

CYPRUS (MEDICAL AND OTHER REPORTS).

RETURN to an Address of the Honourable The House of Commons,
dated 28 April 1879;—for,

C O P Y

OF A

REPORT FROM THE PRINCIPAL MEDICAL OFFICERS

IN

C Y P R U S,

GIVING A MEDICAL HISTORY OF THE TROOPS STATIONED IN
THAT ISLAND SINCE JULY 1878.

War Office, }
1 May 1879. }

FRED. STANLEY.

Lieutenant General Sir *Garnet Wolseley*, G.C.M.G., to the Secretary of State
for War.

(M. 2—1461.)

Sir,

Monastery Camp, Nikosia, 5 March 1879.

I HAVE the honour to forward, for your information, the accompanying very interesting report from the principal medical officer, giving a medical history of the troops stationed in Cyprus since our occupation of the island last July.

I take the liberty of pointing out the misleading tendency of all medical statistics which are only based upon an experience of six or seven months in any country, especially when it is impossible to compare them with the statistics of similar months in other years. For example, if the climate of Malta were to be judged by the medical statistics of the garrison during last summer, they would convey a very erroneous impression as to the fitness of that island as a station for troops. The summer of 1878 was an exceptionally unhealthy season in Malta, as it was in Cyprus, and generally throughout the Levant.

In the three battalions of British infantry, about 2,400 men, quartered here during the hottest months of the year, there were only 22 deaths, of which only 11 were owing to malarious fevers. I have no accurate data to enable me to compare the death-rate here with that of Malta during the same period, but I am informed that in one battalion alone, quartered there in good permanent barracks, the number of deaths last summer considerably exceeded the total number of deaths in all the three battalions stationed here then under canvas.

To those unused to analyse medical statistics, the death-rates given by Sir A. Home are likely to convey a very erroneous impression, as they are calculated (according to the regulations of the service) upon the assumption that had the 42nd, 71st, and 101st Regiments stayed here a whole year, the rate would have continued during the cool months to be the same as it had been during the unhealthy season. The fact that no man of the 1-20th Regiment has died since arrival in Cyprus is a sufficient evidence of how very misleading is any such assumption, and of how very unsatisfactory are all calculations based upon statistics derived from an experience extending only over a few months' residence in any military station.

I regret that I cannot fully agree with the opinion expressed by Sir A. Home regarding the men's rations. I frequently inspected the meat myself, and took the opinions of old and experienced officers and private soldiers regarding it;

between Larnaca and Cheflik there was an extensive salt-water lagoon, and nearer the camp, the water escaping from the aqueduct at one point, found its way to the sea through sodden rush-covered ground. The surface of the camp was a treeless waste, unbroken even by a solitary bush; the ground was covered with a thistle-like shrub, the roots of which barely held the light soil together. At the season the troops were encamped at Cheflik a refreshing south-west wind sprang up every morning about 8 o'clock, and continued until four in the afternoon: occasionally it blew very strongly and raised a suffocating dust. The evenings were calm; in the night there was a cold land breeze. Soon after nightfall dew appeared, and became so heavy that in the morning the tents seemed to have been drenched in heavy rain, whilst everything inside was made damp; clothes were almost wet; the moisture-laden air of the night succeeding to the intense heat of the day caused a great degree of relative cold, and the men suffered nearly as much from the chilling air in the night as from the burning sun in the day. There was often a difference of 40 degrees between the highest day and the lowest night temperatures. In the early morning, before the sun had risen high enough to dispel the mists, the camp sometimes appeared to be covered with a purple-black cloud, and at a distance of half-a-mile its situation could only be guessed at.

The water supply of Cheflik was abundant, excellent in quality, and very convenient of access; derived from hills in the neighbourhood, it was brought close to the camp by the aqueduct constructed for the use of the town of Larnaca.

The 71st Highlanders were camped on the west, where the ground was higher than elsewhere; the 101st were next, then the 42nd Highlanders. The lines of a regiment of native cavalry were separated by a broad interval from the last-named corps; those of the F. Battery, 2nd Brigade of Royal Artillery, were last, at the east end of the camp. The company of the Royal Engineers was encamped at the north-west, apart from the rest of the troops, and a regiment of native infantry on the south-east.

With the exception of the Royal Artillery, who were provided with those used in India by native regiments (sepoy pals), the troops were lodged in the ordinary bell tents. At first one tent was allotted for every eight men; deducting those on guard, detached, in hospital, servants, prisoners, &c., about seven men were placed in each tent. Field officers had marquees, and company officers bell tents. The distance between each tent, and between each company, and between each regiment, was that laid down in the official regulations.

