

# Lessons from the history of brucellosis

H.V. Wyatt

University of Leeds, Leeds LS2 9HD, United Kingdom  
E-mail: nurhvw@leeds.ac.uk

*History reveals the past, but may foretell the future.*

## Summary

The disease we now know as brucellosis was first discovered in the 1850s in Malta. It came to the attention of British medical officers serving on the island after the Crimean War. It was easy to eliminate the disease in British servicemen, but very difficult to reach Maltese citizens. Over the decades, more and more Maltese were infected as the control measures introduced were half-hearted and were often not even enforced. The work of Dr Themistocles Zammit showed that infected goats transmitted brucellosis and that banning use of their milk would be effective. Pasteurisation was not introduced onto the island until the 1930s, when the production of cheap, small sterile containers became possible. Transmission was also possible through sexual contact and by inhalation when people were crowded in hot airless conditions. Success in controlling the disease requires sensible, strict control of animals and the elimination of infected ones, but will fail without an educated public willing to help. In Malta, failure to control rogue flocks and small flocks kept for family use led to an epidemic caused by the sale of cheeselets (small cheeses). In 2005, nearly a century after Zammit's discovery, Malta was finally free of brucellosis.

## Keywords

Brucellosis – Goats' milk – Inhalation – Malta – Mediterranean Fever Commission – Pasteurisation – Royal Army Medical Corps – Sexual transmission.

## Introduction

For the British Royal Army Medical Corps (RAMC), brucellosis is the 'Corps Disease'. The RAMC played a key role in researching the epidemiology of the disease and in discovering ways to prevent it, and in doing so they won a major battle in the war for better health. This battle was won through the efforts of young doctors serving their first overseas postings to Malta more than one hundred years ago and of Maltese doctors such as Colonels Ethelwald Vella and David Vassallo. As British servicemen began to serve in the Mediterranean after the Crimean War, many became ill with mysterious fevers known locally as 'Malta', 'Gibraltar' or 'Cretan fever', often confused with other fevers. In 1903, a British Army doctor, David Bruce, wrote to the Colonial

Office asking that the official name be Mediterranean fever, a name he had previously proposed in 1894 (12). Although Malta fever was too local, people clung to this older and shorter name. Nevertheless, he was able to use the official name when he became chairman of the Mediterranean Fever Commission (MFC) in 1904. Strangely, in all the papers which he edited for the MFC, the *Royal Army Medical Journal* and his papers in other journals, he always used the term Malta fever.

At the time of the Crimean War, there was much confusion about the diagnosis and cause of fevers, but in 1861 a British Army surgeon, Dr Jeffrey Alan Marston, described the many fevers that had been seen in Malta in 1851. He gave a description of typhoid fever and distinguished it

from 'Undulant Fever' – what we now know as brucellosis. In 1887 David Bruce and Lady Bruce, together with Dr Guiseppe Caruana Scicluna, the Maltese public health analyst, discovered and cultivated the micrococcus which caused the illness (Bruce never acknowledged the vital contribution that Caruana Scicluna had made to this research [10]), but how people were infected remained a mystery, although 'bad air' and drains were considered likely causes.

Ten years later, in 1897, a significant advance was made by Professor Almroth Wright at the Army Medical School at Netley in England. He applied the Widal agglutination technique to distinguish typhoid fever from undulant fever by using cultures of bacteria and later, with Surgeon Major David Semple, using dead bacteria. In 1904, Dr Themistocles Zammit, a keen Maltese bacteriologist working in the Government laboratory in Valletta, modified this test by examining the reaction on a slide with a microscope. Later, he used this test, which came to be known as Zammit's test, not only for serum, but also for milk. Another young doctor who was posted to Malta, Captain Matthew Hughes, had written a monograph on the disease in 1897 which confirmed the previous discoveries, but prescribed goats' milk for patients. This promising young researcher returned to Britain and was killed in the first months of the South African War in 1899.

