Contribution

to
the Etiology
of
Malarial-Enteric Fever

by

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"Caecones, sed tamce mobiles, sine
axiomata inchoata quae robiricier-
quirentibus, non pronuntiatiibus, se offe-
sunt, prescribimus et constitutimus.
Utilis enim sunt si non prorsus peri."—Bacon.
"The division of diseases according to the pathological-anatomical changes they induce is only a make-shift. A small-pox pustule may very much resemble one induced by rubbing antimonial ointment into the skin; a pseuducleus bleb may resemble a blister induced by a pith cone rubbed barce, but no one would assert that these scarcely distinguishable disturbances of nutrition were due to the same disease."

Riemeyer
Contribution to the Etiology of Malaria Enteric Fever.

There is probably no disease whose symptoms, as they occur in the British Isles, are more diagnostically characteristic than Enteric Fever. On the other hand to medical practitioners in tropical and sub-tropical climates, its diagnosis often presents points of peculiar difficulty. During a period of over twelve years service in H.M. Service, five of which were spent in the Mediterranean (Malta and Cyprus), and five in various parts of India, not to mention a short period of active service in Egypt in 1882, in common with many of my colleagues, have frequently been struck with the great diversity of clinical symptoms in cases in which post mortem examination revealed in addition to the usual conditions acknowledged to be produced.
by that subtle and hydra-headed
monster Malaria, the appearance usually
held to be pathognomonic of Sutter's
Fever only. And it is of this disease,
which has commonly been called
Typho-malarial Fever, that I wish
to allude, under the more recent
name of Malarial Dunkie,
So intimately associated has this
puzzling and fatal disease been
with nearly every one of our Military
expeditions, from the ill-fated Cam-
pergine in Tralles down to the recent
operations in the Souda, that it behooves
every honest enquirer to lay aside all
prejudices and preconceived ideas and
effort to assist in arranging and
disposing the clinical facts of her distinc-
tional until a sufficient number of
such facts shall have been accumu-
lated to permit of a sound deduction
being drawn from them. And it
is with such an end in view that I venture
to offer this humble contribution to the
accumulated literary literature of the subject.
Ever since the first distinct differentiation of Typhoid Fever an analogy, or as it was generally but probably erroneously termed, an antagonism, between Typhoid and Malarial fevers has been described; yet strangely enough no systematic study of this analogy seems ever to have been attempted. It is true that in 1846 M. Boudin published some investigations on the subject, and two or three other observers, notably M. Angélique in 1845, and Millière in 1837 recorded many important and interesting facts bearing on this very question, yet a wide field for scientific research remains practically unworked. So impressed are we with the importance and rapidity of the intestinal lesion in enteric fever, that we are apt to overlook the fact that there are other diseases also in which the glands of the ileum are involved. Thus Dr. Inneshead in his "Researches on the Diseases of India" significantly remarks—"it should be recollected that..."
disease of Peyer's glands either in the stage of turgescence, or ulceration, is not a morbid state peculiar to Typhoid Fever. It occurs in Cholera, in protracted Diarrhoea, in acute Mucous enteritis, as an occasional complication of Hittitoev Fever, and a frequent one of Hittitoev Pulmonary. It might have added of Dysentery, especially in the Scabious variety; occasionally of Diphtheria, and frequently in poisoning by Colicium. A case of Myctis is described by Horst and quoted by Harley in Reynolds's "System of Medicine" in which no post-mortem examination. Ulceration of Peyer's Villi was discovered. Here, the author of the article "Malarial Fever" in Griswold's "Cyclopedia of Medicine" in which is discusses the pathology of these diseases, writes "The intestinal mucous membrane is either simply hypertrophic and shows the changes incident to a catarrhal condition, or it is reeclirnatic as in the choleraic cases. The Solitary
Follicles and Peyer's patches in the small intestine are often greatly swollen and colored with pigment matter, in the intemperate form they are filled with a bile-colored fluid; the colon is swollen and highly hyperemic, its follicles are infiltrated and partly suppurating, or the mucous membrane flakes off extensive degenerative processes." (p. 627). With this tendency there to catarrhal congestions of the digestive tract the wonder is that a certain proportion of cases of malarial fever should develop intestinal lesions, but that the perversion of the assimilative functions as constant a complication as in syphilis, should in so many instances pass off without permanent injury to the digestive glands. Obstructive impairment of digestion is an exceedingly frequent sequel to several protracted attacks of ague, and "climatic" dyspepsia is a common disease amongst soldiers.
serving in tropical climates.

