MOSQUITOES, QUININE AND THE SOCIALISM OF ITALIAN WOMEN 1900–1914

Malaria qualifies as a major issue of modern Italian history because of the burden of death, suffering and economic cost that it imposed. But it is fruitful to examine its history from a more hopeful, if largely neglected, vantage point. Paradoxically, malaria — or rather the great campaign to eradicate it with quinine — played a substantial political role. It promoted the rise of the Italian labour movement, the formation of a socialist awareness among farmworkers and the establishment of a collective consciousness among women.

In 1900 the Italian parliament declared war on malaria. After a series of vicissitudes, this project achieved final victory in 1962 when the last indigenous cases were reported.[1] Italy thus provided the classic example of the purposeful eradication of malaria. The argument here is that the early phase of this campaign down to the First World War played a profoundly subversive role. The campaign served as a catalyst to mass movements by farmworkers, especially women. Three geographical areas were most affected: the rice belt of Novara and Pavia provinces in the North, the Roman Campagna in the Centre, and the province of Foggia in the South.

Inevitably, this argument involves the intersection of malaria with two further disasters that befell millions. One was the misfortune of being born a farm labourer in a society where serious commentators debated who suffered more — Italian *braccianti* (farmworkers) in the latter half of the nineteenth century or American slaves in the first.[2] The other disaster was the burden of being not only a field hand but also a woman in a nation that Anna Kuliscioff, the most prominent feminist of the period,

[1] World Health Organization, Regional Office for Europe, *Prevention of the Reintroduction of Malaria in the Countries of the Western Mediterranean: Report on a WHO Meeting, Erice (Italy), 23–27 October 1979* (Geneva, 1979), 5.

[2] On this point debate continues. See Raimondo Luraghi, 'Wage Labor in the "Rice Belt" of Northern Italy and Slave Labor in the American South — A First Approach', *Southern Studies*, xvi (1977), 109–27.

described as second only to Turkey and Spain in Europe for its absence of attention to women's emancipation. Italy, she wrote in a famous phrase, was the 'monopoly of men'.[3]

Here it is useful to bring together three distinguishing features of the Giolittian era (1900–14), Italy's *belle époque*. First is malaria, which remained in 1900 the leading public health problem although the disease had long disappeared from nearly all the rest of western Europe. Partly for this very reason, Italy became the world centre of malariology. Italian scientists such as Angelo Celli, Camillo Golgi, Giovanni Battista Grassi and Ettore Marchiafava played a preponderant role in unravelling the mechanisms of the disease and its transmission. Second is the emergence of Italian socialism as a mass movement primarily in the countryside. And third is the substantial influence of women in shaping rural socialism itself. But the starting point is malaria.

Italians initially became aware of the full impact of malaria in the 1880s. In 1882 the first map of malarial Italy appeared, and in 1887 the first official health statistics. What they revealed was that, although the problem was most acute in the South and in Lazio, the whole peninsula was affected. Only four of Italy's sixty-nine provinces were fever-free. Furthermore, every year 2,000,000 people were infected or reinfected, and 20,000 to 100,000 died.[4] In the most afflicted zones virtually everyone was malarious, often from birth, since malaria can be transmitted from mother to foetus. There life expectancy was severely foreshortened; and malaria, which — like AIDS — destroys the immune system, was the indirect cause of most deaths from disease. This terrible parasitic infection predisposed sufferers to the secondary infections that were the chief killers of the Italian countryside — the respiratory diseases of pneumonia, bronchitis and influenza among adults, and gastrointestinal infections among infants and small children.

The heaviest burden of all, however, was chronic malarial fever, which debilitated millions. Classic stigmata of endemic malaria are anaemia, jaundice, painful enlargement of the spleen,

[3] Anna Kuliscioff, *Il Monopolio dell'uomo* (Palermo, 1979). For the placing of Italy behind only Turkey and Spain, see p. 10. A popular article detailing the long delay in the establishment of feminism in Italy is 'La Questione femminista in Italia', *Minerva*, xvi (July–Dec. 1898), 79–81.

[4] Giovanni Battista Grassi, the foremost Italian malariologist, argued that a more accurate figure for annual deaths from malaria at that time would be 100,000: *Difesa contro la malaria nelle zone risicole* (Milan, 1905), 5.

underdeveloped musculature and irreversible neurological damage leading ultimately to cachexia or total apathy. Moreover, as the Nobel laureate Ronald Ross reminds us, malaria and economic development are mutually exclusive. 'Very malarious places', he wrote, 'cannot be prosperous. . . . For the state as for the individual the first postulate of prosperity is health'.[5]

The medical officer of health for the province of Girgenti provided a cogent assessment. 'The problem of malaria', he wrote in 1908,

> is certainly immense . . . and complicated. The enormous prevalence of the disease has the most serious social consequences because the infection — tenacious and lasting — undermines the body. Malaria causes physical decline . . . it prevents growth and alters the very structure of the population. . . . Fever destroys the capacity to work, annihilates energy and renders a people sluggish and indifferent. Inevitably, therefore, malaria stunts productivity, wealth and well-being; it shackles the development of industry and agriculture; and it casts a pall over the whole society. The misery arising from this malady produces ignorance, a low standard of culture and morality and ineradicable illiteracy.[6]

I

RICE FIELDS

Of all infectious diseases, malaria is the most sensitive to the relationship of human beings to their environment. It requires warmth and stagnant water at low altitude where anopheline mosquitoes — the vectors of the disease — can breed. It also presupposes an abundant supply of humans living and working in close proximity, because mosquitoes are weak fliers that travel no more than a few miles from their birthplace. The danger rises exponentially if people perform outdoor labour in the summer, especially at dawn and dusk, when mosquitoes are most active. The rate of transmission increases still more if the victims sleep in crowded quarters, if an impoverished diet compromises their resistance, and if inadequate clothing exposes their bodies to biting insects.

Certain agrarian institutions were notorious for promoting these optimal conditions for fever. In northern Italy the rice fields or *risaie* of the Po valley generated the greatest obloquy. Italy

[5] Ronald Ross, *The Prevention of Malaria* (London, 1910), pp. vii–viii.

[6] Archivio Centrale dello Stato, Ministero dell'Interno, Direzione Generale della Sanità (hereafter ACS, MI, DGS) (1882–1915), b. 115, Prefetto di Girgenti, 'Relazione sulla campagna antimalarica'.

TABLE 1

RICE PRODUCTION IN ITALY BY REGION, 1901 (*hectolitres*)*

Piedmont	2,200,000
Lombardy	3,220,000
Veneto	755,000
Emilia	584,000
Tuscany	8,000
Sicily	32,000
Mainland South	600
Total	6,799,600

* Source: Oreste Bordiga, 'La Produzione ed il commercio del riso', *Atti del 2° Congresso Risicolo Internazionale: Mortara, 1–3 ottobre 1903* (Mortara-Vigevano, 1904), 50.

was the major rice grower of Europe. Production was concentrated in Piedmont and Lombardy, although there was also significant cultivation in the Veneto and Emilia-Romagna. In 1901 Italian production, expressed in hectolitres, was regionally distributed as shown in Table 1.[7]

This crop inspired numerous regulations, official inquiries and an abolitionist literature advocating a ban on its cultivation. Medical observers concluded that *risaie* played a prominent role in the aetiology of malaria. The physician Pietro Canalis is typical. Commissioned to investigate the health of rice workers, Canalis noted in 1905 that 'There is no need to demonstrate that malaria is the principal cause of ill health in rice production because the experience of centuries has settled the issue'.[8] Giovanni Giolitti, the prime minister, believed that the link between the grain and fever was incontrovertible. Rice production, he declared, 'is first in line among the agricultural occupations that demand the intervention of the law'.[9] Further, in the heart of the rice belt, the city council of Vercelli admitted in 1903 that: 'To deny the

[7] Arranged in rank order, the leading provinces for rice production in Italy at the turn of the century were: Pavia, Novara, Milan, Verona, Mantua, Bologna, Rovigo, Reggio Emilia and Ravenna. ACS, MI, DGS (1882–1915), b. 748, fasc. Legge sulla risicoltura, 'La Coltura del riso e le diverse operazioni agricole', 14–15. On the history of rice production in Italy, see Luigi Faccini, 'Lavoratori della risaia fra '700 e '800: Condizioni di vita, alimentazione, malattie', *Studi storici*, xiv/3 (1974), 545–88.

[8] ACS, MI, DGS (1882–1915), b. 747, 'Relazione del prof. Canalis: Risaie', 1.

[9] *Ibid.*, b. 747, fasc. Risicoltura: Atti parlamentari, 'Disegno di legge presentato dal presidente del consiglio, ministro dell'interno (Giolitti): Sulla risicoltura'. Atti parlamentari, Camera dei deputati, sess. 1904–1907, documenti, n. 651, seduta del 21 febbraio 1907, p. 1. Although his own view of the effect of rice production on health was less critical than the prevailing opinion, Camillo Golgi carefully considered the dominant conviction: *Le Condizioni fisiche dei contadini nelle zone risicole* (Milan, 1907).

existence of malaria in this district is to deny the light of day. The two words *risaia* and *malaria* are so closely related that they may be considered synonymous'.[10]

Attempts to protect those who worked in, or lived near, rice fields began with the Cantelli Law of 1866.[11] The Cantelli regulations embodied the contemporary theory that fever was the result of poisonous effluvia or miasmas that emanated from wetlands and corrupted the air. Susceptible bodies then absorbed the poison either through the lungs and pores of the skin or through the stomach after ingesting contaminated food and drink. This law protected the population in three ways. First, it prohibited field work at dawn, when informed opinion held that dew — regarded as a concentrated miasmatic residue — constituted a grave danger to anyone working out of doors. Secondly, it prescribed minimum distances between rice fields and human habitations. Finally, it required that all work cease before dusk, when sudden chills would halt perspiration and thereby enable the miasmatic poison to penetrate the pores.[12] The protective framework of the 1866 law was supplemented by provincial regulations and by occasional local bans, such as the prohibition decreed by the prefect of Parma in 1893.[13]

Anxiety about the spread of malaria by rice cultivation crested again at the turn of the century. Then the mosquito theory of transmission, established by Ronald Ross in India and Battista

[10] Città di Vercelli, *Relazione del consiglio comunale all'on. consiglio provinciale di Novara relativamente al regolamento provinciale sulla risicoltura* (Vercelli, 1903), 4. An official history of the relationship between rice cultivation and malaria is Ministero dell'Interno, Direzione Generale della Sanità Pubblica and Ministero dell'Economia Nazionale, Direzione Generale dell'Agricoltura, *La Risicoltura e la malaria nelle zone risicole d'Italia* (Rome, 1925).

