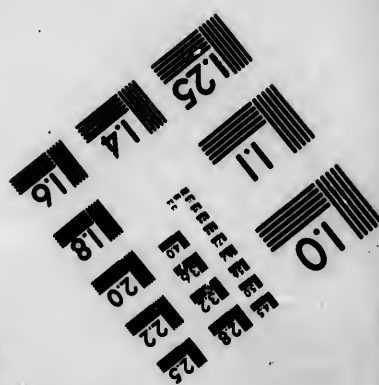
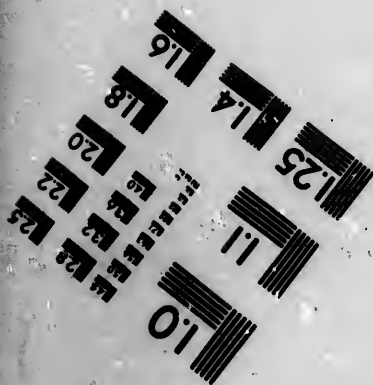
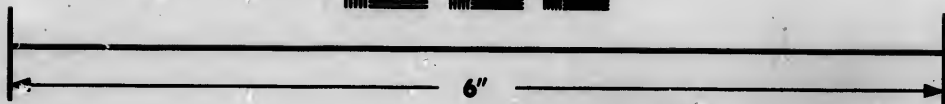
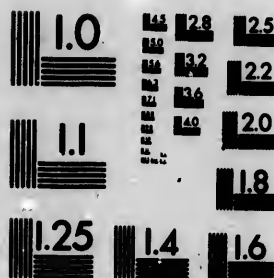


**IMAGE EVALUATION
TEST TARGET (MT-3)**



**Photographic
Sciences
Corporation**

23 WEST MAIN STREET
WEBSTER, N.Y. 14580
(716) 872-4503

**CIHM/ICMH
Microfiche
Series.**

**CIHM/ICMH
Collection de
microfiches.**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques

© 1985

Technical and Bibliographic Notes/Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion
along interior margin/
La reliure serrée peut causer de l'ombre ou de la
distorsion le long de la marge intérieure
- Blank leaves added during restoration may
appear within the text. Whenever possible, these
have been omitted from filming/
Il se peut que certaines pages blanches ajoutées
lors d'une restauration apparaissent dans le texte,
mais, lorsque cela était possible, ces pages n'ont
pas été filmées.
- Additional comments:/
Commentaires supplémentaires:

- Coloured pages/
Pages de couleur
- Pages damaged/
Pages endommagées
- Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached/
Pages détachées
- Showthrough/
Transparence
- Quality of print varies/
Qualité inégale de l'impression
- Includes supplementary material/
Comprend du matériel supplémentaire
- Only edition available/
Seule édition disponible
- Pages wholly or partially obscured by errata
slips, tissues, etc., have been refilmed to
ensure the best possible image/
Les pages totalement ou partiellement
obscuries par un feuillet d'errata, une pelure,
etc., ont été filmées à nouveau de façon à
obtenir la meilleure image possible.

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	28X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

The copy filmed here has been reproduced thanks to the generosity of:

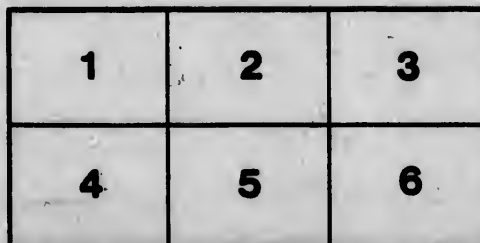
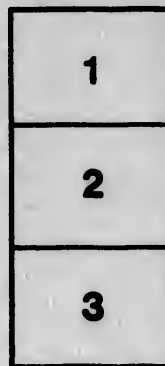
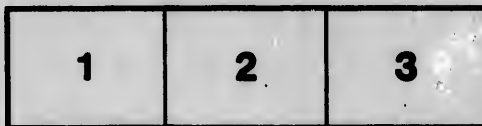
Medical Library
McGill University
Montreal

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol \rightarrow (meaning "CONTINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

Medical Library
McGill University
Montreal

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole \rightarrow signifie "A SUIVRE", le symbole ∇ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

rrata
to
pelure.
h à

32X

McCrae, John.

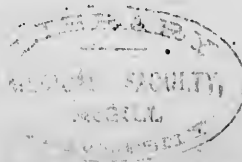
Cup.