At the end of the 19th Century, the British hospital in Valletta, housed in the Hospital of the Knights (which had the longest ward in Europe), was full of soldiers ill with the disease, many of whom were invalided to Britain. Nearly half were discharged because of complications of arthritis and their pensions were a serious drain on the British Treasury. Bruce, now a Colonel and a Fellow of the Royal Society, continued to press for research into the disease and in 1904 he was appointed to head the MFC with four researchers – with typical economy, no new salaries were necessary. Major William Horrocks (RAMC), an army surgeon usually based in Gibraltar, was to head the group in Malta with Staff Surgeon E.N. Shaw (Royal Navy [RN]), Dr R.W. Johnson from the British Local Government Board and Dr Zammit. Later that year, another young doctor, Captain James Crawford Kennedy, attending soldiers in the venereal diseases ward of the Valletta Hospital, joined the MFC.

The new discoveries of the role of insects in transmitting diseases dominated the early experiments. Hundreds of mosquitoes were allowed to feed on infected primates and were then examined. A very few were found to have been infected. Yet these results were surely to be expected, because Malta had very few biting insects in the winter months and people continued to fall ill.

## Goats and the Royal Navy: the silent service

Bruce had shown in 1888 that monkeys were susceptible to the disease and the MFC researchers used them in their studies. But monkeys were expensive and difficult to obtain. Bruce had visited Malta for a month in the summer of 1904 and two weeks after he left, Shaw bought a nanny goat and a kid: both were negative by blood agglutination. Shaw injected the goat with the bacteria and noted a rise in temperature, but no illness. He injected it with more cultures, recorded further rises in agglutinin titres and tried to culture samples of milk and urine. Nothing grew from the urine and the milk samples were overgrown with *Staphylococcus*. He fed a monkey with milk from the infected goat; the monkey died, but its blood and organs yielded no colonies of the micrococcus (9).

Shaw was unlucky and gave up, returning the goats to a farm. He wrote a paper with his results, but submitted it through the Admiralty, not through Bruce who knew nothing of his successful infection of the goat. He then withdrew it, possibly discouraged by the negative results of experiments by his naval colleagues (9). In May 1905, Bruce returned for a short visit to Malta and met Horrocks, Shaw and Zammit. Zammit wanted to continue with his experiments with goats (see below), but at first Bruce and Horrocks opposed this. Zammit persisted and was reluctantly allowed to buy some more goats. Shaw remained silent and did not support Zammit with his own results. We do not know why Shaw began his experiments, although his colleague Surgeon Gilmore, RN, had written to Bruce in 1904 saying that he wanted to feed a goat or two with milk. However, for reasons unknown, the British Government forbade Gilmore from doing any more animal experiments.

## Goats and Themistocles Zammit

While we do not know for sure why Shaw and Gilmore began experimenting with goats, we are on surer ground with Zammit. He bought his two goats after spending a day with Caruana Scicluna, who had probably shared with him his thoughts on the possible link between goats and illness among their owners. In 1903, Caruana Scicluna had seen that 'persons who lived on farms in which milch goats [were] supplying milk' had fever and that 'the blood of a goat...strongly reacted to Remittent Fever [Brucellosis]'. I suggest that he told Zammit about these goats on 14 September 1904, because Zammit bought his goat the next day and fed it agar cultures on 18 September. No doubt Caruana Scicluna and Zammit thought that perhaps a few of the tens of thousands of goats were infected and that somehow the bacteria could be transferred to humans –

perhaps by mosquitoes. Zammit fed his goat more cultures and noted its positive agglutinins and absence of illness. He noted the same responses in a second goat and found the bacteria in the urine, blood and milk of both goats. The day that Bruce left Malta, Zammit bought six more goats and discovered that five were positive. In the next few weeks it was found that about half the goats on Malta were positive and about 10% were secreting bacteria in their milk (13). Even though Zammit had been studying the disease and carrying out tests of blood and milk for some time, he was still surprised at the number of infected goats (11, 14, 18).