[11] The provisions of the Cantelli Law and the subsequent legislation regulating rice cultivation are outlined in Giovanni Lorenzoni, *I Lavoratori delle risaie* (Milan, 1904), 137–66.

[12] Influential statements of miasmatic doctrine with regard to malaria published in the period between unification and the turn of the century are: Pietro Balestra, *L'Hygiène dans la ville de Rome et dans la Campagne Romaine* (Rome, 1876); A. Fedrighini, *La Malaria e cautele per evitarne le febbri: Suggerimenti agli impiegati delle ferrovie meridionali* (Ancona, 1875); Francesco Ladelci, *Intorno alle febbri di periodo* (Rome, 1880); Antonio Selmi, *Il Miasma palustre: Lezioni di chimica igienica* (Padua, 1870); and Corrado Tommasi-Crudeli, *The Climate of Rome and the Roman Malaria*, trans. Charles Cramond Dick (London, 1892).

[13] For the events leading to the ban at Parma, see Luigi Pagliani and C. Guerci, *Relazione intorno alla coltivazione delle risaie nell'Agro Parmense* (Rome, 1895). The texts of the provincial regulations completing the Cantelli Law in the major rice-producing provinces can be found in ACS, MI, DGS (1882–1915), b. 750, fasc. Risicoltura: Affari generali (anno 1895).

Grassi in Italy, displaced miasmatic doctrine and required that existing regulations be revised. Public debate centred on the implications of the new doctrines for the health of rice workers and on protective measures short of banning cultivation. The reluctance to contemplate abolition reflected both economics and a concern for public order. By 1900 rice had become the most lucrative cereal grown in Italy, and there was deep concern not to cripple an industry that yielded both high profits and mass employment.

Pressure for change also arose from a new direction. The rice fields were the heartland of the socialist movement then emerging in the Po valley. At the initiative of the socialist lawyer Modesto Cugnolio, the trade unions attempted to secure strict enforcement of the 1866 law and the related provincial regulations. Cugnolio's strategy was to use a broad construction of the existing statutes as a means not only to defend health but also to achieve the eight-hour day and significant wage increases. Beginning in 1892 and gathering momentum from 1900, when Giolitti granted the right to strike, work stoppages and demonstrations became the essential weapons to overcome the resistance of employers.[14]

Two causes for alarm about the insalubrity of *risaie* were immediately apparent. One factor was environmental. Fields flooded in the summer beneath two feet of still water were ideal breeding grounds for larvae. As Grassi noted, a rice field is 'the most favourable environment imaginable for the reproduction of anopheles mosquitoes'.[15] Among the rice-producing provinces, however, there were differences based on the relative capitalization of agriculture. A clear illustration was the high prevalence of fever in undercapitalized Novara, compared with more intensively cultivated Vercelli. At Novara at the turn of the century there were 3.5 reported cases of fever per hundred inhabitants, but only 1 per hundred at Vercelli. The reason was that the organized landlords of Vercelli had established consortia. Thus

[14] An interesting recent history of the politics of the rice fields in Italy is Elda Gentili Zappi, *If Eight Hours Seem Too Few: Mobilization of Women Workers in the Italian Rice Fields* (Albany, 1991). Older accounts are Luigi Preti, *Le Lotte agrarie nella valle padana* (Turin, 1955), esp. 273–91; and Sergio Soave, 'Socialismo e socialisti nelle campagne dal '90 alla grande guerra', in Aldo Agosti and Gian Mario Bravo, *Storia del movimento operaio del socialismo e delle lotte sociali in Piemonte* (Bari, 1979), esp. 169–205.

[15] G. B. Grassi, 'Le Risaie e la malaria', *Atti del 2° Congresso Risicolo Internazionale: Mortara, 1–3 ottobre 1903* (Mortara-Vigevano, 1904), 228–9.

they collectively irrigated their fields with such copious water that it flowed in a constant current, creating a difficult habitat for mosquito larvae. In Novara irrigation was instead the private concern of individuals, who could not afford the profuse supplies and luxuriant run-offs of their neighbours. They therefore dammed their water up in stagnant basins where larvae thrived.[16]

A second factor linking rice and fever was occupational. The peak of the agricultural cycle began in late May and lasted until mid July. During this period rice fields generated an insatiable demand for labour as a race began to remove the weeds before they destroyed the crop. Each field needed two or three weedings. They were separated by intervals of fifteen to twenty days and were carried out by gangs of workers stretched out in long lines in the water. Weeding, therefore, set in motion tens of thousands of nomadic workers. The provinces of Novara and Pavia, for instance, experienced an annual influx of over 50,000 weeders.[17] These were peasants with no immunity recruited by contractors from distant Apennine villages. They began to toil in the open air precisely at the onset of the malarial season. Furthermore, under the intense press of time, the working day itself extended from sunrise to sunset, interrupted only by pauses for breakfast and lunch. Thus the working day encompassed both dawn and dusk, when anophelines are most voracious.

Weeders were normally women under twenty-one and children. Together they made up between 70 and 80 per cent of the workforce in the three famous rice provinces of Novara, Pavia and Milan.[18] For instance, Table 2 shows the age and sex distribution of migrant weeders in the district of Mortara in 1904.

The reasons for the growers' preference for young women were economic, physical and disciplinary. Economically, a distinguishing feature of rice production was its intense demand for labour. The Ministry of the Interior estimated in 1905 that the

[16] ACS, MI, DGS (1882–1915), b. 750, fasc. Documenti vari. Alessandro Prati, medico provinciale di Novara, 'Relazione al Consiglio provinciale di Sanità nella seduta 16 gennaio 1906', *Bollettino di atti ufficiali amministrativi*, x/3 (1906), 18–19. On the importance of flowing water, see also ACS, MI, DGS (1882–1915), b. 753, fasc. Mantova: Regolamenti risicoltura. Medico Provinciale di Mantova, 'Relazione all'Illmo. Sig. prefetto di Mantova', 22 June 1909.

[17] ACS, MI, DGS (1882–1915), b. 118 bis, Prefetto di Pavia, 'Relazione sulla campagna antimalarica attuata col chinino di Stato nelle squadre fisse dei mondarisi dell'agro pavese', 30 Aug. 1904; and b. 118, Medico Provinciale di Novara, 'Relazione sull'applicazione delle leggi contro la malaria durante il 1906'.

[18] ACS, MI, DGS (1882–1915), b. 747, p. 8.

TABLE 2

AGE AND SEX OF MIGRANT WEEDERS, MORTARA, 1904*

	Age			Total
	< 13 years	13–21 years	> 21 years	
Male	66	2,985	1,639	4,690
Female	80	7,084	3,485	10,649

* Source: ACS, MI, DGS (1882–1915), b. 118 bis, fasc. Pavia: Applicazione della legge sulla malaria. Prefetto di Pavia, 'Relazione sulla campagna antimalarica attuata col chinino di Stato nelle squadre fisse dei mondarisi dell'agro pavese', 30 Aug. 1904, pp. 13–14.

average cost of labour per hectare of rice was 280 lire — double that of any other grain.[19] Furthermore, the single operation of weeding contributed disproportionately to the expense, ranging from 96 to 168 lire per hectare.[20] Consequently, growers sought weeders who were cheap, and women earned half the pay of adult males. In Novara province, for example, daily wages were 3.7 lire for men and 2 lire for women or children.[21] Financial constraints were especially compelling after 1880, when the price of rice declined sharply. The steamship, the Suez Canal and the railway created a global market, exposing Italian producers to stern international competition.[22]

Besides economy, the physical task of weeding favoured the body of the female or the child. Performed with the back bent double throughout a twelve-hour day, weeding required elasticity of the spine, sufficient flexibility of limb to maintain the posture, and short stature. Furthermore, the operation presented no advantage to muscular strength. These qualities suggested the hiring of women and children.[23]

[19] ACS, MI, DGS (1882–1915), b. 748, fasc. Legge sulla risicoltura, 'La Coltura del riso e le diverse operazioni agricole', 14.

[20] *Ibid.*, 16.

[21] *Ibid.*, b. 747, fasc. Relazione della Commissione per le risaie nominata con Decreto 28 agosto 1906, sottofasc. Commissione per le risaie: Verbali delle sedute, no. 1, p. 5.

[22] Associazione fra gli Agricoltori del Vercellese, *Sulle condizioni dell'agricoltura e degli agricoltori* (Vercelli, 1901), 10–11. The average price of rice, in Italian lire per kilo, varied as follows between 1873 and 1900:

1873–4	38.5	1883–4	32.5	1893–4	28.0
1875–6	34.5	1885–6	29.0	1895–6	30.0
1877–8	38.0	1887–8	32.5	1897–8	34.0
1879–80	37.0	1889–90	32.0	1899–1900	30.5
1881–2	31.0	1891–2	33.5		

[23] ACS, MI, DGS (1882–1915), b. 120, fasc. Pavia: Applicazione della legge sulla malaria. Prefetto di Pavia, 'Relazione sulla campagna antimalarica attuata col chinino di Stato nelle squadre fisse dei mondarisi dell'agro pavese', 30 Aug. 1904, pp. 15–16.