Moreover, I believe that there are few medical men in India who have not met with cases of quotidian ague, which terminate or at least change their type abruptly, at the end of a week or ten days in which abdominal symptoms have actually arisen, rendering the diagnosis of the disease for some time uncertain. Is there any a priori reason why the modifying agency of malaria should not fall chiefly on the glands of the ileum, granted that the lymphatic follicles of the small intestine are similar to their anatomical structure and physiological functions to those of the large intestine, and it seems only natural to expect that climatic causes which are known to affect one set of glands, will under certain circumstances affect the other set also; and we see this principle illustrated by the extension of
digestive ulcers upwards into the ileum, and conversely of enteric ulcers downwards into the caecum and colon. Once Sir Joseph Fayrer, in discussing dysentery in his work on "Tropical Diseases" puts it, "One sees the close analogy of the disease with typhoid and diphtheria, and thus as the primary seat of the localization in typhoid is the ileum, in dysentery it is in the large intestine. Does not the tendency of the disease to pass the ileo-colic valve, perhaps throw some light on the pathology of the so-called typhoid in India, which by sources is referred to climatic causes rather than to a specific focal origin? If climatic conditions can cause disease in the gland, structure of the large intestine, it needs no effort of imagination to suppose a similar process may occur in those of the small intestine, or that the disease may pass the
ileocecal valve and appear in the ileum. It is not difficult, either, to imagine that the stress of the morbid inflammation may fall primarily on the glands of the ileum, and to give rise to the enteric symptoms which so closely resemble those of the enteric fever of our own latitudes. (p. 47). Experience teaches us that in very malarious climates cases of so-called typho-malarial fever constantly occur, sometimes epidemically, often sporadically, and my personal observation leads me to believe that the disease seldom attacks men who are subject to periodical attacks of ague, whereby their systems appear to throw off a certain excess of the malarial poison. In every war or expedition which has been carried into malarious countries, ague, malaria, and typho-malarial fever, tend, depending have always some hand in hand. Thus the Waalcheren fever, which raged in the said havoc
in our Expeditionary Army, in the
beginning of the Century, was a vir-
tulent form of Malarial and Typho-
ous malaria fever. In a record of 42
post-mortem examinations held on
soldiers by Dr. J.B. Davis on the bodies
of soldiers who had died of the fever
after their return to England, only
6 cases were found in which both the
large and small intestines presented
no malaric appearances; in 4 cases,
both large and small were congested,
but without any ulceration; 2 showed
ulcerations in the small intestine
alone; 12 in the large alone, and
in 4 cases both large and small
were pretty extensively ulcerated,
in one of the four preceding cases,
were scattered throughout the large sub-
4 lead simple catarrhal congestion
of the small intestine alone, and
in 2 cases the large intestine alone
prevented the appearances of con-
gestion without ulceration. In 5 cases,
the state of the intestinal canal was not
recorded. However in 10 of these cases the pyraneic glands are stated to have been enlarged. There were 2 cases of Intussusception of the small intestine, in both of which the large intestine was reported healthy. And finally in one case there was very extensive peritonitis, the cause of which is not apparent (Dr. J. F. Davis on Wallenburg Fever).

Again the American War of Rebellion furnished some striking examples of Enteric or Typhoid material fever occurring where severe Remittent fever alone might naturally have been anticipated. One Surgeon General of the Army of the Potomac reports:

