Wireless towers at Kranji, His Majesty's Naval Base, Singapore, in the mid-1930s. In what was a fairly conventional style at the time, the towers were photographed to contrast their height with buildings and people. Note how the camera's skyward gaze reduces the size and individuality of people, particularly colonial subjects, compared to infrastructure. Image reproduced with kind permission and help from Ken Sutton and Clive Kidd, curator of the HMS Collingwood Heritage Collection. http://www.rnmuseumradarandcommunications2006.org.uk/.

Communicable Disease: Information, Health, and Globalization in the Interwar Period

HEIDI J. S. TWOREK

IN APRIL 1929, TRAVEL to continental Europe was thrown "into a turmoil."[1] A smallpox outbreak had occurred on the SS *Tuscania*, a large passenger ship that had sailed from Mumbai to Liverpool via Marseilles. News about the outbreak spread quickly. The *North China Morning Herald* called it an "epidemic," which British authorities strenuously denied.[2] Spooked by the news, France banned any arrival from the UK who had not received a smallpox vaccination in the previous two months. The decree "staggered authorities" in Britain, reported the *New York Times* on its front page.[3] The *Guardian* saw the French actions as an exaggerated and "drastic precautionary measure" because there was only one case of smallpox beyond passengers on the *Tuscania*.[4] The dispute threatened the movement of people and goods at the same time as information about the crisis was rapidly circling the world.

Officials from the League of Nations Health Organization (LNHO) saw this moment as an opportunity: they could defuse the dispute and simultaneously showcase the League as a new and indispensable broker of information. British doctor Norman White, a League official at the time, asked the British Ministry of Health for "an authoritative statement of the present state of affairs" that he could publish in the LNHO's *Weekly Epidemiological Record* to counter "the exaggerated and inaccurate reports in

[1] "France Puts English under Smallpox Ban; Bars Those Not Vaccinated in Last 2 Months," *New York Times*, April 17, 1929, 1.
[2] "Smallpox Epidemic in London," *North China Morning Herald*, April 20, 1929, 120.
[3] "France Puts English under Smallpox Ban."
[4] "France's Drastic Smallpox Precautions," *Manchester Guardian*, April 17, 1929, 11.

the Continental press."[5] The French decree was rescinded soon afterward. Information from the League convinced the French when British protests could not.

There are many ways to narrate the story of the *Tuscania*: as a history of European understandings of disease, or of how the press can create panic, or of the importance of ships, to name just three.[6] Another way is to examine the relationship between information and the movement of people. Here two different points stand out: the League's role as an international information broker and the ship's colonial port of origin in India. The imperial and the international intertwined to both cause and resolve a crisis in Europe. More broadly, the League's system shows how and why information flows could increase at a time when the flows of people and goods decreased.

Since the mid-nineteenth century, Western states had valued information about infectious diseases like cholera as theoretically enabling states to enact effective quarantines and prevent epidemics. Even seven decades later, however, no coordinated information exchange occurred during the influenza pandemic of 1918–1919. Only in the following decade did the LNHO create a voluntary system that reached two-thirds of the world's population and made information a vital part of epidemic management. The League's system emerged after the height of economic globalization and mass movement of people prior to 1914. It survived World War II and laid the groundwork for the system that the World Health Organization still uses today.

The unexpected interwar emergence of an international information system has attracted little attention. But that system can take historians beyond simple bromides about how information facilitated globalization. Globalization is classically defined as the increased movement of people, goods, and ideas around the world. It is "a process that generates inequalities as well as convergence."[7] Deglobalization, in turn, generally means more restrictive immigration policies, more autarchic economic practices like tariffs, and more isolationism in rhetoric and in practice. Yet not all aspects of globalization and deglobalization happened simultaneously.[8] Frederick Cooper has argued that globalization theories are flawed in much the same way as modernization theory, because they do not recognize that "[t]he key variables of transition did not vary together."[9] This observation deserves more sustained examination to pull apart the trite and tired triad of people, goods, and information as the foundation of globalization. Some historians of capitalism have argued that "[t]he world economy . . . lost all of its globalization achievements in three decades, between 1914 and 1945."[10] Despite critiques, the

[5] League of Nations Archives, Geneva [hereafter LONA], 8D/R5968/57/83, letter from Norman White to H. A. Macewen, April 20, 1929.

[6] On ships, see Martin Dusinberre and Roland Wenzlhuemer, "Editorial—Being in Transit: Ships and Global Incompatibilities," *Journal of Global History* 11, no. 2 (2016): 155–162.

[7] Adam McKeown, "Periodizing Globalization," *History Workshop Journal*, no. 63 (Spring 2007): 218–230, here 226.

[8] On deglobalization, see Jeremy Adelman, "What Is Global History Now?," *Aeon*, March 2, 2017, https://aeon.co/essays/is-global-history-still-possible-or-has-it-had-its-moment. For a defense of global history, see Richard Drayton and David Motadel, "Discussion: The Futures of Global History," *Journal of Global History* 13, no. 1 (2018): 1–21.

[9] Frederick Cooper, *Colonialism in Question: Theory, Knowledge, History* (Berkeley, Calif., 2005), 97.