Finally, contractors preferred migrant females, whom they deemed more amenable to labour discipline, to local adult males. The youth and sex of the migrants, their ignorance of conditions prevailing in the labour markets to which they were imported, their dependence on employers for meals, shelter and return transportation to their homes, and the payment of wages only at the end of the season — all these factors strengthened the hand of the overseers known as 'corporals' who recruited and drove the work-gangs. Experience demonstrated that locals, who could go home if their demands were not met, were more likely to strike at critical moments when the crop was at risk.[24]

Working from dawn to dusk in water up to their knees, *mondine* (weeders) endured a variety of additional circumstances conducive to disease. Investigators probing the health of weeders noted their inadequate diet. This consisted of 500 grams of bread and two rations of either polenta or soup that they received as partial payment in kind for their labours. Other causes for concern were the lack of safe drinking water, low wages, overwork and the absence of health care or basic sanitation. The rapporteur for the protective legislation of 1907 emphasized that brutal exploitation of the weeders by their recruiters seriously compromised their health. In his words:

> It is an act of sovereign benevolence to clip the claws of the recruiters. They are nearly always rapacious speculators who engage in the most wicked exploitation, particularly at the expense of highlanders from the Apennines. There they practise a genuine white slave traffic in women who accept terms dictated by poverty and ignorance. These recruits are then driven to endure intolerable work rates and inhuman hours — only to be cheated . . . of a considerable portion of their hard-earned wages.[25]

From the specific standpoint of fever, the most dangerous condition experienced by *mondine* was their accommodation at night. Perilously substandard workers' dormitories were the rule. Landlords constructed no humanely salubrious quarters for a transient workforce whose long-term welfare was of no concern. Instead, the weeders sheltered at night in haylofts, in stables or beneath the open porticoes of the central farm buildings. There

[24] *Ibid.*, 18.

[25] *Atti parlamentari, Senato del Regno, Legislatura XXII, 1ª sessione 1904–1907, Documenti*, n. 572-A, 'Relazione dell'Ufficio Centrale sul disegno di legge presentato dal Presidente del Consiglio, Ministro dell'Interno sulla risicoltura', tornata del 27 maggio 1907. The text of this report can be found in ACS, MI, DGS (1882–1915), b. 749, fasc. Regolamenti per l'esecuzione della legge sulla risicoltura.

entire work-gangs slept together on straw matting, with no separation by age, gender or family groupings.[26]

Sydney James, the English malariologist, explained the role of housing in the epidemiology of malaria. Fever, James noted, was not equably distributed within the population. A classic focal disease, it spread in clusters, choosing its victims disproportionately among the poor who slept in dark, crowded and unsanitary dwellings with open windows. The reason is that mosquitoes, including *Anopheles labranchiae* — the principal Italian vector — were drawn by the warmth and plumes of carbon dioxide emanating from such places. Once inside, female anophelines did not content themselves with a single blood meal before taking flight to lay their eggs. Instead, they took up residence for days and feasted repeatedly. In this way numerous bodies crowded together not only attracted mosquitoes, they also posed a direct threat of disease to one another: anophelines inoculated parasites from the blood of one sufferer into the veins of her neighbours. The poorly lit rooms, filthy walls, unprotected windows and open rafters characteristic of northern farm buildings also afforded mosquitoes unlimited access and innumerable crevices where they could shelter, unseen and undisturbed, to digest between one meal and the next. Housing, James concluded, made malaria a social disease, a 'house disease', and a classic disease of poverty.[27] A densely populated, unsanitary and poorly constructed dormitory was the perfect habitat for adult mosquitoes, just as a rice field was an ideal nursery for larvae.

[26] For the 1905 report commissioned by the Ministry of the Interior, see ACS, MI, DGS (1882–1915), b. 748, fasc. Legge sulla risicoltura, 'La Coltura del riso e le diverse operazioni agricole'. The deliberations of the Consiglio Superiore della Sanità can be found *ibid.*, b. 747 bis, fasc. Progetto di legge sulla coltivazione delle risaie. For the final report of its committee of inquiry, see *ibid.*, b. 750: Camillo Golgi, Alfonso Di Vestea and Arnaldo Maggiora, 'Relazione della Commissione nominata dal Consiglio Superiore di Sanità per stabilire d'accordo col Consiglio del Lavoro la durata della giornata di lavoro nella mondatura del riso', 28 Jan. 1904.

Conditions in the rice fields of Pavia province are also well described by the prefect in a report of 1904: *ibid.*, b. 120, fasc. Pavia: Applicazione della legge sulla malaria. Prefetto di Pavia, 'Relazione sulla campagna antimalarica attuata col chinino di Stato nelle squadre fisse dei mondarisi dell'agro pavese', 30 Aug. 1904. The conditions prevailing in the rice fields were also the subject of a series of reports for *Critica sociale*. See Giulio Casalini, 'Leggi sociali in gestazione: La Legge sul lavoro risicolo', *Critica sociale*, xiv (1904), 55–8, 77–80, 127–8, 140–1.

[27] S. P. James, 'The Disappearance of Malaria from England', *Proc. Roy. Soc. Medicine*, xxxiii/1 (1929–30), esp. 77–85. James wrote with regard to *Anopheles maculipennis*, the group to which *Anopheles labranchiae* belongs.

Since most weeders were women of childbearing age, it is important to recall that their children, born and unborn, suffered as well. Malaria is a severe complication during pregnancy, causing high rates of maternal death from anaemia and haemorrhage, as well as disproportionate numbers of miscarriages and of neonatal deaths from premature birth. Of every 1,000 children born to malarious *mondine*, 600 died in the first year of life.[28] Furthermore, the small children who accompanied their mothers on the seasonal trek sickened with alarming frequency. Malaria was thus a fearful scourge of rice workers and their families. Conditions were so harsh that the deputy police commissioner at Vercelli testified that the life of the *mondine* was 'truly sad' — 'so sad that I was moved to pity. Although I did my duty, out of common humanity I felt unable to enforce the full rigour of the law against them'.[29]

The sole protection available to *mondine* was the climate of the North. Cool temperatures precluded the transmission of the most virulent Italian species of malarial parasite — *Plasmodium falciparum*, which is intolerant of cold. In comparison with the rest of the peninsula, therefore, northern malaria was widely prevalent but low in mortality. Furthermore, shorter summers abbreviated the transmission season, lessening the impact of fever. In these respects the workers on the other agrarian institution most closely associated with malaria — the latifundium of central and southern Italy — were less fortunate.

II

LATIFUNDIA

In the warmer, longer summers of Lazio and the South, the contrast was stark. There falciparum malaria with its frequently fatal outcome was the dominant infection. A commonplace among public health authorities was that there were 'two malarial

[28] On the effects of malaria on pregnancy, see ACS, MI, DGS (1882–1915), b. 87, fasc. On. De Renzi: Prov. di Caserta, Enrico De Renzi, 'Relazione sulla campagna antimalarica nella provincia di Caserta (agosto–dicembre 1911)', 10–11.

[29] ACS, MI, DGS (1882–1915), b. 747, fasc. Relazione della Commissione per le risaie nominata con Decreto 28 agosto 1906, sottofasc. Commissione per le risaie: Verbali delle sedute, no. 1, p. 39.

TABLE 3

MORTALITY FROM MALARIA BY REGION, 1887*

Northern Italy	1,507
Central Italy (less Lazio)	696
Southern Italy (plus Lazio)	18,830
Total	21,033

* Source: *Inchiesta parlamentare sulle condizioni dei contadini nelle province meridionali e nella Sicilia*, v, *Basilicata e Calabria* (Rome, 1910), bk 3, p. 357.

Italies'.[30] In 1887, the first year that statistics were collected, deaths from malaria were regionally distributed as shown in Table 3.

Although swamps — natural or man-made like *risaie* — were few outside the North, southern or 'dry' malaria thrived in the valleys of the innumerable rivers and torrents that ran off the Apennines. Deforestation of hills and mountains seriously compromised the hydrology of the peninsula. The original canopy of beech, pine, chestnut and oak had broken the force of heavy spring rains and reduced their volume by providing broad surfaces for evaporation. At the same time roots and undergrowth anchored the soil to the hillsides. Drenched by downpours in the absence of this cover, denuded slopes generated torrents that swept away soil and rocks, silting up river beds downstream and clogging the deltas where waterways flowed into the sea. Fed in this manner by rushes of water and detritus, rivers repeatedly overflowed their banks, inundating the land. In the long drought that marked the southern summer, streams dried up, leaving behind an infinity of puddles that were the delight of anophelines. Malaria also prevailed along the coast, where debris, sand dunes and railway embankments blocked the flow of rivers into the sea, creating stagnant ponds on their inland side.

Telluric factors contributed to disease as well. An impermeable clay topsoil held water on the surface after every rainfall and flood, creating countless opportunities for mosquito larvae. These

[30] See, for example, Antonio Tropeano, 'La Profilassi della malaria con l'uso quotidiano del chinino: Relazione all'Assemblea dell'Ordine dei Sanitari di Catanzaro e Provincia (Dicembre 1906)', *Giornale della malaria*, ii (1908), 276. On malaria in Lazio and the South, see Lauro Rossi, 'Appunti per una storia della malaria nell'Agro Romano nella seconda metà dell'Ottocento', and Paola Corti, 'Per una storia sociale del Mezzogiorno nell'età liberale: La Malaria', in M. Luisa Berti and Ada Gigli Marchetti, *Salute e classi lavoratrici in Italia dall'Unità al fascismo* (Milan, 1982), 227–53, 255–89.

niches abounded wherever land was extensively cultivated or left unplanted as fallow or pasture. Then there was a scarcity of covering plants to absorb moisture and hasten evaporation. Furthermore, since mosquitoes do not require great expanses of water, micro-environments created by man compounded the danger. Drainage and irrigation ditches, ponds where water buffalo wallowed, uncovered wells, drinking troughs, excavation ditches, clay pits and mine shafts all presented a plethora of larval habitats.

