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6021

The Incidence of *B. Dysenteriae* in the Normal Individual.*

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In recent years mild epidemics and a few isolated cases of bacillary dysentery have been reported from various sections of the Southern States (Boyd,¹ Silverman and Harris,² Davidson³). However, these publications have dealt primarily with the active disease. There is a notable lack of information concerning the "carrier" or the occurrence of the specific bacilli of dysentery in the apparently healthy individual of this section of the country. It was, therefore, thought that a systematic study of the stool from healthy persons might prove of interest.

Fifty healthy individuals, with no history of dysentery or intestinal disturbances, were selected from various sections of New Orleans. Fresh specimens of feces, without previous purgation, were obtained through a proctoscope, and cultured immediately upon suitable media for the recovery of dysentery bacilli in accordance with the methods originally suggested by Duval.⁴ Only one stool specimen was cultured in each instance. A large number of plate colonies were transferred and studied biologically. Identification of *B. dysenteriae* was made by means of the cultural (sugars) and serological methods. It is possible that repeated bacteriological examinations might have influenced the results; however, as all cases were handled alike, it was not deemed necessary to repeat the stool examinations.

Specimens of blood were also obtained from each case, and a

* Aided by a grant from the David Trautman Schwartz Research Fund.

¹ Boyd, *Texas State J. Med.*, **17**, 261.

² Silverman and Harris, Unusual and Common Forms of Bacterial Dysentery Observed in the South. Trans. of A. G. E. Assn., in press.

³ Davidson, *J. Exp. Med.*, 1920, **32**, 651.

⁴ Duval, *Am. Med.*, 1902, **4**, 417.

routine microscopic and macroscopic agglutination test carried out with stock cultures of *B. dysenteriae*, namely, Flexner, Shiga, Hiss "Y" and Duval's⁵ lactose fermenter, which was reported by him in 1904 and later confirmed by Sonne⁶ in those instances where dysentery bacilli were isolated from the stools of the normal individuals, they were tested for agglutination by the serum of the homologous case and immune serum from the experimental animal.

The following charts give the results of the first 50 cases examined:

CHARTS SHOWING REACTION OF VARIOUS STOCK CULTURES OF *B. DYSENTERIAE* AND THE HOMOLOGUS ISOLATION AGAINST THE HOMOLOGUS SERUM.

	1-25	1-50	1-100	1-200	1-300	1-400	1-600	1-800
1 <i>B. Hiss Y</i>	—	—	—	—	—			
<i>B. Duval</i>	x	x	x	x	x		x	
<i>B. Flexner</i>	x	x	—	—	—			
<i>B. Shiga</i>	—	—	—	—	—			
<i>B. dysenteriae</i> Isolated								
Duval Type	—	—	—	—	—			
2 <i>B. Hiss Y</i>	—	—	—	—	—			
<i>B. Duval</i>	x	x	x	x	x			
<i>B. Flexner</i>	x	x	—	—	—			
<i>B. Shiga</i>	—	—	—	—	—			
<i>B. dysenteriae</i> Isolated								
Duval Type	—	—	—	—	—			
3 <i>B. Hiss Y</i>	—	—	—	—	—			
<i>B. Duval</i>	x	x	x	x	—			
<i>B. Flexner</i>	—	—	—	—	—			
<i>B. Shiga</i>	x	x	—	—	—			
<i>B. dysenteriae</i> Isolated								
Duval Type	x	—	—	—	—			
<i>B. dispar</i> —Duval Type	—	—	—	—	—			
4 <i>B. Hiss Y</i>	—	—	—	—	—	—		
<i>B. Duval</i>	—	—	—	—	—	—		
<i>B. Flexner</i>	x	x	x	—	—	—		
<i>B. Shiga</i>	—	—	—	—	—	—		
<i>B. dysenteriae</i> Isolated								
Typical Duval Type	—	—	—	—	—	—		—
5 <i>B. Hiss Y</i>	—	—	—	—	—			
<i>B. Duval</i>	x	x	x	—	—			
<i>B. Flexner</i>	x	—	—	—	—			
<i>B. Shiga</i>	x	x	x	x	x			
<i>B. dysenteriae</i> Isolated								
Shiga Type	x	x	x	x	x			
6 <i>B. Hiss Y</i>	—	—	—	—	—			
<i>B. Duval</i>	x	x	x	x	x			
<i>B. Flexner</i>	—	—	—	—	—			
<i>B. Shiga</i>	x	x	x	x	x			
<i>B. dysenteriae</i> Isolated								
Duval Type	—	—	—	—	—			

x positive agglutination reaction.

— negative.

⁵ Duval, *J. Am. Med. Assn.*, 1904, **46**, 381.