[10] Kevin H. O'Rourke and Jeffrey G. Williamson, *Globalization and History: The Evolution of a Nineteenth-Century Atlantic Economy* (Cambridge, Mass., 1999), 2. For a similar tracing of the overall trajectory of international trade, see Geoffrey G. Jones, "Origins and Development of Global Business," in Teresa da Silva Lopes, Christina Lubinski, and Heidi J. S. Tworek, eds., *The Routledge Companion to the Makers of Global Business* (London, forthcoming 2019).

interwar period is still often framed as a classic example of deglobalization.[11] This did not hold true for information, particularly as radio extended its reach across borders in the 1930s through new offerings like the BBC World Service.[12] Health communications continued, too.

The key was infrastructures—"big, durable, well-functioning systems and services, from railroads and highways to telephone, electric power, and the Internet"—which made it easier for information (whether statistics or other written materials) to be distributed and for two-way communication to occur.[13] Infrastructures have long interested historians, who have pointed out that roads and electricity linked territories in interwar Europe long before postwar European political or economic integration.[14] There are three main historiographical narratives about the spread of information infrastructure. One focuses on political and military control, whether in competition over colonial communications or in the use of newspapers and other media to create national consciousness.[15] The second sees economic cooperation between media and technology companies as driving the spread of submarine telegraph cables and wireless.[16] The third strikes a middle ground by emphasizing political economy, or "the relationship of the state and the market."[17] All three stories largely omit international organizations. The International Telegraph Union and the Universal Postal Union appear in these narratives more as organizations that created technical standards than as aggregators of information or creators of content.[18] The focus on empires and nations as political units elides

[11] William Hynes, David S. Jacks, and Kevin H. O'Rourke, "Commodity Market Disintegration in the Interwar Period," *European Review of Economic History* 16, no. 2 (2012): 119–143. One critique is McKeown, "Periodizing Globalization."

[12] Simon J. Potter, *Broadcasting Empire: The BBC and the British World, 1922–1970* (Oxford, 2012).

[13] Paul N. Edwards, Geoffrey C. Bowker, Steven J. Jackson, and Robin Williams, "Introduction: An Agenda for Infrastructure Studies," *Journal of the Association for Information Systems* 10, no. 5 (2009): 364–374, here 365.

[14] Alexander Badenoch and Andreas Fickers, eds., *Materializing Europe: Transnational Infrastructures and the Project of Europe* (Basingstoke, 2010); Frank Schipper and Johan Schot, "Infrastructural Europeanism, or the Project of Building Europe on Infrastructures: An Introduction," *History and Technology* 27, no. 3 (2011): 245–264. Recent work on infrastructures has examined everything from roads to power lines to motorways. See, for example, Badenoch and Fickers, *Materializing Europe*; Jo Guldi, *Roads to Power: Britain Invents the Infrastructure State* (Cambridge, Mass., 2012); Christopher F. Jones, *Routes of Power: Energy and Modern America* (Cambridge, Mass., 2014).

[15] On empire, see Daniel R. Headrick, *The Invisible Weapon: Telecommunications and International Politics, 1851–1945* (New York, 1991); Peter J. Hugill, *Global Communications since 1844: Geopolitics and Technology* (Baltimore, 1999); Harold A. Innis, *Empire and Communications* (1950; repr., Lanham, Md., 2007). On the nation, see Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism*, revised ed. (London, 1991). On the history of information itself, see Jeremy Black, *The Power of Knowledge: How Information and Technology Made the Modern World* (New Haven, Conn., 2014); Paul Edwards, Lisa Gitelman, Gabrielle Hecht, Adrian Johns, Brian Larkin, and Neil Safier, "Historical Perspectives on the Circulation of Information," *AHR* Conversation, *American Historical Review* 116, no. 5 (December 2011): 1393–1435; John Seely Brown and Paul Duguid, *The Social Life of Information* (Boston, 2000).

[16] Dwayne R. Winseck and Robert M. Pike, *Communication and Empire: Media, Markets, and Globalization, 1860–1930* (Durham, N.C., 2007).

[17] Richard R. John, "Bringing Political Economy Back In," *Enterprise & Society* 9, no. 3 (2008): 487–490, here 488–489, quote from 488. On this perspective, see Heidi J. S. Tworek and Richard R. John, "Global Communications," forthcoming in da Silva Lopes, Lubinski, and Tworek, *The Routledge Companion to the Makers of Global Business*. For a historiography on submarine telegraphy, see Simone M. Müller, "From Cabling the Atlantic to Wiring the World: A Review Essay on the 150th Anniversary of the Atlantic Telegraph Cable of 1866," *Technology and Culture* 57, no. 3 (2016): 507–526.

[18] Heidi J. S. Tworek and Simone M. Müller, "Introduction," *The Governance of International Communications: Business, Politics, and Standard-Setting in the Nineteenth and Twentieth Centuries*, Special

how international organizations like the LNHO could foster cooperation over information and infrastructure not created by the League itself.

