

PANAMA: THE WAR, ILLNESS AND DISEASE

During World War 2, those in Panama and the Canal Zone faced a range of restrictions and difficulties, including those arising from the American and Panamanian authorities' discrimination policies¹, and the general limitations placed on one's freedom due to wartime.

A major problem that one has to consider is one that has existed for as long as Panama has (and long before that) and which, albeit to a much lesser extent, continues to this day. This is the problem of disease and illness. As I myself found during the Covid-19 pandemic of 2020-2022, the awareness of risk, on the part of both the authorities and the populace of the country, and the willingness and ability to address medical problems caused by outbreaks of disease are as good as, and probably better, than many European states or the US. As I write, though the Covid-19 threat has reduced, there is concern about a rising number of cases of dengue fever, although in reality numbers and serious cases appear tiny.

However, the climate of the region is conducive to serious outbreaks of many diseases if not monitored and controlled. The climate is also conducive to many other illnesses and diseases which, if not life threatening, can be painful, uncomfortable and/or embarrassing – and could severely limit the efficiency and effectiveness of a military organisation. Even minor scrapes and upsets can easily become worse than might have been the case in a more temperate climate. All this is without considering the risk from wildlife – and that in a country which more undeveloped during World War 2².

¹ See <https://wordpress.com/post/raytodd.blog/42142>

² A guide book for my first visit to the country warned of five types of big cats, the largest being the jaguar, several types of poisonous snakes, as well as boa constrictors and poisonous sea snakes, crocodiles and caiman alligators – then there were the toxic frog and toads, all types of spiders and insects, and even tree with toxic spikes...

When first visiting Panama at the start of the 21st Century, yellow fever injections and malaria tablets were still required for visitors from Britain, even if staying in Panama City.

However, a 1946 report from the Office of the Surgeon General³ made the claim that the health of the troops of the Army's Panama Canal Department (the name of the Army command in Panama and the Canal Zone) during the period 1 January 1940 to 1 October 1945 had been "excellent". It also said -

"An energetic and continuous campaign of training and indoctrination in preventive medicine, sanitation and hygiene was constantly carried on during the World War II period. All individuals were instructed and indoctrinated in public health and the methods of prevention of disease. All available prophylactic measures were used and working quarantines were instituted whenever infections or contagious diseases occurred in unit or organization. Debarking troops were physically inspected and all suspicious or suspected cases of infections or contagious disease were screened out and placed under observation";
and

"It is believed that the annual rates per thousand per annum for epidemic cerebrospinal meningitis and for measles, both rubeola and rubella for the World War II period, January 1940 to October 1945...are indicative of the excellent results obtained by the preventive medicine program in the Panama Canal Department".

MALARIA, YELLOW FEVER AND DENGUE

These were the most serious disease threats faced by the US forces in Panama (if one ignores VD). During World War 2, the influx of servicemen and others from the US provided a rich vein of potential new victims for the mosquitos as disease vectors, and the

³ *Prevention of disease in the United States Army during World War II : the Panama Canal Department, 1 January 1940 to 1 October 1945* edited by Wesley C Cox (Department of the Army, Office of the Surgeon General, Historical Division, 1946):

<https://collections.nlm.nih.gov/ext/dw/101705278X1/PDF/101705278X1.pdf>

Panama Canal Department found itself initially unprepared to properly handle and accommodate the tremendous increase of military personnel. While these insects are best known for the malaria⁴ they spread, they are also responsible for dengue fever⁵ and yellow fever⁶.

By the time war arrived what were the vectors of the insect borne diseases commonly found in the tropics had been well established and steps were taken to protect troops stationed in the Canal Zone. The majority of those troops stationed in the Zone had been housed in permanent quarters which had already been, in part, sanitised, insofar as insect control was concerned. It would be any newcomers, especially those accommodated in tents and/or based or working in newly developed areas, who would be at most risk.

During the early part of the war control measures used against insect vectors consisted chiefly of anti-mosquito sprays in accommodation, anti-mosquito cream, and mosquito-proofing of all buildings in which men lived and worked. The construction of the trans-isthmian highway and the Rio Hata highway, as well as the Third Locks Project, then saw outposts outside the more controlled areas; breeding areas of the chief malaria vector were created and were extremely difficult to control as long as the construction remained in progress.

It has to be remembered that, in the 1940s, Panama was much less developed than now, with much more jungle and places where the mosquitos could thrive. In December 1948, for example, there was an outbreak of yellow fever in the Canal Zone, amongst men

⁴ Caused by single-cell parasites transmitted by the bite of the (female) *anopheles* mosquito. It can be asymptomatic, uncomplicated or severe. Symptoms range from fever, chills, profuse sweating, headache, nausea, vomiting, diarrhoea and mild anaemia to severe anaemia and organ damage, with a coma and complications leading to increased mortality.