As in the North, malaria in central and southern Italy was deemed an occupational disease. Under constant indictment were the backward wheat-growing estates known as latifundia that extended over hundreds, even thousands, of hectares. For instance, the whole Roman Campagna — 210,000 hectares in area — was divided in 1885 among only 357 farms.[31] As with rice fields, there was a strong current of abolitionist opinion demanding the elimination of latifundism as a measure of public health. The charges were numerous and heavy.[32] Located in the most fertile terrain — river valleys and coastal plains — these properties held the land in a perpetual state of insalubrity.

Watchwords for backwardness and ruinous agricultural practice, latifundia carried out extensive single-crop wheat farming and pastoral transhumance. Both enterprises left vast tracts unplanted. In addition, the stunted development of animal husbandry ensured that mosquitoes had no cattle but only man on whom to predate. Furthermore, the agricultural season peaked on the wheatfields in June and July when malaria broke out in full force. The calendar for wheat farming dictated that the period from October to March constituted the slack season when estates employed only a skeletal labour force. Conversely, harvesting and threshing in the summer generated a sudden, inextinguishable demand for labour. The impact on health was severe. Like rice planters, single-crop wheat growers met their labour needs by massively deploying migrant workers just as the fever season

[31] Comune di Roma, *Relazione della commissione incaricata dello studio sulla circoscrizione dell'Agro Romano* (Rome, 1885), 23.

[32] Classic studies of the relationship between latifundism and malaria in the Agro Romano are Angelo Celli, *Come vive il campagnolo nell'Agro Romano* (Rome, 1900); and Anna Celli (pseudonym M. L. Heid), *Uomini che non scompaiono* (Florence, 1944). A discussion of the social conditions prevailing under latifundism in Apulia is my work, Frank M. Snowden, *Violence and Great Estates in the South of Italy: Apulia, 1900–1922* (Cambridge, 1986).

commenced. In this case too the migrants were non-immune highlanders. The latifundia of Foggia and Rome exemplified this phenomenon. Foggia experienced an annual summer in-migration of 100,000 labourers from villages high in the Apennines;[33] and the Roman Campagna seasonally tripled its population from 9,000 to 30,000.[34]

Furthermore, *latifondisti* imposed severe medical risks on their workers. Since absenteeism was universal among proprietors, estate management was entrusted to a speculative farmer on a short-term lease variously known as a *massaro*, *gabellotto* or *mercante di campagna*. A temporary figure in the local economy, the leaseholder had no reason for a long-term concern with productivity, labour relations or the fertility of the land. His activity was purely speculative — the agricultural equivalent of strip-mining. He allowed buildings to deteriorate, ignored the maintenance of roads and the hygiene of wells, overworked farm animals, neglected the drainage of water, failed to remove weeds and progressively exhausted the soil. The farmer ploughed the earth, scattered seed and then left the rest to nature. Success or failure depended on the elements. Farming was a game of chance, a throw of the dice.

Working conditions under such a system had negative political and medical consequences. There was no tradition of paternalism, no common stake in the future, no spirit of co-operation. Furthermore, pressed by a high rent, a slack market for wheat and the acute uncertainties of the harvest, the leaseholder engaged in harsh dealings with his labourers. Labour was the one variable in production over which he could exercise control, and his strategy was to reduce its cost to the minimum. If workers fell ill, it was cheaper to replace them than to invest in prevention or care. Housing was a notorious example. The undercapitalized estates often provided no housing at all, requiring harvesters to bivouac in open fields. Alternatively, workers sheltered in filthy stables or in crowded and unpaved huts such as the notorious *capannoni* of the Roman Campagna built of mud, straw and

[33] ACS, MI, DGS (1882–1915), b. 116, fasc. Foggia. Medico Provinciale Albertazzi, 'Relazione sull'applicazione della legge contro la malaria durante l'anno 1906'.

[34] *Ibid.*, b. 122 bis, fasc. Roma: Applicazione della legge sulla malaria. 'Roma', n.d., p. 10; 'Provvedimenti pel servizio sanitario all'Agro Romano', *Atti del consiglio comunale di Roma dell'anno 1900*, i (Rome, 1900), 488.

bamboo cane. On some estates labourers lived as troglodytes in caves dug out of the limestone rock of nearby hills.[35]

With regard to fever, a critical influence was the working day at harvest time. As in the rice fields, so on the latifundia work at the high season filled all daylight hours, exposing *braccianti* to the well-known dangers of dawn and dusk out of doors. Furthermore, studies of southern farming stress other circumstances conducive to disease: low wages, inadequate clothing, unsafe water, poor diet, flogging by mounted overseers, and child labour.[36] On the eve of the First World War, a parliamentary inquiry under Senator Eugenio Faina investigated the conditions of peasants in the South.[37] The terms invoked to portray life on the great estates, both by the investigators and by the workers themselves, were slavery and serfdom. A Sicilian farmworker explained that

> The boss treats us like slaves, and no language is too harsh to use on us. The leaseholders especially, and the overseers, would crush our faces under their boots if they could. They are evil people who don't love the common folk. They use us like beasts of burden, and treat us worse because, if there is no work, they don't need to feed us.[38]

Similarly, in 1881 the municipal councillor F. Pericoli exposed the conditions endured by labourers just a few miles from Rome — conditions that carried important medical corollaries. 'All suppositions', he announced,

> are exceeded by reality. The mind cannot accurately imagine . . . the life they lead. . . . They are transported in . . . foul railway wagons intended for goods and cattle, and they are housed worse than cattle on estates that provide no dormitories. There they lack mattresses, space and a wholesome diet. And if the summer air is lethal, the water . . . is equally impure. Relations between workers and their recruiters are generally similar to those between slaves and their drivers, who enjoyed such an evil reputation in both hemispheres. These relations are deplorable. It is no exaggeration to say that there is no limit to the rapacity of the 'corporals' who hire them. Neither the customs of the place nor the terms of contracts permit any resistance to their exactions . . .

[35] Sidney Sonnino denounced the scandalous housing of day labourers known as *guitti* in the Roman Campagna. See *Atti del parlamento italiano: Camera dei deputati. Sessione del 1882–83, I[a] della XV Legislatura. Discussioni, IV*, 2903–4.

[36] On child labour in the Agro Romano, see Antonio Dionisi, 'La Malaria di Maccarese dal marzo 1899 al febbraio 1900', *Atti della Società per gli Studi della Malaria*, iii (1902), 16–17.

[37] *Inchiesta parlamentare sulle condizioni dei contadini nelle province meridionali e nella Sicilia*, 8 vols. (Rome, 1908–11).

[38] *Inchiesta parlamentare*, vi, *Sicilia: Relazione del delegato tecnico prof. Giovanni Lorenzoni*, 2 bks (Rome, 1910), bk 1, pp. 758–9.

> For those workers who fall ill, conditions are still worse. It is not easy for a physician to intervene; medicines are seldom available; . . . and conveyance to the hospitals of our city is both difficult and dangerous.[39]

Inevitably, the provinces where latifundism prevailed were among the most malarious in the kingdom, including both Foggia and Rome.

An important difference between latifundia in the Centre and South, on the one hand, and *risaie* in the North, on the other, was the gender division of labour. Great wheat-growing estates predominantly employed men, and malaria was therefore principally an affliction of males. In the interior of Sicily, for example, the Faina inquiry found that agricultural work was 'unthinkable for any women except the most impoverished — wives abandoned by their husbands, widows and young girls who have experienced some disaster'.[40] The malariologist Corrado Tommasi-Crudeli described the result with respect to the agro-town of Sezze, overlooking the Pontine Marshes. The men of Sezze, he observed in 1892,

> are decimated by the malaria to such an extent, that it is unusual to find one of their women who has not had three or four husbands. The town of Sezze itself is comparatively healthy, and it is only the male portion of the population who go down to the fields to work.[41]

Rome possessed two hospitals specializing in the treatment of fever patients from the surrounding Campagna: Santo Spirito for men and San Giovanni for women. Their statistics clearly demonstrate the extent of the prevailing gender gap in both farm labour and disease at the close of the nineteenth century. Between 1892 and 1895 the Roman hospitals treated malaria patients in the proportions shown in Table 4.

This pattern of nearly total separation between the sexes, however, began to change with gathering speed in the new century. Mass emigration from the Mezzogiorno to North and South America — one of the defining features of Italy in the Giolittian era — transformed the situation because the exodus was overwhelmingly dominated by single males. Between 1900 and 1913

[39] 'Proposta del signor consigliere Pericoli di nominare una commissione d'inchiesta sulle condizioni dei lavoratori della campagna romana e sulle provvidenze opportune per migliorarle', *Atti del consiglio comunale di Roma dell'anno 1881* (Rome and Florence, 1882), 256–7.

[40] *Inchiesta parlamentare*, vi, bk 1, 17.

[41] Tommasi-Crudeli, *Climate of Rome*, trans. Dick, 131.