A ground sheet and two blankets were served out to each of the men; these, with great coats, formed their bedding whilst they remained at Cheflik; afterwards, when straw became available, palliasses were provided.

The cooking places of the regiments were on the left of the lines; at first they were quite unsheltered, after a time a little protection from the sun was obtained by erecting roofs of matting on bamboo uprights. The cooking was done in the "Torrens" kettle, 18, and sometimes 20, being allotted to each company, a number afterwards increased; a few of the "Flanders" kettle were also used.

The abundance of water close at hand insured the means for personal cleanliness. Wooden troughs conveniently placed served as sponging baths; they were much used, but not always perhaps at the safest hours, or only when the state of the body made the bathing salutary, as well as grateful.

Refuse pits were established in suitable places, and litter that could be set fire to, was burnt. The latrines were of the ordinary field kind—trenches with a slight screen, but no roofing.

The sick were treated in a field hospital in the camp; at first one hospital marquee was allotted to every 10 patients, but this number was greatly exceeded when the sudden outburst of sickness occurred. Boards, and trestles, and palliasses were provided. The marquees were furnished with other articles of hospital equipment from time to time, as the field hospital became in reality a stationary hospital. The means of cooking for the patients were those supplied in the field hospital canteens.

At first the ration issued in Cheflik Camp consisted of a pound of fresh meat and of a pound of bread daily; each regiment provided tea, coffee, sugar, and the other articles of grocery by arrangements of its own; and a regimental contractor

tractor furnished potatoes and vegetables, of the first a pound, and of the last four ounces daily for each man. There were occasional deviations from this scale as regards the supplies found by the regiments themselves; thus only half a pound of potatoes was at one time issued in the Royal Engineers, and in one of the regiments three-quarters of a pound; another regiment issued one pound and a-half; but a pound being considered as the standard quantity, when a lesser amount of potatoes was given, an increased quantity of bread was usually issued in lieu. For nearly a fortnight after landing the supply of potatoes was irregular. Though the quality of the beef or mutton issued was occasionally nearly equal to that provided at other Mediterranean stations, it was usually very inferior, and as there was no grass for the feeding of the animals, lean and insipid to a degree which could not be exceeded. The bread was of the brown kind used in the country, and was often under-baked, sour, and gritty; the potatoes imported from Malta were originally of good, or of fair quality, but they were sometimes so deteriorated by long exposure in the sun, and want of timely separation of the decomposing ones from the others, that they were unwholesome if eaten, or if only the best were eaten, then they were insufficient. The other vegetables issued were onions, tomatoes, pumpkins, and vegetable marrows, a sufficient variety, but being drawn from markets which could not be rapidly brought up to the requirements of a very large and an unexpected demand, it was sometimes the case that the issue was interrupted, or was curtailed. The groceries purchased at the regimental canteens were good; the beer was also very good. These canteens were of the greatest service in affording the soldier the means of procuring for himself the kind of food which (especially after illness) he craved for, which instinct told him he needed. Fruit was exceedingly plentiful; grapes of the finest kind were sold in the camp for a halfpenny a pound, and they were eagerly bought by the men; pears, peaches, and other fruits (of indifferent quality, however) were also sold cheaply.

The injury accruing to the health of the men from the inferior quality of the meat, was aggravated by the circumstance that, on account of the great heat, it was necessarily cooked very soon after killing; the poor nutritive property it had was further diminished by the rapid cooking it underwent, and the sameness of its preparation day after day; men in health might manage to eat it, but to those recovering from sickness it was most distasteful.

The want of sufficient nourishment at a critical time, when the condition of bodily weakness required the indulgence of even fanciful appetites, contributed to the occurrence of relapses of the fever from which many of the men had suffered, and eventually to a state of chronic malarial illness in them. An endeavour was made to provide better meat, and in order to compensate partially for the poor quality of that available, the issue was increased by one-fourth. Two ounces of rice were at the same time added to the ration, which in amount was then an ample one, and in composition was sufficiently varied; but the improvement in the quality of the meat was very gradual and very imperfect. After a time, bread of excellent quality was baked by the commissariat, and it formed a most important addition to the comfort of the men.

There was very little sickness amongst the troops at first; including those transferred from the ships, only 52 men were admitted into the Field Hospital in the last nine days of July; fewer than the same number of troops quartered in England would probably give. Most of the attacks of illness were also of a mild kind; 12 of them were due to simple continued, or light fever; but on the day after the camp was formed, one soldier of the 71st died of heat apoplexy: another subsequently attacked, recovered. The intense heat was greatly mitigated by the fresh breeze which blew all day, but with a temperature of 113° in a tent in the hottest part of the day, there was necessarily much suffering from heat.

