CRETE AS A STATION, WITH A MOSQUITO CAMPAIGN CONDUCTED THERE IN 1903.

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The British Army, in performing its duties of garrisoning the various parts of a world-wide empire, often finds itself in strange places, but nowhere, I think, does it occupy so peculiar a position as in Kandia, Crete, where it is stationed outside the actual limits of the Empire, and is nevertheless not on active service.

To the ordinary man in the street at home Crete is, I am afraid, practically an unknown quantity, or, if not altogether unknown, is simply classed by him vaguely as "in foreign parts," much in the same way as the ancient Greek or Roman relegated all peoples not his own to the category of barbarians. What is more surprising, however, is that, even amongst those who are supposed to have a more intimate knowledge of it, their ideas on the subject refer rather to those far-off days when Zeus was king and Minos ruled the land, than to anything of a more recent date, and I am sure they would be more prepared to furnish a description of Theseus' classic campaign against the Minotaur than give even the merest outline of those events which led to the intervention of the Powers and the inauguration of the present regime.

For the information of such, I may mention that it was as a result of that intervention that the island passed practically from under the sway of the Turk and became at least autonomous, if not actually independent. The fruits of this change became very soon apparent, and are becoming daily more so. Where up to then was chronic disorder, with exacerbations attended by crimes of violence in every form, there is now complete peace and a re-establishment of social order equal to the most settled country in Europe; and as a result the prosperity of the people is growing apace, and there is every prospect that they will eventually reach a high standard, even though there may be little hope that they will ever regain the position they occupied almost before the dawn of history.

The island is, of course, still nominally under the suzerainty of the Sultan, but in this instance I think that very indefinite, if at times useful, prerogative is reduced to the minimum possible. It has its own High Commissioner—Prince George of Greece—and it
is to maintain his authority that the four protecting Powers—
Great Britain, France, Russia and Italy—have quartered there a
certain number of their troops.

The British troops have their camp at Kandia, which is situated
about midway on the northern coast, while the remainder of the
international forces are stationed at Canea, about seventy miles to
the west near Suda Bay.

The town of Kandia—the Heracleion of Homeric days—has a
population of about 21,000, and is situated on the sea-shore of a
roughly semi-circular plain, which is bounded on the other sides by
an almost continuous range of hills. These in some places attain
a considerable height, from 7,000 to 9,000 feet, especially to the
south-west and south-east, where they are snow-clad for about
eight months of the year. The plain slopes quickly from the higher
ground to the sea, and, as is only to be expected in a country subject
to a very heavy rainfall, it is scarred, fissured and very irregular;
while the rivers that traverse it partake to a large extent of the
character of mountain torrents, running with a full, rapid current in
winter and dwindling down in the summer to comparatively small
sluggish streams with numerous semi-stagnant pools, and in some
instances becoming mere rivulets which spread out and struggle
along over the rough, uneven beds. Two of them, as they approach
sea-level, have rather wide margins of low-lying marshy ground,
viz., the Third River, about four miles to the west, and the
Kolomodi River, about a similar distance to the east.

The town itself is of the purely oriental type, all the houses in
the residential portion, both rich and poor, being surrounded by a
high wall, which completely conceals them from public view.
Within the last few years, however, since the change of Govern-
ment, a few houses built on the western plain have begun to spring
up, and their number will no doubt gradually increase as time goes
on, seeing that the Greek element forms more than half of the
population. Three or four of the streets are fairly broad, and laid
down with concrete or with large square blocks of stone, after
Venetian fashion; but the majority are little more than narrow
winding lanes and alleyes. Shops in the ordinary sense of the term
can hardly be said to exist, with few exceptions, as the commercial
life of the place has not yet apparently reached the stage when the
shop becomes differentiated from the workshop, and as a result the
streets in the commercial part are simply lined by a succession of
semi-open booths, in which the workers in brass, leather, &c., ply
their trades and surround themselves with the products of their
labours for sale. The effect is no doubt quaint and picturesque, but the impression obtained is that of an oriental bazaar, rather than of anything approaching what one is accustomed to in the West.