Information exchanges did not necessarily develop at the same times or in the same spaces as other international and imperial interactions. Maps produced by the League of its epidemiological intelligence system highlight that point.[19] (See Figure 1.) Appearing in annual reports delivered to the LNHO's main funder, the Rockefeller Foundation, these maps portrayed an infrastructure ordered not by nation-states, but by port cities, colonial networks, the sea, and the air. State and imperial borders were never communicative borders. Technologies like submarine cables had long blurred the international and the national. States had to approve landing rights for undersea cables from multinationals or companies that might be subsidized by other states, for example. The development of wireless telegraphy in the early twentieth century enabled electrical impulses from one jurisdiction to enter the airspace of another. Terrestrial borders could now be crossed in the sky, and moving ships could communicate from the sea. Midway through what Charles S. Maier has called the "territorial" twentieth century of the 1860s to the 1970s, based on "spatially anchored structures for politics and economics," wireless offered new ways to order the spaces of the sea and the air.[20] It presented new opportunities for colonial cooperation when imperial philosophies like those of disease control aligned. It enabled the LNHO to integrate nation-states, empires, and foundations into a new international system of health information that has lasted until today.

The LNHO's epidemiological intelligence system cautions historians not to assume that there is one timeline for all aspects of globalization or international cooperation. During the interwar period, the movement of people became more restricted and borders stronger.[21] Yet information exchange continued long after other types of cooperation had broken down. Political and economic histories have focused on the growing antagonism between nations and the disintegration of international trade in the 1930s.[22] At the same time, there was remarkably widespread sharing of epidemiological information. As the 1930s progressed, information-gathering was one of the few areas where the League seemed functional. League officials traveled to Asia on fact-finding missions about nutrition and health.[23] Germany continued to send out epidemiological bulletins after Hitler rescinded the country's League membership in October 1933. The U.S.-based Rockefeller Foundation still provided most of the funding for the Health Organization. Imperial powers shared health information in the colonial air and on the seas around Africa and Asia well after World War II had broken out on European land.

Issue, *Journal of Policy History* 27, no. 3 (2015): 405–415. On the ITU, see Léonard Laborie, *L'Europe mise en réseaux: La France et la coopération internationale dans les postes et les télécommunications (années 1850–années 1950)* (Brussels, 2011); Francis Lyall, *International Communications: The International Telecommunication Union and the Universal Postal Union* (Farnham, UK, 2011).

[19] LONA 8D/R6198/341, C.H.1249, League of Nations Health Organization Eastern Bureau [henceforth Eastern Bureau], *Annual Report for 1936*.

[20] Charles S. Maier, "Consigning the Twentieth Century to History: Alternative Narratives for the Modern Era," *American Historical Review* 105, no. 3 (June 2000): 807–831, here 808.

[21] In some ways, the League facilitated this process by creating Nansen passports for stateless people. Mira Lea Siegelberg, "The Question of Questions: The Problem of Statelessness in International History, 1921–1961" (Ph.D. diss., Harvard University, 2014).

[22] See, for example, Zara Steiner, *The Triumph of the Dark: European International History, 1933–1939* (Oxford, 2011).

[23] Sunil Amrith and Patricia Clavin, "Feeding the World: Connecting Europe and Asia, 1930–1945," *Past & Present*, no. 218, suppl. 8 (2013): 29–50.
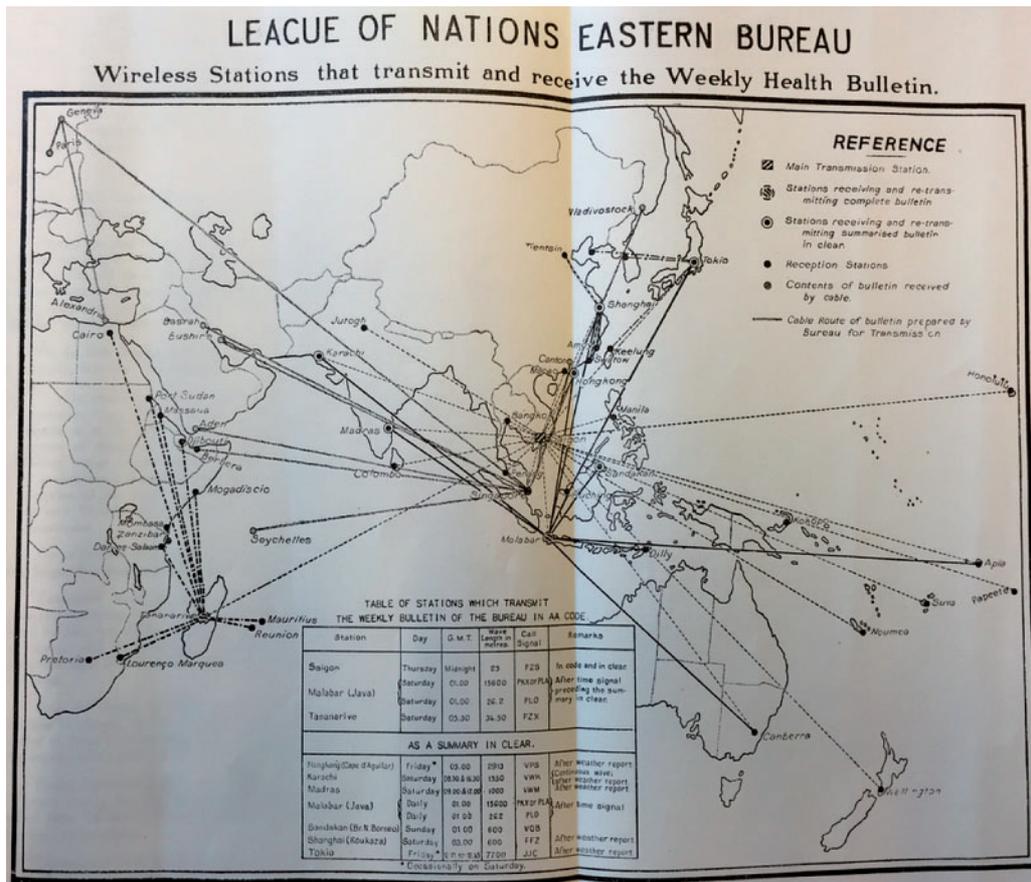
FIGURE 1: Map showing the wireless infrastructure underpinning the League of Nations Health Organization's dissemination of its *Weekly Health Bulletin*. While some places still received the bulletin by cable, note how the map highlights the newer technology of wireless. League of Nations Archives, Geneva, 8D/R6198/341, C.H.1249, Eastern Bureau, *Annual Report for 1936*, between 2 and 3. Reproduced by permission from the League of Nations Archives.