The information given by the local physicians, and by the inhabitants, as to the kind of illness likely to be met with amongst the troops, was to this effect:—That every new comer in Cyprus would suffer from the endemic fever of the country within a year of his arrival, the exceptions being so few as not to affect the general statement; that the fever was of paludal origin, and according to the severity of the attack, was termed a “cold fever,” a “hot fever,” or “a pernicious fever;” that the illness was very slight in most persons attacked, the suffering caused by it not being much worse than that felt in the course of an ordinary cold; that the mortality from the worst kind, the pernicious fever,

land near the salt march, caused its comparative immunity.* On this being suggested, the companies of the 42nd, whose tents were on the lowest part of the slope, were moved to higher ground near the presumed healthier site of the 71st lines. Owing to the change of arrangements soon after made, however, the effect which this measure might have had in averting sickness was never ascertained.

The proceeding which, of all others, seemed to be demanded, was that of moving the camp away from Cheflik Pasha altogether; but it was not easy to determine where to move to. The choice of ground for a new camp was restricted by the necessary conditions, that with an apparent absence of malarial soil, there must be a sufficient supply of good water, and a distance from the existing camp, not exceeding that which the small available amount of transport could manage. Inquiry from persons of local knowledge who were likely to give responsible advice, resulted in the selection of Dali, in the valley of that name, as a locality likely to prove healthy; other places were suggested by different persons, but Dali was the only one in regard to which there was an agreement of favourable opinion, or rather in respect of which no adverse opinion was given.

It had not been originally meant to make more than a very short stay in Cheflik camp; most of the troops were to be placed at the different centres of the civil government of the island, but the intention was ultimately carried out as respected two of them only, Kyrenia on the north, and Papho on the west coast. On the 19th of August the head-quarters of the 42nd Highlanders were sent by sea to Kyrenia, and next day two companies of the same regiment were embarked for Papho. The men who were recovering from attacks of fever acquired at Cheflik were sent with their regiment, the belief being that removal from that place, and the invigorating effect of a short sea voyage, would restore them to health.

On the 28th of August the 71st Highlanders marched to Dali, 17 miles north-west of Cheflik Pasha; they were at first encamped in the valley on ground at the base of the cliff which forms its northern boundary or wall. The Dali Valley presented a striking contrast to the desert-like country adjoining the former camp. The Idalia River, which runs through it, though a river only in the season of heavy rains, and at other times the bed of a river in which there are occasional pools, fertilises a narrow strip of land on each side of it by means of a water system which has been contrived by sinking a series of shafts into the stratum beneath its bed, and connecting them by a gallery and culverts. The valley thus has the appearance of the country bordering the River Nile; the most luxuriant field of cereals, of cotton, and of other crops, extend as far as the irrigation channels are carried; beyond this point sterility begins abruptly. The population of the valley is aggregated in several small villages of clay-built houses, the churches and mosques being commonly the only buildings which seem fit to withstand the effect of a heavy shower of rain; but notwithstanding their appearance, they are solidly built and well designed for the needs of those inhabiting them; the heat of summer and the chilling winds of winter are both excluded by the thick sun-burnt clay walls, and by roofs of matting, brushwood, and clay in successive layers. The structures in which the inhabitants secure cool dwellings for themselves could not, however, be quickly erected for the troops. In the selection of a camp in which to place men depressed by the occurrence of epidemic sickness, the effect on their spirits of the sight of trees, of green fields, of vineyards, of houses, and the signs of domestic life and occupations, were of sensible importance; all these were obtained at Dali.

As the 101st Regiment was under orders to leave the command, and as troops were required at Larnaca for duties in connection with the landing and protection of the Government stores, three companies of the corps were moved successively from Cheflik Pasha to a camp on ground close to the west side of the

* In the communication from Fleet-Surgeon Dr. Beaumont, R.N., already adverted to, an illustration is given of the fact that the existence of a very circumscribed source of malaria may determine the comparative prevalence of sickness in two bodies of men placed otherwise apparently under exactly the same conditions. Of the detachment landed from H.M.S. "Minotaur," the seamen occupied the barrack over the Larnaca Gate of Nikosia, and the Royal Marines the corresponding barrack over the Papho Gate; the attacks of fever in the party of seamen were in the rate of 53 per cent. of the strength, whilst in the party of Royal Marines they were in the rate of 91 per cent.

the town. The military necessity which demanded the presence of the regiment at Larnaca, also dictated that the site of their camp should be in proximity to the locality where the men had to undertake the duty.