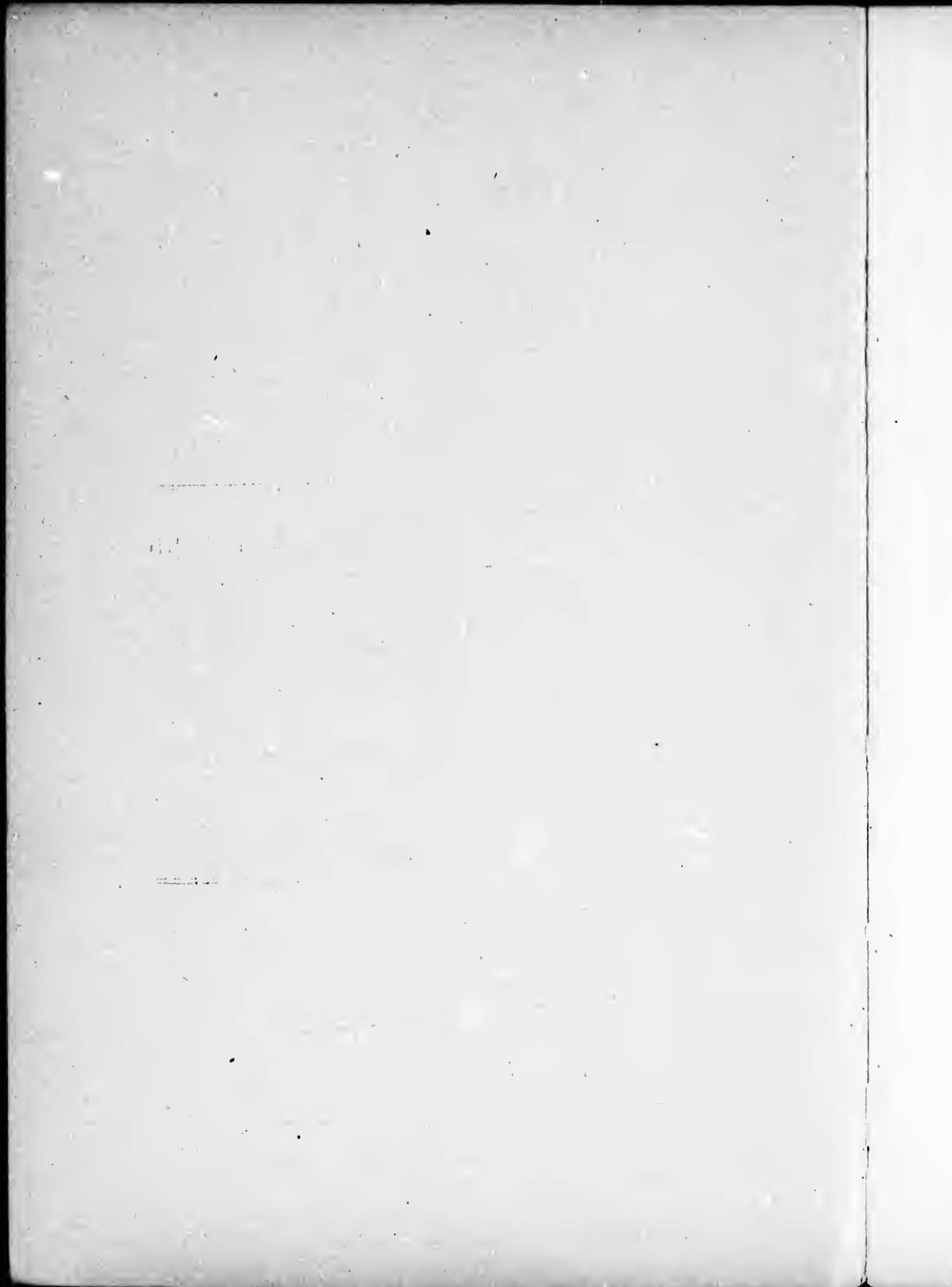
**NOTES OF THREE HUNDRED AGGLUTINATION TESTS WITH
B. COLI COMMUNIS.**

BY

JOHN McCRAE, M.B., (Tor.)
Fellow in Pathology, McGill University.

Reprinted from the Montreal Medical Journal, May, 1900.





NOTES OF THREE HUNDRED AGGLUTINATION TESTS TRIED WITH B. COLI COMMUNIS.

BY

JOHN McCRAE, M.B., (Tor.)
Fellow in Pathology, McGill University.

(From the Molson Pathological Laboratory, McGill University.)

In the absence of sufficient data upon the agglutinative action of blood serum upon *B. coli*, it was thought well to try this action in a routine of cases taken at random in the various wards of the hospitals; and, in addition, some healthy cases were observed. Many of the cases noted, were examined with a view to their Widal reaction, and those which gave the reaction are referred to as typhoid.

Technical Method.

Three forms of *B. coli* were isolated, selected from a number, and named I., II. and III.

I. Showed slight motility, slight fermentation and very slow formation of acid. It was isolated from the healthy bowel.

II., from the stomach of a case of pernicious anæmia (and proved to be *B. coli*), was of very slight motility, moderate acid-forming and slight coagulating ability, and of moderate gas-producing power.

III., was isolated from the bowel of a case of chronic diarrhœa, was of slight motility, strong acid-forming and coagulating power, and strong gas-producing power.

The limit of reaction fixed at one hour; and the dilution was in case of fresh serum, 1 in 10. Where the specimen was dried blood, a dilution was made as near as possible to 1 in 10, though of necessity this could be only estimated. Whenever a specimen was positive at 1 to 10, it was tried at 1-20, 1-30, etc., until reaction failed.