⁵ A mosquito-borne illness that occurs in tropical and subtropical areas of the world. Mild cases cause a high fever and flu-like symptoms. The severe form, also called dengue haemorrhagic fever, can cause serious bleeding, a sudden drop in blood pressure (shock) and death.

⁶ A viral disease endemic to many tropical and subtropical areas of Africa and Central and South America. It is spread by mosquitoes that breed in standing water.

clearing jungle near Pacora, about 15 miles (24 km) east of Panama City, this being the first recorded outbreak in the Zone 20 years. By the following January, eight men had contracted the disease and six had died, and a vaccination campaign planned by the Canal Zone authorities. By 24 January, more than 30,000 people – Canal employees and Panamanians – had been vaccinated by the Canal Zone Health Department.⁷

The Army's Medical Department Field Sanitary Force maintained a force of field inspectors and laborers, and this undertook operations to sanitise all areas except for the outposts where, for security reasons, natural cover could not be disturbed for the purpose of either large scale drainage or filling operations.

As feared, the influx of new servicemen - untrained and unschooled in the fundamentals of individual protection against malaria - resulted in increased cases of malaria and, between April and September 1942, it reached epidemic proportions among troops who were often deployed in areas before adequate protection could be put in place. At the height of the epidemic, 111.7 out of every 1,000 men were being treated for malaria, and training and manoeuvres were often cancelled as a result.

Preventive measures were quickly put in place, including dusk-to-dawn curfews, night-time guards wearing gloves and netting on their heads, and bed checks ensured that troops only slept under mosquito netting. The rate of infection began to fall as controls and protective measures improved.

In part to cope with problems being faced in the war in the Pacific theatre, the US Army School of Malariology⁸ was established at Fort Clayton in 1943. It undertook research into

⁷ The vaccine was flown from the US Public Health Service lab in Montana to the Canal Zone in a B-29 bomber: <https://amcmuseum.org/history/panamanian-yellow-fever-outbreak/>

⁸ The School continued its work into the 1960s, as part of the US Army Medical Research and Development Command, credited with devising more accurate laboratory methods for identifying, testing and treating a variety of infectious and parasitic diseases.

prevention and treatment⁹, as well as developing training methods for troops on the ground. It was thought that having such a facility in a region where the disease was prevalent meant that trainees could learn in a place where anti-malaria controls had been tried and implemented successfully. It offered a four-week course that emphasised malaria survey and control techniques¹⁰.

Although dengue fever¹¹, also spread by the mosquito, received, and receives, less attention than malaria (as I write in 2022 there is concern at rising cases in parts of Panama). However, as early as 1904, US Navy physicians had reported 200 cases in the isthmus of Panama, and it was already said then to be playing an important part in increasing the number of sick days – and it had been reported that dengue had been substantially weakening US military operations and reduced troop strength since the Spanish-American War¹².

However, during the period 1942-45, dengue was diagnosed in just 245 US soldiers in Latin America, with most of them in the Canal Zone. When compared to around 80,000 cases in the Pacific theatre¹³ and around 8,000 in the China-Burma-India theatre, the relatively low numbers in Panama probably reflects the effectiveness of the anti-malaria precautions and operations. It has been reported that dengue had been substantially weakening US military operations and reduced troop strength since the Spanish-American War¹⁴.

⁹ Some troops with malaria were unknowingly used the military's "Mary" experiments: they were given a new, experimental drug codenamed "Mary", which was short for suflamerazine. However, this turned out to be worthless in treating malaria.

¹⁰ <https://apps.dtic.mil/dtic/tr/fulltext/u2/a388262.pdf>

¹¹ <https://www.nature.com/scitable/topicpage/what-is-dengue-fever-22399100/>

¹² *Dengue and US Military Operations from the Spanish–American War through Today* by Robert V Gibbons, Matthew Streitz, Tatyana Babina & Jessica R Fried (National Library of Medicine, 2012): <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3309667/>

¹³ Morbidity was very high in some areas, e.g., Saipan, where nearly one-third of the troops stationed there contracted the disease between June 1944 and September 1944:

<https://www.sciencedirect.com/science/article/pii/S1198743X14608259>

¹⁴ *Dengue and US Military Operations from the Spanish–American War through Today* by Robert V Gibbons, Matthew Streitz, Tatyana Babina & Jessica R Fried (National Library of Medicine, 2012): <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3309667/>

ANTI-MALARIA CAMPAIGN IN PANAMA

In 1941, there were 460 cases of malaria among the 33,815 Canal employees, a rate of 14 per thousand – and the proportion had been around the same level for most of the 1930s. There were no deaths from malaria reported in 1941, just one in 1940 and, in fact, only three during the whole of the 1930s. Since 1921, death rates from malaria had remained at such low levels, having already been gradually declining from 233 in 1906 to 21 in 1913.¹⁵

