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Title: A review of programmatic material on malaria control campaigns

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This essay describes archival materials related to malaria control campaigns carried out by the International Health Board (IHB) of the Rockefeller Foundation (RF) in the United States and Mexico from about 1918 until the early 1940s. While I focus primarily on material held at the Rockefeller Archive Center (RAC), I provide some discussion of relevant materials held elsewhere. The research presented here is part of my dissertation project, which explores the political logic of disease control in the pre-World-War-II US South and in mid-twentieth century Mexico. The RAC was an ideal source for the project, owing to the important, albeit different roles that the IHB played in public health efforts in both countries.

I begin with a brief overview of anti-malaria efforts sponsored by the IHB in Mexico and the United States. I then review existing secondary sources on the topic, with commentary on the topics that do not receive extensive treatment in these works. The third section of the essay briefly summarizes archival holdings outside of the RAC

relevant to the topic. Finally, I describe the material on the campaigns held in the RAC, focusing primarily on the United States.

Background

For centuries malaria wrecked havoc on human settlements from South Africa to Great Britain, until technological advances and changes in land use reduced its extent almost entirely to tropical climates.[1] The southern United States and Mexico were both plagued by malaria through the colonial era and beyond the first century of independence. In response to widespread recognition that malaria was a major economic burden on the regions it affected, federal authorities in both countries ultimately undertook large-scale campaigns to eliminate the disease.

These campaigns, which are well known for their zealous use of the chemical DDT, followed decades of efforts to *control* malaria without aiming to *eradicate* it.[2] Systematic malaria control campaigns began in the United States as early as 1916[3], and in Mexico by the 1920s. These demonstration projects were initially carried out jointly between state- or national-level health authorities and IHB personnel.[4] The projects varied over time; in their geographic scope; in the number and type of actors involved; and in the level of resources invested. In what follows, I focus primarily on these earlier efforts at control, rather than on the large-scale eradication campaigns.

Secondary and other archival sources

A number of existing secondary sources cover the topic of malaria control in Mexico and in the United States. In the case of Mexico, Marcos Cueto[5] has studied the malaria eradication campaign as an important exercise in international health and diplomacy, while A. E. Birn[6] has examined the occasionally rocky collaboration between Mexican health authorities and the IHB. For the United States, Margaret Humphreys[7] has written the definitive historical account. With the partial exception of Birn, these authors dedicate

relatively little effort to understanding how domestic politics (rather than international politics or currents in international health) influenced malaria control efforts.

There are extensive primary sources on malaria control in Mexico and the U.S. housed at locations other than the RAC. Here I review two of the most important: the United States National Archive and the Historical Archive of the Secretary of Health and Assistance in Mexico. Although there is some overlap between collections, these other archival holdings complement those available at the RAC by providing more specific information on the political and bureaucratic actors involved, as well as more geographically refined information on some of the campaigns.

The United States National Archives and Records Administration, in its College Park, Maryland location, houses extensive material on the malaria control campaigns in the United States. Some of this material parallels what appears in the RAC, demonstrating the close collaboration between officials at the United States Public Health Service (USPHS) and the IHB. In fact, the documents show that some health officers were confused as to the identity of their official employer, and as to whether they should use USPHS or IHB stationery. In spite of their similarities, the material a the National Archives is particularly rich in its record of correspondence between IHB officials, USPHS bureaucrats, members of the American public (including industrialists), and members of the U.S. Congress. The records include many letters to and from members of Congress, requesting information or assistance related to malaria control.

The Historical Archive of the Secretary of Health and Assistance (AHSSA), housed in Mexico City, contains extensive records of malaria surveillance and control activities in Mexico. Materials in the collection date back at least as far as the 1920s, but the bulk of the material pertains to the national malaria eradication campaign, which began in the late 1950s. For the period when the IHB remained active within Mexico, the AHSSA records provide rich geographic detail, including maps and tables of surveillance data. Additional archival records of the Mexican campaign are at Mexico’s General Archive of the Nation, and hosted online by the Pan American Health Organization.