Frank Boudreau, a former Health Organization official, proclaimed in 1939: "it is one of to-day's paradoxes that the world which is destroying international co-operation by every means in its power is being saved from possibly devastating epidemics by international co-operation in health matters."[24] Still, even cooperation on health information could not survive the tipping point of political antagonism.

AT FIRST GLANCE, disease surveillance might seem a strange choice for untangling the threads of trade, migration, and information entwined in the knot of globalization. But

[24] Frank G. Boudreau, *Ancient Diseases—Modern Defences: The Work of the Health Organization of the League of Nations* (New York, 1939), 4, https://babel.hathitrust.org/cgi/pt?id=mdp.35112101720011. The text of this sixteen-page publication, printed for distribution at the 1939–1940 New York World's Fair, was reprinted in *The Health Work of the League of Nations: Thirty-First Session of the Health Committee*, Special Supplement to the *Monthly Summary of the League of Nations*, January 1940, 15–24. On the League's turn to the technical, see David Ekbladh, "American Asylum: The United States and the Campaign to Transplant the Technical League, 1939–1940," *Diplomatic History* 39, no. 4 (2015): 629–660.

the comparatively late development of any systematic international exchanges shows how and why the globalization of information was not concurrent with that of migration and trade. A global infrastructure for exchanging epidemiological information emerged nearly seven decades after states had recognized disease as a cross-border problem. Serious attempts to share such data had begun in the mid-nineteenth century. After cholera outbreaks in the 1830s and 1840s, European governments met at the first International Sanitary Conference in 1851 to coordinate quarantines and exchange information. This produced few concrete results.

Sanitary conferences continued, motivated by colonial concerns. Multiple nineteenth-century outbreaks that spread to Europe and the United States were known as "Asiatic cholera pandemics" because they had purportedly originated in India.[25] Western states convened eleven ad hoc sanitary conferences by 1903.[26] But they were slow to create institutions. The first international health organization was the Pan-American Sanitary Bureau, created in 1902 by American health experts to expand U.S. interests in Latin America.[27] Five years later, an international sanitary agreement in 1907 established the Office international d'hygiène publique (OIHP) in Paris to coordinate the International Sanitary Conferences. As one of its responsibilities, the OIHP collected information about public health and infectious diseases like cholera that were hampering maritime trade.

Simultaneously, other organizations emerged to address health. Imperial states developed medical institutes, including Britain, which opened the London School of Hygiene and Tropical Medicine in 1899. Health policy underpinned colonial structures: medical discourse often legitimized racial hierarchies.[28] Epidemiological control helped to counter imperial concerns about "colonial disease" and the health costs of empire.[29] Philanthropies also became involved with public health. The Rockefeller Foundation, for instance, focused on eradicating communicable diseases like hookworm.[30]

Only under the LNHO would "an unsystematic collection of data on a few diseases in a few countries" become a comprehensive system.[31] The LNHO initially emerged less from colonial concerns than from the influenza and typhus epidemics. The flu pandemic of 1918–1919 killed more people than World War I, with estimates ranging from 50 to 100 million deaths.[32] Colonial, indigenous, and aboriginal populations were dis-

[25] Mark Harrison, *Contagion: How Commerce Has Spread Disease* (New Haven, Conn., 2012), chap. 6.

[26] Valeska Huber, "The Unification of the Globe by Disease? The International Sanitary Conferences on Cholera, 1851–1894," *The Historical Journal* 49, no. 2 (2006): 453–476.

[27] Marcos Cueto, *The Value of Health: A History of the Pan-American Health Organization* (Washington, D.C., 2007).

[28] Peter Baldwin, *Contagion and the State in Europe, 1830–1930* (Cambridge, 1999); Deborah J. Neill, "Science and Civilizing Missions: Germans and the Transnational Community of Tropical Medicine," in Bradley Naranch and Geoff Eley, eds., *German Colonialism in a Global Age* (Durham, N.C., 2014), 74–92; S. J. Watts, *Epidemics and History: Disease, Power, and Imperialism* (New Haven, Conn., 1997).

[29] Alan Bewell, *Romanticism and Colonial Disease* (Baltimore, 1999); Robert Peckham, "Infective Economies: Empire, Panic and the Business of Disease," *Journal of Imperial and Commonwealth History* 41, no. 2 (2013): 211–237.

[30] Jessica Wang, "Colonial Crossings: Social Science, Social Knowledge, and American Power from the Nineteenth Century to the Cold War," in Jeroen van Dongen, ed., *Cold War Science and the Transatlantic Circulation of Knowledge* (Leiden, 2015), 184–213, here 191–199.

