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Tuberculosis and the Problem of Race in American Anthropology

David S. Jones

David S. Jones is A. Bernard Ackerman Professor of the Culture of Medicine in the Department of the History of Science, Harvard University.

Aleš Hrdlička, Tuberculosis among Certain Indian Tribes of the United States, Smithsonian Institution, Bureau of American Ethnology, Bulletin 42 (Washington: Government Printing Office, 1909)

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Aleš Hrdlička's *Tuberculosis among Certain Indian Tribes of the United States* looks innocuous, just 36 pages of text with 38 photos.[1] Sent from the United States government to the Harvard College Library in July 1909, it bears little evidence of use: it may have been checked out just five times. The title page (fig. 1) greets readers with a mysterious engraving in the shape of a crystal ball showing petroglyphs, ruined cliff dwellings, and a domed city floating in clouds. While this insignia accompanied countless publications from the Bureau of American Ethnology, in this case it can be read with special meaning. Hrdlička believed that the survival of indigenous Americans hung in the balance. His analyses demonstrate tensions about race and disease that remain relevant today.

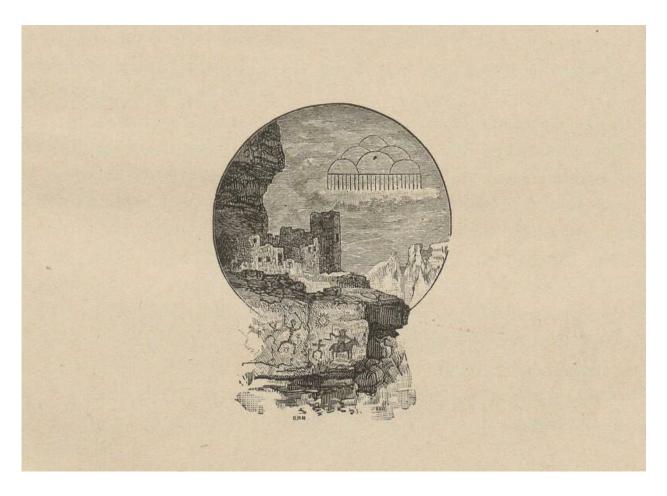


Figure 1. Title page vignette, Tuberculosis among Certain Indian Tribes (1909).

Contexts

Hrdlička's monograph sits at the intersection of many histories. First, it reflects an important moment in the development of American anthropology. When Congress established the Smithsonian Institution in 1846, one early interest was the study of indigenous archeology, languages, and cultures.[2] Congress redoubled its support in 1879, creating the Bureau of Ethnology to oversee anthropological research. The Bureau published annual reports and bulletins to catalog information about Indian tribes and to inform Indian policy. Universities and private museums also invested. Frederick Ward Putnam, who directed Harvard University's Peabody Museum, worked in the 1890s to develop anthropology at New York's American Museum of Natural History (AMNH). He mentored and hired both Franz Boas, who later established cultural anthropology at Columbia University, and Hrdlička, who led the development of physical anthropology.[3]

Hrdlička (1869–1943) followed an unlikely path to prominence.[4] Born in Bohemia, he came to New York in 1881 and worked in a cigar factory while taking evening courses to

master English. After a bout with tuberculosis, he pursued training in homeopathic and allopathic medicine. While working at the State Homeopathic Hospital for the Insane, he became interested in anthropometry. He spent several months studying this science in Paris in 1896 and then returned to work as an anthropologist at the Pathological Institute of the New York State Hospitals. Putman arranged for Hrdlička to accompany ethnographic expeditions to Mexico and the southwestern United States.[5] Recognizing an opportunity to establish physical anthropology in the United States, Hrdlička published a manifesto in *American Naturalist* in 1899.[6] Putnam hired him as director of physical anthropology at AMNH. In 1903 William Henry Holmes, the director of the Bureau, recruited Hrdlička to be the first curator of physical anthropology at the Smithsonian.