At first the effect of removal from Cheflik on the health of the men seemed to be beneficial in every instance. The 42nd especially seemed to have exchanged an unhealthy for a healthy camp. It has been stated in the introduction of this report that no exact information respecting the climate of Cyprus was obtainable, the relative healthiness of the various places could only be guessed at, opinion respecting this being formed not from carefully observed facts, but mainly from the impressions of individuals, and of a very small number of individuals, of the effect of residence at the localities on their personal health, and this might obviously be extremely misleading. Places of notorious unhealthiness were known, but there was no general consent of opinion as to the healthiness of any particular place. In answer to the question, How was the salubrity of any district to be ascertained, one gentleman, in every way exceedingly well qualified to advise, said, "Go to the various villages, notice the appearance of the inhabitants; where you find them well grown and robust, that place will be healthy." Writing after an experience of eight months, the advice seems to be the very best that could have been given, but it required time to put it to use. Kyrenia was very favourably spoken of; people convalescent from sickness went to it to hasten their recovery; it was thought that troops there might be lodged, part in a small fort near the shore, the rest in an old convent on the side of the mountain. When the 42nd arrived, however, it was found that neither of these buildings could be adapted to use, and the regiment was again placed in a camp formed near the town of Kyrenia, about half a mile from the sea, and a mile from the foot of the mountain chain which separates the narrow north coast district from the rest of the island. The situation of the camp was open, trees for shade abounded, the site seemed dry, and water procured from an aqueduct close at hand was plentiful, and of good quality. The remarks made by the medical officer in his first report, after the arrival of the 42nd at Kyrenia, were to the effect that the health of the regiment had improved very much, that nearly all the convalescent men sent from Cheflik camp had returned to their duty, and that the cases of fever admitted into hospital were few and of a mild kind. In the next week, however, there was a large increase in the number of men in hospital; part of this was due to the exposure which a party of the regiment underwent when on duty escorting convicts; the men were excessively fatigued in climbing the side of the mountain in the hot sun, and many of them suffered from fever in consequence. The heat continued to be great; even in the comparatively good shelter of the Indian tents, in which the troops were lodged, the thermometer registered 98°. Relapses of fever now became common in those who had suffered at Cheflik. In the second week of September, 23 men were attacked with remittent fever; eight of the cases were relapses, and a death due to the disease occurred, but most of the attacks at this time were of a light kind, as is shown in the fact that the discharges from hospital in the week were more in number than the admissions.

A detachment of 40 men of the Royal Engineers was also stationed at Kyrenia, in a camp three miles from the town, near an old monastery on the side of a wooded mountain, at an elevation of about 600 feet above sea-level; but this proved to be no healthier than the lower ground in the plain where the 42nd was encamped.

The post was first occupied at the end of August, when nine men recovering from fever were transferred to it from Nikosia. An outbuilding of the monastery at "Bella Pais," as the place was named, had been fitted up as a field hospital, and it was hoped that the greater coolness on the high ground, with the shade of the trees, and the protection from the sun which the thick walls gave, together with the inspiring effect of change to a place of so much natural beauty, would justify the selection of the monastery hospital as a convalescent station for the island. No tonic, bracing effect, due to residence at it however was apparent; the sick recovered very slowly and imperfectly, whilst the men employed on duty at the post were attacked with malarial fever in about the same proportion as those in the lower camp.

The companies of the 42nd sent to Papho suffered even more severely than those at Kyrenia. Though at first placed on low ground, the camp was soon moved to a higher and an apparently unobjectionable site close to good water,

but a good deal of exposure had occurred at first to a part of the men before the camp was set out, and the various arrangements necessary for their comfort were made. The Indian tents were used. After the detachment had been a fortnight at Papho, the admissions into hospital for remittent fever were in the annual rate of 4,216 per 1,000 of the strength, but the illnesses were mostly of short duration. In the next week the rate was more than doubled, and for the week ending the 13th of September, 47 men were attacked in a strength of 163, and one of the attacks was fatal after an illness of two days. Although the heat had now become sensibly less, and the weakest of the men had been sent away, no abatement in the amount of sickness took place; in the last week of September, 31 men were taken into hospital, one-half of whom had previously suffered from fever. The men of the detachment looked exceedingly ill; even those at their duty, with exceptions which were quite rare, had no strength for active or for any continued exertion.