Following Zammit's discovery, Shaw examined the goats whose milk was bought for the Royal Naval Hospital Bighi (located in the village of Kalkara in the south of the island) and banned those which were positive. All the milk was supposed to be boiled to destroy bacteria, but when the cauldron was nearly empty, more milk was added – and used before it had been sufficiently heated. The military may give orders, but authority may be subverted, either by intention or by laziness. A year later, there were still cases of brucellosis and Shaw again examined the goats, finding that many were positive. In 1906, the use of goats' milk by the British Armed Services was prohibited and the number of cases was reduced dramatically. Between 1900 and 1906 there had been a total of 3,631 cases, but by 1907 there were only 21. Condensed, evaporated and sterilised milk were used instead. By 1909, the vast ward at the army hospital was empty and it was used for a huge reception and ball (2).

## Sex and food

In the Knights' hospital there was a venereal diseases ward (probably in the basement) under the management of Captain Kennedy. He noticed that many of his patients were already suffering from brucellosis when admitted. Keen to be part of the research, he applied to join the MFC and was told to begin research, but in addition to his medical duties. Accompanied by a senior police officer, he visited the prostitutes in 'the Gut' in Valletta – a notorious street of low bars and even lower sexual haunts. The policeman may not have been there to protect the women – or Kennedy – his presence may well have been to persuade them that the visit was 'legal'. Kennedy found that 30% of 134 women were positive by the agglutination test, whereas among ordinary Maltese the incidence was only four cases per thousand. He went back to take urine samples and vaginal swabs and cervical mucus for culture, isolating colonies from four urine and two vaginal swabs. He also isolated *Brucella* from the vaginal swab, urine and breast milk of a married British woman. Kennedy transmitted the disease to two monkeys by attaching cotton wool soaked with infected urine around the glans. Kennedy reported these findings only

in his doctoral thesis (for which he was awarded a Gold Medal) (16).

It would seem that the sex workers had acquired their infections from their male clients and that they then transmitted the disease to their next partners. But neither Kennedy nor others had examined semen from positive males to find the bacteria. Nor have I found reference to whether billy goat semen contained bacteria or whether nanny goats impregnated by positive billy goats were infected. It was known that the bacteria were found in the urine of people with the disease and of infected goats, so it was possible that it might also be found in semen. There was an indication that the disease could be sexually transmitted in a long report published in 1906, which listed several cases of brucellosis among soldiers treated for sexually transmitted diseases (3, e.g. pages 196–199).

Kennedy also looked at products containing goats' milk. In Malta, there were two kinds of ice-cream: the cheaper was little more than flavoured frozen goats' milk and might have been responsible for unexplained cases of the disease. The dearer, probably bought by officers, was a custard of milk and eggs, heated to near boiling and then frozen. A popular drink of sailors was grog, raw milk laced with rum: some bacteria might have survived their temporary immersion in alcohol. There was also an 'egg flip' made with goats' milk. Kennedy also looked at cheeses. Later, he examined milk in London and, comparing it with cultures obtained from Zammit in Malta, found that the milk contained *Brucella* agglutinins. His research also provided the first clue to the relationship between Malta fever and contagious abortion.

## Inhalation brucellosis

Almost all investigators of the disease fell ill with it. Shaw and fellow naval doctor P.W. Bassett-Smith contracted the disease in 1900 and 1901, respectively. Captain Hughes had been invalided to England in 1896 with his wife and her two sisters, who had also contracted the disease in Malta. The members of the MFC were all ill at one time or another and almost all veterinarians have high anti-*Brucella* titres (see 15). Sniffing of cultures was routine in diagnostic laboratories at that time. François Jacob related that among the 'Pastorians... was the one to whom all France sent microbes that were hard to characterize, and who made his diagnosis by smell'. Sniffing of cultures is now forbidden (17).

In the late 19th Century, ships of the Mediterranean Fleet called at ports in many countries. Although the crews had no contact with goats' milk, there were several epidemics of brucellosis: in 1882 two ship epidemics accounted for 42% of the fleet cases. Captain Sheldon Dudley, RN, Professor

of Pathology at the Royal Naval College in Greenwich, examined the ships' diaries for the fleet and concluded that in the congested, humid, torrid and stifling atmosphere of the unventilated mess decks, 'Br melitensis had acquired the power of spreading by droplet infection'.