Second, Hrdlička's book came at an inflection point in the federal government's response to the "Indian problem." [7] By 1900, war and diplomacy had forced many American Indians to accept confinement on reservations. Some federal officials, motivated by faith in white supremacy, believed that extinction of indigenous populations was inevitable, and that tuberculosis would deliver the final blow. As V.T. McGillycuddy wrote from Pine Ridge in 1885, "the rapid development of latent scrofulous and tubercular diseases, &c., will eventually 'evolute' 'Poor Lo' to a higher sphere in the happy hunting grounds, and, in obedience to the law of the survival of the fittest, the Sioux Nation as a people will be forced to the wall."[8] Some of the investment in Indian ethnology reflected a desire to document indigenous populations before they disappeared.[9] Other officials rejected this extinction narrative. As Commissioner of Indian Affairs W. A. Jones wrote in 1900, "It is evident that with the humane treatment of this Government, and contrary to the predictions of many, the Indian is not dying out, is not becoming extinct." [10] This faith provided a different motive for ethnographic work—to collect information that would shape policy. Holmes made this clear in 1905 when he relayed Hrdlička's early findings to Congress: the work "deals with matters of great importance to the aborigines and to those agencies, governmental and otherwise, interested in promoting their welfare, as well as to the science of Anthropology at large."[11]

Third, Hrdlička's research came at a key juncture in the history of medicine, tuberculosis, and race. Tuberculosis dominated mortality in 19th-century Europe and North America, claiming roughly one-fourth of all lives. Even though all were at risk, physicians often focused on differences in susceptibility. For instance, many believed that the Jewish people were at highest risk, prompting debate about the relevance of heredity and context.[12] The disease, however, had been rare among the indigenous populations in the Americas. As Hrdlička noted, the disease seldom appeared in colonists' accounts, Indian elders said that the disease had been unknown, and pathologists found little evidence of tuberculosis in pre-Columbian skeletons. This made sense: "It is to be assumed on purely logical grounds that the disease must have been

much less frequent among the Indians in former times when they lived a more natural and active life, were better inured to hardships, and, with exception of particular localities and periods, were better provided with suitable food."[13]

By the late 19th century, however, tuberculosis was on the rise among indigenous communities. In 1891, physician Z. T. Daniel identified consumption and scrofula as "the great destroyers of the Sioux."[14] Hrdlička shared this concern. Introducing his book, he noted that the "increasing prevalence of tuberculosis in all its forms among the Indians in many parts of this country demands the special attention."[15] Indians had "a greater susceptibility to the disease than the white man," indicating "a lesser immunization of his system," the result of "the more recent introduction of the infection into his race." But as Hrdlička's own work would show, neither this premise (greater susceptibility) nor hypothesis (lesser immunization) were actually clear.

Tuberculosis

Hrdlička began his "inquiries" about tuberculosis among indigenous groups in 1900.[16] He compiled information from Indian Office physicians in 1904 and 1908.[17] These data confirmed that tuberculous morbidity and mortality "exceed by far those among the whites generally; and that their average exceeds even the very high rate among the American negroes."[18] Rates, however, varied 100-fold, from 60.4 cases per 1000 among the Hupa in northern California to 0.6 per 1000 among the Navajo at the San Juan Agency. Hrdlička saw no obvious correlations with geography or climate. Contact with whites, however, had been toxic: "Nearly all of the tribes that have long been in contact with the whites, and that have advanced more or less in civilization, are seriously affected."[19] The Indian Office and the Smithsonian Institution asked Hrdlička to conduct more detailed research to unravel these mysteries.