However, while the 1941 levels remained low, despite a significant increase in the average number of workers in the Canal Zone, 1942 saw a considerable increase in both cases and deaths (the latter rising to the highest rate since 1927). The greater number of cases were said to have been contracted outside the “sanitised” areas of the Canal Zone and the Republic, with the increase presumably reflecting the increase in new personnel during the expansion of the defences and related construction work, much of such work taking place outside the sanitised areas. Hence, in 1942, 904 cases were reported, equating to about 25 per thousand persons, with three deaths (as many as in the whole of the 1930s).¹⁶

As said, the Army’s Panama Canal Department had been unprepared for the great increase in numbers of servicemen that were sent to Panama from 1942, and action was required, with the chief aim of the disease control efforts to be the control of mosquitos, the vector for both malaria and yellow fever. An intensive campaign was immediately begun to educate and indoctrinate newly-arrived troops in the fundamentals of individual protection against the bite of mosquitoes. The initial efforts saw a gradual fall in the rate

¹⁵ *Report of the Health Department of the Panama Canal for the calendar year 1941* (The Panama Canal press, 1942).

¹⁶ *Report of the Health Department of the Panama Canal for the calendar year 1942* (The Panama Canal press, 1943).

of primary malaria from 50.3 per thousand men in January 1942 to 28 per thousand in April, with the rate for recurrent malaria remaining almost constant at approximately 10 per thousand.

However, when field manoeuvres were then held in April to June 1942, during which men lived and worked under simulated battle conditions, case numbers rose. The make matters worse, at the same time the Mobile Force conducted period of jungle training. Despite the liberal use of anti-mosquito cream, pyrocide-20 sprays at barracks and hutments, and quinine prophylaxis to all men living in other than permanent mosquito-proof quarters, the rate among the troops rose to 223 per thousand for primary malaria and 25 per thousand for recurrent malaria. Then this rate gradually fell to 90 per thousand for combined primary and recurrent in November, only to rise to 126 per thousand as combat teams again undertook jungle training in various camps in the interior.¹⁷

Initial anti-malaria efforts included the aforementioned work of the Canal Zone's Medical Department Field Sanitary Force (which in 1941 consisted of three field inspectors and an average of 168 labourers) sanitising outpost areas and undertaking drainage or filling operations (except where natural cover could not be disturbed for security reasons). There was also anti-mosquito spraying of buildings and attempts to make them mosquito-proof with bug screens etc.¹⁸

Accommodation in buildings used by the Army had bug screens on doors and windows. In addition, where tents had to be used as temporary accommodation¹⁹, every effort was made to mosquito-proof the pyramidal and wall tents used. Tent floors and tent frames were used, and the tent frames were screened to tent shoulder height and provided with

¹⁷ *Prevention of Disease in the United States Army during World War II: the Panama Canal Department, 1 January 1940 to 1 October 1945 (Volume 1)* via the US National Library of Medicine.

¹⁸ *Ibid.*

¹⁹ Tents continued to be used in the Canal Zone until 1943, when new barracks were completed.

screen doors. Frames were constructed and the use of mosquito nets was obligatory. Concentrated pyrethrum extract in kerosene was used nightly as an insecticide.

The completion of the new construction project providing housing and barracks in 1943 saw an end to the large-scale use of tents to house troops, which contributed to better control of mosquito-borne diseases. Nevertheless, malaria prevention continued, as part of a 10-year program known as the Long Range Malaria Control Project, with an estimated \$3 million budget. In Fiscal Year 1945²⁰, \$280,000 was allocated for the program, but \$400,000 was actually spent in 1945 alone.²¹

Under the program, work was also undertaken in towns in the interior along the routes of the trans-Isthmian highway and the Inter-American Highway under the direction of the Chief Health Officer of the Panama Canal. It was felt that due to the close proximity of many military installations to the towns in question, and due to the fact that many of the towns would be visited by military personnel, any reduction in the malarial reservoir among the native population would reflect itself in reduced malaria rate among the military personnel.²²

By December 1943, anti-malaria efforts had produced a marked drop in the malaria rate throughout the Department - primary cases being 24 per thousand and recurrent cases at 17 per thousand. It was noted that the primary rate attributable to the areas which remained unsanitised was 17 per thousand, whereas in those areas in which drainage and other work was carried out in an effort toward complete mosquito sanitation, the rate was significantly lower.

²⁰ The US federal government's fiscal year runs from the first day of October of one calendar year through to the last day of September of the next. For example, FY1945 started on 1 October 1945 and ended on 30 September 1946.

²¹ *Prevention of Disease in the United States Army during World War II: the Panama Canal Department, 1 January 1940 to 1 October 1945 (Volume 1)* via the US National Library of Medicine.

"FY" denotes fiscal year, the US Government accounting period than runs to September.