The town, generally speaking, is kept very clean superficially, and there is an absence of smells which compares very favourably with towns of its class in the East; but its sanitary arrangements would, I am afraid, not stand a too close inspection. They can hardly be spoken of as forming a system, as they simply consist in most cases of separate and isolated cesspits in connection with each house, and these are apparently not dealt with in any organised or regular manner, being, in fact, as a rule, left severely alone, until they obtrude themselves too offensively to allow of further neglect. This state of things reaches its climax in the western portion of the town, which is the poorest quarter, mainly inhabited by Turks, and which is unfortunately also the part that comes in direct contact with the British camp. In that part the houses are little more than flat-roofed clay cubicles, each of which, however, is provided with a small high-walled courtyard of a few square yards superficial area, where is invariably to be found a well and a latrine, as often as not in immediate juxtaposition. The latter is without exception nothing more than a cesspit of a most unpleasant character, which is apparently never cleaned out until it overflows and invades the remainder of the courtyard.

This low standard of sanitation shows a great falling off from the water-borne scheme established by the Venetians during their occupation of the place, of which many remnants are still to be seen, and is also far inferior to the excellent system of drains recently disclosed in the excavation of the Palace of Knossos close by, which dates back to some 1500 or 2000 B.C. The "primitiveness" of the present arrangements can therefore hardly be described as prehistoric, and must be looked upon rather as a degeneration than as a lack of development. Such an unsatisfactory condition must necessarily be a constant source of danger to the town itself, and also to the camp, on account of its immediate proximity, although there was no disease amongst the troops, or apparently amongst the population generally, during the period under review, which could be ascribed to this cause. The present municipal authorities, however, appear to be enlightened and progressive, and seem anxious to raise the town to a standard more in keeping with Western ideas; but it is only natural that there should be at present many calls on the public purse to rectify the effects of centuries
of indifference, if not actual chaos, and they are therefore not able to make as much progress in any particular direction as might perhaps be desired. They show, however, such a spirit of energy and intelligence in these matters that I think it is only reasonable to hope that a great improvement will be effected within the next few years.

The resources of the town in the way of amusements are naturally limited, and there is, in fact, little to tempt one to visit it, after the first novelty has worn off. Socially, of course, it is a closed book as far as the garrison is concerned, and even amongst the inhabitants themselves there seems to be little mixed social intercourse. This, however, is only to be expected amongst a people a large proportion of whom are Mahomedans by religion, and all of whom have been born and bred for generations under Mahomedan rule and influence, with all that that entails in the exaggerated privacy of the family life and the complete seclusion of the female element. The garrison has therefore to fall back on its own resources in this respect, and these are unfortunately not extensive. Some tennis can be had, when the wind in summer is not too strong, or when the rain in winter permits; and cricket, football and hockey can be played on a piece of rough, more or less level, ground in the moat, but polo is out of the question. Even riding is somewhat at a discount, as there are practically no roads, and the pathways are so uneven as to be quite unsuitable for going at any pace, while it is impossible to go across country, as where it is not actually under vines it is very hard, rough and lumpy.

Luckily there is a certain amount of shooting to be had in the autumn and winter, viz., duck and snipe in the marshy ground already mentioned, and partridge and cock in the glens and gorges of the neighbouring hills. The former are a very variable quantity, in some years affording very good sport, while in others they are practically non-existent; and as regards the latter, it is necessary to be somewhat of an expert mountaineer and fairly indifferent to fatigue to enable one to obtain even a very limited bag.

Besides the above, I may mention the archaeological resources of the island, which are not only extremely interesting in themselves, but also afford an object for making many agreeable excursions in various directions, where the scenery alone would be a sufficient recompense for the trouble taken, and where the variety and gradation of tints, especially in the evening, are at times so remarkable that one would have to be as colour-blind as a camera not to observe and appreciate. A number of people of every nationality
interested in these *disjecta membra* of a bygone day visit the island annually between February and July, some to superintend the various excavations which are being carried on in different places, such as Knossos, Phaistos, Gortinus, &c.; others simply those who are desirous of seeing a land so redolent of mythological lore and who wish to view for themselves the footsteps of civilisation in its passage from Egypt and Asia Minor to Greece and Europe generally.

The climate is on the whole fairly good, but it is by no means an equable one. It is hot and relaxing in summer, especially during the month of May, when the south dust-laden siroccos are frequent, but it is more bearable later, when the north-west winds begin to prevail. It begins to get cool in September, and October is generally a very good month. The rains, as a rule, begin in November and generally continue, with varying intensity, until the end of March. They are usually very heavy and are accompanied by high, very cold winds, which are at times very trying; but there are occasional intervals of fine weather, which are very bright and bracing. The most trying element in the climate is undoubtedly the tendency to rapid changes of temperature, which are liable to occur at all seasons and which it is almost impossible to foresee or guard against.