TABLE 4

MALARIA PATIENTS HOSPITALIZED IN THE CITY OF ROME 1892–1895*

	Male	Female	Total
1892	4,224	500	4,724
1893	4,810	469	5,279
1894	5,637	664	6,301
1895	6,184	970	7,154
Total	20,855	2,603	23,458

* Source: Reggio Commissariato degli Ospedali Riuniti di Roma, *Statistica sanitaria degli ospedali per gli anni 1892, 1893, 1894 e 1895* (Rome, 1896), table 23, p. xl.

the South lost 3,738,000 emigrants, of whom nearly two-thirds were adult males.[42] The result was an ever-broadening tendency down to the First World War for women and children to replace absent men in the fields.[43] The marked rise in adult male wages that resulted from such a transformed labour market provided employers with a major inducement to turn to women.[44] Finally, the First World War mobilized male peasants en masse to serve in the trenches, bringing a furious climax to the process of employing women in farm labour in regions once marked by a strict demarcation of gender roles. Thus malaria, once the occupational disease of men, became an infection of both sexes. Indeed, since southern women newly recruited to agriculture lacked the immunity already acquired by men, the fevers to which they succumbed were more severe and resistant to treatment. 'If they don't work', remarked one observer, 'they die of hunger. If they do work, malaria poisons them'.[45]

[42] Domenico Demarco, *Per una storia economica dell'emigrazione italiana* (Geneva, 1978), 31; Robert F. Foerster, *The Italian Emigration of Our Times* (1924; New York, 1969), 327–8.

[43] Conducted as the mass exodus reached its peak, the Faina inquiry noted this sea change in the gender division of labour in the Italian countryside: *Inchiesta parlamentare*.

[44] As early as 1903 physicians in the Roman Campagna noted that corporals were turning increasingly to women in an effort to contain wages: Piero Ambrogetti, 'La Campagna antimalarica a Corcolle e Lunghezza nel 2º semestre 1902', *Atti della Società per gli Studi della Malaria*, iv (1903), 334–5.

[45] ACS, MI, DGS (1882–1915), b. 91, fasc. Relazioni: On. Castellino. Prof. Pietro Castellino, 'La Campagna antimalarica nelle Puglie durante l'anno 1906', 39.

III

ERADICATORS, SOCIALISTS AND FEMINISTS

A national strategy to attack the problem of malaria emerged along with a series of scientific breakthroughs. Beginning in the 1890s and continuing for the first half of the new century, malariology became the glory of Italian medical science. Indeed, malariology as a discipline was dominated by the so-called 'Rome School', whose 'Grand Maestros' were Celli, Golgi, Grassi and Marchiafava. In an age of competing scientific nationalisms, they were celebrated as the Italian response to Louis Pasteur and Robert Koch.

Their work made the eradication of malaria a project that appeared both feasible and affordable. Most important among the new discoveries were the deciphering of the life cycle of the plasmodium, the establishment of the mosquito theory of transmission and an understanding of the action of quinine. Quinine, one of the first 'magic bullets' known to medical science, circulates in the blood and destroys plasmodia.[46]

A feature of Italian malariology was the speed with which it transformed these discoveries from the laboratory and the field into clinical applications. Immediately after their work proving the mosquito theory of transmission, Grassi and Celli proclaimed that they had located the weak point — the 'feet of clay' — of the looming Colossus Malaria.[47] Quinine, they argued, was the weapon of choice, though they differed on whether it should be administered prophylactically or therapeutically. For Celli, the prophylactic solution was to induce the entire population of malarial Italy to swallow two tablets of the alkaloid a day throughout the epidemic season from June to November. In this manner new infection could be prevented and the cycle of transmission broken. Grassi aspired instead to the 'radical cure' of patients by 'sterilizing' their blood with quinine administered during the off season

[46] A succinct overview of the state of knowledge regarding malaria in the early Giolittian period, and of the discoveries that had led to it, by two of the major malariologists involved is Ettore Marchiafava and Amico Bignami, *La Infezione malarica* (Rome, 1904).

[47] The essential works in which Grassi explains the steps by which he discovered the mosquito transmission of malaria and then devised experiments to prove it scientifically are *Cenni storici sulle recenti scoperte intorno alla trasmissione della malaria* (Rome, 1900); *Relazione dell'esperimento di preservazione dalla malaria fatto sui ferrovieri nella piana di Capaccio* (Milan, 1901); *Studi di uno zoologo sulla malaria* (Rome, 1901).

TABLE 5

PRODUCTION OF QUININE IN JAVA (*kilograms*)*

1870	876
1890	124,000
1900	5,237,000
1910	8,325,000
1911	9,558,000

* Source: ACS, MI, DGS (1886–1934), b. 57, fasc. Coltivazione dell'albero della china. 'Relazione circa studi e ricerche per una piantagione di Chinchone (Chine) per conto del Governo Italiano', n.d., p. 2.

from December to May. His strategy was to eliminate the reservoir of infection during the winter so that no new cases would develop in the following summer.

With this difference in approach, Celli and Grassi experienced a rush of optimism. They believed that mass quininization offered a quick solution to Italy's foremost medical problem. The nation would not need to drain its swamps, reforest the Apennines, modernize agriculture and transform society. All that was required was to dose a sufficient number of human bloodstreams twice daily for several epidemic seasons. Grassi estimated the cost at several hundred million lire and predicted that success would occur during the reign of the newly crowned sovereign, Victor Emmanuel III.[48]

Fortuitously, the medical discoveries regarding malaria coincided with a revolution in the international supply of quinine. The bark of the cinchona tree had been recognized from the seventeenth century as an antimalarial specific. Limited availability, however, severely restricted use of the bark and its active ingredient, quinine. A native of the Andes, the 'fever tree' resisted all attempts to transplant it until 1852, when the Dutch successfully established plantations in Java. By the end of the century quinine became abundant and affordable. Table 5 shows the growth of production in Java.[49] At the same time the price per kilo fell to 42 lire in 1900, 24 in 1905, and 12 in 1910.[50] For the first time, mass administration of the drug became feasible.

[48] For Grassi's estimate of the time and money required to free Italy from malaria, see G. B. Grassi, *Difesa contro la malaria*, 5–6.

[49] A history of the medicinal uses of quinine is M. L. Duran-Reynals, *The Fever Bark Tree: The Pageant of Quinine* (Garden City, 1946).

[50] ACS, MI, DGS (1886–1934), b. 57, fasc. Coltivazione dell'albero della china. 'Relazione circa studi e ricerche per una piantagione di Chinchone (Chine) per conto del Governo Italiano', n.d., p. 2.

Thus encouraged by science and by a glut of the specific, parliament passed a series of laws between 1900 and 1907. This legislation, drafted by Celli and the deputies associated with the Society for the Study of Malaria, launched a heady experiment — the first of its kind — at eradicating malaria by chemotherapy.[51] In accordance with this plan, the Italian state undertook to purchase quinine on the international market, to package it in tablets and to ship the pills to all designated 'malarial zones' of the peninsula, where they would be provided gratis to the poor. Quinine, previously a privilege of the affluent, was suddenly available to all at risk.

The crusade against malaria involved a close partnership among local authorities, central government and the medical profession. Municipalities financed the operation by collecting a 'quinine tax' levied on landlords and other employers of outdoor labour in malarial zones. *Comuni* (townships) were also charged with establishing facilities to distribute medication to the population — dispensaries (also known as rural health stations) and malaria sanatoria. In addition, schools provided both children and their parents with the essential knowledge necessary for self-protection and treatment. Health officials and teachers educated the rural population in a newly proclaimed 'right to health' against landlords and employers, in their rights under the recent legislation, in the essential mechanisms of malaria as a disease and in the proper use of quinine. They conveyed the message in a whole gamut of forums — classrooms, pamphlets, public lectures, newspaper articles and rural health stations.

Central government co-operated in the deployment of health personnel to staff the institutions of the crusade. From 1906 Rome also appointed eminent physicians from the universities as commissioners to investigate conditions, superintend the implementation of the programme and gather epidemiological information. The commissioners, normally charged with overseeing the antimalarial campaign of a region, included such prominent clinicians as Camillo Golgi, Bartolommeo Gosio, Enrico De Renzi and Giuseppe Cardarelli.

[51] The texts of the laws establishing the antimalarial campaign can be found in *Raccolta ufficiale delle leggi e dei decreti del Regno d'Italia* (Rome, 1900–7). For a brief discussion of the passage of the first legislation, see Angelo Celli, 'Legislazione contro la malaria', *Critica sociale*, xiii (1903), 56–60.

Finally, even the coercive instruments of the state assumed an important role. Prefects and provincial officers of health were instructed to punish non-compliance with the campaign on the part of those whose vested interests were threatened: landlords, pharmacists, taxpayers and municipal councillors. Both of the prime ministers who superintended the programme between 1900 and the First World War — the Liberal Giovanni Giolitti and his conservative rival Sidney Sonnino — were convinced of the urgent need for social reform in order to strengthen the state, to bolster the economy and to counter the appeal of socialism. They were prepared, therefore, to call upon employers to make short-term sacrifices in the long-term interest of political stability. The war on malaria was an essential component of enlightened political self-interest.

Whatever their intentions, the war on malaria embodied a profoundly subversive content. The effects were most pronounced in three districts that served as pilot zones. These districts were also the most malarious in their respective regions: the rice district of the Po valley, the province of Rome and the province of Foggia. In all three areas, the legislation on quinine delivered the radical message that malaria was not an individual misfortune but the result of culpable negligence by employers. This view carried two explosive corollaries: first, that malaria was not simply a disease but an injustice; and second, that workers now had rights to health, to medical care and to compensation. These rights, moreover, were to be enforced collectively at the expense of landlords. State-administered quinine, therefore, entailed a reordering of the moral relationships between the working poor and the powerful. Officials imparted the lessons that landowners were accountable for the use of their property and that labourers were the bearers of rights.

The main obstacle facing the quinine campaign was the difficulty of reaching a nomadic population scattered across remote and inaccessible countryside. Here psychological distance was just as important as physical space. Italian farm labourers were illiterate; they had little history of contact with the medical profession; and they were deeply suspicious of the free capsules suddenly thrust upon them. The idea that Rome was interested in their welfare seemed implausible. Therefore, the countryside teemed with rumours of diabolical plots to destroy the poor with poison.