²² *Ibid.*

As the 10-year program continued, the rate for primary malaria for the calendar year 1944 was 7.7 per thousand, the lowest in the history of the Panama Canal Department. The rate for recurrent malaria was 6.8 per thousand, giving combined rate for primary and recurrent malaria of 14.5 per thousand, which was also the lowest rate ever attained.²³

A 1946 report from Army's Surgeon General noted trials using a specially-equipped C-47 transport aircraft to carry out spraying of DDT, with an interim report submitted to the Surgeon General in December 1945. It is said that various formulae of DDT and solvents were tested, with six jungle test plots, two native village test plots and lake and jungle areas selected.²⁴

VENEREAL DISEASE (VD)

VD would be a concern in all theatres during the war, with Panama no exception, its spread being seen as a particular problem in the Canal Zone²⁵. Two contributing factors were seen as the legal prostitution industry in Panama²⁶ and the significant transient population associated with the Canal²⁷. The majority of customers for the prostitutes were US military personnel and this fact caused tension between Panamanian authorities and the US²⁸.

²³ Ibid. The rates continued to fall in 1945, the rate for primary cases falling to 4.9 per 1,000 in the early months.

²⁴ *Prevention of disease in the United States Army during World War II : the Panama Canal Department, 1 January 1940 to 1 October 1945* edited by Wesley C Cox (Department of the Army, Office of the Surgeon General, Historical Division, 1946).

²⁵ Statistics from the Social Protection Division of the Office of Community War Services had also shown that VD had cost the US Army 7 million days of service during World War 1. As the Army did not begin the use of penicillin to cure VD until 1944, it continued to be a significant problem for the armed forces for much of World War 2. US military doctors had begun using it to treat syphilis in the Pacific theatre in 1943, and by 1947 it was to become the "gold standard" for treatment of the disease:

<https://www.sciencedirect.com/science/article/pii/S1578219014002480>

²⁶ It remains legal.

²⁷ <http://exhibits.domains.uflib.ufl.edu/TheDigging/>

²⁸ Ibid.

By 1939, there were 44.5 cases per thousand men being reported. However, the rate of infection fell during 1941-43, finally reaching a low level of 9.3 per thousand men by August 1945 (which was actually lower than the rate of infection in parts of the US at the time)²⁹. This reduction was attributed to improved education and improvement in treatment³⁰.

In 1942, the annual report of the Canal Zone Health Department included a new section on the Venereal Disease Control program. A special study had been undertaken by the Chief Health Officer to determine ways and means of both combating and preventing VD. The Senior Surgeon of the US Public Health Service also arrived in the Canal Zone to assist in organising the control program, both for the Canal Zone and in the Republic.

\$19,050 was provided by the Committee on Inter-American Affairs in July 1942 to set up a central control office, and the Federal Works Agency provided \$151,000 for the building of facilities for treatment and control, with a further \$108,000 for the first year's operations and maintenance.³¹

Instruction in sex hygiene was given to all military personnel by the unit or organisation Medical Officers, with groups not larger than squad size of four to ten men being involved. It is said that every effort was made to conduct this instruction on a "high moral plane". In addition, individual instruction was given wherever the Medical Officer or Chaplain considered this more advantageous.³²

²⁹ <https://apps.dtic.mil/dtic/tr/fulltext/u2/a388262.pdf>

³⁰ Researchers had shown in 1943 that penicillin was effective against syphilis and gonorrhoea, but there remained doubts about how the disease could be prevented and treated, although US military doctors were already using it to treat servicemen for syphilis in the Pacific theatre in 1943:

<https://www.actasdermo.org/en-syphilis-human-experimentation-from-world-articulo-S1578219014002480>

³¹ *Report of the Health Department of the Panama Canal for the calendar year 1942* (The Panama Canal press, 1943).

³² *Prevention of disease in the United States Army during World War II : the Panama Canal Department, 1 January 1940 to 1 October 1945* edited by Wesley C Cox (Department of the Army, Office of the Surgeon General, Historical Division, 1946).

The US Army also sought to regulate its soldiers' contact with the population of Panama. This effort included exercises that involved the arrest and screening of Panamanian women as "venereal disease suspects". It also staged aggressive campaigns against sex workers which included deporting prostitutes from other countries, extended quarantine and treatment requirements (lasting as much as six months), and establishing red-light districts.³³ The military authorities barred US personnel from off-limits bordellos due to their high rates of VD (as well as crimes committed against Americans, particularly robbery and assault of drunken GIs or Navy personnel).

The health officials involved in the prevention programs even likened the Panamanian women to a pestilence, and likened them to the mosquitos which spread malaria, and to agents of the Axis, with purported racial proclivities for dirt, bacteria and seduction. The publicity involved portrayed the cities of Panama as places of corruption and greed. This naturally offended Panamanians and contributed to increased nationalist calls to limit the extent of US legal and territorial power in the country.³⁴

During the war, the Catholic Church in Panama encouraged parishes to set up "Catholic recreational centers for servicemen" to try to lure serviceman away from the red-light districts³⁵.