[31] Iris Borowy, *Coming to Terms with World Health: The League of Nations Health Organisation, 1921–1946* (Frankfurt a.M., 2009), 13.

[32] Alfred W. Crosby, *America's Forgotten Pandemic: The Influenza of 1918*, 2nd ed. (Cambridge, 2003); Howard Philips and David Killingray, eds., *The Spanish Influenza Pandemic of 1918–19: New Perspectives* (London, 2003).

proportionately affected, although their experiences differed markedly. Up to 85 percent of adults from some Inuit villages in Alaska perished. Around half of the residents of the Bombay Presidency contracted the flu; 10.3 percent, or just over 1 million, died.[33] Colonial administrators provided little help. But some, including the later League official Norman White, believed that poor information and inadequate colonial mortality figures had perpetuated disease.[34]

The most direct impetus for creating the LNHO was typhus, an epidemic disease transmitted by body lice that devastated Eastern Europe and Russia starting in 1916. By 1920, there were approximately 30 million cases and 3 million deaths. At the height of the Russian Civil War, Lenin declared that "either socialism will defeat the louse or the louse will defeat socialism."[35] Two months before the League officially came into existence in June 1920, officials from the major Western powers, the OIHP, and the Red Cross had convened a conference to coordinate a response to typhus and discuss the possibility of setting up a League organization that would focus on health.[36] In December 1920, the League Assembly approved a resolution to create a Health Committee. Ludwik Rajchman, a bacteriologist, had led Poland's response to typhus so impressively that he was hired as the League's medical director in mid-1921, serving in that office until 1939.[37]

Although the LNHO is comparatively under-explored, a historian called it "by general consent the most successful of the auxiliary organizations" as early as 1960.[38] Until 1923, the Health Committee was designated as "provisional." From 1923 to 1928, it was called the Permanent Health Committee and housed within the League's Social Section. Only in 1928 did the committee become its own division, the Health Section, also known as the Health Organization (LNHO). The new section organized international exchanges of medical personnel, convened conferences on biological standardization, conducted studies, and created national health systems in countries like Greece and China. In the 1930s, it branched into investigating rural health, particularly in Asia. The Health Organization employed elite public health and medical experts with similar

[33] David Hardiman, "The Influenza Epidemic of 1918 and the *Adivasis* of Western India," *Social History of Medicine* 25, no. 3 (2012): 644–664.

[34] F. Norman White, *The Prevalence of Epidemic Disease and Port Health Organisation and Procedure in the Far East: Report Presented to the Health Committee of the League of Nations* (Geneva, 1923), 49.

[35] Emily Willingham, "Of Lice and Men: An Itchy History," Guest Blog, *Scientific American*, February 14, 2011, https://blogs.scientificamerican.com/guest-blog/of-lice-and-men-an-itchy-history/.

[36] On the League's cooperation with Poland over typhus, see Borowy, *Coming to Terms with World Health*, 45–54.

[37] Marta A. Balińska, *For the Good of Humanity: Ludwik Rajchman, Medical Statesman*, trans. Rebecca Howell (Budapest, 1998); Balińska, *Ludwik Rajchman: Życie w służbie ludzkości*, Polish ed. (Warsaw, 2012).

[38] F. P. Walters, *A History of the League of Nations* (London, 1960), 180. Nevertheless, there is surprisingly little literature on the League and health. See Sunil Amrith, *Decolonizing International Health: India and Southeast Asia, 1930–65* (Houndmills, 2006); Borowy, *Coming to Terms with World Health*. Others have examined philanthropies; see, for example, John Farley, *To Cast Out Disease: A History of the International Health Division of the Rockefeller Foundation (1913–1951)* (Oxford, 2004); Gwendolyn C. Shealy, *A Critical History of the American Red Cross, 1882–1945: The End of Noble Humanitarianism* (Lewiston, N.Y., 2003). One scholar addressed communications, though not why wireless technology fostered cooperation. Lenore Manderson, "Wireless Wars in the Eastern Arena: Epidemiological Surveillance, Disease Prevention and the Work of the Eastern Bureau of the League of Nations Health Organisation, 1925–1942," in Paul Weindling, ed., *International Health Organisations and Movements, 1918–1939* (Cambridge, 1995), 109–133.

understandings of medicine.[39] They also shared an optimism that their work could alleviate, or even eliminate, disease.

Much of this new international health coordination focused on information, particularly standardized statistics, which Rajchman believed fervently would "demonstrate the practicability and the indispensability of international health work."[40] Created in 1921, the Epidemiological Intelligence Service was a central part of the Health Organization. The next year, it started to issue multiple series of periodical reports. *Epidemiological Intelligence* reported on Europe and Russia, while *Epidemiological Reports* summarized the latest health data. Monthly reports on infectious diseases were initiated in 1923. As the 1920s progressed, reports included maps and graphs to render statistics from seventy-four countries, colonies, and territories comparable.[41] The maps were also meant to demonstrate the swift spread of the League's information networks and to secure funding for the LNHO.