Archival Material at the RAC

Holdings at the RAC on the campaigns are extensive. My primary purpose in examining these materials was twofold: first, to discover the geographic extent and intensity of malaria control efforts prior to the major eradication campaigns, and second, to understand the roles and responsibilities of political actors in carrying out and evaluating these campaigns. In what follows, I focus on the program and administrative materials produced by the IHB. Most of my commentary will be on the US South, though I also give some description of the material on Mexico. Additional relevant material will likely be uncovered in the correspondence of foundation officers, a task that awaits a future visit to the RAC.

The IHB's malaria control efforts in the US South can be divided into two phases. The first phase consisted of urban demonstration projects, in which a handful of towns were selected to receive extensive interventions. The measures adopted included: ditch digging; other forms of drainage; oiling of standing water and other anti-larval measures; surveillance, including censuses carried out in a number of towns; and the therapeutic treatment of malaria by quinine. This phase lasted from about 1918 through 1923. The documentation of these early efforts is quite thorough. In particular, annual and quarterly reports summarize the activities carried out in each locality, and often include charts, tables, and maps. After giving an overview of the activities carried out during the period, I explore four important themes of these early efforts revealed by the archival sources: financial and popular support, race, scientific management, and operational control.

Much of the information on the early demonstration projects is organized geographically by state or county, while some additional reports cover all of the ongoing projects together. A 1920 report[1] covering all of the demonstration projects lists the states in which preliminary survey work was undertaken to support malaria control, along with the number of towns surveyed in each state (this information is reproduced in Table 1). The

[1] RF Record Group 5 Series 3 200 Box 5 Folder 46

localities selected for demonstration projects included: Demopolis, Dothan, Eufaula, Gantt's Quarry, Mignon and Selby in Alabama; Eldorado, Fordyce, Malvern, and Searcy in Arkansas; Albany, Cairo, and Thomasville in Georgia; and Batesville, Charleston, Coffeeville, Columbus and Tupelo in Mississippi.

Table 1, Count of malaria demonstration projects, circa 1920

State	Count
Alabama	8
Arkansas	7
Florida	7
Georgia	3
Louisiana	6
Mississippi	6
North Carolina	14
South Carolina	11
Tennessee	7
Texas	24
Virginia	10

Unsurprisingly, a main concern of the actors involved in malaria control was how the campaigns would be funded. Money for the urban demonstration projects came initially from the IHB. However, as was the case for the IHB's more general efforts to support local health delivery, emphasis was placed from the outset on identifying local sources of funding to ensure the project's long-term success. In some cases, specific municipal authorities showed themselves to be either reticent or outright hostile to the idea of subsidizing malaria control work. In other settings, local populations and authorities appeared to be enthusiastic contributors to the work.[8] Ultimately, officials encountered a wide range of levels of local support, with some going so far as to conduct small surveys in towns where demonstration projects were ongoing to assess the value attributed by the public to their efforts. In one case, the State Health Officer of Georgia went so far as to record specific statements made by members of the public regarding malaria control, along with pertinent details about each respondents' economic and social position.[9]

Another key theme in the early malaria control campaigns was race. Of course race was an important element of every public policy initiative adopted in the United States South in the interwar years. Nevertheless, it is remarkable to note how race seemingly entered into all aspects of the campaigns, even the most practical administrative details. Flyers were drafted so as to be directed to the different races and to make clear to the public that campaign efforts would target the two races separately.[10] Not only were statistics on the number of malaria cases and deaths reported separately by race, so were statistics on the number of individuals and dwellings inspected or treated.[11] Moreover, informational materials distributed to the public were designed in such a way that the targeted individuals would know that racial segregation was built into the campaign.[12]

As was common for IHB projects on different diseases and in different parts of the world, the officers carrying out the program valued scientific rigor, and endeavored to carry out their operations with precise measurement and scientific validity in mind. Data on malaria surveillance collected by local authorities are deemed to be unsatisfactory, or even “worthless.” Many of the demonstration projects began with intense surveillance, and in a few cases a census of the town was taken. Detailed maps were produced, showing the precise locations of dwellings in which cases of malaria had been reported, which would be used to assess the need for therapeutic interventions. Some later reports from the period contain detailed epidemiological data covering an entire state or a subset of counties. These surveillance data were occasionally combined with budget data for program activities in an attempt to precisely estimate the cost of an incremental reduction of malaria in a given town.