Various Mexican newspapers and magazines from 1940 to 1943 carried stories claiming that Mexican dancers were being taken to the Canal Zone, to work in cabaret bars and to also offer sexual service to US servicemen.³⁶

³³ <http://exhibits.domains.uflib.ufl.edu/TheDigging/>

³⁴ *Bioinsecurities: Disease Interventions, Empire, and the Government of Species* by Neel Ahuja (Duke University Press), 2016: <https://collections.nlm.nih.gov/bookviewer?PID=nlm:nlmuid-101705278X1-mvpart>

³⁵ *A History of the American Vincentian Fathers in Panama* by Robert J Swain CM (Vincentian Heritage Journal Vol 3 Issue 1, DePaul University, 1982): <https://via.library.depaul.edu/cgi/viewcontent.cgi?referer=https://en.wikipedia.org/&httpsredir=1&article=1010&context=vhj>

³⁶ <https://muse.jhu.edu/article/840205/pdf>

However, catering for the US servicemen is said to have represented “commercial activity” which, in the year 1945 was said to be worth more than \$6 million “in prostitution and vice”, this being \$4 million more than the foreign aid provided by the US Government to Panama that same year. From time to time, the Panamanian authorities sought to close down establishments – a measure said to be complicated by their ownership by powerful local businessmen and National Police officers.³⁷

It has also been claimed that the US authorities saw the “service” provided by the cities of Panama and Colón “as an escape valve, where man could let steam escape...that can cause an explosion in an unventilated society “like that of the Zone”.”³⁸

During the war and afterwards, a key objective of the US military and the Canal Zone authorities was to keep prostitution out of the Canal Zone and in the Republic – thus maintaining the longstanding policy that the Zone was a site of cleanliness, health and order, compared to what was seen as the barbarous and chaotic Panama.³⁹

OTHER DISEASE AND ILLNESSES OF CONCERN

Before and during World War 2, and particularly during the build-up of forces from 1939, the Army Medical Department had concerns, particularly of the risk of malaria – although tuberculosis (the leading cause of death in Panama at the time⁴⁰) and venereal disease were other major threats that caused the Army concern.

³⁷ *Decentering America* by Jessica CE Gienow-Hecht (Berghahn Books, 2007).

³⁸ <https://www.laestrella.com.pa/nacional/211218/antigua-zona-canal-region-frontera>

By 1951, it was estimated that throughout Panama City there were more than 250 brothels, among which were famous sites such as, “the Blue Grotto, the Villa Amor, the Ancon Inn, the Golden Key, the Tropical Coffee, the Fenix Coffee and La Gloria”, located in towns such as “Chilibre, El Coco, Capira, Cativá, Río Abajo and La Chorrera”. In 1950, the armed forces were producing a 26-page manual outlining places in the Panama area that were out of bounds or off limits: <http://gozonian.org/offlimits/index.shtml>

³⁹ US military doctors had begun using it to treat syphilis in the Pacific theatre in 1943, and by 1947 it was to become the “gold standard” for treatment of the disease:

<https://www.sciencedirect.com/science/article/pii/S1578219014002480>

⁴⁰ However, the rates of the disease in Panama were less than in some areas of the US.

The Panama Canal Department published a complete compendium of sanitary regulations for distribution throughout each unit. In addition, a copy of the Sanitary Regulations was published in Spanish by the Coast Artillery Command for use of its Puerto Rican servicemen who arrived during the war. One of the recommendations it contained was that a frequent change of underclothing and socks was seen as essential, and the boiling of clothing necessary in order to destroy the spores of fungi. Many cases of fungal skin infection were said to have been traced to the wearing of soiled, perspiration-impregnated clothing.⁴¹

In 1942, a general typhoid inoculation program was instituted by the Canal Zone Health Department, due to the U-boat campaign in the Caribbean causing fears of disrupted supplies of chemicals to treat drinking water. The program included those employees of contractors working in the Zone.⁴²

The Medical Department Field Sanitary Force and the Anti-Biological Warfare Officer (of which more below), the latter being appointed in 1944⁴³, are said to have done excellent service in preventing and combating all kinds of serious illness and disease – not just the more obvious malaria and yellow fever. The Corps of Engineers also maintained a medical service for civilian employees, which functioned alongside the Army Medical Services.

Other identified potential risks included –

⁴¹ *Prevention of disease in the United States Army during World War II : the Panama Canal Department, 1 January 1940 to 1 October 1945* edited by Wesley C Cox (Department of the Army, Office of the Surgeon General, Historical Division, 1946).

⁴² *Report of the Health Department of the Panama Canal for the calendar year 1942* (The Panama Canal press, 1943).

⁴³

Flies not regarded as a serious problem in the Panama Canal Department, even in the field positions because prompt and careful policing of all areas kept fly breeding at minimum level.

Bedbugs during the war, control measures for bedding and walls were employed and the necessity of continued and repeated treatment was particularly stressed. From 1944, DDT was used and proved more effective.