"The regiment was attached to Genl. Kearny's Brigade of General Kearny's Division of the 3rd Army Corps, and arrived at Fort Monroe on March 20th, 1862, and shortly after moved to Yorktown, and encamped in a thick woods intermixed with"
patches of swamp and pools of water, the ground being covered with fragments of fallen trees and decaying vegetable matter. Water could be obtained only by digging holes from 2½ to 3½ ft. in depth, and the surface water obtained from there was all that the men had. The regiment remained in this camp about five weeks, and was doing garrison and fatigue duty in trenches and fortifications all that time. A few intermittent and remittent cases occurred, as also about 20 cases of Typhoid Fever, all very severe, marked by epistaxis, typhus fever, and after a few days hemorrhage from the bowels, the blood being evidently impoverished. Several of these proved fatal. The sick were cared for at a hospital about a mile and a half to the rear, composed of log tents or barracks, built and formerly occupied by the 52nd Virginia Volunteers (Confederate).
upon a sandy soil, where we obtained an abundant supply of excellent well water. xxx xxx I saw all of the sick and what few wounded there were, at the hospital, and had immediate charge of very many sick men; who were members of various regiments, and nearly all of the cases were either low remittent or typhoid fever. I say remittent, because some of them might be easily classified as such; but I believed then, as now, that they were almost invariably pure enteric fever. I held autopsies of all that died who were under my charge, nine in number. All the deaths from typhoid fever occurred late in the course of the disease, and the majority from hemorrhage of the bowels, one from coma, and the other apparently from pure exhaustion. The abdominal viscera were those principally examined. Peyré's glands were found in each case in a state of ulceration; some very large ulcers, some healing,
While others were in an inflamed condition, some of the ulcerations extended nearly through the coats of the intestines. The entire intestines through their entire length gave evidence of previous inflammatory action, but all the other abdominal viscera gave no evidence of either organic or serious functional disease, and the soft parts and glands where divided with the scalpel seemed to be almost unexposed.

(See Official "History of the War of Rebellion," Medical Volume.)

So also in Cyprus, which is a malarious country, as indicated by the severe outbreak of malarial fevers by which our troops were so seriously shattered on their field occupying the country, and where our camps were carefully removed from all unhealthy surroundings, and where water of the best and purest quality was always procurable, numerous cases of a prolonged fever either with or
without abdominal symptoms, but which were pronounced unhesitatingly by Dr. Briggs, a practitioner of long and extensive Sypian experience to be Enteric Fever, occurred as soon as the large number of acute and milder remittent cases began to decrease. These cases usually occurred in men who had not previously suffered from malarial diseases, and were frequently characterized by an abruptness of attack unusual in ordinary Enteric Fever. These cases were almost identical in similar cases in India, where the regularity was observable even in the course of the irregular looking temperature curves. This form of fever is so graphically and accurately described in a paper in the "Medical and Surgical Journal" of 1843 (vol. 60) by a Mr. Robertson, Surgeon R.N., entitled "Medical Notes on Syria" that I subjoin his description verbatim. He terms the disease "Enteric Remittent", and after premising that
it should be "regarded more strictly as a disease peculiar to the winter months," he goes on to describe the symptoms thus: "Previously to the full development of this so formidable disease, the person will be found to have laboured four or five days under these symptoms or excitations constituting general malaise, with slight febrile exacerbations, occurring irregularly, but more particularly for noon and afternoon, the latter one in all cases being the more severe; after a period varying from two to five or seven days, they are succeeded by feelings of extreme prostration of strength, disinclination to move, the countenance becomes more depressed and anxious, the eye dull and lifeless, the breathing and respiration as if the symptoms as above described were all increased in severity, constituting the first stage of the disease to which the patient may fall a victim, from too great a depression of the whole system — may have a struggled and uneffectual reaction — or after ce
times ranging from one to two or three
days, be succeeded by, though the second
stage, or that of reaction, characterised
by the breathing becoming anxious
and accelerated; an inclination to
move perpetuating the previous list
lessness; the breath being hot and
offensive; the cheek flushed; fre
quently only partially; and then breaking
more than of hectic fever than the blush
of feverish excitement; the skin warm
and parched to the touch; the tongue
dry and red round the edges, furred,
thickly coiled, and not sufficiently
moist in the centre; the lips parched
and glazed; thirst present, but not relieved
by fluids, which rather excite nausea,
headache and vomiting; the headache
from having been merely a feeling of
stupor, changes its character, and
although in some cases reaches the length
of a mild delirium, in the generality of
instances is merely an excited stupor;
the pulse uneriously weak, small, weak,
and easily compressible, measuring 120 or
the urine, although varying in appearance, being light, coloured, brown, or thick and dark, is always small, insipid, and very offensive. This stage may last in reach the same state for a few days, may vary considerably, and have various terminations. The exacerbations (which are very evident and marked, in which there is a sensible increase of the epigastic tenderness &c.) may recur once or more frequently in the twenty-four hours; at this stage also the body, which has always shown a fainter or less nauseous disposition to a pale yellow tinge, acquires a deeper yellow tint. This second stage may appear to be prolonged. Milder delirium, succeeded by coma, continues to advance; colliquative diarrheea, papillae, and death ensue, or it is changed to an intermittent, not at all infrequent; or the following, its more usual termination. The patient seldom the fifty fifth,
or seventh day, becomes free from pain, says he feels himself recovering, which from the time frequently recurring reaction, although shorter and milder, it is too obvious that he is rapidly picking; a drowsiness, from which he sometimes may be roused, gradually passes off, and becomes more and more complete; the tongue parched, is shrivelled up and frequently dropped; the lips, which are clinging with the teeth become covered with Lorde; subcutaneous tenderness, and pneumodiæ twitchings of the facial muscles take place; the eye dead-like, sinks in the socket; the voice, if sensibility and intelligence yet remain, is weak and scarcely audible; on being asked a question, he gives a vacant stare, whilst on pursing a smile curls about his lips; the breathing soft is highly fetid and offensive; the skin bedewed with a thick oily offensive diaphoresis; the face covered with petechiae &; diarrhœa...
of late troublesome, now permit not a moment's respite; the discharges, drench the like, grow insensibly from him; he lies upon his back; the lower jaw chomps; the temples and cheek sink; the intervals in the respiration become longer and longer; the pulse gradually weaker and weaker is no only a thread; the exhaustion becomes extreme; and he sinks without a struggle, or on making an attempt to rise, or raise himself, falls back lifeless.