Hrdlička visited the five populations with the highest rates of tuberculosis: the Hupa (California), Menominee (Wisconsin), Quinaielt (Washington), Oglala (Pine Ridge, South Dakota), and Mohave (Colorado River Agency, Arizona). These groups "were selected not only because of the prevalence among them of tuberculosis, but also because they lived under widely differing conditions of climate, environment, civilization, and contact with the whites."[20] Hrdlička examined indigenous dwellings and bodies. When possible, the expedition bacteriologist analyzed sputum. The communities, at least according to Hrdlička, cooperated enthusiastically: "The investigation was everywhere promoted by the Indians themselves, who welcome an inquiry into the disease which is decimating them, the gravity of which they well appreciate, but against which they feel utterly helpless."[21]

The investigation confirmed prior dire findings. Three to five percent of the people had definite pulmonary tuberculosis, "an appalling proportion." [22] Only 34 percent of the

Oglala were free of suspicion. How could this be? Hrdlička approached each group with a consistent set of questions that reflected his prior assumptions about possible causes. He determined the prevalence of "Mixed-bloods," from "Scarcely any" (the Mohave) to "Very nearly all" (Menominee).[23] He assessed their "Civilization," from "In transition period" (Oglala and Mohave) to "Quite advanced" (Menominee). He documented the environment (e.g., forests, soils, and water), topography (flat or hilly), and climate (temperature, moisture, winds, sunshine). He noted how homes were built (brush shelters, log walls, or wooden framed) and floored (dirt, sand, wood). He described clothing, occupations, and diet. And he commented on habits, including alcohol use, social customs (visits and gatherings), and elder care.

Despite the diversity of environments and practices, all five groups suffered seriously from tuberculosis. Hrdlička recognized that structural factors, especially "Helpless poverty," were a root cause: "Want and consequent debilitation are certainly responsible for a percentage of the cases of pulmonary tuberculosis among the Indians." [24] But he emphasized behavior. His ethnographic descriptions offered a litany of blame. [25] The Menominee wore too many clothes and were prone to drunkenness. The Oglala took no precautions to prevent the spread of disease, visiting friends and relations and expectorating freely. "One of the most reprehensible customs," passing of the pipe, spread consumption widely. Even though the Quinaielt were "quite advanced in civilization," they allowed flies to contaminate food with tuberculous sputum. The Hupa were also advanced, but "know very little concerning hygienic living." For instance, "They still use basket bowls for soups, passing them freely to well and sick alike." The Mohave, still "in the transitional period," allowed their sand floors to become "the receptacle of remnants of food, of the expectorations of sick and well alike, and of filth from the chickens, all of which look diseased."

Of 13 possible contributory factors, Hrdlička listed "facility of infection" first: "The average Indian has no idea of the real nature of tuberculosis, or of the means by which it is propagated."[26] This was made worse by pervasive pessimism, even fatalism: "The patient utterly gives up the fight against the disease as soon as he fully understands that he is infected."[27] He acknowledged that none of this was unique to Indians: "Dissipation, indolence, and all other weakening conditions contribute, doubtless, as much to the susceptibility of the Indian to tuberculosis as they do among the whites."[28] But he emphasized how a toxic mix of ignorance and poverty fostered household practices that left all five communities vulnerable. As Agency Physician O. M. Chapman had written in 1904, the excessive mortality of Indians from tuberculosis was "the measure of their transgressions."[29]

After naming facility of infection as the first contributing factor, Hrdlička proceeded to discuss heredity: "Second only to the foregoing in seriousness in the propagation of tuberculosis among the Indians is doubtless the now frequent hereditary taint." In

