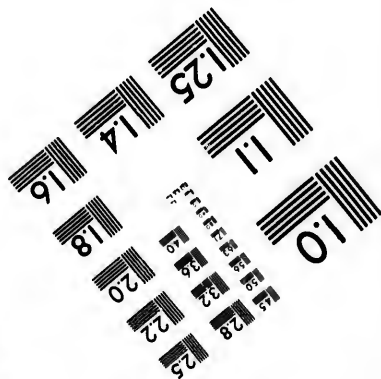
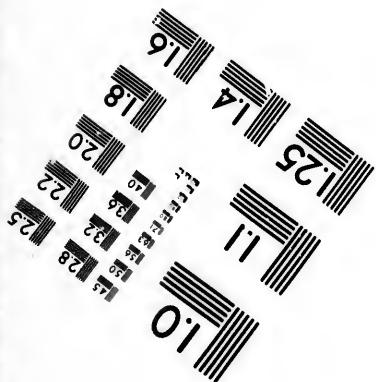
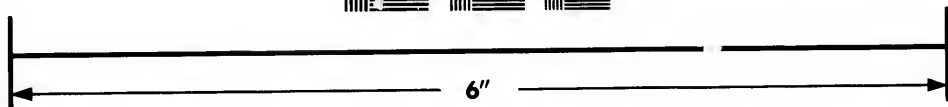
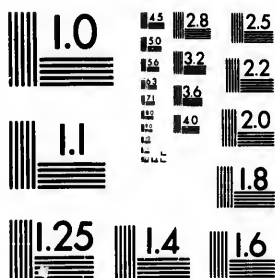


**IMAGE EVALUATION
TEST TARGET (MT-3)**



**Photographic
Sciences
Corporation**

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

1.5 1.8 2.0 2.2 2.5
1.2 1.5 1.8 2.0 2.2 2.5

**CIHM/ICMH
Microfiche
Series.**

**CIHM/ICMH
Collection de
microfiches.**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques

1.0 1.2 1.5 1.8 2.0 2.2 2.5

© 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

Coloured pages/
Pages de couleur

Covers damaged/
Couverture endommagée

Pages damaged/
Pages endommagées

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Cover title missing/
Le titre de couverture manque

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Coloured maps/
Cartes géographiques en couleur

Pages detached/
Pages détachées

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/
Transparence

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Quality of print varies/
Qualité inégale de l'impression

Bound with other material/
Relié avec d'autres documents

Includes supplementary material/
Comprend du matériel supplémentaire

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

Only edition available/
Seule édition disponible

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.

Pages wholly or partially obscured by errata slips, tissues, etc., have been refilmed to ensure the best possible image/
Les pages totalement ou partiellement obscurcies par un feuillet d'errata, une pelure, etc., ont été filmées à nouveau de façon à obtenir la meilleure image possible.

Additional comments:
Commentaires supplémentaires:

Pagination as follows : 596-600 p.

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	26X	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:

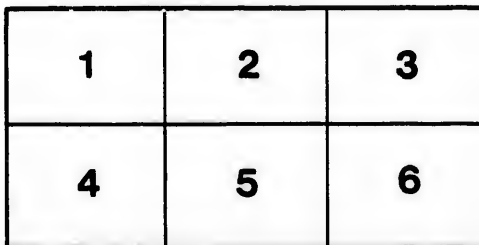
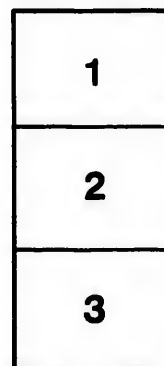
Medical Library
McGill University
Montreal

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 ~~image~~.

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.

BILHARZIA HÆMATOBIUM.

BLOOD FLUKE.

BY

HARRISON R. ROSS, M.D., 1900

Surgeon to Jeffery Hale's Hospital, Quebec.

Bilharz, in the year 1851, while engaged in the study of the diseases of Egypt, discovered that the endemic hæmaturia of that country was due to the presence in certain veins of a trematode worm to which he gave the name of "Distoma Hæmatobium," afterwards better known as "Bilharzia Hæmatobium," after the discoverer.

This disease, while very prevalent in Egypt, Arabia, Mauritius, and certain parts of South Africa, is practically unknown in America—being only met with in imported cases. These have evidently been very rarely found up to the present time, as in my search through the literature of the subject I have succeeded in finding reports of only four or five, all of which were seen in the United States.