Like bubonic plague and Asiatic cholera, malaria thus generated its *untori*, agents suspected of mass murder.

To reach the population most at risk, Italian physicians launched what the socialist paper *Avanti!* described as the most extraordinary movement in the history of the profession — an immense and generous programme of 'going to the people'.[52] Inspired by the most ambitious health campaign in Italian history, doctors and medical students went out into the countryside to reach the poor at workplaces, homes and shelters. Their purpose was to educate them in the fundamentals of malaria transmission, to inform them of their rights and to administer quinine. For many doctors, the hope was to transform medicine itself. No longer was the profession confined to individual patients. Medicine instead was to become 'social medicine' — a discipline that was preventive more than curative, ministering to society as a whole by implementing the economic and social reforms essential to health. Medical science, explained a leading antimalarial warrior, must assume the collective task of saving nations and humanity as a whole. The antimalarial campaign was the testing ground for this vision.[53]

To describe the campaign, doctors widely resorted to Christian metaphors. They saw themselves as 'apostles', 'priests', 'pilgrims' and 'disciples', spreading 'the Word' and 'glad tidings'. Their work was a 'mission' whose purpose was the 'redemption', 'resurrection' and 'salvation' of the people. Furthermore, in the 'holy' battle of 'good' and 'evil', the weapons of their 'faith' were 'brotherly love', 'non-violence' and the rural health station they described as a 'sanctuary'.[54] Amidst the Gospel concepts, however, there was also a vivid and revolutionary Old Testament motif. Just as bondage was widespread as a metaphor to describe conditions on the rice fields and the latifundia, so the Mosaic concepts of 'emancipation' and 'abolition' recur repeatedly in the medical literature. Many doctors saw themselves as bearing

[52] 'Medicina sociale e malaria in Italia', *Avanti!*, 29 July 1901.

[53] On social medicine, see *ibid.*, and Tullio Rossi-Doria, 'Nuovi tempi e medici nuovi', *Avanti!*, 6 Dec. 1900.

[54] For an example of such vocabulary employed by a socialist physician, see Rossi-Doria, 'Nuovi tempi'. The prefect of Sassari used similar terms to describe the work of the director of the antimalarial campaign in the province, Alessandro Lustig. ACS, MI, DGS (1882–1915), b. 93, fasc. Lotta contro la malaria: Spese complessive, Letter of prefect of Sassari to On. Ministero dell'Interno, Dir. Gen. Sanità Pubblica, 22 Dec. 1910.

prophetic witness to the sufferings of their people, denouncing the oppression of the powerful and delivering the poor from the tyranny of disease. An unlikely bureaucratic source provided a powerful description of the religious motivation of the physicians combating malaria in Sardinia. The prefect of Sassari commented admiringly on the efforts made by Alessandro Lustig and Achille Sclavo, who directed the antimalarial campaign on the island. 'It is my duty', he informed Rome,

> to draw your attention to the disinterested, humanitarian and intelligent labours of Professors Lustig and Sclavo. They gave up lucrative private practices in order to confront our perilous climate in the fever season. Despite enormous discomfort, they travel tirelessly to health stations everywhere to keep watch over the execution of their programme and to encourage the populace. Their intention is to spread the glad tidings of redemption among people who have been too long abandoned and to give them hope of a better future. . . . In the most desolate places . . . they have opened soup kitchens and libraries, using money from their own pockets.[55]

Despite the biblical terminology and sense of Christian mission that motivated so many doctors, their political orientation was frequently anticlerical, socialist and sometimes revolutionary. Among the foremost leaders of the campaign, Angelo Celli, Tullio Rossi-Doria, Pietro Castellino and Giuseppe Tropeano held views suffused not only with the prophetic tradition but also with the teachings of Marx and Engels. They taught that malaria could be combated only if workers were educated, properly nourished, hygienically housed, guaranteed productive work and organized in defence of their rights.

Such fervent teaching was institutionalized. First, the campaign spawned two national voluntary associations, the Society for the Study of Malaria and the National League against Malaria. These organizations galvanized the medical profession, promoted research and the exchange of information, organized lectures for the general population and distributed pamphlets. At the same time the war on malaria operated through an institution that became its sheet anchor. This was the dispensary or rural health station, which had been first developed as a weapon against malaria in the Roman Campagna. The municipality of Rome set up its first five dispensaries in 1874 at Campomorto, Fiumicino,

[55] ACS, MI, DGS (1882–1915), b. 93, fasc. Lotta contro la malaria: Spese complessive, Letter of prefect of Sassari to On. Ministero dell'Interno, Dir. Gen. Sanità Pubblica, 22 Dec. 1910.

Isola Farnese, Ostia and Torrimpietra. Thereafter it progressively expanded their functions and increased their numbers, to seven in 1876, nineteen in 1884 and twenty-five in 1912.[56] Their mission was to overcome the crippling difficulty that the existing health facilities in Italy were unequal to the challenge of providing care to the rural poor. Attention, available only in towns and cities through the public health doctors (*medici condotti*), was inaccessible to those most in need. Rural dispensaries, by contrast, brought care where its impact was greatest — along routes frequented by migrant labourers, on estates and at strategic locations in the open countryside.[57]

Based on Roman precedent, the health stations of the national antimalarial campaign, numbering 1,200 by the First World War, had as their primary purpose the job of dispensing quinine. This task implied constant contact through individual persuasion, group instruction, house visits and inspection tours of workplaces. Many dispensaries established an ambulance service and isolation rooms. Often, staffed by young doctors newly imbued with the doctrines of malariology and the vision of social medicine, they served to supplant local physicians who were too sceptical of the claims of modern science, too old to endure the physical rigours of a demanding rural practice or too poorly paid to make the effort. Those who directed the service discovered, however, that the most important function performed by the dispensary was to overcome the suspicions of the uneducated. To achieve this goal, the best means was for the dispensary to provide a general clinical service instead of confining its attentions solely to malaria. Rossi-Doria, drawing on his own experience in the Roman Campagna,

[56] 'Provvedimenti pel servizio sanitario all'Agro Romano', *Atti del consiglio comunale di Roma dell'anno 1900*, i (Rome, 1900), 485–6; and 'Istituzione di sei stazioni sanitarie nell'Agro romano e varianti ad un articolo del regolamento', *Atti del consiglio comunale di Roma dell'anno 1912*, ii (Rome, 1912), 906–9.

[57] On the establishment and functions of rural health stations in the Roman Campagna, see 'Proposta di assistenza sanitaria nell'Agro Romano', *Atti del consiglio comunale di Roma degli anni 1872–1873* (Rome, 1873), 710–14; 'Istituzione di nuove stazioni sanitarie nell'Agro Romano', *Atti del consiglio comunale di Roma dell'anno 1878*, i (Rome, 1878), 636–8; 'Servizio sanitario nell'agro romano', *Atti del consiglio comunale di Roma dell'anno 1881*, i (Rome, 1881), 314–33; and 'Progetto di riforma per i servizi di assistenza sanitaria nel suburbio ed Agro Romano', *Atti del consiglio comunale di Roma dell'anno 1907*, i (Rome, 1907), 800–59. On the use of the experience of the municipality of Rome as a model for the national campaign against malaria, see Archivio Storico Capitolino, Archivio Ripartizione VIII 'Igiene', b. 159, fasc. 1 Anno 1922: Campagna antimalarica. Letter of Assessore per l'Igiene to Gabinetto dell'On.le Sindaco, 16 Feb. 1922.

explained more specifically that obstetrical services provided the indispensable instrument for outreach and the establishment of trust. Pregnancy, he advised, was the Trojan horse by means of which medical science could penetrate the peasant family. Women were willing to avail themselves of care related to safe motherhood. A forbearing physician could also test their blood for parasites and arrange follow-up visits to their workplace and home, explaining all the while the danger of mosquitoes and the utility of quinine.[58]

In addition, Rossi-Doria and his colleagues introduced notions of feminism and women's rights. Rossi-Doria was an obstetrician who believed that education and emancipation were the high roads to women's health in general and to the conquest of malaria in particular.[59] Indeed, he included women's emancipation as a main theme in his course on gynaecology at the medical faculty in Rome. In line with the creed of social medicine, Rossi-Doria taught that educating women and awakening them to their rights were the best prophylactics and the most certain antimalarials — as vital as quinine to success.[60]

Education, women's emancipation and workers' rights rapidly became integral to the campaign. Again the Roman Campagna led the way. There the female doctor Anna Celli, and the feminist organization Unione Femminile, established the first 'peasant schools' in 1904.[61] Ignorance and illiteracy, in the view of the Rome School of malariology, played a sinister role in the aetiology of the disease and constituted the chief obstacles to its eradication

[58] On the role of dispensaries (health stations) in the campaign against malaria, see ACS, MI, DGS (1882–1915), b. 88, fasc. On. Rummo: Prov. di Benevento, Prov. di Napoli, sottofasc. Provincia di Benevento. Gaetano Rummo and Prof. Luigi Ferrannini, 'La Campagna antimalarica nella provincia di Benevento durante il 1910: relazione a S.E. il Ministro dell'Interno'. See also *ibid.*, b. 91, fasc. Prof. Gosio. Letter of Bartolommeo Gosio to Min. Int. Dir. Gen. Sanità, 11 Aug. 1904. Gosio wrote: 'Above all I must report the excellent results already achieved by the dispensaries, especially those located in the countryside. This institution is greeted everywhere with real enthusiasm both by doctors and by patients . . . I am ever more convinced that this is the only system that can produce positive, lasting and demonstrable results in malarial areas'. Another brief statement of their role is Alessandro Lustig, 'Questioni del giorno', *Minerva*, xxx (Dec. 1909–Dec.1910), 87–90, 111–13.