After being moved from Cheflik, the 101st Regiment had at first a short interval of comparative health at Larnaca. The fatigue duties devolving on the men in landing stores, &c., though carried on only in the morning, entailed exposure in a sun, powerful even then. In the second week after the arrival of the regiment there was a daily average of twenty-three admissions into hospital, and at the same time the discharges from hospital averaged twelve only; the peculiarity of the illness, the recurrence of fever for an indefinite number of times in those once attacked, caused a constant succession of the same individuals into hospital. Many of the illnesses at Larnaca were of great severity; in some of them death followed within a few days of the seizure.

The sick from the camp were treated in a field hospital adjoining it, or as room became available in a hospital in the town. The heat, though more moderate than at first, was still very great. After the unsuccessful efforts made at first to procure buildings for hospitals, the search, though not abandoned, was not pressed, from experience of the unsatisfactory progress of the cases of illness treated in that already established, and the hopelessness, with the means at command, of effecting any real abatement of the insanitary state of every building in the town; but it was impossible not to recognise the fact that the chances for the recovery of a man in fever, with a temperature of body of 105 degrees, were greater on the whole, in an unwholesome house in which the heat was 85 degrees, than in a marquee.

Two more dwelling-houses were therefore hired, and equipped as hospitals; by this the accommodation for the sick in buildings was increased to 65 beds.

In the second and third weeks of September the attacks of fever oscillated, so to speak, in evident relation to perceptible atmospheric conditions. The season for the light rains had arrived, and from time to time the expected showers seemed about to fall; in the early morning, before day, vivid lightning lit up the south-east horizon; the sun rose amongst heavy masses of black clouds, and a cold wind, heavy with damp, blew in the morning and forenoon. But these appearances did not prove to be the precursors of rain; the sun burst through the clouds, and after a period of diminished intensity again shone with its ordinary power. The effect of this peculiar condition was seen on the 9th of September, in the number of attacks of fever rising to 21, and next day to 26, whilst on the third day after the cessation of the atmospheric phenomena the attacks were only 16; on their repetition, however, on the 13th of September, the admissions into hospital for fever rose to 39. The same relation between an abnormal meteorological state, and an increase of sickness at this time, was also felt in the ships of war anchored two miles from the shore. On the 18th of the month heavy rain at length fell, and an increase in the prevalence of fever followed; but there was no progressive increase, though there was much rain on three days subsequently. An effect of the great diffusion of malarial disease was the repression of nearly every other kind of illness; thus, in the middle of September, of 106 men in hospital, only three suffered from illness other than malarial fever. A great change in the proportion in which the two forms of fever occurred now took place; the severe kind was displaced by the milder; but this did not affect the total amount of illness, which remained very much the same as before. In the first week of September there were only three admissions for ague, whilst there were 20 for remittent fever; in the second week of October there were 25 admissions for ague, and only one for remittent fever. In the first three weeks of October the discharges from hospital at

Larnaca

Larnaca became progressively more numerous than the admissions, but as men from other stations were occasionally received, the decrease did not evidence a diminution in the amount of sickness peculiar to it.

On the 8th of October the 101st Regiment embarked for Halifax, taking with it such of its sick as were considered likely to be restored to health before the completion of the voyage; in very many instances this proved to be an over-sanguine expectation. During its residence in Cyprus the regiment, 813 strong, had sent 841 cases to hospital, of whom five were fatal, giving an annual proportion of sick of 4082·5, and a death-rate of 24·27 per 1,000 men. Twenty-three men were also invalided home during the time. It is hardly necessary to point out that these being annual proportions it is assumed in them that the sickness and the deaths in the regiment would continue without reduction for 12 months.

On the 12th of October the time-expired men and the invalids from the various regiments were sent home; few of the latter suffered from other than climatic illnesses, whether designated remittent fever, or ague, or hepatitis, or debility, the illness was a malarial one in a chronic form.

On the departure of the 101st, Larnaca ceased to be a station for troops, though from its being the port of arrival and of departure in the command, a small number of men, chiefly of the Army Service and of the Army Hospital Corps, were kept there in connection with the hospitals and the stores. Partly in consequence of the nature of their employment, and partly from the unhealthiness of the town, these men suffered very much from sickness; several of them had attacks of enteric fever, and one man died of diphtheria.