In spite of the emphasis on rigor, control of field operations by the IHB and state health authorities was at times uneven and methods for evaluating the work completed were not always ideal. In some cases, control efforts were initiated in areas that did not submit operating budgets to the state health authorities, while areas that had been assigned resources did not carry out control activities.[13] Moreover, in one instance an IHB officer instructs a State Health officer that when IHB staff visit the state to evaluate malaria

control efforts, "[i]t would be desirable, of course, to refer them to the towns where progress is most satisfactory".[14] One can only wonder whether this method of evaluation could lead to erroneous conclusions about the effectiveness of the strategies employed in those towns.

A second phase of malaria control activities began in the mid-1920s, this time focusing on rural areas. These activities were carried out jointly, between the IHB and County health authorities, as part of a broader initiative to improve the provision of health services at the county level. This period, after the initial demonstration projects but before large-scale DDT-spraying activities, has been given sharply contrasting interpretations by different scholars. Humphreys concludes that the rural malaria control activities carried out in the early 1930s, especially the extensive drainage projects mandated by the New Deal, were poorly planned and had an uncertain or negligible impact on the disease.[15] On the other hand, new evidence from the state of Alabama suggests that control efforts may have played a pivotal role in reducing malaria in that state.[16]

Regardless of which position turns out to be correct, the period is an important one for understanding the mechanics of disease control, precisely for its ability to generate such controversy. Here I review a small sampling of the extensive material available at the RAC covering this period, just enough to highlight a few relevant aspects of this second phase of malaria work. Most of the material is contained in annual reports produced by IHB officers, based on correspondence and collaboration with their counterparts in County-level health services. As with the documents covering the first period of demonstration project, many of these reports contain detailed disease surveillance, presented at various geographical and temporal scales.

While the selection of the first sites for malaria control work had been made with an eye to selecting the most advantageous locales,[17] IHB program officers were clearly aware that the scope of the problem was much broader, and extended to areas not as well suited to the systematic application of malaria control measures.[18] As the problem of malaria in

rural localities came into focus, it blended with the IHB's efforts to develop and expand public health capacity at the county level.

As an illustrative example of this so-called cooperative malaria control work, consider the efforts carried out in the state of Mississippi in the early 1920s.[19] Demonstration projects had been ongoing in the state since 1916, and by 1922 there were active projects in the counties listed in Table 2. Much of the surveillance work in towns with cooperative projects was focused on schools, with results reported separately for schools by race. There are records of extensive public outreach methods including placards, lectures, newspaper advertisements, etc., also targeting one racial group or the other. Direct interventions with property owners were implemented, in some cases with the support of municipal authorities (e.g., the city of Greenville issued citations to tenants occupying land deemed to be a "breeding ground for mosquitoes."). In select localities, extremely detailed surveillance was carried out (e.g., West point), though overall evaluation of these programs is less rigorous than that carried out for the initial urban demonstration projects.

Table 2, Active demonstration projects in Mississippi, ca. 1922

Cooperative
Boyle
Greenwood
Greenville
Leland
West Point
Yazoo City
Yazoo County

Independent
Biloxi

Canton

Grenada

Gulfport

Hattiesburg

Inverness

Jackson

Natchez

Starkville

University

Water Valley

Webb

Winona

Cooperative demonstration projects continued throughout the south during the 1920s, though most states appear to have experienced major disruptions of work later in the decade. Projects were ongoing through the 1930s, and a particularly interesting example drawn from this period is the state of Tennessee.[20] It is well known that the southern United States experienced a major resurgence of malaria in the early 1930s. This resurgence coincides with one of the most intensive periods of sanitary engineering to control malaria, spurred by New Deal public spending. While there is no evidence that drainage activities caused the increase in malaria, it is somewhat surprising that such intensive efforts did not lead to sharper reductions of the disease. One possible explanation for this is that the particular projects selected were not the ones best suited to control the disease. The following excerpt of an IHB annual report from 1934, quotes a Tennessee state health officer describing how the financial control of drainage activities passed between federal and local governments as the federal funding stream dried up. Could this awkward sharing of the planning mandate have contributed to the limited effectiveness of drainage projects? Coming to a final resolution of this question may be difficult, given the limited data available.