This Mr. Robertson describes as a typical case, but says "we would, however, remark, that the attacks in some cases may be sudden and sudden, insomniac symptoms or rigors; that in others general maladies may exist for several days; that it may succeed a severe phlegminal fever, that it may appear in a mild and tractable form, which may continue throughout the whole course. It may succeed
an intermittent, or pass into it."

(See also my paper on the fever which attacked the Army of Occupation in Cyprus from 1878 to 1879." Published in "The Edinburgh Medical Journal" for June, 1880.) With the above description compare the following abstract of a case which occurred in Cyprus in the spring of 1879,

"Dr. M. Royal Engineers. Age 21. Service 2 years. Was admitted into hospital at Mariis (at the foot of Mount Troodos) on 22nd April 1879 suffering from headache, pains in the back and limbs, anaemia, sickness, and constipation. Tongue small, red, and covered at base with a yellow fur. Previous to admission he had suffered from the characteristic symptoms of the cold stage of an Ague. He was placed in a eucalyptus followed by a purgative, and 10 per. of quinine to be administered as soon as the sweating commenced. On the 23rd there was no improvement, and on the 24th he felt much worse.
The skin was burning hot and irritable to the touch. Pulse quick and full, though compressible. Tongue still red and irritable. Eyes suffused. Countenance dull. No appetite, but considerable thirst. There was pain over liver and spleen, the latter being much enlarged. Bowels freely open.

Unice febrile in character. There was much headache, for which the hair was cut short and blisters applied to the temples, while camphine was given at intervals during the sweating stage. On the 25th the symptoms continued unabated, pulse weaker, and tongue tending to become dry.