That the general health of the inhabitants is not, however, appreciably affected prejudicially by these somewhat unfavourable climatic conditions, nor by the unsatisfactory state of their immediate sanitary surroundings, which have been already alluded to, and which prevail quite as much in the small country villages as in the larger towns, the present physique of the people is, I think, a sufficient index. This is well above the average for a southern race, and is especially noticeable in the country districts and in the highland valleys in the interior, where the fact is no doubt accentuated by the picturesque and manly national costume. A certain amount of leprosy, no doubt, exists amongst them, and the presence of some of these maimed and disfigured beings at the entrance gates of the town begging is fortunately a strange sight for Western eyes. They are not allowed to reside in the town itself, and as they are generally very poor, they have to make their homes in the caves a little to the east of it. These caves at first sight may not strike one as being very agreeable places to live in, but in reality they compare very favourably with the houses in the poorer quarters of the town. They are, if anything, superior in cubic space, light and ventilation, and are, in addition, devoid of an encircling wall and a
noisome courtyard. All those affected with this disease are, however, soon to be collected from the various districts and removed to the island of Spina Longa, which is situated a little to the east of the main island, and which has been set apart by the Cretan Government for their segregation. An asylum is at present being built there, which it is expected will be ready for their reception in about six months. It will be provided with a resident physician and all the necessary arrangements for the suitable care and treatment of these cases. The total number affected is not relatively large, being only 350 for the whole island, of whom about one-third are resident in the Kandia district, so that the disease cannot be said to show any marked prevalence.

The only disease which really does prevail amongst the population to any large extent is malaria, and that apparently they have become so accustomed to as to accept it as part of their every-day life without troubling themselves as to what might be its cause, much less contemplating any possible scheme of prophylaxis.

In the early days of our occupation outbreaks of this affection amongst the British troops were, I believe, looked upon simply as a recurrence of disease contracted outside the island and not due in any way to local infection, and if any of the natives were seen to be affected, it was considered to be a spread of the infection from the former; that, in fact, the troops were the foci for dissemination. Subsequent experience and a more extended knowledge of the island has, however, shown the converse to be the case, and has proved that the various epidemics which have occurred were in all cases due to local infection and that the disease was prevalent in the island long before our advent. How far back it dates as a cause of disease or how long it has been endemic in the island it is, of course, impossible to say, as there are no records at present known to us to throw light on the subject, but there is no doubt it goes back for a considerable time. In fact, to my mind, it would not be surprising, now that we are becoming accustomed to the subversive tendencies of modern research, if some day some savant arose to demonstrate that the yearly tribute of youths and maidens rendered to the Minotaur meant nothing more than the annual death-rate from malaria, and that that fearsome creature was none other than the humble Anopheles; Theseus’ chivalrous undertaking naturally resolving itself into a somewhat antedated mosquito campaign. This would, no doubt, be a somewhat new reading of an old myth, but it would nevertheless be quite in keeping with ancient modes of thought and expression, and besides, it would be only in accord-
ance with the fitness of things, now that the far-famed labyrinth, which was supposed to have had such a definite place in the life of those days, has been shown by the light of recent excavations to have been nothing more than a double-headed axe, that our ideas with regard to the Minotaur himself should also suffer a similar disillusionment. But however that may be, the tribute taken by malaria, whether by death or loss of health, still continues, and, as far as this concerns the British troops, it is the main source of disease any medical officer stationed in Crete has to deal with and guard against.

Before enumerating the various steps taken by me during the year under review with this object, it may perhaps be advisable to give a short description of the Camp itself and its relations to the town, &c., so as to render it more easy to understand the measures adopted and to appreciate their relative values as a means of prophylaxis. As an aid in this matter I annex a sketch giving the more important details.

The camp is situated on the old Venetian ramparts on the western side of the town, extending from the sea-shore southwards and inland for about a mile. It is therefore necessarily very narrow compared with its length, but as the ramparts are higher than the ground on either side and have a good slopè, it is dry, airy, and in itself satisfactory from a sanitary point of view. It is bounded on the outer or western side by a deep, broad moat, the southern part of which, near the International Redoubt, has a fertile soil, where rank grass and weeds grow freely if undisturbed, while the remainder consists of bare rock or soft clay, with little or no vegetation. Through the latter part there runs towards the sea a small stream, which is made up partly of drainage from the piece of ground higher up and partly from a spring rising a little below that part. My reason for describing this so fully will be apparent later. On the inner or eastern side the Camp is bounded in its southern half by some market gardens of various sizes, with the houses of the town beyond, while in its northern half the houses of the town come into direct contact with the camp limits.