nearly every Oglala family, Hrdlička found victims of tuberculosis, "some of whose progeny are congenitally predisposed to the disease." [30] He then moved on to a related problem, "lesser racial immunity from disease." Hrdlička's own evidence, however, was inconsistent. He compared pulmonary tuberculosis among Whites and Indians and found that "no radically different features exist." [31] Bacteriological examinations similarly failed to reveal "the existence of any peculiar racial features." [32] Hrdlička found that symptoms "were much like those seen in similar cases of the disease among the whites," but he did note "a few interesting differences, and more detailed future studies may possibly establish others."[33] For instance, "fever, sweats, and a rapid exhaustion of the patient are especially noticeable in the Indian." Subtle differences could also be found on physical examination. Percussion of Indian lungs revealed "diminished or irregular resonance" and "a more or less flat sound over the apices." [34] Hrdlička also discussed the impact of race mixing. Among the Oglala, "full-bloods" suffered more from tuberculosis than "the half-breeds." [35] But in other groups, the context of childbearing mattered: "The mixed-breeds resulting from regular marriages between the Indians and the whites appear to be freer from tuberculosis than either the full-bloods, or the mixed-breeds due to clandestine unions." [36] But again he equivocated: "Doubtless much of what now appears to be greater racial susceptibility is a result of other conditions, particularly greater opportunities for infection, and malnutrition."[37]

This desire to attribute disease to race has deep roots in American history. Observed disparities in disease susceptibility in the 17th century continued through the emergence of a "racial idiom" in (white) American thought.[38] These racial intuitions were initially over-shadowed by social and environmental factors.[39] By the 19th century, however, racial articulations of disease had become ubiquitous. [40] This "durable preoccupation" with race persists in medicine today.[41]

Regardless of whether Hrdlička blamed indigenous bodies or behaviors, he demonstrated profound cultural hubris. It was white people who had first achieved high rates of tuberculosis in the mid-19th century. The tuberculosis epidemic that struck indigenous communities by 1900 reflected the adverse impact of white contact on those communities (with wars, displacement, mass starvation, genocide, etc.). Despite this, Hrdlička and many others believed that white beliefs and practices provided the standard by which all others should be judged. As historian Francis Paul Prucha noted, federal Indian policy exhibited "ethnocentrism of frightening intensity."[42]

Remedies

Despite tracing tuberculosis to a complex mix of poverty, behavior, heredity, and race, Hrdlička did not despair. His survey found many Indians who had recovered from

tuberculosis, clear proof "that pulmonary tuberculosis is by no means always fatal in the Indian." [43] He proposed many possible reforms, starting with "the combating of ignorance. The Indian must be taught how to live, how to prepare his food, how to take care of the young, of the old, and of the sick, and what precautions to use against the spread of consumption." Sputum control was essential: "Make the Indian fear the sputum of the consumptives as it should be feared." Sick people should be isolated and provided with medical care. Dirt floors had to be upgraded. Pipe sharing had to stop. Alcohol "should be repressed." Indian police could serve as sanitary inspectors. Morale was crucial: "These measures should be accompanied by judicious efforts to raise the Indian's pride and ambition in the directions indicated." With concerted efforts, "speedy progress can be made in preventing and curing tuberculosis among the Indians." Success would be "of potential civilizing influence for the race." [44]

While Hrdlička exhibited optimism, his director, Holmes, warned of "serious and often insurmountable difficulties." The requisite reforms required Congressional action, but Holmes doubted whether they had "the sanction of Congress or of public opinion."[45] Hrdlička proceeded nonetheless and presented his findings at the 6th International Congress on Tuberculosis in Washington during the autumn of 1908. His presentation incited great interest in Commissioner of Indian Affairs, Francis E. Leupp, who acknowledged tuberculosis as "the greatest single menace to the Indian race."[46] Leupp endorsed Hrdlička's recommendations. In 1912 President William Taft praised Leupp's efforts as "the most vigorous campaign ever waged against diseases among the Indians."[47] Taft "believed that the tide can be turned, that the danger of infection among the Indians themselves and to the several millions of White persons now living as neighbors to them can be greatly reduced."[48] A 1921 investigation by the National Tuberculosis Association concluded that "thanks to the progress of medical science and the splendid humanitarian efforts of our Government, a noble race of people has been snatched from the very jaws of death."[49]