On HMS *Superb*, 136 sailors contracted the disease, 77 of them were invalided home and one died. Dudley noted that: 'The ratings in the *Superb* slept on three decks. The flying deck was a kind of huge shelf cutting part of the lower deck horizontally in two.' The epidemic was attributed to bad ventilation between decks. He described conditions on the lower deck in her sister ship in a similar way: 'All the ship's company [*St Jean D'Acree*] amounting to about 930 men... slept on this deck. The hammock hooks were placed ordinarily at only 14 inches apart – less than the average breadth of the men's shoulders; consequently while on harbour when no watch was required at night and all hands had turned in, they formed a compact mass close beneath the beams, the only air available for respiration being above them, that beneath the hammocks being almost entirely shut out from the space above. All the ports as well as the small round scuttles were kept closed at night' (17).

It was not only sailors who had such unhealthy living quarters; soldiers stationed at Fort Rinella in Malta were housed in unsanitary conditions in underground barracks. Conditions in the Lower St Elmo barracks 'sunk in a hollow... were very insanitary... with very inadequate ventilation... the supply of fresh air a difficulty at all times and practically an impossibility on calm and still days' (3).

## Taste, education, and control

Despite the new insights into modes of transmission, convincing the Maltese to alter their food preferences was not so easy. They liked not only goat meat, but also the taste of raw milk. In spite of an education drive from 1906, many Maltese refused to believe that their precious goats caused the disease. A local doctor and a pharmacist owned newspapers which disputed the role of goats' milk in the transmission of the disease and were encouraged by a British doctor who visited Malta. The controversy lasted until 1916, when they finally accepted that milk was a factor in transmission (2). In 1907 there were 714 cases among Maltese civilians and, in general, the number of cases rose steadily over the years until there was a dramatic fall in the mid-1930s (1), when people began to reduce their consumption of raw milk and implement better hygiene practices in the care of their goats. The number of cases fell further when a pasteurisation plant was opened in 1938.

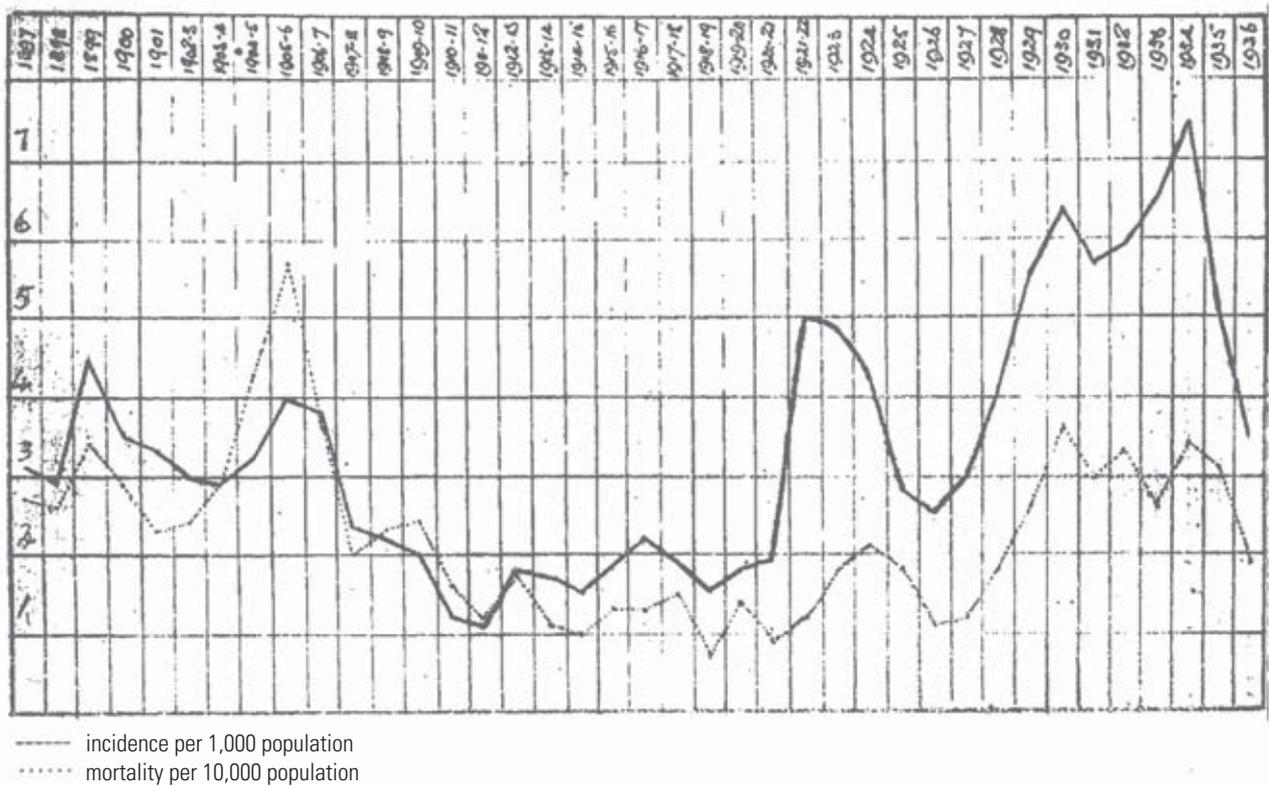
The Maltese were poor and could not afford refrigerators, although ice could be bought. Because milk bought in the