A complete reaction was decided to be present in those cases in which cessation of motion occurred, together with clumping and decided clearance or tendency to clearance of the field between the clumps. Where there was a distinct clumping without the field being cleared of free bacilli, the reaction was called "suggestive." These semi-reactions were fairly frequent, and no doubt indicate the cases in which a true reaction would occur if the dilution were 1-2, 1-3, etc., instead of 1-10.

Every hanging-drop was examined as a control previous to the serum being added to the culture, to prevent pseudo-reactions. This was especially necessary in the case of Colon iii, which at times would show a pseudo-reaction 2 to 3 hours after the bouillon had been inoculated.

It was found necessary in this case to use one of two expedients, viz.: (1) use the culture at a very early moment after inoculation, or (2) use a bouillon culture 3 to 5 days old, when the greater number of the bacilli settled as a sediment, and those in the supernatant fluid showed little, if any tendency to clump. At the same time, the question arises if, from some cause, such bacilli would not have lost their power of clumping to ordinary stimuli (such as that of bloom serum).

Results (300 Agglutination Tests).

Positive	10
Suggestive	18
Negative	272

Of 10 positive reactions, the distribution was:

With bacillus	I.1
“ “	II.1
“ “	III.8

Of 18 suggestive reactions, the distribution was:

With bacillus	I.1
“ “	II.2
“ “	III.15

Of the 10 positive in 1-10 dilution, one showed a positive reaction in 1-15 dilution; the others no higher than 1-10. One case only (a case of undiagnosed chronic stomach trouble, (gastritis) reacted to both ii and iii.

Of 10 positive reactions, the diseases were as follows:

Bronchitis	1
Typhoid (convalescent).	1
Anæmia	1
Gastric ulcer	1
Gastritis? (v. sup.)	1
Undiagnosed	5

Of 18 suggestive reactions, the diseases were as follows:

Appendicitis	2
Acute rheumatism	1
Bronchitis (acute)	1
Exoph. Goitre	1
Typhoid	3
Gastritis (v. sup.)	1
Organic heart disease	1
Undiagnosed	7
Normal	1

Of cases, possibly of *B. coli* infection, which gave no reaction, the following were tested :

Cholecystitis	1
Appendicitis	3
Typhoid	11
Probably typhoid, no certain data.	8

RESULTS, INFERENCES, ETC.

1. The greater liability to reaction of III, renders it very desirable that different races of *B. Coli* should be used, each one with a shorter series of cases than 100.

2. As has been frequently stated, the liability of a strongly acid and gas-producing bacillus to clump (so far as this series shows) is demonstrated.

3. It is desirable that the virulence of such a strongly acid and gas-producing bacillus, be tested; as it is probable that from its growth and character on different media III. would have proved to be the most virulent of the three forms selected.

4. It is also desirable that a dilution of at least 1 in 10 and a time limit not exceeding 1 hour be adopted, that the clumping power of normal blood serum be avoided.

5. It is desirable that a series of cases of such acute infections as are liable to be caused by *B. Coli*, should be tested. So far as the above series goes there appears to be no increased reaction observed in the cases of appendicitis, cholecystitis, etc.

From the number of positive typhoids which gave no reaction (in which the Widal test was made the crucial point), it, so far, does not differ from the observations already made by Drs. Johnston and Mac-Taggart, that a decided reaction of *B. Typhosus* is generally accompanied by a low degree of reaction to *B. Coli*.

6. If, as the researches conducted here by Drs. Adami, Nicholls and Ford seem most clearly to demonstrate, the colon bacilli and other bacteria are constantly being taken in small numbers into the system, and are to be found in the tissues in various stages of degeneration, then this mere taking up, even if constant, is not, under ordinary conditions of health, sufficient in man to develop any pronounced serum reaction against the colon bacillus. This would seem to indicate that the mere act of arrest of growth and destruction of bacteria by the tissues, does not in itself lead to the development of any large quantity of agglutinating substance in the circulating blood and may indicate that there must be an active proliferation of the bacteria in the tissues before any recognisable amount of agglutinating material is produced.

7. Lastly, remembering how abundantly the colon bacilli proliferate

4

within the intestine under normal conditions, it would not have been surprising to find that human blood constantly exerted a very definite agglutinating action upon the colon bacillus. The very fact that the reaction is so relatively uncommon is of interest as showing that the presence of toxine-bearing and toxine-producing bacteria within the intestines does not result in the circulating blood containing what I may term, broadly, reactive substances. It is true that like those of the typhoid bacillus, the toxins of the colon bacillus only diffuse out with difficulty. It is difficult, however, to imagine that none of these toxins are discharged from the bodies of the bacilli when they are growing within the intestinal canal and that none are absorbed. Indeed, the results here presented, so far as they go, seem to indicate that for the development of agglutinating substances in recognisable amounts within the blood, there must be some very intimate reaction between bacilli which have invaded the tissues and the tissues themselves.