Rajchman's information strategy relied fundamentally on coordinating a new infrastructure for collecting and disseminating epidemiological information. A key part of this strategy was the League's first extra-European office: the Far Eastern Health Bureau (also known as the Eastern Bureau) opened in 1925 in Singapore.[42] The choice of a port city reflected the importance of Southeast Asian urban centers like Penang, Rangoon, and Bangkok as hubs for maritime trade, migration, and cultural exchange.[43] Singapore itself represented the confluence of interests between the League's information strategy, British imperial communication networks, and the priorities of the LNHO's main funder, the Rockefeller Foundation. The Rockefeller Foundation had long shared Rajchman's belief that information and statistics were the backbone of public health.[44] Funding an information office in Asia made sense for the foundation, which had created the China Medical Board in 1914 to provide medical education and conduct research in China and Southeast Asia.

The choice of Singapore dovetailed with imperial priorities. Interwar British officials saw Singapore as "the strategic centre" for regional communications because the city had many cable connections and a secure receiving wireless station, Kranji, on His Majesty's Naval Base Singapore.[45] It was also no coincidence that the nautically obsessed British were heavily involved in health communications.[46] British state agen-

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[39] Martin David Dubin, "The League of Nations Health Organisation," in Weindling, *International Health Organizations and Movements*, 56–80, here 56.

[40] Rajchman letter to Director of the International Health Board of the Rockefeller Foundation, Wickliffe Rose, May 2, 1922, cited in Borowy, *Coming to Terms with World Health*, 96.

[41] The statistical sheets from these territories are stored in boxes in the League of Nations Archives and include territories like the Tangier International Zone. LONA 8D/R5966–R5970.

[42] On health in Southeast Asia, see Tim Harper and Sunil S. Amrith, eds., *Histories of Health in Southeast Asia: Perspectives on the Long Twentieth Century* (Bloomington, Ind., 2014).

[43] Su Lin Lewis, *Cities in Motion: Urban Life and Cosmopolitanism in Southeast Asia, 1920–1940* (Cambridge, 2016); Eric Tagliacozzo, "The Lit Archipelago: Coast Lighting and the Imperial Optic in Insular Southeast Asia, 1860–1910," *Technology and Culture* 46, no. 2 (2005): 306–328.

[44] Interwar faith in statistics to solve health problems was pervasive. The Soviet state, for example, devoted massive resources to creating national statistical studies on suicide, a phenomenon that seemed individualistic and antithetical to the Soviet collectivist project. Kenneth M. Pinnow, *Lost to the Collective: Suicide and the Promise of Soviet Socialism, 1921–1929* (Ithaca, N.Y., 2010).

[45] The National Archives, Kew, UK, Records of the Admiralty, Naval Forces, Royal Marines, Coastguard, and related bodies, ADM 1/9180, Enclosure "B," Report of the Singapore Conference, 1934, 1.

[46] On how bodies of water like the Suez Canal connected British imperial possessions and spurred communications, see Mark Ravinder Frost, "Asia's Maritime Networks and the Colonial Public Sphere, 1840–

cies had used submarine telegraphy to map incidences of influenza in the 1890s; in turn, epidemics like the 1894 outbreak of bubonic plague in Hong Kong promoted the consolidation and spread of telegraphy itself.[47] The League's international vision overlapped with British colonial anxieties about disease. It would soon go beyond them by linking multiple empires in the newly accessible space of the air.

Singapore became a hub for health information because the Eastern Bureau used the new technology of wireless telegraphy to cross imperial borders and establish a durable information infrastructure. Mostly forgotten today, wireless conveyed short and long electrical impulses through the ether to signify dots and dashes in Morse code. Spoken radio was often called wireless, too. "The wireless telegraph is not difficult to understand," Albert Einstein purportedly proclaimed. "The ordinary telegraph is like a very long cat. You pull the tail in New York, and it meows in Los Angeles. The wireless is the same, only without the cat."[48] Initially plagued by atmospheric disturbances and unreliability, the technology improved greatly during World War I and became a key weapon by 1918.[49] Wireless also became a point-to-many form of communication: a single tower could now reach multiple recipients simultaneously. With these developments, empires and nation-states could cooperate in the air and on the sea even as they were competing on land.

League officials saw wireless as an opportunity to coordinate communication between polities. Wireless was the "principal medium" for receiving information to be included in the new *Weekly Epidemiological Record*, a bulletin started in 1926 by the Eastern Bureau's first director, Raymond Gautier.[50] A Swiss physician, Gautier would succeed Rajchman in 1939 as acting director of the Health Organization. Prior to starting at the League in 1924, Gautier was an award-winning researcher who had articulated the idea of the blood-brain barrier. He made epidemiological intelligence "the main function" of the Eastern Bureau.[51] The eleven employees devoted most of their time to information. Expenses for cables and wireless transmissions were the second-highest expenditure after staff, because the Eastern Bureau had to pay to send messages back to Geneva and around the world. Cable and wireless companies charged comparatively high rates and charged by the word, making the Eastern Bureau's weekly activities of information gathering and dissemination very expensive.[52] The aerial information service in turn justified the Bureau's existence and facilitated new forms of inter-imperial cooperation.

1920," *New Zealand Journal of Asian Studies* 6, no. 2 (2004): 63–94; Valeska Huber, *Channelling Mobilities: Migration and Globalisation in the Suez Canal Region and Beyond, 1869–1914* (Cambridge, 2013). Many LNHO officials were British, although the British state sometimes disagreed with the LNHO's priorities and initiatives.