The headquarters of the command had been established at the monastery of Kykko, near the town of Nikosia, in the great central plain of the island, and in the beginning of August it was joined by the Company of Royal Engineers from Cheflik. The camp was pitched close to the monastery, in the fields, which had formerly been cultivated by irrigation, but there were no marshes near. In the two days succeeding its arrival, 10 sick men belonging to the Company were received into hospital in a strength of 155, and 16 more in the next week, and the same number also in the succeeding week. The illnesses were due to remittent fever of an exceedingly severe kind, of which three of the men died. The unhealthiness of the camp having been recognised, the troops in it were sent to the Dali Valley, and such of the sick as were able to be moved were either sent to Dali or to the Monastery Hospital at Kyrenia. A few soldiers only, employed as clerks, batmen, &c., remained at the headquarters.

The troops sent to the Dali Valley consisted at first nearly exclusively of the 71st Highlanders, the corps which had suffered comparatively so little at Cheflik camp; this exemption did not continue at Dali; in the second week after its arrival, that ending 3rd September, there were 75 admissions into hospital for remittent fever, and a death from apoplexy occurred; in the next week 122 were admitted with fever, and dysentery also caused a few admissions. The sickness at Dali was malarial fever of precisely the same kind as that from which the troops suffered at Cheflik Pasha, and some of the attacks were very severe, but the distinguishing feature of the illness at Dali was that, excepting in the instance just noted, no man died of it, and very few were invalided for its consequences; the weakness left after it was not permanent, it was recovered from. As at other stations many men had relapses of fever contracted at Dali, either in the same form, or more often in that of ague, but on the other hand a comparatively large number of men escaped attack altogether; many never had a second attack, and, as a body, the troops at Dali looked fairly robust; they never presented the pale worn look of those stationed elsewhere in the island.

In the fourth week after its arrival the sickness in the 71st began to abate, but the outbreak in the beginning had determined the abandonment of Dali in favour of Mathiati, a locality further up the valley and at a higher elevation. From time to time therefore men were withdrawn to the encampments made in places convenient for the duty which now devolved on the men, that of working on the road in process of construction to the place definitively chosen as the cantonment for the troops in this part of the island in the ensuing winter.

The immediate result of moving to new ground was another outbreak of sickness similar to that seen on the establishment of every new camp; the men were received into hospital, 12, 15, and 20 a day. As a new factor in the

causation of sickness had been introduced, and at the same time the old ones were losing much of their former power, it was not possible to decide whether the new ground was more or less healthy than the old, or just as unhealthy. The season was near when sickness might be expected to decrease greatly, fever being repressed as soon as heavy and continuous rains have saturated the ground, and at the same time the sun in the intervals of dry weather has not its former power. In the beginning of October the heat, though considerable, was very sensibly less than before, the men ate better, and being better nourished, were more able to withstand illness; on the other hand, the labour of road-making for six hours a day under a still powerful sun, and in a locality where chilling blasts of cold wind blew down the valleys, excited attacks of fever in those whose systems the malarial poison was present. The necessity for thus employing the men, however, was paramount to every other consideration; their employment at road-making was the least of two evils; the possibility of putting the troops under cover before the winter rains came on, depended on their own exertions. No sufficient supply of labour could be had in the country, even after sweeping the neighbouring districts, and gathering in the old and the young of both sexes, and employing them in such capacities as their strength fitted them for. If a road fit to be used in winter, between the base from which the troops were fed and the place at which they were to be stationed, was to be constructed, it must be done principally, or largely, by their own labour; the men liked the work; were eager for it; they preferred anything to an objectless life in camp.

In the last week of October sickness amongst the troops at Mathiati suddenly fell to about the half of that previously present; though the decrease was in part similar to that which had followed the outbreaks in Cheflik and at Dali, and though the diminished rate was not maintained quite uninterruptedly, it marked the turning-point between the healthy and unhealthy season, between the excessive and moderate prevalence of the endemic illness. The huts sent from England for the housing of the troops had now arrived, and were in course of construction at Mathiati, but the influence which the greater comfort they afforded had in reducing sickness was not evident until three weeks later, when nearly all the men were removed from the tents. After this, and the other accompanying ameliorations, the condition of the troops approximated to that of those at ordinary stations. Relapses of ague were the illnesses chiefly seen, but it sometimes happened that men who had passed through all the exposure and privation of the preceding summer without experiencing sickness were now attacked with fever, of a kind not distinguishable from that seen in the cases at Cheflik camp. The strongest evidence, however, of the change in the conditions, climatic and other, now affecting the troops, was the fact that new comers at this time escaped sickness nearly altogether.

A party of 50 men of the Royal Engineers arrived from England in the end of October; after six weeks' residence only three of them had been attacked with ague, and the same immunity was seen in the instance of others arriving in this season.