The troops are accommodated in wooden huts, which are placed at intervals along the whole length of the camp. They are serviceable and satisfactory, although of course presenting the usual defects of such structures, being hotter in summer and colder in winter as compared with stone buildings.

I arrived in Crete on March 1st, 1903, accompanying the 1st Battalion Royal Dublin Fusiliers, and as past experience had shown...
Rough Sketch of Candia
Showing Position of Troops
malaria to be the one prevailing disease amongst the troops there, a vigorous mosquito campaign was prosecuted throughout the year. Recognising, however, that it would be impossible to effect anything on a large scale in an island where malaria is prevalent everywhere, and in some places, such as the Plain of Messara to the south, in so epidemic a form as to compel even the natives to avoid it at certain seasons of the year, it was determined to concentrate all efforts within the danger zone, and then to prevent the men as far as possible from going outside that area at night-time. With the latter object night attacks, which necessitated the men remaining for hours in low-lying places amidst long grass in the vicinity of creeks and streams, and that, too, at a time when mosquitoes are most active, were discontinued at my recommendation, and a projected scheme of extended manoeuvres, during which the men would have had to encamp in a country infested with mosquitoes, was similarly abandoned.

As soon as the rains began to ease off, all the ground in the camp and its vicinity was carefully examined for the purpose of localising as far as possible the various breeding grounds. Within the actual precincts of the camp itself there existed a large deep hollow in the ramparts in the vicinity of the International Redoubt, and quite close to some of the barrack rooms, in which rain-water collected in large quantities. As it had no means of exit it had to remain there until it passed off by evaporation, a process which would naturally take a considerable time. A permanent outlet was established so as to carry off the water as it fell, and a couple of disused wells close by were also permanently sealed up.

Outside the precincts of the camp, but within the danger zone, the following were the principal breeding grounds localised, together with the means adopted to deal with them:

(1) The Moat Outside the Ramparts.—This, in my experience, was the most fertile breeding ground of Anopheles, and also the most likely to prove dangerous to the health of the troops, inasmuch as the men's barracks and rooms were the nearest habitations, being not more than a dozen yards away in some instances, while sources of infection were always present there during the day and evening in the numerous native boys playing or looking after goats and cattle. For convenience of description it may be divided into two parts:

(a) That portion near the International Redoubt, which has a fertile soil, and which is about three acres in extent. This is indicated by a dotted line on the attached map. No large collection of water was ever apparent on the surface of this part, but the soil
was so completely water-logged, owing to the constant oozing from under the wall on the outer sides of the moat, that all tracks of cattle passing over it when grazing became so many small pools, in each of which were found innumerable larvae, mostly *Anopheles*. To obviate this the long grass and weeds which covered it were cut away, and a system of drains established to carry off the excess water to the stream below. This proved thoroughly and permanently efficient.

(b) The stream already mentioned. At that time this meandered slowly down over an irregular bed towards the sea for a distance of about three-quarters of a mile. In some places it spread out, forming pools and back-eddies, and in others the banks were so soft in the immediate vicinity of the current that the goats and sheep which were constantly moving about this part caused numerous little collections of water, in all of which larvae, mostly *Anopheles*, developed in large numbers. As a remedy the stream was trained and its banks stiffened with a layer of broken stones where required. This proved efficient.

In the part of the moat dealt with in the above two sections there also exists a number of mines of Venetian origin, dating back to the time of the Turkish siege, which extend outwards in various directions and to unknown distances under the glacis or outer boundary. In some of these accumulations of water were found, but I was unable to discover whether they contained larvae or not, as it would prove a difficult, if not dangerous, undertaking. As, however, they appeared to be very possible breeding grounds, and, moreover, as all the innumerable long winding passages seemed to be very suitable places for mosquitoes to hibernate in, and were, in fact, found to contain them in large numbers whenever visited, I had all the apertures built up as a precautionary measure. The openings of several sally ports and underground passages in the ramparts were also similarly dealt with, with a like object.

(2) The Wells and Tanks of various sizes used for Irrigation Purposes in the Market Gardens lying between the Southern Part of the Camp and the Town.—These were also extensive breeding grounds, but mostly of the type *Culex*. They were kept perfectly under control, the wells by oil, and the tanks by having them run dry and then well swept out once a week. This was carried out by my own men by arrangement with the several owners.

