderabad, Sind. The proportion of each of the various positions of the appendix are given in table II and compared with published results (Wakeley, 1933).

TABLE I

Position	591 APPENDICES IN INDIANS		
	Operation cases	Cadavers	Total
Anterior ileal ..	57 (14.1%)	12 (6.5%)	69 (11.7%)
Splenic ..	52 (12.8%)	40 (21.5%)	92 (15.6%)
Pelvic ..	33 (8.2%)	65 (34.9%)	98 (16.6%)
Subcæcal ..	15 (3.7%)	13 (7.0%)	28 (4.7%)
Retrocæcal and retrocolic.	248 (61.2%)	56 (30.1%)	304 (51.4%)
Total ..	405 (100%)	186 (100%)	591 (100%)

TABLE II

Author	PERCENTAGE OCCURRENCE OF VARIOUS POSITIONS OF APPENDICES				
	Anterior ileal	Splenic	Pelvic	Sub-cæcal	Retrocæcal plus retrocolic
Wakeley (1933).	1.0	0.40	31.01	2.26	65.28
Present authors (1945).	11.7	15.6	16.6	4.7	51.4

A glance at these tables will show that the results of analysis in Indians are in substantial agreement with those obtained in Europeans. The commonest position is the retrocæcal and retrocolic position (51.43 per cent), that is in the extremely developed type of cæcum where its anterior wall has developed so much more than the posterior as to have pushed the appendix behind the terminal ileum and behind the cæcum or the lower part of the ascending colon. Next in frequency in both Europeans (31.01 per cent) and Indians (16.58 per cent) is the pelvic type, where the appendix hangs over the pelvic brim or lies over the psoas

muscle. The splenic position does not appear to be so rare in Indians (15.56 per cent) as it is in Europeans (0.4 per cent). The anterior ileal position (11.67 per cent) and the subcaecal position (where the appendix lies below the caecum, 4.73 per cent), make up the total.

#### Summary

A report is presented of 591 cases in which the position of the vermiform appendix was noted. Analysis of these cases confirms the view that the most common position of the appendix, in the adult, is the retrocaecal and retrocolic. The splenic position does not appear to be as rare in Indians as in Europeans.

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### 4 : 4' DIAMIDINO-DIPHENYL-ETHER IN THE TREATMENT OF INDIAN KALA-AZAR

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4 : 4' diamidino-diphenyl-ether (phenamidine, M&B 736) is one of the series of aromatic diamidine compounds synthesized by A. J. Ewins. It was found to possess a marked curative action on *Babesia canis* infection by Lourie and Yorke (1939). Adler and Tchernomoretz (1942) tested the therapeutic activity of this drug in the treatment of infection by *L. donovani* in Syrian hamsters. They found that repeated injections of this drug in 10 mg. per kilo body weight doses did not control a mild infection in Syrian hamsters. Larger doses were not tolerated by these experimental animals. Wien (1943) studied the pharmacological action of this drug and found that phenamidine was the least toxic of the four diamidines—phenamidine, stilbamidine, propamidine and pentamidine; but the differences were not great. The least toxic had the least effect on blood pressure and the intestines. The metabolic changes produced by this drug were studied by Wien *et al.* (1943). Also the drug has been reported to be no more toxic on prolonged administration than pentamidine which has been found to be a relatively

non-toxic drug in the treatment of kala-azar and sleeping sickness.

A consignment of phenamidine was received in February 1944, and the immediate results of treatment of the first 16 cases were published by the writer in October (Sen Gupta, 1944). During that year, 30 cases in all were treated with phenamidine. The complete results of this therapeutic trial are presented in this paper. The immediate results of treatment, and also the results of follow up of the cases six months after they had been discharged as clinically cured, are discussed in this paper.

All the patients of this group, except two, were admitted into the hospital of the Calcutta School of Tropical Medicine. These two patients were treated at the kala-azar clinic of the school. Twenty-six of the patients were Indians, three Anglo-Indians, and one Chinese (the disease being acquired in Calcutta). The age distribution was as follows :

Between 1 and 10 years	..	..	8 cases
" 11 " 20 "	..	..	8 "
" 21 " 30 "	..	..	12 "
" 31 " 40 "	..	..	1 case
" 41 " 50 "	..	..	1 "
TOTAL			.. 30 cases

The duration of illness varied from less than one month to 2 years. In 11 of the cases the duration was 2 months or less.

Twenty-eight of these patients were cases of ordinary untreated kala-azar and 2 were anti-mony resistant ('resistant') cases.

#### Diagnosis

The diagnosis in all cases was made on clinical grounds, confirmed by the aldehyde test and/or the complement fixation test with an antigen prepared according to the method of Witebsky, Klingenstein and Kuhn from the so-called leprosy bacillus of Kedrowsky (Sen Gupta, 1944a). Except in one obvious kala-azar case whose serum gave a strongly positive aldehyde reaction, *Leishmania donovani* was demonstrated in every case by sternal or splenic puncture. The aldehyde test was positive (+++, ++ or +) in 14 cases, (+) in 3, ± in 4 and negative in 7 cases. The complement fixation test was done in 29 cases; it was 'strongly positive' in 7, 'positive' in 21 and the serum was anti-complementary in 1.

#### Blood picture before treatment

A blood count was done in all cases on admission and at least once before discharge from the hospital, except in the one case of death. The mean value of hæmoglobin content was  $8.1 \pm 1.8$  gm. per 100 c.cm. of blood, and the leucocyte count showed a mean of  $2.96 \pm 1.74$  thousand per c.mm.

#### Treatment

The specific treatment with phenamidine was usually commenced after the usual hæmatological and parasitological investigations had