Drug somewhat spurious. During the next two days there was very little change in the patient's condition, except that on the 27th his bowels again became constipated. He was treated by a Castor oil enema, and 15 drachms of camphine administered as before during the sweating stage, which was constantly present once in every 24 hours. Four
that date he commenced to ascend, the Quinine treatment being continued, and on the 9th May (17 days after admission) the report from the Case Book is as follows: “Patient’s health is now being rapidly restored, appetite good, and the functions of the various organs now normally performed.” On the 14th May he was transferred to the Hospital at Mount Troodos for change of air, from whence he was discharged to duty on the 26th May. He returned to Malaria for duty, and on the 4th June he had a slight reappearance of fever, complicated by lomelline irritation. The treatment of the fever consisted in giving 20 p. of Quinine during the “treatment,” while the cough was treated in the usual way. On the 9th June the report was that the fever was declining, but the cough continued troublesome. Two days later the report stated that the fever had almost disappeared and the cough was improving. On the 15th the
following note was made: "Strength returning daily; appetite good; secretion free." On the 17th he got a severe relapse of the fever, with all the former symptoms greatly intensified (note the tendency to remittent recurrence, a popularly noticed peculiarity of Cyprus fever). On the 21st he was removed to Mount Brook in a very low condition, suffering greatly from sickness, and a tendency to syncope. By the 23rd he had improved somewhat, and an attack of diarrhoea which had supervened the day previous had disappeared. The large doses of quinine were abandoned. On the same night (23rd) there was a marked change for the worse, and in the following evening the Case book records: "Intelligence quick and weak - tongue drawn and dry - muttering delirium present. There were general tremors and clenching of the bed clothes. Feet cold. Countenance pale and drawn. No stool for 24 hours,
abdominal tympany. The morning
temperature registered 101.5° F. evening
103.2°. On the morning of the 25th
the following note was entered: "Much
worse—has had a bad night—julcevate,
tongue drier and brown—tympany
still present, notwithstanding a tur-
rience. He is very restless, and
delirious at first, muttering is now of a
more noisy character. On the morning
of the 26th he was almost comatose,
respiration noisy-tongue brown, dry and
pierced, and together with the teeth
and lips covered with sordes. Body
covered with a clammy perspiration.
Temperature in rectum 105.6°. Two
attempts which failed in both in-
estances were made to reduce the
high temperature by administering
first an enema and afterwards 2
swallows of 20 grs of laudanum, but
were immediately rejected. During
the day he passed involuntarily
several bronchial motions, foetid, and
of the consistence of treacle. In the
evening the temperature in the rectum registered 106.2°. He gradually sank and expired the same evening. At the post-mortem examination the morbid appearances were almost confined to the abdominal viscera. The liver was enlarged and friable, weighing 2 lbs. 10 oz. The spleen was greatly enlarged and deeply congested, and weighed 2 lbs. 1 oz. It also was soft and friable. The mesenteric glands were much enlarged. In the ileum, "Bugs" glands were much enlarged and congested, and in the vicinity of the cecum two circular ulcers of the size of a sixpenny piece were discovered. In the upper part of the large intestine the solitary glands were enlarged. The united appearances found in this case would seem to point to the intestinal lesion being having been developed as a late state in the disease, in other words, that the original attack of fever was purely climatic and not enteric. In the only necropsy made by Dr. Robertson on
a fatal case of "Ateuric Remittent", the intestinal tract was found to be healthy throughout. (Edin. Med. and Surgical Journal 1843. Vol. 60. p. 48). Now this case which I have quoted at some length was merely one of several, but the most striking example of an intermingling of Ateuric Remittent Fever, enteric Fever and Dysentery in a small body of mere apparently equally exposed to exactly similar conditions. While I was with them, was a series of cases which came under my observation and many of them under my immediate treatment in Cyprus; and it appears worthy of record.

On or about the 2nd of August 1879 (for all the cases did not start in the same date) a party of 17 mounted Royal Engineers were sent from the summer camp on Mount Troados, about 5700 ft. above the sea, for duty on a newly completed road, between Teneassos (villa of Diana) and Doros, a small village about half way between Troodos and Chorio, and for all practical purposes in the plain
The majority of these men (who had been in the island about 10 months) had never previously suffered from any malarial fever. They took with them two bell tents, and some two, others three blankets apiece. They slept alternately at the Depot at Dinard, which is some distance from the native town, and in a cultivated field near Borsos. The tents were used principally for bedding up, most of the men preferring, on account of the mosquitoes, to sleep in the open air on the ground in spite of the heavy nights and dew. Of this party three were admitted into Hospital within a few days of their return to Troados (the party spent about a fortnight in the plains) suffering from ague and Remittent or typho-remittent fever, of whom two died at the time, and later on a third also died of Classic Dysentery which followed the attack of Remittent Fever; two were attacked once or oftener by Sleepy but Sleepy attack of ague; and at a somewhat later period three more were admitted for
**RECORDS OF TEMPERATURE, PULSE, RESPIRATION, AND EXCRETA.**