(3) The Wells in Connection with the Houses of the Town Bordering on the Camp.—These were more difficult to keep under control, but they were also, in my opinion, less dangerous to the health of the
troops, not only because they were not so prolific comparatively, but also because it is doubtful that mosquitoes would travel some hundred yards for their food, when they had plenty in that way within a yard or two in the inhabitants of the adjoining houses. *Anopheles* were found to predominate in those which were seldom or little used, but were comparatively rare in those in constant use. Whether this was due to the females of this type instinctively choosing still water to lay their eggs in, or that much movement interfered with their development, it is impossible to say.

All these breeding grounds were constantly visited at regular intervals, and those which were not used for drinking purposes were treated with petroleum, and in those which were so used arrangements were made to have them kept covered as completely and continuously as possible. It was not thought advisable to have recourse to a volatile oil such as eucalyptus in dealing with the latter, as I was anxious to avoid even the appearance of tampering with the drinking water, lest it should create prejudice or be a source of unpleasantness.

This constant visiting, however, entailed much labour, and in the end was not altogether satisfactory. I therefore had an interview with the Governor, and recommended that water be laid on in pipes to this quarter, as to other parts of the town, and that fountains or standing taps be erected in several convenient situations, the wells in connection with each house to be subsequently closed or completely filled in. This he promised to take in hand at once, and to have completed before the following hot weather. The danger from this source will then be completely eliminated without further trouble.

(4) *Some Small Tanks in Connection with those Houses in which Wine is made.*—They are used for receiving the juice from the larger receptacles in which the grapes are pressed, and as they have no outlet, and are very deep compared with their superficial area, they might easily retain water throughout the summer. These were found to be very prolific breeding grounds of both *Anopheles* and *Culex*, and even in winter were more so than the wells above mentioned, as they are situated in very sheltered places and have very good exposure to the sun. They were kept under control by having them emptied at least once a week while the rains lasted.

(5) *The First River, which is about a Mile to the West of the Camp.*—This has been mentioned as a breeding ground in previous years, but it was not so in my experience. It occasionally becomes very sluggish during the summer months owing in a great measure
to the partial closing of its mouth by a sand-bank caused by the action of the sea. Periodic removal of this bank, however, rectified this.

(6) A few Collections of Rain-water on the Irregular Ground to the South and West of the Camp, and a few scattered and little used Wells in the same Neighbourhood.—The former only exist for a variable time after rain, and were as a rule drained off without difficulty, while the latter were treated with oil with success.

From the above it will be seen that the object aimed at in dealing with all these various breeding grounds has been not to rest satisfied with measures of a temporary character, such as the destruction of successive broods of larvae as they developed, but rather to attack the grounds themselves and thus render them unsuitable for such purposes. Where this was not possible petroleum proved very efficient. This was especially the case in deep wells, which were seldom or little used, but even in those which were in constant use, if the oil was applied in sufficient quantity, it remained for a considerable time, apparently slipping off the full bucket as it emerged from the water, and then closing up and forming a continuous layer again at once. In these cases it not only destroyed the larvae in the water at the time, but also apparently prevented other eggs being laid there, so long as it remained in any appreciable quantity. The above represent the the offensive means employed.

The defensive measures consisted of the following:

(1) Removal of all long grass and weeds which could afford cover or a resting place for mosquitoes within the precincts of the Camp itself and in its immediate vicinity.

(2) Immediate removal to Hospital of all men the moment they showed any signs of an approaching attack.—This was issued as a Regimental Order, and posted up in each barrack room, the N.C.O.'s in charge being held responsible that it was strictly carried out.

(3) Mosquito Nets.—These were not used except in the hospital. The previous regiment left some behind, but as they were little bigger than a coverlet I condemned them as useless for the purpose required. At the same time, however, I submitted a recommendation that each man should be provided with a full-sized net, recognising that some such protection was necessary to guard against not only those mosquitoes that should escape destruction, but also against any that might wander in from outside the area operated on. No action was, however, taken in the matter, and the men were therefore without any protection of any kind in this respect throughout the fever season. If they had been protected, it is, I think, only
reasonable to suppose that it would have led to a still further reduc-
tion in the admission rate for malaria.