morning would curdle by the afternoon, it was bought twice daily. Five thousand goats entered Valletta every morning and afternoon, their large udders trailing in the dirt, faeces and urine in the road. They were milked in the street into small jugs to provide just enough milk for the morning. Filling a pint container would have been wasteful as the milk would have curdled before it could all be consumed. The new pasteurisation plant opened in May 1938. Goats were brought to covered milking yards and milked under supervision. The milk was weighed, cooled and taken in cans to the Milk Centre. Insulated electric vans were used for delivery, with ice to cool the one pint glass bottles and the smaller waxed cartons.

In 1927 there had been 699 cases of brucellosis, rising to 1,909 in 1934. By 1936, two years *before* the pasteurisation plant opened, the number of cases had dropped to 873. Had the plant opened in 1936, the drop would have been mistakenly attributed to pasteurisation. But rather than being the result of pasteurisation or of some change in the goats, the dramatic fall (Fig. 1) must surely have been due to subtle social changes among the Maltese or to stricter adherence to the hygienic care of the goats (1).

Today, we would expect health authorities to examine why the measures to control the disease were not working – were the cases occurring in farmers or café drinkers, goat-owners or milk-buyers, in villages or isolated houses? In Malta, there was no money for such enquiry and few staff to carry out the routine measures to control the disease.

Ultimately, control was centred on three strategies, a vaccine, clean milk and healthy goats. Zammit and others tried to make an effective vaccine for humans, but were unsuccessful. Even if they had produced one, it would have been very difficult to protect a quarter of a million Maltese, because it can be difficult to reach even a small group, let alone an entire population. (For example, thousands of Maltese schoolchildren received the polio vaccine in 1957 and 1958 but it was difficult to reach all children because it was hard to trace young children and babies unless they were registered and seen regularly by doctors or other health workers.) As a brucellosis vaccine for humans was not available the authorities targeted the usual suspects – unhygienic living conditions, unhygienic milking, the use of unboiled milk, sale of infected milk and the presence of infected goats. Sadly, there were too few staff to enforce the regulations and the herdsmen were uncooperative. For example, goats were prohibited in the capital, Valletta, and goats' milk that had not been boiled was banned from hotels and coffee shops, but contraband milk was smuggled in. Similarly, when goats were tested in a government centre, those positive for brucellosis were supposed to be slaughtered and compensation paid, but staff often returned the goats to the owner in exchange for half of the compensation.