Such declarations of victory proved premature. Charles Eastman, one of the first indigenous Americans trained in western medicine, noted in 1915 that the tuberculosis mortality rates remained nearly three times higher than those among whites.[50] A 1928 investigation found that the "health of the Indians as compared with that of the general population is bad." Tuberculosis, "without doubt the most serious disease among the Indians," dominated the concerns.[51] Consider the fate of the Navajo. Hrdlička had found in 1908 that rates of tuberculosis were lower among the Navajo than among whites. By 1955, however, the incidence of tuberculosis among the Navajo was 15 times higher than among the general population.[52]

Health inequities persisted among many indigenous communities throughout the 20th century. Even though researchers repeatedly demonstrated the importance of socioeconomic status and not race, assumptions about bodily difference endured.[53]

Researchers spent decades searching for genetic roots of disease susceptibility (most famously for diabetes among the Akimel O'odham) even though the primacy of environmental and structural causes was obvious.[54]

Hrdlička was enough of an empiricist to recognize the signal in his data: tuberculosis was, and remains, the epitome of a social disease.[55] Yet he, like so many of his predecessors and successors, wanted heredity and race to be part of the story. His work on tuberculosis was just one part of his substantial legacy. He founded the *American Journal of Physical Anthropology*. Under his leadership, the Smithsonian Institution amassed an enormous collection of human remains. [56] He used those bones to theorize, correctly, that the Americas had been settled from eastern Asia. But he also argued that modern humans had evolved in Europe. Believing—against Boas—in the existence of fixed racial types, he supported eugenics and even advised President Franklin Roosevelt about race and migration.[57] While this left Hrdlička, in the eyes of many, on the wrong side of history, his faith in the importance of race difference remains rampant—and problematic—in medicine today.[58]

Notes

- [1] Aleš Hrdlička, *Tuberculosis among Certain Indian Tribes of the United States*, Smithsonian Institution, Bureau of American Ethnology, Bulletin 42 (Washington: Government Printing Office, 1909).
- [2] Richard B. Woodbury and Nathalie F.S. Woodbury, "The Rise and Fall of the Bureau of American Ethnology," *Journal of the Southwest* 41 (Autumn 1999): 283–296.
- [3] Michael A. Little, "Physical Anthropology in 1918 and the Founding of the U.S. Journal," *American Journal of Physical Anthropology* 165 (2018): 626–637.
- [4] For his biography, see Robert Lynn Montgomery and Jennifer Chien, "Guide to the Aleš Hrdlička Papers, 1875–1966," Smithsonian National Museum of Natural History (1996, 2006), available at https://sova.si.edu/record/NAA.1974-31; Samuel J. Redman, *Bone Rooms: From Scientific Racism to Human Prehistory in Museums* (Cambridge: Harvard University Press, 2016); Little, "Physical Anthropology."
- [5] For an example, see Aleš Hrdlička, *Physiological and Medical Observations among the Indians of Southwestern United States and Northern Mexico* (Washington: Government Printing Office, 1908).
- [6] Aleš Hrdlička, "Correspondence: The needs of American Anthropologists," *American Naturalist* 33 (1899): 684–88.