But whilst the health of the troops at Mathiati had improved so greatly, no corresponding change took place in that of those at Kyrenia. Up to the end of September the men discharged from hospital very nearly balanced the number of those admitted, but after that more were admitted than were discharged, and an accumulation of sick took place. One after another men, who up to then had withstood the malarial poison, succumbed to its influence, and were attacked with fever; but acute illnesses were now less dangerous; there was not the rapidly fatal termination seen in bad cases in the hot season; the deaths were fewer. The only remedy for the sickness from which the troops at Kyrenia suffered was removal to a locality free from malaria, but it could not be ascertained where that was to be found, and the experience at Dali, and again at Mathiati, seemed to show that a great aggravation of the prevalence of fever would take place at once on the removal of the troops to any fresh ground in the island. Many of the men who suffered from repeated recurrences of fever, and from the complications consequent on the state of chronic malarial illness, were invalided, and others, whose condition seemed less urgently to require invaliding, were occasionally sent, by the courtesy of the Admiral commanding the squadron, to cruise at sea in a ship-of-war for a week or 10 days; this measure,

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from which great good was expected, failed to effect much; some of those taken on board quickly regained strength, but the majority were unbenefited, and to some the voyage was injurious.

In the second week of October huts were received at Kyrenia, and the troops were employed in erecting them. At first the effect of work seemed to be salutary; the men were interested, and sickness diminished a little; but the slight improvement was not long continued; the proportion of sick (including men at light duty, and those attending hospital daily to take quinine) was only fractionally less than 20 per cent. of the strength, and at the same time many of the other four-fifths were very weak. None looked robust.

At Papho also the men of the 42nd continued to be very sickly; even after the invaliding of nearly one-fifth of those originally sent there, the daily average of sick amounted to a sixth of those left.

In the beginning of November orders were given for the withdrawal of the 42nd Highlanders from the command, and the regiment left on the 18th of the month. On embarking, the sick were 100 in number, in addition to whom 30 men were at light duty only, the two classes together being in the proportion of 20·2 per 100 of the strength.

During the time the regiment was stationed in Cyprus its average strength was 727; the attacks of illness amongst the men were 1,258, and the deaths 12; the rate of sickness was in the annual proportion of 4264·4, and that of deaths in the annual rate of 40·68 per 1,000 of the strength; 61 men were also invalided.

Nearly all the troops were now quartered at Mathiati, and were lodged in huts of comparative comfort. Mathiati is a village in the lower range of hills, at the base of the mountain chain, which runs nearly through the island from west to east. Here at a height of 1,100 feet above the sea, a plain was found about a mile long, and half a mile in average width, and surrounded by hills, some of which rise to nearly 200 feet above the level ground. Good water could be procured from wells; the heat in summer was somewhat less than that on the lower ground in the same valley. These advantages, and the occurrence of much sickness on the first occupation of Dali, contributed to the selection of Mathiati as a provisional cantonment for the troops. In the autumn a road for wheeled carriages had been made through the valley, and huts of what is called the "Canadian pattern" had been brought up. The one advantage claimed for this particular description of hut, is the rapidity with which the different parts of it can be put together, and it was thought that, in the special circumstances of the case, this outweighed other considerations; solid, good huts could not have been made, transported, and erected in the short time supposed to be available. The huts were single boarded, unceiled, and without a provision for warming; the sun penetrated through their roofs, and wind was admitted through the numberless chinks in the warped boards; but however imperfect, they were immeasurably more comfortable dwellings than the tents in which the men had been so long encamped. The huts were erected on a ridge at the north border of the plain. The hospital huts were of very good pattern, raised from the ground, lined, and ceiled; they were roomy, and well designed for the comfort of the sick.

After the troops were settled in the cantonment, the weather was as favourable to health as it had previously been unfavourable, and sickness gradually subsided. Ague continued to be the ordinary form of it met with, but the repression of every other kind of disease than malarial fever was not so complete as before; in the beginning of December, however, two-thirds of the men in hospital still suffered from it. The proportion of sick at Mathiati at this time was 8 per cent. of the strength; in the middle of the month it was 6 per cent. The men of the Royal Engineers participated in the improvement in health very slowly; their sick rate in the second week of the month was 14 per cent., and in the last it was $7\frac{1}{2}$ per cent.)

On the 15th of December the 71st Highlanders left the command; its sick rate on embarking was a little over 5 per cent.

During the time it served in Cyprus its average strength was 724; there were 1,083 attacks of illness amongst the men, and five deaths; the sick rate, reduced to an annual proportion, was 3242·5, and the death rate 14·97 per 1,000 men. The regiment also sent 13 invalids home.