**Fig. 1**  
**Brucellosis in Malta: incidence and mortality between 1897 and 1936**  
 Annual Report of the Maltese Public Health Department for 1936

After World War II, malaria was eradicated from the island of Cyprus with the extensive use of DDT (dichlorodiphenyltrichloroethane) to kill the mosquitoes, showing that a determined campaign can succeed in ridding an island of a disease. In theory, brucellosis could have been eradicated from Malta, but this did not happen. The testing of goats was hampered by false positives and negatives, although, in time, these problems might have been overcome. The chief difficulty was the negative attitude of many of the Maltese and the owners of the goats. It was not until the 1960s that education, better communications and a higher standard of living meant that a serious effort at control could be made. It is worth bearing in mind, however, that there can be a gap between education and implementation: knowing about hygiene practices does not necessarily mean that these practices will be adhered to, even by health workers (for example, in Palestine, I saw goats chewing on soiled sanitary towels discarded by nursing students, who should have known the risks that this presented).

During the siege of the island in World War II many goats were eaten, but the Governor later ruefully commented that he wished all had been eaten. The use of pasteurised milk on Malta was a success and the ban on goats' milk was lifted for British servicemen in early 1940. However, the success of pasteurisation and other measures on Malta initially had little effect on cases on the neighbouring island of Gozo.

The island has one-tenth of the population of Malta, but as many as one-half of the total annual cases in the Maltese archipelago occurred here. Eventually, a pasteurisation plant was opened on Gozo as well.

During the war, the number of cases fell because goats were killed for food, but after the war, when the breeding of goats was resumed, the number of cases rose, reaching 2,410 in 1946. It then fell rapidly to a few each year from 1965 onwards as testing procedures improved. In 1961 there were 31,000 goats on Malta, owned by 5,400 breeders, of whom about 3,600 owned only one or two. These 'back-yard' breeders used the milk for their families, but often supplied neighbours and friends. From 1956, the Government moved to eradicate brucellosis from sheep and goats, and tuberculosis from cattle. However, control of movement of goats was poor and there were many transfers to Gozo. Even when herds were tested and infected animals were killed, there was no proper disinfection of the farms, so animals were reinfected. Many small herds were not registered or even found and farmers and breeders would not cooperate. Sheep and goats mingled when grazing and infected each other.

Other competing priorities ensured that the regulations were not rigorously enforced in the 1980s and the number of cases rose. A small outbreak in 1988 prompted new regulations and strict enforcement, with tattooing, branding and tagging of goats on 1,500 registered farms. However,

before an inspection, many goat breeders would transport their goats by night to another herd owned by a relative or neighbour (6). This hampered control efforts and eradication was only achieved with the help of vigilantes who would report on these transfers and the phantom herds.

## Cheese

Kennedy had looked at other milk products, namely, ricotta and cheeselets (small cheeses) (both of which could be fresh, dry or pickled). These products should have been safe: ricotta was made from milk boiled with sea water and cheeselets were made with sheep's milk and sheep were only very rarely infected. However, some were made with the addition of goats' milk, and this milk occasionally came from goats that were infected. The *Brucella* could survive for three months even in the dry cheeselets. The Milk Marketing Undertaking (the government department responsible for pasteurising and packaging milk) produced cheeselets with pasteurised milk, but the homemade products sold on the street were sometimes infected. Gozo produced more than Malta and some were exported to Malta.

The Compulsory Pasteurisation Regulations allowed the use of unpasteurised goats' milk for these cheeselets. In 1969, of 57 cases, 30 were the result of consuming fresh cheeselets and only 11 were the result of direct contact with infected goats. By 1980 cheeselets had become very popular for weddings and other large events. Some cheeselets continued to be made with the addition of unpasteurised goats' milk, but, increasingly, they were made solely from sheep's milk, pasteurised goats' milk or milk from goats from disease-free herds, so the number of cheeselet-related cases fell to about five or so each year. However, in 1995 there was an epidemic with more than 232 identified cases (plus two cases in England in people who had been infected on a visit to Malta), of which 100 were treated in hospital. An intensive sampling and testing programme included every street vendor, grocer and supermarket. Raw milk from all registered herds and some unregistered herds was tested. Positive results were found from two unregistered herds, all goats of which were killed. Eventually, all 3,416 herds on Malta and 1,449 on Gozo were screened and positive animals were killed (68 cows, 116 goats and 43 sheep). About a dozen illegal herds were discovered and their owners prosecuted (6).