- [7] Francis Paul Prucha, *The Great Father: The United States Government and the American Indians* (Lincoln: University of Nebraska Press, 1984).
- [8] V.T. McGillycuddy, in *Annual Report of the Commissioner of Indian Affairs to the Secretary of Interior for the Year 1885* (Washington: Government Printing Office, 1885), 33.
- [9] For one example, see Gilbert King, "Edward Curtis' Epic Project to Photograph Native Americans," *Smithsonian Magazine*, Mar. 21, 2012, available at https://www.smithsonianmag.com/history/edward-curtis-epic-project-to-photograph-native-americans-162523282/
- [10] W. A. Jones, in *Annual Report of the Commissioner of Indian Affairs, 1900* (Washington: Government Printing Office, 1900), 47.
- [11] W. H. Holmes, "Letter of Transmittal," in Hrdlička, *Physiological and Medical Observations*.
- [12] Alan M. Kraut, *Silent Travelers: Germs, Genes, and the "Immigrant Menace"* (Baltimore: Johns Hopkins University Press, 1994); Howard Markel, *Quarantine! East European Jewish Immigrants and the New York City Epidemics of 1892* (Baltimore: Johns Hopkins University Press, 1997).
- [13] Hrdlička, *Tuberculosis*, 1.
- [14] Z. T. Daniel, in *Annual Report of the Commissioner of Indian Affairs to the Secretary of Interior for the Year 1891* (Washington: Government Printing Office, 1891), 392.
- [15] Hrdlička, *Tuberculosis*, 1. For the emergence of tuberculosis on the reservations, see David S. Jones, *Rationalizing Epidemics: Meanings and Uses of American Indian Mortality since 1600* (Cambridge: Harvard University Press, 2004).
- [16] Hrdlička, *Tuberculosis*, 3.
- [17] Hrdlička, Physiological and Medical Observations.
- [18] Hrdlička, *Tuberculosis*, 6.
- [19] Hrdlička, Tuberculosis, 6. Contact with Mexicans "was not as detrimental."
- [20] Hrdlička, *Tuberculosis*, 7. He also examined conditions at the Phoenix Indian School.
- [21] Hrdlička, Tuberculosis, 8.
- [22] Hrdlička, *Tuberculosis*, 26.

- [23] Hrdlička, Tuberculosis, 20-21.
- [24] Hrdlička, Tuberculosis, 31.
- [25] Hrdlička, *Tuberculosis*, 8–18. The Phoenix School, meanwhile, had similar problems with hygiene and was hemmed in by white settlements: its district was "a Mecca for consumptives" (22).
- [26] Hrdlička, *Tuberculosis*, 29.
- [27] Hrdlička, Tuberculosis, 32.
- [28] Hrdlička, Tuberculosis, 31.
- [29] O. M. Chapman, in *Annual Report of the Commissioner of Indian Affairs, 1904* (Washington: Government Printing Office, 1905), 342.
- [30] Hrdlička, Tuberculosis, 31.
- [31] Hrdlička, Tuberculosis, 26.
- [32] Hrdlička, *Tuberculosis*, 29.
- [33] Hrdlička, *Tuberculosis*, 28.
- [34] Hrdlička, *Tuberculosis*, 28–29.
- [35] Hrdlička, *Tuberculosis*, 7.
- [36] Hrdlička, *Tuberculosis*, 32.
- [37] Hrdlička, Tuberculosis, 31.
- [38] Joyce E. Chaplin, "Natural Philosophy and an Early Racial Idiom in North America: Comparing English and Indian Bodies," *William and Mary Quarterly* 54 (1997): 229–52.
- [39] Jones, Rationalizing Epidemics; "Virgin Soils Revisited," *William and Mary Quarterly* 60 (October 2003): 703–42; Paul Kelton, *Epidemics and Enslavement: Biological Catastrophe in the Native Southeast, 1492–1715* (Lincoln: University of Nebraska Press, 2007).
- [40] Charles E. Rosenberg, "The Bitter Fruit: Heredity, Disease, and Social Thought in Nineteenth Century America," in *From Consumption to Tuberculosis: A Documentary History*, ed. Barbara Gutmann Rosenkrantz (New York: Garland Publishing, [1974] 1994), 154–94; Marion M. Torcha, "The Tuberculosis Movement and the Race Question, 1890–1950," *Bulletin of the History of Medicine* 49 (Summer 1975): 152–68; Katherine Ott, *Fevered Lives: Tuberculosis in American Cultures since 1870* (Cambridge: Harvard

University Press, 1996); Christian W. McMillen, "'The Red Man and the White Plague': Rethinking Race, Tuberculosis, and American Indians, ca. 1890–1950," *Bulletin of the History of Medicine* 82 (2008): 608–645; Evelynn Hammonds and Susan M. Reverby, "Toward a Historically Informed Analysis of Racial Health Disparities since 1619," *American Journal of Public Health* 109 (October 2019): 1348–49.