Sandflies and Sandfly fever sandflies were seen as an irritant, particularly affecting morale, rather than a health problem, especially as in some locations large swarms could be observed. There were no cases of sandfly fever recorded by the Panama Canal Department during the war. Spraying of the interiors of occupied buildings, screens, screen-doors and the walls about screen-doors from 1945 practically ended the sandfly nuisance indoors.

Cockroaches were (and are) a scourge in Panama. Rigid hygiene controls were put in place by the US armed forces to maintain buildings in a scrupulously clean state.

Snakes at least 15 species were identified in an Army report, but a very low mortality rate from snake bites was reported – this being attributed to the fact that, even among the bites of snakes whose venom is deadly, these are nocturnal in their habits.⁴⁴

Relapsing fever⁴⁵ can be caused by tick or louse bites, and in the US is linked to sleeping in rustic cabins. Personnel were warned to avoid native quarters, especially at night, and the danger of “native hotels”.

Chagas disease⁴⁶ there were two documented cases hospitalised in the Panama Canal Department during the war. Also known as American trypanosomiasis, this potentially life-threatening disease is caused by the bite of a parasite and is most commonly transmitted by so-called ‘kissing bugs’.

⁴⁴ One study likened the risk of death from snake bite to that from a lightning strike (though it is worth noting that, even today, use of public swimming baths in rainstorms is prohibited due to the risk).

⁴⁵ https://www.cdc.gov/relapsing-fever/resources/15_260166_FS_APerea.pdf

⁴⁶ <https://dndi.org/diseases/chagas/facts/>

Chagas now kills more people in Latin America each year than any other parasitic disease, including malaria.

Q fever⁴⁷ just one case of this zoonotic was reported by the Department during the war. First described in 1937, transmission occurs primarily through inhalation of aerosols from contaminated soil or animal waste, and it can trigger flu-like symptoms including fever, chills, fatigue, and muscle pain.

Anthrax there were no recorded cases during the war.

Beri Beri careful control of menus prevented the development of this illness, which is a disease caused by a vitamin B1 deficiency.

Granuloma Inguinale⁴⁸ there were no cases of this STI among troops in the region – the point that this affliction is most common in less developed countries might be the reason for the questionable comment in a 1946 Army report that the low number of cases was despite the high percentage of people of Afro-Caribbean origin in the native population.⁴⁹

Infectious jaundice there was an outbreak of infectious jaundice which followed the immunisation of all military personnel in the Department with an attenuated yellow fever vaccine – but this was said to be self-limited.

Rabies at the time the Canal Zone and Panama as a whole were free of rabies, with no recorded cases in the previous 30 years.

Scabies routine physical examinations of all enlisted personnel were regularly conducted in accordance with Army Regulations, and any case of scabies detected was immediately placed in quarantine and treatment started.

Scurvy was prevented by the provision of adequate quantities of vitamin in the diet.

⁴⁷ <https://www.cdc.gov/mmwr/PDF/rr/rr6203.pdf>

⁴⁸ <https://www.cdc.gov/std/treatment-guidelines/donovanosis.htm>

⁴⁹ *Prevention of disease in the United States Army during World War II : the Panama Canal Department, 1 January 1940 to 1 October 1945* edited by Wesley C Cox (Department of the Army, Office of the Surgeon General, Historical Division, 1946).

Tetanus	military personnel were immunised with six-monthly boosters.
Tinea Cruris	this fungal infection (aka “jock itch”) was common, and efforts to counter it were made by emphasising personal hygiene etc.
Trachoma	no cases were detected in the Department during the war.
Yaws	is a skin infection which was endemic in Central and South America at the time, primarily affecting children living in poor communities in warm, humid and tropical forested areas. While wartime control emphasised efforts against flies and other insects, the WHO says the disease relies on human-to-human transmission.

Others, then as now, included sunburn, heat cramp, heat exhaustion and heat stroke.

THE CANAL ZONE HEALTH DEPARTMENT

Recognising the risks of illness and disease to the Canal, its operations and employees, the Canal Zone Government provided comprehensive health services in the Zone⁵⁰. In 1939, it was said that the same vigilance which was seen in the elimination or control of tropical diseases during the construction of the Canal was seen as just as vital in guarding the health of the employees and their families.⁵¹ The health services were provided for all, although, given the discrimination engendered by the Gold and Silver Rolls system, those for the latter (almost entirely non-American and non-white) would not be as good as for the former.

The Canal’s Health Department was responsible for the prevention and control of infectious and contagious diseases in the Canal Zone, as well as the cities of Colón and Panama City in the Republic, providing general medical care to employees of the Canal

⁵⁰ Among the first set of instructions issued by President Theodore Roosevelt to the Isthmian Canal Commission was "that every precaution be taken to protect the employees of the [United States] Government against the tropical diseases that [had] previously caused a high mortality at Panama".