As I have at present two cases of Bilharzia under observation, the patients having been infected while on military service in South Africa, it has occurred to me that in view of the many Canadians and immigrants who, having served with the British forces during the late Boer War are now settled in Canada, the disease may be more often met with than formerly.

That a large number of the men were infected with this parasite during the campaign is beyond doubt, as pointed out by Hardy and Douglass in a very interesting article on the subject in the *Lancet*, of October, 1903. What information I have been able to glean seems fully to bear this out.

Hæmaturia,—the primary and practically the only symptom of the disease in the first few years of its course,—being one common to so many pathological conditions of the genito-urinary tract, there is at once suggested a wide range of possibilities. But if the fact can be elicited that the patient had resided in a country where the parasite is indigenous the possibility of Bilharzia would at once be suggested, and if confirmed by a microscopic examination of the urine a great deal of unnecessary and painful instrumentation might be avoided.

As there is very little to be found relative to this parasite in our text books, the subject being left to writers on Tropical Medicine, a short description of the worm and ova together with the accompanying plate may be of assistance in recognizing the latter under the microscope.

The worm is a soft white creature, differing in shape and size in the two sexes. The body of the male, about 12 mm. long by 1 mm. broad, is flat with the edges enfolding over the ventral surface forming a cylinder wherein the female is enclosed during congress.

The female is filiform in shape and longer than the male, measuring about 20 mm. and darker in colour.

The ovum, the most important feature for the purpose of diagnosis, is oval and measures about 0.16 mm. in length, though there is a considerable variation in size in those seen on any one slide under the microscope. They present a terminal or lateral spine, as the case may be,—which difference has not as yet been satisfactorily explained. While the spine is invariably at the end on the ova found in the urine, it is said that those found in the fæces present the lateral spine. In an article by Herbert Gunn in the *Journal of the American Medical Association*, Vol. XLVI, No. 14, he expressed the opinion that the lateral-spined ova are produced by a different species of worm.

Apparently very little has been added to our knowledge of the habitat and life history of the worm since the investigation of Bilharz. In regard to the mode of infection, while it is generally admitted that the parasite gains entrance into the human body by being swallowed in infected food and water, it seems probable that it may directly infect the bladder and rectum through the external orifices while bathing. By whatever channel the worm gains entrance into the body it eventually finds its way into the veins of the portal circulation and urinary organs, principally in those surrounding the bladder and rectum, where they make for themselves in the walls of these viscera under the mucus lining, a smooth walled nidus communicating with the veins and which is in reality nothing but the altered blood vessel. The ova then force their way from the nest into these hollow viscera and appear in the urine and fæces, the sharp spines with which they are armed possibly assisting them in their migration through the intervening tissues. The parasite itself is never found in the excreta.

It would appear that, in the vast majority of cases of Bilharzia, the lesions caused by the parasite and the migrating ova must be very slight indeed, as little inconvenience is experienced by the host,—the only symptoms being the presence of some small clots of blood in the urine, the slight burning in the urethra on micturition.

In Natal a very large number of the male inhabitants harbour the parasite, but few are seriously inconvenienced. This applies particularly to the young boys of the country, who seem to be exceedingly susceptible, but, as a rule, on arriving at puberty they then throw off the disease.

Bilharzia may, however, give rise to the most intense suffering; incessant desire to micturate, dysentery, profuse hæmaturia and melæna being the principal symptoms. The patient loses weight and becomes anæmic and dull from loss of blood. In these severe cases the mucous membrane of the bladder will be found swollen and hyperæmic, with ecchymosed patches varying in size to that of a shilling and coated with a tough mucus or layer of grayish yellow exudation. When the intestines are involved the walls of the rectum show similar lesions, and dysentery, tenesmus and melæna set in.

Even in those mild cases in which the patient is not aware that he harbours the disease, the ova acting as foreign bodies in the bladder,



not uncommonly become encrusted with urinary salts and form the nucleus of small calculi which, as a rule, pass out through the urethra. It is remarkable, however, that in Egypt not only does this occur more frequently than in other countries where the parasite is indigenous, but the disease often leads to the formation of very large stones necessitating surgical measures for their removal.

The course of the disease is slow and insidious, often lasting many years before any serious symptoms develop, but eventually it may spread throughout the whole urinary tract and the ureters become occluded by the masses of ova and the infiltration of the walls.