[47] Robert Peckham, "Panic Encabled: Epidemics and the Telegraphic World," in Peckham, ed., *Empires of Panic: Epidemics and Colonial Anxieties* (Hong Kong, 2015), 131–154.

[48] In the German versions, it is a dachshund rather than a cat. The attribution to Einstein seems apocryphal, but is widespread. Albert Einstein, *The Ultimate Quotable Einstein*, comp. and ed. Alice Calaprice (Princeton, N.J., 2010), 474.

[49] Brian N. Hall, "The British Army and Wireless Communication, 1896–1918," *War in History* 19, no. 3 (2012): 290–321; Michael Friedewald, "The Beginnings of Radio Communication in Germany, 1897–1918," *Journal of Radio Studies* 7, no. 2 (2000): 441–463.

[50] LONA 8A/R6199/341, C.H.1450, Eastern Bureau, *Annual Report for 1939*, 2.

[51] LONA 8A/R6185/882, C.462.M.236.1933.III, Eastern Bureau, *Annual Report for 1932 and Summary of Proceedings of the Seventh Session of the Advisory Council Held at Singapore, March 29th to April 1st, 1933*, 2.

[52] LONA 8D/R5971/158, Eastern Bureau annual reports.

As Charles S. Maier notes, communications create a "spatial domain that has never been bordered so rigidly, indeed that challenges the territorial limits that prevail at any moment—what might be called the *communication space* in which ideas and cultural goods have been exchanged."[53] Wireless made the air and sea into two-way communication spaces for the first time.[54] Rajchman and the League sought to broker maritime and aerial cooperation that would supersede national and imperial borders. The LNHO brought together national and imperial wireless towers to form an international system of cooperation that functioned differently from and lasted longer than other types of political and economic collaboration.

States and empires acquiesced to the new "intrusion" of epidemiological intelligence because they saw its potential economic benefits. A similar dynamic operated in the League's testing of vaccines in French imperial North Africa.[55] Ships were laden with goods, but also with pathogens. Because polities—and imperial powers in particular—worried about how disease would affect maritime trade, information exchange offered a solution. Health communications made it possible to anticipate and prevent the spread of ship-borne sickness. The LNHO's system allowed empires to leverage international information networks without burdensome administrative costs and coordination. Economic interests and colonial concerns could drive imperial participation more than altruism or idealism. Commerce spread disease; communications could fix that problem.

Only with the rise of wireless, however, could an international organization like the LNHO become such a central broker of information between polities. The League hoped that new media like wireless and cinema could connect peoples and prevent future wars; truthful communication was a form of moral disarmament.[56] Information dissemination was a key part of the League's strategy to cement itself in Asia in particular. The League's only other extra-European offices were branches of its Information Office, founded in Tokyo in 1926 and Delhi in 1931.[57] For health information, the Eastern Bureau swiftly used wireless to become more than just "a Post Office" for the OIHP.[58] This new technology enabled the Bureau to coordinate epidemiological intelligence from Asia, the East Coast of Africa, and the Pacific Ocean. Imperial commercial incentives helped to explain an international system's comparative lack of presence in the West Coast of Africa: the information exchange focused more on major trade routes via the Indian and

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[53] Charles S. Maier, *Once within Borders: Territories of Power, Wealth, and Belonging since 1500* (Cambridge, Mass., 2016), 301 n. 8, emphasis in the original.

[54] It also reminds us that territory is three-dimensional with verticality and volume, as Gabrielle Hecht has suggested. Manu Goswami, Gabrielle Hecht, Adeeb Khalid, Anna Krylova, Elizabeth F. Thompson, Jonathan R. Zatlin, and Andrew Zimmerman, "History after the End of History: Reconceptualizing the Twentieth Century," *AHR* Conversation, *American Historical Review* 121, no. 5 (December 2016): 1567–1607, here 1570.

[55] Clifford Rosenberg, "The International Politics of Vaccine Testing in Interwar Algiers," *American Historical Review* 117, no. 3 (June 2012): 671–697.

[56] Jo-Anne Pemberton, "New Worlds for Old: The League of Nations in the Age of Electricity," *Review of International Studies* 28, no. 2 (2002): 311–336; Heidi J. S. Tworek, "Peace through Truth? The Press and Moral Disarmament through the League of Nations," *Medien & Zeit* 25, no. 4 (2010): 16–28.

[57] Tomoko Akami, "The Limits of Peace Propaganda: The Information Section of the League of Nations and Its Tokyo Office," in Jonas Brendebach, Martin Herzer, and Heidi Tworek, eds., *International Organizations and the Media in the Nineteenth and Twentieth Centuries: Exorbitant Expectations* (London, 2018), 70–90.

[58] The British Library, London [hereafter BL], India Office Records [hereafter IOR], L/E/7/1451, draft letter to Secretary-General of the League of Nations communicating the views of the Government of India, August 2, 1927.