The epidemic finally ended in 1996 after new regulations were made and a massive education campaign reached the whole population. The epidemic probably stemmed from three unregistered (phantom) herds which had been concealed. Gradually, the goats, which may have numbered as many as 50,000, were replaced by cattle. I have never

seen a cow on Malta, as there is no grazing and the cows are kept in stalls. Fed with concentrated foods, the cows become constipated: Prof. A. Scicluna-Spiteri, Director of Agriculture, proposed a porridge of newspapers (delivering digested news with the morning milk), but the idea was not pursued.

The 1988 regulations did not apply to goats kept only for family use, but when the new regulations were introduced Prof. Scicluna-Spiteri, who had a degree in agriculture, ordered that all animals, including those privately owned, be registered and tested. Although the Chief Government Medical Officer is a medical doctor, administrators without an agriculture or science degree oversee the equally important agriculture post. Workers in health, food and agriculture (including animal husbandry) must work together in matters of health.

## Success

In 2005, one hundred years after Zammit's experiments, Malta was finally declared free of brucellosis. There had been partial successes over the previous years, but partial successes are in the long run a failure. The cost to Malta in those one hundred years of brucellosis far exceeded the amount that would have been needed to eradicate it. But as well as money, to eradicate a disease there must be an educated public, with the enthusiasm and commitment to join the eradication efforts. The eradication of poliomyelitis in India drew on a million people willing to administer vaccine to 120 million children five years old and under in one day: Rotarians, teachers, health workers and volunteers. From about 200,000 cases of polio each year, last year there was none.

Scicluna-Spiteri grew thousands of tree seedlings for schoolchildren to plant over the island, but in the schools there seems to have been no sustained education about brucellosis. There was no campaign to educate the public through the university, the newspapers or the Church.

## Other Mediterranean countries

The Maltese goat was much sought after as it was prolific, resistant to heat and dry conditions and gave high milk yields. Zammit said that 'it was the hardiest, the tamest, the best milking goat in existence' and a yield of five-and-a-half litres of milk a day was not uncommon. Maltese herdsmen and their families were based in many Mediterranean countries, living closely with their goats and children in squalid and unhygienic conditions (15).

## Gibraltar

Major Horrocks returned to the Rock of Gibraltar where he made a retrospective survey of brucellosis. More than 400 cases had occurred in 1884 when there were 1,800 goats which grazed on the upper slopes. With the building of the Italian navy, the Rock was more heavily fortified, with large areas kept for water conservation: the area for the goats was much reduced. In 1905, Horrocks found only 254 goats still there. Imported Spanish goats which had bred with the Maltese goats had evidence of infection, while others had been sold in Spain where goats had been exported to towns along the North African coast.

## North African countries

An outbreak of brucellosis in Oran (Algeria) in 1906–1907 was traced to contact with a harness contaminated with urine from an infected mule. Laboratory experiments and frequent infections showed that simple contact could result in infection. In Algiers, Maltese tended the goats which were of Maltese, Spanish and mixed origins and a few were positive. A committee recommended that only Maltese goats free from infection should be imported to Algiers and Tunis. Later, a decree prohibited the exportation from (or transit through) Malta of goats or their meat or offal. Spanish goats from Western Algeria and Morocco brought the disease to Oran again (see above). The Institut Pasteur in Tunis produced a vaccine to immunise young goats. Brucellosis was confirmed in Tripoli in 1910: one case was a Maltese who drank only goats' milk. Brucellosis was ultimately eradicated in Port Said after World War I by culling all infected goats. ■

## Conclusion

History may repeat as farce, but diseases recur with historical memories. The military may give orders, governments may pass laws, but authority may be subverted by intention or laziness, and lack of effective education. As major sources of transmission are removed, minor ones may also vanish only to recur, sometimes in unexpected circumstances. The early work on brucellosis was done by junior officers and it was the three juniors of the MFC, Shaw, Kennedy and Zammit, who made lasting contributions. The three seniors, Johnstone, Bruce and Horrocks, contributed little – indeed Bruce and Horrocks tried to stop Zammit's research on the goats. Horrocks returned to Gibraltar in 1905 and was replaced by a posse of RAMC majors and a Lt. Colonel (5). Zammit's largely unsung discovery that apparently healthy goats could suffer long-term infections and be carriers of the disease was 'one of the greatest advances ever made in the study of epidemiology' (7), yet it eventually fell into contemporary obscurity. Indeed, remaining accurately aware of our history is crucial to correctly understanding our past, engaging with our present, and planning our potential futures; as we continue too often to observe, some of the vicissitudes of late 19th and early 20th Century brucellosis diagnosis, epidemiology and management play out over and over again.