[59] See T. Rossi-Doria, 'Femminismo borghese e femminismo socialista', *Avanti!*, 17 Nov. 1900.

[60] On Rossi-Doria's teachings, see 'L'Igiene della donna e il lavoro', *Avanti!*, 23 Feb. 1902.

[61] For a brief history of the peasant schools in the Roman Campagna, see Giovanna Alatri, 'Alessandro Marcucci e i valori educativi e sociali della scuola nella campagna romana', *I Problemi della pedagogia*, xxxix (1993), 31–62 and 215–49.

by quinine. Every dispensary, therefore, should house a school that would provide adult farmworkers and peasants with basic literacy. More importantly, the school should also give them a detailed knowledge of hygiene, of the fundamentals of malaria transmission and of the political and legal rights available to them in pursuit of their health. Designed to reach a remote and nomadic farming population that the state had too long ignored, the new institutions were mobile, following the labourers in their migrations and offering instruction at times when their attendance was possible — on Sundays and in the evenings. In the words of Giovanni Cena, the socialist teacher who directed the project, this was the first occasion when educators adopted the missionary view that schools should go to the students rather than students to the school.[62]

Teachers thus joined physicians in redeeming the malarial countryside. The decision to enlist them in the antimalarial programme was a highly charged political step. Teaching, the largest Italian profession, was the first profession open to women and the only one dominated by them.[63] In this way the war on malaria charged the largest group of women professionals in Italy with awakening the medical and political consciousness of their sex.

The content of instruction in the peasant schools was also highly radical. Their ambition was to promote an intellectual and spiritual awakening. Alessandro Marcucci, who devised the curriculum for use in the Roman Campagna, wrote that the didactic programme of the schools 'envisages an inevitable transformation of rural life, and perhaps new cultural and economic structures, especially in the areas dominated by latifundia. Much, if not everything, must change in the present means of production and of life in the countryside'.[64] For this reason, the schools prepared the way for the new order to emerge, teaching farm labourers, both male and female, the 'Gospel of truth, freedom and social justice'.[65] At the same time teachers dispensed quinine and supervised its use.

[62] Giovanni Cena, 'Per l'alfabeto nell'Agro Romano', *Opere*, ii (Rome, 1968), 306.

[63] In 1901 women composed 68 per cent of the teaching profession, and 70 per cent in 1907. Michela De Giorgio, 'Donne e professioni', in Maria Malatesta (ed.), *Storia d'Italia: Annali 10. I professionisti* (Turin, 1996), 49. In 1914 the figures for teachers in Italy were 18,216 males and 42,107 females. 'La Questione delle miste', *Corriere delle maestre*, 8 Mar. 1914, pp. 153–4.

[64] Alessandro Marcucci, *Il Programma didattico* (Rome, n.d.), 5.

[65] Alessandro Marcucci, 'La Scuola ambulante nell'Agro Romano', *La Cultura popolare* (1913), 252. For a description of the curriculum of the peasant schools, see Marcucci, *Per il contadino del Lazio: La Nostra Patria* (Rome, 1916).

To reach an inaccessible population and overcome its mistrust, the quinine campaigners also appealed to the emerging labour movement. Here was a further subversive initiative. The anti-malarial warriors encouraged trade unionists and socialist party leaders to organize farmworkers and to educate them in the new science. Almost immediately the socialist movement responded to the call. The socialist press and party branches in infected zones made antimalaria a prominent theme of their propaganda. *Avanti!* noted that socialism and quinine advanced step by step together in the Italian countryside.

Federterra, the national federation of farmworkers' unions and peasant leagues, declared malaria the foremost occupational disease of its members. It therefore encouraged member unions to adopt the quinine campaign as an official part of their programme and to include fever prominently among their grievances against landlords. Socialist unions also educated their members in basic malariology, organizing lecture tours by physicians, distributing pamphlets and taking the message of the campaign directly to the workplace. Where distrust was most firmly entrenched, union leaders even organized public therapeutic rituals in the central piazzas of *paesi* (villages). There league officials, sympathetic schoolteachers and socialist municipal councillors gathered to swallow their tablets publicly in order to demonstrate their harmlessness and to encourage emulation. Under the leadership of Argentina Altobelli, Federterra even took a stand in the medical debate between Celli and Grassi, calling for the prophylactic rather than the curative use of the alkaloid. Celli's position was officially endorsed as socialist therapeutics.[66]

A special case was that of the rice fields, which experienced a surge of activity as *mondine* suddenly became national symbols of the oppression of women. Concern about malaria was further sharpened by racial panic about the inevitability of national degeneration if so many women gave birth to a new generation that was unfit for production, reproduction and military service. There was a dark Darwinian fear of a eugenic dystopia. There was also a moral panic about the sexuality of tens of thousands of young females removed for long periods from their watchful guardians — fathers, brothers, husbands and priests. Giovanni Lorenzoni, an expert agronomist, worried deeply about the sexual

[66] 'Dopo il congresso medico di Milano', *Avanti!*, 12 Oct. 1909; 'La Riunione del Consiglio Generale della Federaz. lavoratori della terra', *Avanti!*, 2 Nov. 1909.

morality of the rice fields. There, he wrote, 'anything goes', and the evenings were filled with singing and dancing. He warned of 'sexual licence' and a high rate of illegitimate births.[67]

In this highly charged context, the rice belt was perceived as a place in need of such urgent reform that the national legislation on quinine needed to be reinforced if the physical and moral health of female workers was to be adequately protected. The state therefore conducted a series of inquiries and enacted the law of 1907 protecting *mondine* and their children. The law banned night work in the fields, prohibited all work in the last month of pregnancy, mandated two half-hour breaks in the working day to allow mothers to breastfeed their infants, limited the working day to nine hours and enjoined that the water used to irrigate fields be flowing rather than stagnant. In addition, employers were required to equip all workers' quarters with metal screening, to provide gender segregation, to whitewash interior walls, and to face the external walls with impermeable materials that would prevent access by mosquitoes. Finally, in the event of disputes, the legislation established mediation committees chosen by election, and the regulations stipulated that female workers be both enfranchised and made eligible for office.[68]

Thus in the rice belt the social question, the woman question and the malaria question were joined into a single movement. The socialist feminists Anna Kuliscioff, Angelica Balabanoff, Maria Cabrini and Argentina Altobelli lectured tirelessly, and for the first time they found a mass audience. Kuliscioff in particular regarded the public debate that preceded the passage of the 1907 law as an opportunity both to politicize working women and to

[67] Giovanni Lorenzoni, *I Lavoratori delle risaie* (Milan, 1904), 131–3. For an earlier author who worried in 1814 about the 'dark and shameful deeds' committed by rice workers both by day and by night, see Luigi Angeli, 'Delle risaie e dei loro pessimi effetti', in Luigi Faccini (ed.), *Uomini e lavoro in risaia: Il Dibattito sulla risicoltura nel '700 e nell'800* (Milan, 1976), esp. 107–9.

[68] For the text of the law of 1907, the bill originally presented by Giolitti to parliament in 1905 and the reports in its support, see ACS, MI, DGS (1882–1915), b. 747, fasc. Risicoltura: Atti parlamentari; and b. 747 bis, fasc. Progetto di legge sulla coltivazione delle risaie.

For the supplementary general and special regulations, see *ibid.*, b. 749, fasc. Regolamenti per l'esecuzione della legge sulla risicoltura.

An important example of the provincial regulations that completed the protective structures created in 1907 is that of the province of Novara. Cf. *ibid.*, b. 749 bis, 'Testo del regolamento per la coltivazione del riso nella Provincia di Padova', 16 July 1909.

press the socialist party into taking a firmer stance on the issue of women's rights.[69]

In this context, the campaign against malaria played a major role in the politicization of farm labourers, especially women. Quininization profoundly altered power relationships. It did so by placing landlords morally, legally and politically on the defensive, by providing workers with a sense of injustice and a vocabulary of rights, by placing two professions — doctors and teachers — on the side of social reform, and by establishing channels by which the twin messages of socialism and women's emancipation reached a large population. Furthermore, as the campaign reduced the burden of illness, improved health enhanced the capacity of labourers to defend their interests.

The argument here is not one of malaria determinism. The antimalarial campaign played so large a part in the emergence of socialism and women's consciousness because it took place in an environment where its message struck a resonant chord at an opportune moment. But other essential factors were at work. Among these were Giolitti's new policy of the neutrality of the state in labour disputes, the concentration of labour on the rice fields and latifundia, the practice of gang working that multiplied horizontal bonds of solidarity, the absenteeism of landlords that negated the possibility of paternalism, the concurrent struggle over common land and use rights that bound communities together in opposition to proprietors, transoceanic emigration that thinned out the labour market and brought growing numbers of women into agricultural labour to replace absent men, and sheer economic distress. The intransigent reaction of employers to the demands of farmworkers and their fierce opposition to the state quinine campaign against malaria also encouraged the politicization of farm labourers.

In this process the antimalarial crusade was an important catalyst. It was no coincidence that in Lazio, Apulia and the rice belt the campaign against malaria was rapidly followed by a flowering of socialist organizations and mass demonstrations in which women played a prominent role. It is also suggestive that Lazio

[69] On Anna Kuliscioff's part in the campaign to pass protective legislation on behalf of rice workers, see Maria Casalini, 'Femminismo e socialismo in Anna Kuliscioff, 1890–1907', *Italia contemporanea*, xxxiii/143 (1981), esp. 40–3. Two useful biographies of Kuliscioff are Maria Casalini, *La Signora del socialismo italiano: Vita di Anna Kuliscioff* (Rome, 1987) and Marina Addis Saba, *Anna Kuliscioff: Vita privata e passione politica* (Milan, 1993).

and Apulia, the strongholds of the drive against malaria, were the only regions south of the Po valley where mass actions by farm labourers, peasants and women played a prominent role in the Giolittian era.