- [41] Anne Pollock, *Medicating Race: Heart Disease and Durable Preoccupations with Difference* (Durham: Duke University Press, 2012). See also: Samuel Kelton Roberts, *Infectious Fear: Politics, Disease, and the Health Effects of Segregation* (Chapel Hill: University of North Carolina Press, 2009); Dorothy Roberts, *Fatal Invention: How Science, Politics, and Big Business Re-create Race in the Twenty-First Century* (New York: New Press, 2011).
- [42] Prucha, The Great Father, 2:610.
- [43] Hrdlička, Tuberculosis, 33.
- [44] Hrdlička, *Tuberculosis*, 34–36.
- [45] W. H. Holmes, "Prefatory Note," in Hrdlička, *Tuberculosis*.
- [46] Leupp, quoted in Prucha, The Great Father, 2:848.
- [47] William H. Taft, "Special Message to Congress," in *Annual Report of the Commissioner of Indian Affairs*, 1912 (Washington: Government Printing Office, 1913), 18.
- [48] Taft, "Special Message," 19.
- [49] George M. Kober, George E. Bushnell, Joseph A. Murphy, Albert B. Tonkin, William H. Baldwin, and Hoyt E. Dearholt, *Tuberculosis Among the North American Indians* (Washington: Government Printing Office, 1923), 42. See also Prucha, *The Great Father*, 2:850–52.
- [50] Charles A. Eastman [Ohiyesa], *The Indian To-day: The Past and Future of the First American* (New York: Doubleday, Page & Company, 1915), 135.
- [51] Lewis Meriam, Ray A. Brown, Henry Roe Cloud, Edward Everett Dale, Emma Duke, Herbert R. Edwards, Fayette Avery McKenzie, Mary Louise Mark, W. Carson Ryan, Jr., and William J. Spillman, *The Problem of Indian Administration* (Baltimore: Johns Hopkins University Press, 1928), 3, 204. See also Diane Therese Putney, *Fighting the Scourge: American Indian Morbidity and Federal Policy, 1897–1928*, PhD diss. (Marquette University, 1980); Robert A. Trennert, *White Man's Medicine: Government Doctors and the Navajo, 1863–1955* (Albuquerque: University of New Mexico Press, 1998).

- [52] J. Nixon Hadley, "Health Conditions Among Navajo Indians," *Public Health Reports* 70 (September 1955): 831–36.
- [53] David S. Jones, "The Persistence of American Indian Health Disparities," *American Journal of Public Health* 96 (2006): 2122–34.
- [54] Arleen Marcia Tuchman, *Diabetes: A History of Race & Disease* (New Haven: Yale University Press, 2020).
- [55] René Dubos and Jean Dubos, *The White Plague: Tuberculosis, Man, and Society* (New Brunswick, NJ: Rutgers University Press, [1952] 1987); Paul Farmer, *Infections and Inequalities: The Modern Plagues* (Berkeley: University of California Press, 1999).
- [56] Redman, *Bone Rooms*; Little, "Physical Anthropology."
- [57] Robert Oppenheim, "Revisiting Hrdlička and Boas: Asymmetries of Race and Anti-Imperialism in Interwar Anthropology," *American Anthropologist* 112 (March 2010): 92–103; Steve Usdin, "New Documents Reveal FDR's Eugenic Project to 'Resettle' Jews During World War II," *Tablet*, Apr. 30, 2018. https://www.tabletmag.com/sections/arts-letters/articles/m-project-franklin-delano-roosevelt-jews
- [58] Darshali A. Vyas, Leo G. Eisenstein, and David S. Jones, "Hidden in Plain Sight—Reconsidering the Use of Race Correction in Clinical Algorithms," *New England Journal of Medicine* 383 (Aug. 27, 2020): 874–82.