**Name of Hospital or Station:** Mount Groove, Opprae.

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<th>No.</th>
<th>in the case of</th>
<th>E. C.</th>
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**A. E. Corps or Regiment:**

**Regimental number:**

**Disease:**

**Age:** 32

**Years of Service:** 3

**Ward:** Field Hospital

**Register:** B

**File:**

**Termination:** Died

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<td>Fever</td>
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<td>Diarrhea</td>
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**Remarks:**

- Wave
- Fever
- Diarrhea

**Diagnosis:**

- **Syphilis and Hepatitis**
- **Dysentery and Fever**
malarial fever of a mild type. Of the three who escaped altogether, one was the newly commissioned officer in command, who succeeded in procuring shelter and a rough bedstead for himself; and the second used to place a piece of old tarpsuliac between himself and the ground. The first fatal case began abruptly with severe rigor, and quickly developed into a characteristic case of Typhus Malarial Fever. The autopsy revealed in addition to the ulcerated condition of Peyer's glands, some enlargement and engorgement of the spleen, which weighed 22 oz.; and deep congestive of the truncus coeliac and sigmoid flexure.

The second fatal case in the person of a healthy looking principal young liver of temperate habits and good character, was due to such a complication of diseases that it was not until a post-mortem examination had been made that the full extent of the disease was discovered. The principal liver...
pneumonia of the left lung; lobary pneumonia of the right; and edema of both. The liver was enlarged, of a firm consistence, and of a peculiar muddy colour, and weighed 5 1/2 lbs. Under the microscope the intercellular tissue was seen to be thickly studded with black pigment particles. Each kidney weighed 10 oz. and presented the appearance described as "large white kidney," though under the microscope the same black pigment but only sparsely distributed was discovered. The spleen was large, weighing 14 oz., friable and pigmented. There was some cutaneous congestion of the small intestine throughout its entire length but most marked in the lower part of the ileum, where luminae Peyre's flaps were not even enlarged; while the cecum and ascending colon were extensively ulcerated. This man's illness had lasted only since three days, and during the last five days the temperature had been subnormal. Another of these cases, also luminal
recovered, suffered from a sub-remittent fever extending over a period of 31 days, which was abruptly discontinued. In this case there were daily ablatory remissions marked by free diaphoresis, and an eruption of bright, red spots appeared on the cheeks and abdomen in the 15th day of the disease, and persisted without fading until the 22d day, when it slowly began to vanish, no fresh spots at any time taking the place of those that had faded. Slight but obstinate diarrhoea, vague ileo tendencies, and occasional constipation complicated this case, which, as many of its features resembled the so-called "malarial fever" (Compare account of "Malarial Fever and Malignant Malaria" by Dr. C. French, U.S. Army, in the "American Journal of Medical Science," for January 1878). Supposed temperature charts of the above case. Cases of this last description were by no means uncommon during the cold season of 1878 to 79, and in the
hills camp during the ensuing summer, but they occurred only in those who had been exposed to pronounced malarial influences.

Turning to the Afghan and Nile Campaigns we again find numerous cases of enteric or dysentery. Malarial fever occurring where we would have anticipated meeting cases of malarial fever only. But on the other hand it must be acknowledged that in the Nile war many of the Medical officers were satisfied that the specific forms of enteric fever had been imported into the camps by drafts of men from Cape Town where the disease was prevalent at the time. As far as the differential diagnosis between dysentery and enteric cases was in many cases impracticable during life I do not think the enteric pestilential theory should be at once accepted without reservation. To illustrate my meaning let me quote the remark of one of the Medical Officers (Surgeon...
Edge) who lays great stress on the patho-anatomic appearance, evidently somewhat to the exclusion of the clinical considerations. "The cases I saw in theh area from Port Durban to Ulundi and back to Natal were not easy of recognition; the pox-colonized spots were absent, the temperature chart gave no assistance, and in the advanced stages of some cases of remittent fever the patient passed into a typhoid state and died from ulceration and perforation of the bowels. Post-mortem examination revealed the great difference between the diseases as regards the structure affected, in remittent fever the ulceration was not in Peyer's patches or the solitary glands traceable in the fresh inflammation and thickening of the lower part of the ileum. In the enteric cases the post-mortem showed the inflammation and ulceration confined to the Peyer's patches and solitary glands." (A. M. D. Annual
Report 1877. Appendix, p. 306) To see the tendency of the violence of the local inflammation to concentrate itself in some cases on the mucous membrane and in others on the glandular structures of the same portion of the intestine, appears to be very doubtful. Evidence in favor of either view, that is to say, of either the dissimilarity or the similarity of the disease in the two sets of cases, it would be interesting to know the ages of the men attacked by each form, in order to compare the physiological activity and relative susceptibility to disease of the glands in question.