In the rice belt there was a wave of strikes by *mondine*. By 1905 the movement had assumed a thick organizational structure of leagues, co-operatives and socialist party branches. In that year the Ministry of the Interior reported the transformation of the area and sounded a note of alarm. The rice workers' movement, it noted, 'has taken on a serious quality that it never had in the past — serious both because of the imposing number of organized workers in leagues, and because of the marked character of class struggle that the leagues have assumed'.[70] More than merely a local phenomenon, the organization of the *mondine* served as an important catalyst in the organization of Federterra as a national union federation.

Of the first congress at Bologna in 1901, *Avanti!* recorded that salient features were a series of women speakers from the rice fields, all of whom were greeted with thunderous applause; and the influential role of rice workers in establishing the federation.[71] Indeed from 1893 until Mussolini's consolidation of power the league of *mondine* at Molinella remained, as the paper already noted in 1901, the 'moral centre, the vanguard' of the socialist movement in the Po valley.[72] Furthermore, a striking and unique feature of Federterra, the largest Italian union federation, was that its leader from 1906 until its destruction by fascism was a woman — Argentina Altobelli, who represented the rice workers.

The Giolittian period also marked a time of intense activity in the zones of latifundism in the Roman Campagna and Foggia province. In Lazio, the turn of the century marked the beginning of a wave of land occupations that culminated after the First World War when occupations swept the whole of the Mezzogiorno as one of the distinctive features of the *biennio rosso* — the 'Red Years' of 1919–20. Lazio during the years of

[70] ACS, MI, DGS (1882–1915), b. 748, fasc. legge sulla risicoltura, 'Questioni di ordine pubblico: Cenni storici sulle agitazioni agrarie dal 1898 a 1905 e sulle cause di esse', 1.

[71] 'Il Congresso dei contadini', *Avanti!*, 25 Nov. 1901. Similarly, the socialist deputy Angelo Cabrini stressed the role of women and their unionization as crucial to the establishment of the provincial federation of Federterra in the rice-growing province of Mantua: Angelo Cabrini, 'I Lavoratori della terra', *Avanti!*, 24 Feb. 1901.

[72] 'Molinella', *Avanti!*, 10 May 1901.

the quinine campaign marked the beginning, and women took a leading part. As early as 1900 *Avanti!* reported that

> A season never passes without large numbers of troops, *carabinieri* and police being sent from Rome to put down a movement by the peasants in one of the nearby towns.
>
> The agitation is always the same. . . . The land under cultivation is not enough for the arms that need to work and the mouths that need to be fed. And while they contemplate this fact, . . . the peasants see nettles growing in the fields that stretch out from the fertile hills across the endless plain of the Agro Romano as far as the eye can see.
>
> They look in silence and they keep their peace. But one day an irresistible impulse seizes them. If those fields were planted, they could yield wheat and every gift of God sufficient for a population double, triple that of their village. Then with their mattocks and spades on their shoulders they invade the land, they frenetically break the soil, and they plant it, affirming their right to work and to live.[73]

Anguillara in 1903 was typical of these events. There a thousand women accompanied by their children processed in grand ceremonial manner marked by music and red banners to occupy and plant the uncultivated fields of the neighbouring latifundia. When cavalry were sent to disperse them, they resorted to passive resistance by lying down with their children in front of the soldiers' horses.[74]

Political ferment was even more intense in Apulia. Foggia province, the centre of the attentions of the National League against Malaria, emerged as a bastion of revolutionary syndicalism with the militant agro-town of 'Red Cerignola' as its galvanizing centre. The Giolittian period on the Tavoliere was a time of general strikes, land occupations, mass demonstrations and electoral triumphs by the left. Landmarks in the history of the region were passed in 1901 with the proclamation of the first agricultural strikes in the history of the region, the establishment of the first peasant leagues and the setting up of the Bari and Foggia Chambers of Labour. In the first week of April 1902, moreover, the first Regional Congress of Apulian Peasants met at the provincial capital to establish priorities and to determine the strategy of the new organization, which was anarcho-syndicalist in its political orientation. For the years between 1901 and 1909, the figures for strikes and strikers in Foggia province demonstrate the rapid and powerful organizational progress (see Table 6).

[73] 'Le Agitazioni dei contadini nella provincia romana', *Avanti!*, 9 Oct. 1900.

[74] 'Le Agitazioni nell'Agro Romano', *Avanti!*, 28 Aug. 1903. On the renewed agitation in 1904, see 'Dalla provincia romana', *Avanti!*, 12 Sept. 1904; 'Il Diritto alla terra', *Avanti!*, 13 Sept. 1904.

TABLE 6
STRIKES AND STRIKERS IN FOGGIA PROVINCE
1901–1909*

	Strikes	Strikers
1901	1	600
1902	7	1,780
1903	0	0
1904	3	8,000
1905	2	7,400
1906	6	4,000
1907	16	48,000
1908	16	20,000
1909	3	400

* Source: Frank M. Snowden, *Violence and Great Estates in the South of Italy: Apulia, 1900–1922* (Cambridge, 1986), 105.

Feminism was an integral part of the politics of the Apulian labour movement. Hierarchy in any form was anathema to its libertarian ethos. A continuous effort was made to confront the issue of women's rights, to encourage women to take an active political role and to place such issues as divorce at the centre of the rallies and open-air meetings of the left. The results were clearly underlined in the comment by *Avanti!* on a general strike at Foggia in 1908. In the paper's words,

> in the present strike those who stand out most for their enthusiasm and pride are the women. . . . They are genuine heroines! . . . Their activity is phenomenal: they dash wherever there is a danger of strikebreaking; they urge on their husbands and call out for resistance.[75]

IV

CONCLUSION

The quinine campaign launched in Giolittian Italy was the first state-sponsored campaign to eradicate malaria throughout an entire nation ever instituted. It also marked the beginning of an ongoing effort to combat the disease that, despite the vicissitudes of two world wars and fascism, continued until final eradication was announced when the last indigenous Italian case was reported in 1962. Because of its pioneering role in international malariology, its ultimate success and its neglect by historians, this campaign offers lessons of considerable importance. Their significance is especially apparent at a time when malaria is again resurgent

[75] 'Il Movimento agrario', *Avanti!*, 24 May 1908.

in the tropical world and the World Health Organization has launched its own 'Roll Back Malaria' programme to combat the ancient scourge.

Down to the First World War, when the necessities of war and the sudden disruption of the international market for quinine caused both a hiatus in antimalarial activity and a recrudescence of fever throughout the peninsula, the Italian programme embodied two very distinct approaches to the issue of waging war on malaria. The first line of attack was official, and it corresponded to the expressed intentions of the internationally famous Rome School of malariology. The Rome School first suggested the vulnerability of plasmodia to attack once their complex life cycle had been understood and the specific of choice — quinine — had become suddenly available in quantities sufficient for mass distribution. This approach was based on boundless confidence in the power of a 'magic bullet' to achieve a quick solution to the problem of malaria without the necessity of embarking on costly and complicated programmes of environmental, agricultural, economic, hygienic, educational and labour reform. Merely dosing a sufficient number of human bloodstreams with the precious alkaloid for several seasons in succession would achieve the greatly desired result.

Unhappily for the quinine warriors, malaria of all high-impact diseases is the one most sensitive to the relations between human beings and the environment, social conditions and occupational circumstances. By the eve of the First World War, it was already apparent that quinine alone did not live up to the exuberant expectations of its supporters. The complex reality of the clinic proved recalcitrant to an idea propounded in the laboratory by the medical elite of research scientists in Rome. Although the abstract principle of destroying the reservoir of infection in the bloodstreams of Italians by means of quinine ingested according to a rigorous and prolonged regimen was admirably clear, it proved impossible to accomplish in practice. In the first place, it was impracticable to locate the entirety of a nomadic population of farm labourers and peasants scattered across vast stretches of inaccessible terrain. Furthermore, healthy Italians refused to follow Celli's advice to take tablets prophylactically, especially since quinine is sometimes toxic and often leads to painful and distressing side effects. Similarly, fever victims refused Grassi's appeal to follow through with medication until a 'radical cure'

had been achieved — when not only had symptoms been suppressed but also the final plasmodium had been destroyed in the body. On the contrary, the most frequent response of patients was to take their tablets only until the rigours of malarial fever had subsided, and then to hoard the remainder for future use or for sale. For these reasons, leading Italian malariologists concluded that quinine's great effect was radically to reduce mortality, but that its impact on morbidity was so limited as to transform the vision of eradication into an ever-receding mirage. The results are suggestive for those in more recent times who envisage a solution to the problem of malaria by other and sometimes more exotic bullets: DDT, a vaccine and genetically engineered mosquitoes.

Fortunately, a second and complementary approach to the war on malaria was developed empirically in the field by the foot soldiers of the campaign: clinicians, teachers and trade unionists. Manning rural health stations and peasant schools or organizing farm labourers, they adopted the point of view that health depends less on magic bullets and magic thinking than on a series of simple but vital prerequisites. These more humble antimalarials included a sound diet, sanitary housing, safe motherhood, humane working conditions, the right to organize and knowledge made accessible to all. In pressing these conditions as essential attributes of the campaign, the activists raised issues that would form a lasting part of the Italian success against fever and that were arguably important components of the 'recession' of malaria more broadly in North America and northern Europe.

Equally important for historians, the campaigners who took the approach that malaria was a multifactorial social problem also demonstrated the importance of medicine and disease to the mainstream of Italian social and political history. Malaria and the campaign against it contributed significantly as catalysts in the development of Italian socialism, trade unionism, feminism and the medical and teaching professions. Finally, the transformative influence of women and their health was crucial in the broadening of democracy and popular political participation that were leading themes of Italian politics in the Giolittian era. To ignore the role of women in that process is to fail to understand the period.

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