(4) Quinine.—In the month of July, as the men had no protecting
nets, and a certain number of fever cases began to present them-
themselves, this drug was issued to all troops at the rate of ten grains
daily to each man, with subsequent reduction to five grains. It was
not given as a means of prophylaxis against infection, but rather
with the object of attacking the parasite in that undetermined
number of men who had already become infected, but in whom the
disease had not so far manifested itself, and in that respect it might,
perhaps, be looked upon rather as an offensive than a defensive
measure. In such cases it would, perhaps, modify or ward off the
threatened attack, but what was more important, from my point of
view, it would help to remove the parasite from the blood, and thus
prevent any mosquitoes there might be from becoming infected. If
the number of men so affected could have been determined the issue
might, perhaps, have been restricted to such men, but in the absence
of this knowledge it was decided to issue it indiscriminately. Such
an effort to prevent any mosquitoes that should happen to survive
from becoming infected, and thus becoming a centre for the spread of
the disease and a source of danger to the other men, is, in my
opinion, a necessary supplementary measure in any mosquito
campaign.

The following are the species of mosquitoes which have been
found on the island: Anopheles maculipennis, Anopheles super-
pictus, Anopheles bifurcatus, Stegomyia fasciata, Culex spathi-
palpis, Culex fatigans, Culex pipiens.

I will now turn to the statistics of this disease for the year,
so that an estimate can be formed of the results attained. The
general health of the troops was very good throughout, especially
after the arrival of the 1st Royal Dublin Fusiliers, amongst whom
there was hardly a single case of disease of importance due to local
causes, with the exception of malaria. The epidemic due to this
cause was, however, very mild, and as compared with the previous
two years almost insignificant.

In 1901 a strength of 564 men gave 1,540 admissions (taking
simple continued fever and malaria together), or an admission rate
of 273 per cent.

In 1902 a strength of 460 men gave 1,084 admissions, or a rate
of about 236 per cent.

In 1903 a strength of 410 men gave only 227 admissions (again
taking the simple continued fever, of which there were five cases,
and the malaria together for the sake of comparison), or a rate of only 55 per cent. And even this marked disparity in the admission rate would be enhanced, if the admissions from the Cameron Highlanders for January and February, which were probably secondary attacks of disease contracted in the previous year, were taken away, and those from the Dublin Fusiliers substituted; that is, if, instead of taking the statistical year, the actual year of residence of the regiment in the island were taken. This would be a more accurate method of comparison, and taken in this way the admissions would only come to 183, or a rate of about 44 per cent. At no time during the year, not even in the months of July and August, when the admissions reached their highest point, did the epidemic assume serious proportions.

The disease was almost altogether of the tertian type and of a very mild form, as can be judged from the fact that, although no case was discharged from hospital until the temperature had been normal for ten days, the average duration of each case of sickness was only thirteen days. The range of temperature was almost invariably low, and the severe vomiting and general gastric disturbance usually observed in such cases were in the majority of the primary attacks conspicuous by their absence. The blood was examined in a number of cases and the parasite demonstrated. There were only eight cases of the remittent type, but even these were of a comparatively mild form, the fever never lasting for more than four days.

No deaths took place from it during the year, and no complications of any kind occurred, nor after-effects of a marked or persistent type, except in two cases, which were transferred to Malta for change in October—both with anaemia. In all the other cases recovery was rapid and complete.

Whether the mildness of both the above types and the absence of after-effects were in any way due to the quinine taken beforehand it is impossible to prove, but I think it most probable that it was in some measure due to this cause.

As regards the cause of the marked diminution in the admission rate above noted, it is, of course, difficult to speak absolutely definitely, as it is hard to eliminate all sources of error in coming to a conclusion. The Dublin Fusiliers were, I believe, of superior physique to the Cameron Highlanders, although I have had no opportunity of making any actual comparison, and the natural tendency therefore is to ascribe the difference in the admission rate to this fact alone; but I think it could hardly be supposed that they were also so much
superior in that respect to the North Lancashire Regiment, which was in Crete in 1901, to account for the even greater disparity which was apparent in their admission rate.

Superior physique, with the consequent increased resisting power, must, of course, count for something in such cases, but it has been my experience that that factor alone does not avail to any great extent in preventing the disease from manifesting itself in the presence of repeated infection, although it does, no doubt, help considerably to withstand the attack and to minimise the ill-effects likely to arise from it.

My opinion is that, making every allowance for this element, the cause of the diminution was in the main due to the mosquito campaign, which, as already stated, consisted not only in destroying as far as could be all possible vehicles of infection, but also in preventing those that might happen to survive such destruction from becoming infected, by the immediate segregation of all men the moment they showed signs of fever, and by attacking by means of quinine the parasite in those men who had suffered infection, but in whom the disease had not yet manifested itself.