I proposed going from reference to the sudden outbreak of enteric fever amongst our troops in the Egyptian Army of 1882, as no local nervous theory was found to account for the epidemic, as anyone who has ever walked through the bazaars of Cairo can fully testify; and moreover local nervous
fevers of primary origin were by no means of constant occurrence.
In the recent operations in the Soudan, however, the phenomena of
Malaria, tertian fever were so common and so striking that they formed
the subject of a most interesting discussion in the Royal Medical and Chirurgical
Society of London on the 9th February of
the current year. As this discussion is
of so recent a date, I need do no more
than refer to the report of it contained
in the British Medical Journal of
13th February, (p. 294) and to a short
but suggestive article which was elicited
from Dr. W. H. Macnamara of the Army
Medical Staff, published in the same
Journal of March 13th. It will be noticed
how similar the experience of the Military
Surgeons in the Soudan was to that of ob-
servers of the fevers of fever occurring in
all our previous expeditions into malaria-
ous countries. I would truly remark that
in the Summer of 1854 in India I
had under my care a case of prysoidal...
Sub-acute fever which I was at length constrained to return as one of "Santaré Fever," but which after death was found to be free from any specific enteric lesion whatever; the case thus exactly corresponding to the one described by Dr. J. B. Squire in having been observed by him in the base hospital at Surcha. I report that notes of this case, together with a large number of temperature charts collected in Cyprus and India were lost while in military duty in the last named country.

And now turning to the consideration of Malaria, enteric fever in our great Eastern Empire, I see that the problem becomes still more complex. In spite of the fact that in no other country in the world are so many sanitary precautions taken on behalf of our soldiers that the sites of barracks are carefully selected, and removed as far as possible from the native towns; that the water is carefully
collected and filtered before it is used by the men, that the latrines are conducted on the dry cattle system (and as a general rule it is most efficiently carried out); and that everything that forethought and care to is done, and done under constant medical supervision, to ward off every preventible form of disease; yet it cannot be denied that opportunities for contracting enteric fever in the ordinary way are still abundant throughout the country. In the native towns and villages sanitary matters are little attended to; that an excellent place for the reception and cultivation of the enteric fever germs is always at hand; and the soldier in his march, or the tired official in his ride may stop to drink at one of these places in spite of every warning. In bottles and native liquor shops too it is possible that the disease may be contracted; while the condition
of the doli's (washermen's) ponds and the place where he keeps the clothes entrusted to his care, are too often altogether neglected oregardless suspected. Moreover no unbiased observer can deny the appearance of occasional small-defined epidemics of true scar complications enteric fever where the symptoms, including even the peculiar eruption, are typical, and where the origin of the disease can be distinctly traced to some local cause.