⁵¹ https://aquadocs.org/bitstream/handle/1834/19156/pages1_38.pdf?sequence=1&isAllowed=y

and their families, and hospital services to the Army and Navy. The Chief Health Officer supervised the activities of four field divisions: Hospitals and Dispensaries, Sanitation, Hygiene, and Quarantine. The Division of Hospitals and Dispensaries operated Gorgas Hospital on the Pacific side, and Colón Hospital on the Atlantic side, each of which was a general hospital. There was also Corozal Hospital, which handled what were then termed “mental” patients and other chronically ill employees. The Division also operated six dispensaries in Canal Zone towns for the treatment of minor illnesses, including treatment at home for those not sufficiently ill to be hospitalised⁵². There was also the Paco Seco Leper Colony, a remote location on the other side of the Canal entrance from Panama City. In 1941, five new patients (plus a former patient) were admitted to the Colony, and by 1945 it had reached its peak of 127 patients, including 10 Americans.⁵³

During the war, there was of necessity a considerable expansion of the Health Department. This saw 630 additional beds and some 20 additional dispensaries. The Department also supplied complete medical services for vessels in transit, both onshore and on board the ships, and served as a supply source for merchant shipping passing through the Canal. The Board of Health Laboratories carried out water analysis, tested food and carried out “special tests” for various branches of the armed services⁵⁴. Given the facilities available in the Canal Zone, the latter tests were also undertaken for the US armed services throughout the Caribbean and Central and South America.

The Quarantine and Immigration Division inspected ships, crew, passengers, and sometimes cargo, entering Canal Zone waters, in order to prevent communicable diseases of man or animals, and enforced the immigration laws of the Canal Zone and of the

⁵² There were also nurses’ aid stations, occupational health training, well-baby clinics, home visits, and school nurses: <http://exhibits.domains.uflib.ufl.edu/TheDigging/>

⁵³ https://aquadocs.org/bitstream/handle/1834/19156/pages1_38.pdf?sequence=1&isAllowed=y

The majority of its patients were always Panamanian, although until 1977 it was run by the US authorities.

⁵⁴ These would include tests linked to the chemical warfare activities on the Island of San José.

Republic, and its officers also served as aides to civil and military intelligence in checks on vessels' crews and passengers.⁵⁵

The Panama Canal's Medical Department Field Sanitary Force also collected insects and any thought to be capable of transmitting disease were sent to the Army Medical School in Washington DC for examination.⁵⁶

The Canal Zone was also home to the world-famous Gorgas Memorial Institute of Health Studies (ICGES)⁵⁷, a public health institution dedicated to the investigation and prevention of diseases. The facilities in Panama City were inaugurated in 1928 (and, until 1990, were managed by the US authorities). It continues to this day, and worked on the coronavirus during the Covid-19 pandemic.⁵⁸

THE ANTI-BIOLOGICAL WARFARE OFFICER

The Army's Panama Canal Department appointed an Anti-Biological Warfare Officer on 27 May 1944. Despite the seemingly ominous title, his main role was to prevent any potential contamination of food and drink, including water supplies, presumably by hostile actors. This included inspections of food and drink producers and suppliers that provided or delivered products to the Army locally – including that imported from other Latin American states (many products, including much of the fresh vegetables supplies, actually came from the US). Water supplies were also monitored. One of the chief efforts made

⁵⁵ https://aquadocs.org/bitstream/handle/1834/19156/pages1_38.pdf?sequence=1&isAllowed=y

⁵⁶ *Prevention of Disease in the United States Army during World War II: the Panama Canal Department, 1 January 1940 to 1 October 1945 (Volume 1)* via the US National Library of Medicine.

⁵⁷ Named for Major General William Crawford Gorgas, who had been Chief Sanitation Officer of the Canal from 1904, who had instigated a comprehensive program of mosquito control (despite considerable apathy and opposition, some racist in nature) and, by 1906, had seen the Canal Zone was declared free of yellow fever, with eradication of malaria soon following:

http://www.udelas.ac.pa/site/assets/files/4253/gorgas_historical_document.pdf

⁵⁸ <https://panamaliving.com/the-experience-of-history-the-gorgas-institute/>

was to prevent and eradicate rat infestations. The Officer also liaised with other agencies in the Canal Zone and the Republic over any disease among animals.⁵⁹

MILITARY AND NAVAL HOSPITALS

Anticipating the likely increase in a need for hospital services by the forces and latterly, in the case of the Navy, reacting to the actual increase, the US armed forces greatly expanded their medical services in the Canal Zone during the war.

By the 1930s, it had been decided that there was a need for independent hospital facilities for the military⁶⁰. Therefore, in 1939, Congress approved funding for the construction of three Army hospitals at Fort Clayton, Fort Gulick and Fort Kobbe⁶¹. These “sector hospitals” were to meet the local military demand as well as the anticipated expansion of “hospital requirements of the armed forces” associated with the combat in the Pacific theatre. In January 1942, the 210th and 218th General Hospitals of the US Army embarked for Panama, to join the Station Hospital there.⁶² Until the hospital at Fort Clayton opened, it was completed in 1943, military personnel had been forced to rely upon the canal Zone Government for hospital space and treatment.⁶³

For the Navy, the 200-bed Coco Solo Naval Hospital near Colón on the Caribbean end of the Canal was commissioned in September 1942. It was built on a 41-acre (16.6 hectare) site on the north side of the new Trans-Isthmian Highway, about 3 miles (4.8 km) from the

⁵⁹ *Prevention of Disease in the United States Army during World War II: the Panama Canal Department, 1 January 1940 to 1 October 1945 (Volume 1)* via the US National Library of Medicine.