## L'histoire de la brucellose et ses enseignements

H.V. Wyatt

### Résumé

La maladie que nous connaissons aujourd'hui sous le nom de brucellose a été découverte pour la première fois dans les années 1850 à Malte. Elle a attiré l'attention des médecins de l'armée britannique qui se trouvaient en poste sur l'île après la guerre de Crimée. S'il fut facile d'éliminer la maladie dans les troupes britanniques, il s'est avéré beaucoup plus difficile d'atteindre les citoyens maltais. Au cours des décennies suivantes, de plus en plus de Maltais ont contracté l'infection, mais les mesures de lutte introduites demeuraient timides et n'ont pas toujours été appliquées. Les travaux du Docteur Themistocles Zammit ont

montré que les chèvres infectées transmettaient la brucellose, de sorte que l'interdiction de consommer leur lait pouvait s'avérer une mesure efficace. La pasteurisation n'a été introduite à Malte qu'à partir des années 1930 avec le développement de containers stériles de petite taille et bon marché. L'infection se transmet également par voie sexuelle, ou encore par inhalation d'aérosols en cas de forte affluence dans des espaces mal aérés et chauds. La réussite des opérations de contrôle passe par une gestion intelligente et rigoureuse des animaux et par l'élimination des animaux infectés, ce qui ne peut réussir sans le soutien de populations informées et conscientes du problème. À Malte, l'absence de contrôle sanitaire des troupeaux errants et familiaux a entraîné une épidémie qui s'est propagée via le commerce de petits fromages contaminés. En 2005, près d'un siècle après la découverte de Zammit, Malte a finalement réussi à éradiquer la brucellose.

#### **Mots-clés**

Brucellose – Commission de la fièvre méditerranéenne – Corps médical de l'armée royale – Inhalation – Lait de chèvre – Malte – Pasteurisation – Transmission par voie sexuelle.



## **Enseñanzas de la historia de la brucelosis**

H.V. Wyatt

#### **Resumen**

La enfermedad que ahora conocemos como brucelosis fue descubierta en el decenio de 1850 en Malta, cuando llamó la atención de oficiales médicos británicos que servían en la isla tras la Guerra de Crimea. Resultó fácil eliminarla en los soldados británicos, pero muy difícil, en cambio, llegar a los ciudadanos malteses. Durante décadas hubo cada vez más malteses infectados, pues las medidas de lucha instauradas eran tímidas y a menudo ni siquiera llegaban a aplicarse. Los trabajos del Dr. Themistocles Zammit demostraron que las cabras infectadas transmitían la brucelosis y que prohibir la utilización de su leche resultaría una medida eficaz. La pasteurización no fue introducida en la isla hasta el decenio de 1930, cuando empezó a ser posible fabricar envases baratos, pequeños y estériles. La transmisión también podía producirse por contacto sexual o por inhalación (en espacios abarrotados de gente, poco ventilados y calurosos). Para luchar con éxito contra la enfermedad se requieren un control prudente y estricto de los animales y la eliminación de los ejemplares infectados, pero todo ello sirve de poco sin una población instruida y dispuesta a colaborar. En Malta, la falta de control de los rebaños clandestinos y los de pequeñas dimensiones destinados al consumo familiar desembocó en una epidemia causada por la venta de quesitos. En 2005, casi un siglo después del descubrimiento de Zammit, Malta quedó por fin libre de brucelosis.

#### **Palabras clave**

Brucelosis – Comisión de la fiebre mediterránea – Cuerpo médico del ejército británico – Inhalación – Leche de cabra – Malta – Pasteurización – Transmisión sexual.



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