Nevertheless there are hundreds of cases annually of ill-defined enterie or malaria enteric fever in which the utmost care and inquiry fail to elicit any cause save purely climatic influences. Remitted fever, ague, enteric fever, and dysentery are frequently to pass into each other, liable easy graduations until it is almost impossible today which was the original or prominent disease. I will remember a case which occurred under
my case in Rawalpindi (Punjab) of a young soldier who came into hospital suffering from all the symptoms and clinical history of an attack of acute dysentery, which resisted all treatments and ultimately proved fatal. At the post-mortem not only was the whole tract of large intestine found to be extensively ulcerated and in parts stony-hard, but Peyer’s patches and the solitary glands of the small intestine were discovered in a precisely similar condition, so that the question might have been asked whether dysentery or enteric fever was the primary cause from which the patient had been suffering. Dr. Welch of the Army Medical Staff in his admirable little book on “Enteric Fever as illustrated by Army Data at Home and Abroad” expresses most injuriously for the specific origin of Indian Enteric, but he
Completely ignores cases of true typho-malarial fever in his considerations. As, however, I have already greatly exceeded the limit of length which I originally proposed to observe in this contribution, and as my much has recently been written and said concerning malarious enteric fever in India, I must content myself with briefly summing up the results of all experience of this disease in expeditions and wars in tropical and sub-tropical climates in the suggestive words of Sir Thomas Crawford, Director-General of the Army Medical Staff, published in a memorandum issued to Medical Officers in the Sudan, and later to all Medical Officers who were warned to be in readiness for active service in the North-West Frontier during the Russian dispute this spring: "The most valuable part of the clinical history of an army in the
field develop themselves with a regularity that is almost monotonous. Loss of the bowels, under the name of Camp diarrhea, begins to be common almost as soon as the army takes the field. This is in a large number of cases compatible with apparently good health, and is doubtless attributable to the changed condition of life. Soon cases of fever appear, some of very brief duration, which are classified as local fever, and some are attended with diarrhea, making the commencement of enteric fever in the force. The development of this disease and the proportions in which it will assume will be surely a question of time and circumstances. The disease embraces every variety from the mildest to the most acute types, from the so-called ambulant to the most fatal forms. The instances in which this fever occurs as a relapsing typhoid properly so called, with an invasion fever period followed by one or more febrile recurrences in which all the
characteristic phenomena are repeated with intervals of amnesia between them, are also not uncommon."

Enquiring the clinical facts observable in the disease under discussion let me very succinctly formulate what I believe to be the peculiar points which when present may be taken as guides to the diagnosis of true climatic tertian fever: they are briefly - the frequent suddenness of attack, the invariable absence of the characteristic eruption, the sudden abruptness of departure, and the general rapidity and completeness of the convalescence.

I need not enter longer delay over my subject, but would in conclusion suggest as worthy of attention in relation to the question of malaria, enteric fever, the frequent local characteristics of malarial fevers. These local characteristics are often so well marked as to give rise to popular distinctive names for the fever. Thus we have "Pulmonary Fever," "Jungle Fever," "Cape Coast Fever," and se-
haps we may add "Mediterranean Fever" (though that is by no means strictly a malarial disease) &c., and these names, unscientific though they be, represent pretty constant varieties in the symptoms. I do not mean to imply that cases of so-called Pocke

Fever are confined to the districts whence the local appellation is derived, but they are comparatively uncommon in other parts of India; and the same remark applies equally to the other forms cited. The same constancy of symptoms in certain localities has also been noticed by M. Culicidae in certain Fever. Thus he says: "I have often been struck with the similarity in the symp-
toms of all the cases of Culicic Fever occurring in the same bene. Thus I have known all the cases in one bene

very mild, and in another very severe; acute diarhoea or sickness in one bene, no diarhoea or sickness in another; severe cerebral symptoms in one bene, no cerebral symptoms in another.
In one instance I have met with three
gases of mumps, and in two instances
of two cases of mumps in the same
family. " (Practice on Continued Fever.
p. 494.) I believe I have occasionally
noticed a similar phenomenon in
Syphilis, one source of contagion pro-
ducing secondary symptoms chiefly
or wholly affecting the throat; matter
often the spine, and so on. As known,
loci in India where it is frequently
easy to detect the diseased woman,
a certain amount of cohabitation
must always obscure all such
general deductions, my observations
are not sufficiently full and accurate
to justify a positive statement on
the subject. Do not there however
pass from variety in the matrices
moiri in certain localities or
epidemics; and may there not possi-
be some variety of malaria in which
the powers of the infective agency
will "fall principally on the glands
of the face."


I feel painfully conscious not only of the crudeness of the arguments I have brought forward to illustrate my opinions, but also of the peril of attempting to ascribe to climatic causes one which we have but little control a disease commonly regarded as due to neglect of sanitary principles; but I would respectfully submit to you, while using every endeavour to refute false or undue hypotheses, we ought not to undervalue any honest opinion however opposed to our own way of thinking, bearing in mind that heterodoxy is the very life-blood of progress; or to borrow the words of an eminent historian, that "the great luxury of knowledge is not error but sects". (Rudley's Hist. of Civilization. Vol. III. p. 394)

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