⁶ Sonne, *Giftfattige Dysenteribaciller*, *Kjobenk*, 1914, **8**, 23.

CHART SHOWING PERCENTAGE AGGLUTINATION OF STOCK *B. DYSENTERIAE* WITH SERUM FROM FIFTY NORMAL PERSONS.

	1-25	1-50	1-100	1-200	1-300	1-400	1-600
	%	%	%	%	%	%	%
<i>B. Duval</i>	76	72	64	52	40	16	8
<i>B. Flexner</i>	64	48	28	16	10	4	2
<i>B. Shiga</i>	30	16	10	10	6	4	4
<i>B. Hiss Y</i>	6	2	2				

As shown in the charts, *B. dysenteriae* was isolated from 6 cases (12%). Of these 6, one (No. 5) was definitely of the Shiga type; 2 (No. 4 and No. 6) were Duval's lactose fermenters. The remaining 3 were also lactose fermenters, but possibly atypical forms of the Duval strain. They also correspond in some respects to the "A" and "B" Metadysentery of Castellani.⁷ In one case (No. 3), an organism, *B. dispar* (Andrew) was isolated. Ford⁸ regards *B. dispar* as belonging to the group originally described by Duval. It is interesting to note in case No. 4 in which a definite Duval strain was isolated, neither the isolated bacillus nor the stock culture of "Duval" was agglutinated, yet Flexner was agglutinated in dilution 1-100. Whereas, in case No. 5, in which the Shiga type was isolated, there was a definite agglutination of the stock Shiga culture and also the isolated organism itself in dilution 1-300, and slight agglutinations only with Duval and Flexner types. In case No. 6 the Duval organism isolated was not agglutinated, yet stock cultures of Shiga and Duval were agglutinated in 1-200 dilutions. In the remaining cases, in which borderline dysenteric organisms were recovered, only No. 2 and No. 3 agglutinated the isolated organisms.

Since the primary purpose of this work was to determine the occurrence of dysentery bacilli in the healthy individual, no attempt will be made here to explain the high percentage of agglutination of the various stock cultures of *B. dysenteriae* with the blood of these normal persons (see charts). It is recognized that there are often difficulties attendant upon the identification of strains of *B. dysenteriae* through their agglutinability with bloods of the patients; however, this means was not in any instance solely relied upon to identify the recovered cultures herein reported. Strong agglutinating sera obtained from the experimental animal and the sugar fermentation tests were commonly resorted to.

Comments. It would appear from the study of this series of cases (50) that *B. dysenteriae* occurs in the stool of the healthy in-

⁷ Castellani, Manual of Trop. Medicine. William Wood Co., N. Y. 1910.

⁸ Ford, Textbook of Bacteriology. W. B. Saunders Co., Philadelphia and London. 1927, 536.

dividual of New Orleans in approximately 12%. In a future publication it will be shown what number of these cases are true "carriers", and in what number the dysentery bacillus is a transitory sojourner of the intestinal tract. Such problems are of considerable practical importance from the standpoint of the spread of bacillary dysentery. It is noteworthy that only the lactose fermenting Duval type of *B. dysenteriae* was recovered from the normal stools in all instances except one, in which the true Shiga type was recovered. It is further noteworthy that in none of the normal stools examined was the Flexner type encountered.

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**Susceptibility, Resistance and Spontaneous Recovery in Dogs
Experimentally Infected with *Endamoeba histolytica*.***

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In previous communications^{1, 2, 3} the writer has demonstrated a method whereby dogs may become infected with canine and human strains of *Endamoeba histolytica*. He has also proved that the dog is a particularly appropriate animal for study of amebic enteritis, since it is readily infected and manifests all of the symptoms described for human intestinal infections with this organism. Moreover the lesions in the large bowel are similar to those found in man. The present paper is based on an analysis of the protocols of 77 dogs which have been inoculated with the pathogenic ameba and on which careful observations have been made.

The essential data are set down in Table I. Eleven strains of the organism have been used, 2 of canine origin and 9 of human origin. There is also evidence that 8.4% of the positive cases were detected *post mortem* and that 12.7% of the animals which were positive at one time or another during their life failed to show any gross or histological *post mortem* evidence of infection.

The great majority of these animals were inoculated by the intra-

* Aided by a grant from the David Trautman Schwartz Research Fund.

¹ Faust, E. C., *PROC. SOC. EXP. BIOL. AND MED.*, 1930, **27**, 908.

² Faust, E. C., *Porto Rico J. Pub. Health and Trop. Med.*, 1931, **6**, 391.

³ Faust, E. C., *Am. J. Trop. Med.*, 1932, **12**, 37.