"Under the CWA, projects for malaria control were carried out from December 1, 1933 to February 15, 1934 in 14 counties, employing on average 1700 men per week. Upon termination of CWA aid, new projects under the emergency relief administration were formulated for 32 counties, starting March 1, 1934. As no costs for materials were allowed under the ERA, local governments were induced to withstand such expense in nearly every instance."

As for Mexico, it is important to first note that by the time large-scale malaria control efforts were underway, the IHB was no longer active in the country. For this reason, the material on Mexican campaigns pertains to demonstration projects carried out in a few disperse areas. Most importantly, the RAC holds some detailed surveillance information collected in the states of Veracruz and Morelos in the 1940s. These data, which provide some of the only existing local local-level information on malaria transmission for Mexico in that era, are not, to my knowledge, reproduced in the holdings of the Historical Archive of the Secretary of Health and Assistance in Mexico City.

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[1] For a history of the disease, see Packard, Randall M. 2007. *The Making of a Tropical Disease: a Short History of Malaria*. Baltimore, MD: Johns Hopkins University Press.

[2] A discussion of the difference between these two approaches appears in Stepan, Nancy L. 2011. *Eradication: Ridding the World of Diseases Forever?* Cornell University Press.

[3] Rock Found Record Group 5, Series 3 227 Box 45 Folder 515

[4] For a general chronology of IHB projects, see Farley, John. 2003. *To Cast Out Disease: A History of the International Health Division of Rockefeller Foundation (1913-1951)*. New York: Oxford University Press.

[5] Cueto, Marcos. 2007. *Cold War, Deadly Fevers: malaria eradication in Mexico, 1955-1975*. Johns Hopkins University Press.

[6] Birn, Anne-Emanuelle. 2006. *Marriage of Convenience: Rockefeller International Health and Revolutionary Mexico*. University of Rochester Press.

[7] Humphreys, Margaret. 2001. *Malaria: Poverty, Race, and Public Health in the United States*. Baltimore, MD: Johns Hopkins University Press. See also "Water won't run uphill: the New Deal and malaria control in the American South, 1933-1940." Parassitologia 40(1-2): 183-91 and "Kicking a Dying Dog: DDT and the Demise of Malaria in the American South, 1942-1950" Isis. 87(1): 1-17

[8] For discussion of this contrast in the case of Arkansas, see RF Record Group 5, Series 3 204I Box 12 Folders 140-142. For the case of Baton Rouge, LA, see RF Record Group 5 Series 3 200 Box 5 Folder 46.

[9] RF Record Group 5, Series 3 212 Box 20 Folder 250
[10] Rock Found Record Group 5, Series 3 227 Box 45 Folder 515
[11] For a colorful example of widely employed methods, see charts in RF Record Group 5, Series 3 227 Box 48 Folder 527a
[12] See, for example, the flyers distributed in Bolivar County Mississippi to announce an informational meeting on campaign efforts. The meeting times and locations designate which racial groups are invited to attend specific meetings. RF Record Group 5, Series 3 227 Box 46 Folder 515
[13] A letter to L.D. Fricks indicates that "budgets have been adopted for certain towns toward which it was not necessary for this Board to contribute." RF Record Group 5 Series 3 200 Box 5 Folder 46
[14] Letter from John Ferrell to L.D. Fricks, RF Record Group 5 Series 3 200 Box 5 Folder 46.
[15] Humphreys 1998, idem.
[16] Sledge, Daniel and George Mohler. 2013. "Eliminating Malaria in the American South: An Analysis of the Decline of Malaria in 1930s Alabama." American Journal of Public Health. 103(8): 1381-1392.
[17] Rock Found Record Group 5, Series 3 227 Box 45 Folder 515
[18] RF Record Group 5, Series 3 227 Box 48 Folder 527a
[19] Described in RF Record Group 5, Series 3 227 Box 47 Folder 523, 526.
[20] RF Record Group 5, Series 3 200J Box 6 Folders 59