The 71st was relieved by the 1st Battalion of the 20th Foot from Halifax, on the 12th of December.

On arrival the battalion proceeded to Mathiati in two marches, and it has been quartered at that cantonment up to the present time; its health has been excellent, the average number of men in hospital having been only 3·3 per cent.; the illnesses in nearly every instance were of a very light kind. Three men suffered from ague, but no other form of climatic illness appeared amongst the men. The winter proved to be exceedingly enjoyable; the days were bright and pleasantly warm, without being hot. Heavy rain fell occasionally, but it was never long continued; hoar frost and thin ice were often seen at Mathiati in the early morning, and the air was very keen on those days, when the wind came over the snow-covered heights of Mount Olympus, but there was an absence of damp cold; in consequence of this chest affections were rare, and all acute illnesses were rapidly recovered from.

Inquiry had from the first been made respecting a locality in Cyprus, residence at which, under the ordinary conditions of a soldier's life, might be compatible with the enjoyment of an average standard of health throughout the year. It was probable that with the avoidance of the accidental sources of unhealthiness to which the troops were exposed in the first five months of their residence in the island, those unavoidable might not be great. The information obtainable related exclusively to the health of communities in the plains, and it was in harmony with that received at first, to the effect that fever was found everywhere during the hot months; experience in the case of the troops showed that in those once attacked, recurrences of fever would follow; to prevent the first attack, therefore, seemed to be the problem. From the known repression of malaria by cold, and its decreased prevalence nearly in proportion to increased altitude in the countries subject to it, the inference was that in a station at a sufficient height in the hills of the central range, the immunity sought would be obtained. In the district round Beyrout, at 12 hours' sail from Cyprus, the same fever as that seen in the island is endemic, but in the mountain which rises from the plain there it is unknown, except as occurring in persons who have removed from the low country to recover from its attacks. No reliable information concerning the health of the inhabitants of the hills in Cyprus was procurable; it was believed that fever was less met with in the hills, and was milder than that seen in the plains, but this opinion did not rest on observation. It was difficult to find anyone who had ever made the journey to the hills, where there was no town, or even any considerable village; excepting a few monks, all the inhabitants were peasants exceedingly poor, and their ignorance may be inferred from the fact that the priests were peasants also, undistinguishable from the rest by dress or manners, and that very often they could neither read nor write. An investigation made in the course of a journey undertaken in December, proved that ague was met with each year from May to October in every village from Prodromos, the highest inhabited ground in the island, and just under the summit of Mount Olympus, to the village at sea-level at the foot of the chain, but it also showed that the dangerous kind of fever, that called the pernicious fever, was not met with amongst the inhabitants after a height of 3,600 feet was reached. The appearance of the people in the hills was usually very good; they were florid and robust.

But though it was ascertained that malarial illness might be met with even in the hills, the significance of the fact taken by itself was greatly reduced when everything connected with its occurrence was considered. As a body, the population of the hills looked healthy and vigorous; their appearance was incompatible with the existence of a widely-diffused chronic sickness. In cultivating fields in the lowest parts of deep and damp valleys, where the air was infected by decaying accumulations of vegetable matter, brought down by the torrents in winter, individuals were exposed to the influences which develop ague. A soldier in a cantonment in the hills, however, would not be exposed to those hurtful influences; his employment, lodging, food, and clothing ought to be those most favourable to health, and if on its first establishment ague was not altogether absent, the cases of it would probably be mild, and as the drainage of the locality became more perfect, fewer in number, until at length, as originating at the cantonment, the disease would be as little known as it is in England.

England. Besides placing the troops at an elevation sufficient to insure a cool climate in summer, the men intended for service should arrive in Cyprus at some time between the middle of November and the middle of February ; they should be lodged suitably ; and until the resources of the island for the supply of meat of good quality are much greater than at present, cattle fit for use in this way should be imported.

It is believed that, under these easily satisfied conditions, troops might be stationed at a selected place in the hills in Cyprus, with every prospect of their being healthy and efficient.

Nikosia, 1 March 1879.

A. D. Home, Surgeon General,
Principal Medical Officer.

CYPRUS (MEDICAL AND OTHER
REPORTS).

COPY of a REPORT from the PRINCIPAL MEDICAL
OFFICERS in CYPRUS, giving a MEDICAL HISTORY
of the Troops stationed in that Island since
July 1878.

(*Mr. Henry Samuelson.*)

*Ordered, by The House of Commons, to be Printed,
6 May 1879.*

169.

Under 2 oz.