The danger to life depends very much upon the severity of the infection, but is, as a rule, not serious, as in the great majority of cases the parasite dies within the host and recovery follows. Even, however, in slight infections it is the cause of a very distinct predisposition to intercurrent diseases.

The treatment of Bilharzia is unsatisfactory in the extreme, and while the symptoms may be relieved to some extent, nothing has as yet been found that will affect the parent worm and thus rid the patient of the disease, though a large number of drugs have been tried, among which are chiefly the urinary antiseptics as urotropine, benzoic acid, salol and methylene blue. Draughts containing male fern or turpentine seem to have been most used, but with indifferent success.

The condition of the bladder may be treated by irrigations containing one of the many mild antiseptics generally used for that purpose with a very fairly satisfactory but temporary result. The general health should receive attention and be kept up by good food and tonics—iron being indicated where there is a severe loss of blood.

Of the two cases I now have under observation the first came to me complaining of "passing blood in the urine, vague pains over the region of the kidneys, slight burning on micturition and increased frequency, loss of weight, and a general feeling of weakness and lassitude." His appearance was, however, good, temperature and pulse normal, mucous membranes good colour.

On his first visit to me I did not go into the history of the case, but merely inquired into the symptoms and made a three-beaker test of the urine, which showed the whole bulk to be distinctly blood-tinged, and in the third beaker a large quantity of blood clots, varying in size from a grain of rice to that of a pea, also a considerable quantity of deposit.

This specimen was handed to Dr. W. H. Delany, pathologist at Jeffery Hale's Hospital, who reported that it contained besides blood and vesical epithelium a great number of the ova of Bilharzia Hæmatobium.

Upon again seeing the patient I learned that in 1900 he went out to South Africa with one of the Canadian Contingents and served there for three years, being stationed for a good part of the time in Natal. Shortly after his discharge in 1903 he noticed for the first time an increased frequency in the desire to micturate, and occasionally the passage of a few small clots of blood at the end of the act. The presence of these clots gradually became more and more frequent until, at last, it occurred each time he voided urine.

During the first two years there were no further symptoms, but about a year ago the quantity of blood increased and he began to suffer from pain in the region of the kidneys and perineum, with a general feeling of weakness and lassitude. Recently he has at times been troubled with diarrhœa, and occasionally has noticed streaks of blood in the stools. As the nature of his employment necessitated a good

deal of heavy work and exposure, which seemed to aggravate all the symptoms, he was obliged to give it up.

Since the beginning of the trouble he has been under almost constant treatment for some one of the many troubles of which hæmaturia is a symptom, the actual condition never having been recognized.

The examination of the interior of the bladder, while not altogether satisfactory on account of the blood obscuring the view, reveals no marked changes in the mucosa beyond a general hyperæmia, nor could any changes be detected in the mucous membrane of the rectum.

My second case very well illustrates the fact that while a patient may have a considerable number of ova in the urine he does not necessarily suffer any inconvenience, even though the disease is of some years standing.

This man, after having served in South Africa for several years in the Constabulary, noticed on three or four occasions a very small clots of blood in his urine—and, although he had very often heard of "Red Water" and had actually known of several men in his company who had suffered from it, he did not seem to connect his own symptoms with the disease, as they were so slight and his general health perfect.

The ova in this case, while not so numerous as in the first, can be found without difficulty on every slide made from the deposit in the urine, which contains also a considerable amount of pus and epithelium and a few red blood cells. Dr. Delany reports that in both cases the ova contained in the urine present the terminal spines, and that he has been unable to find any in the fæces notwithstanding the fact that one of the patients has symptoms of beginning trouble in the rectum.

The examination of the blood of these two patients, as is always the case in parasitic diseases, shows an increase in the number of Eosinophiles to seventeen per cent. and five per cent. respectively.

While in the past *Bilharzia Hæmatobium* has been looked upon in America rather as a medical curiosity than as one of the diseases we have to deal with, it appears to me, from what I can learn of the prevalence of the disease among the men who served in South Africa, that it may now be much more often met with,—as in all probability many of the ex-soldiers now scattered throughout the Dominion harbour the parasite, and sooner or later will present themselves for diagnosis and treatment.

I wish to add my sincere thanks to Dr. Delany for his valuable assistance, and particularly for the diagnosis in both these cases.