⁶⁰ The entire US Army Medical Department in June 1939 consisted of only four Medical Regiments (two of which were stationed overseas, one being in the Canal Zone): <https://www.med-dept.com/articles/ww2-military-hospitals-zone-of-interior/>

⁶¹ The 201st Army General Hospital at Fort Gulick, was reorganised and redesignated as the 368th Station Hospital on 1 April 1944; and the 218th at Fort Clayton, was reorganised and redesignated as the 333rd Station Hospital on 1 April 1943 (and back to become the 262nd General Hospital on 1 April 1944). The 267th General Hospital was organised at Fort Clayton on 7 February 1947, and the 368th Station hospital at Fort Gullickson on 22 November 1948.

⁶² <https://www.med-dept.com/articles/ww2-military-hospitals-zone-of-interior/>

⁶³ <http://bdigital.binal.ac.pa/bdp/an%20american%20legacy4.pdf.pdf>

Coco Solo air station, and in the south-western corner of what was later called Coco Solo Navy Station.⁶⁴ It was later enlarged by the addition of two temporary wards of frame construction, to provide an additional 500 beds. A second 400-bed hospital was built adjoining the operating base on the Pacific side, with construction begun in Autumn 1941 and it being commissioned in August 1942, although then only partially completed. All the buildings in this new complex were of temporary frame construction, one-story high, and well ventilated.⁶⁵

The Army's Panama Canal Department published the following statistics detailing hospital admissions 1940-45, in cases per thousand persons⁶⁶ –

	1940	1941	1942	1943	1944	1945
All causes	835	881.4	1,009.5	794.1	633.9	656.6
Common respiratory diseases	187.1	159.4	117.7	77.5	81.5	137.4
Venereal disease	66.1	64.8	60.8	42.7	20.3	15.1
Malaria (primary and recurrent)	56.8	51.8	111.7	42.6	14.5	8.9
Injuries	116.4	107.6	117.8	109.3	73.7	58.7
Diarrhoea	1.6	2.9	4.4	3.5	2	4.1

SCHISTOSOMIASIS AND CONCERNS OVER PUERTO RICAN TROOPS

According to the US Centers for Disease Control and Prevention, schistosomiasis, also known as bilharzia, is a disease caused by parasitic worms and is said to be second only to

⁶⁴ <http://bdigital.binal.ac.pa/bdp/an%20american%20legacy4.pdf.pdf>

In 1954, the Coco Solo Naval Hospital was transferred to the Panama Canal Company. When the Department of Defense assumed responsibility for all US medical facilities in the Canal Zone, Coco Solo Hospital was included in the turnover of treatment facilities. In compliance with the Panama Canal Treaty, Coco Solo Hospital was turned over to the Republic of Panama in June 1994.

⁶⁵ https://www.ibiblio.org/hyperwar/USN/Building_Bases/bases-18.html

⁶⁶ *Prevention of Disease in the United States Army during World War II: the Panama Canal Department, 1 January 1940 to 1 October 1945 (Volume 1)* via the US National Library of Medicine.

malaria as the most devastating of parasitic diseases⁶⁷. At the time of World War 2, this disease was described as being endemic in Puerto Rico.

The 65th Infantry Regiment, a Puerto Rican unit, had been present at Empire in the Canal Zone during and after World War 1, but this had not resulted in any known infections in the Canal Zone, although the troops were not screened for the disease at the time.

However, the arrival of Puerto Rican troops in the Canal Zone 1943 (already regarded as a problem by the Panamanian Government, which raised objections to the presence of Puerto Ricans in the country) raised the risk that the disease could be introduced into Panama. In August 1944, tests revealed an infestation rate among the troops of approximately 40%. Consequently, snails were collected throughout the area occupied by the Panama Canal Department and sent to the School of Tropical Medicine in San Juan, Costa Rica, but all samples were found to be negative for infection.

The 1945 report said that there was no indication that infections of the disease existed in the Canal Zone or the Republic, and concluded that, unless the molluscan hosts were themselves to be introduced into Panama, the disease would not be introduced, and the Puerto Rican troops would not be carriers⁶⁸.

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21 November 2022

⁶⁷ <https://www.cdc.gov/parasites/schistosomiasis/index.html>

⁶⁸ *Prevention of Disease in the United States Army during World War II: the Panama Canal Department, 1 January 1940 to 1 October 1945 (Volume 1)* via the US National Library of Medicine.