Pacific Oceans back to Europe.[59] The League's system sought to forestall epidemics by receiving messages from moving ships and informing ports of infected ships before they even arrived. As one former League official put it, the Bureau was "a central fire-station in a municipal system of fire prevention," overseeing "the world's alarm system."[60]

The Eastern Bureau used twentieth-century information technology, yet it took a nineteenth-century colonial approach to the content it disseminated. International Sanitary Conferences in the previous century had sought to protect Europe from three diseases in particular: smallpox, plague, and cholera. Correspondingly, they became the focus of the wireless version of the *Weekly Epidemiological Record*. Although the death tolls for these maladies were high, they were lower than for more common diseases like tuberculosis. Officials perpetuated a tradition of viewing diseases like cholera as "oriental." In contrast to medical science's broader move to focus on the social causes of disease in the interwar period, the Bureau and Geneva used new wireless technology to address older, imperial concerns.[61]

While the choice of diseases was old-fashioned, the use of wireless reflected a new attitude toward the air. From the medieval period to the late nineteenth century in Europe, miasma theory blamed poisonous air for the spread of diseases like cholera. By the 1920s, modern bacteriology blamed disease on germs, not bad air. In the nineteenth century, the status of air also transformed when mountain air was commoditized as a cure.[62] While air had often represented insubstantiality or danger before 1900, inventions like wireless and the airplane reframed the air in the popular imagination as a space for freedom and utopian solutions for modern, technical problems.[63] In the interwar period, public health officials mobilized the air as a cooperative communicative space to prevent disease. The utopia of the air translated into a utopian vision of a wireless world freed from epidemics.

That vision relied upon an intricate, interconnected infrastructure that was coordinated every week by the LNHO and the Eastern Bureau. At first, the Health Organization's ambitions clashed with those of existing international institutions, particularly the OIHP and the Pan-American Sanitary Bureau. The OIHP had collected health data prior to 1918 but had not issued regular reports. After those initial conflicts, the International Sanitary Convention, signed in Paris in 1926, separated the tasks of the OIHP and the League.[64] Article 7 of the convention acknowledged "the value of the information" that the Eastern Bureau and the League provided. The convention allowed for separate agreements with each regional bureau, principally the League's Eastern Bureau and the Pan-American Sanitary Bureau. The agreement effectively recognized the Eastern

[59] On the longstanding dynamic of how global capital excludes most of Africa and connects only with particular nodes, see James Ferguson, *Global Shadows: Africa in the Neoliberal World Order* (Durham, N.C., 2006).

[60] Boudreau, *Ancient Diseases—Modern Defences*, 5, 4.

[61] On how technology shapes imperial discourse, see Duncan S. A. Bell, "Dissolving Distance: Technology, Space, and Empire in British Political Thought, 1770–1900," *Journal of Modern History* 77, no. 3 (2005): 523–562.

[62] Alison F. Frank, "The Air Cure Town: Commodifying Mountain Air in Alpine Central Europe," *Central European History* 45, no. 2 (2012): 185–207.

[63] Peter Fritzsche, *A Nation of Fliers: German Aviation and the Popular Imagination* (Cambridge, Mass., 1992). Air was also an ambivalent metaphor used around 1900 and thereafter to describe Jews as people who did not belong anywhere. Nicolas Berg, *Luftmenschen: Zur Geschichte einer Metapher* (Göttingen, 2008).

[64] Anne Sealey, "Globalizing the 1926 International Sanitary Convention," *Journal of Global History* 6, no. 3 (2011): 431–455.

Bureau's independent room for maneuver by allowing governments to provide information to the regional bureau in Singapore rather than the OIHP. The Singapore Bureau would then forward information about epidemics and the weekly reports to the OIHP.[65]

EPIDEMIOLOGICAL INTELLIGENCE AT THE Eastern Bureau was generated in three stages: collection, collation, and distribution. Between Monday and Wednesday each week, the Bureau received cables or postal mail relaying the latest numbers for smallpox, cholera, and plague. Information from British India arrived only on Thursday mornings because it took so long for officials in Delhi to gather information from the large number of Indian provinces. India was particularly important because Western officials had regarded ship-borne infections from there as "the fount of cholera" since the mid-nineteenth century.[66] Cables provided numbers; letters conveyed information about mortality rates, meteorological conditions, and measures taken to destroy rats or protect infected ports.

Soon, though, the infrastructures of epidemiological intelligence furthered enduring cooperation in the air and on the sea. Such infrastructures enable historians to overcome the somewhat artificial divide between the national, international, imperial, and global by tracing how networks of information collection and distribution were created and functioned.[67] Most information came from what League reports called "maritime towns" in the Pacific and Indian Oceans, as shown in the map in Figure 2. These port cities served as hubs for the public health officials who brokered communications with local populations, and for the doctors who ultimately decided what should and should not be classified as cholera. The system relied on multiple two-way dependencies: between the League and public health officials, between public health officials and doctors, and between public health officials and statisticians. The service began in 1926 with 104 ports and reached 163 by 1933. By the early 1930s, the LNHO's network spanned forty-five countries and two-thirds of the world's population.[68] But globalization was not always a synchronous process: even as the Great Depression contracted trade networks, epidemiological networks expanded, in part because the Rockefeller Foundation answered the LNHO's pleas to continue funding the organization.

The League's international system also thrived because it standardized imperial and national information systems. The boxes of submissions from countries around the world reveal that there were many different methods for representing disease: narratives, drawings, graphs, and tables with signs like circles or pluses that bear little resemblance to statistics today. Collecting statistics meant making them uniform. Just as patient histories were standardized over the late nineteenth century, League officials sought to regularize the numbers that they received.[69]

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[65] LONA 12B/R983/52505, C.225.1927.III, Report on the Work of the Tenth (Extraordinary) Session of the Health Committee, April 26–27, 1927.

[66] Harrison, *Contagion*, 140.

[67] On the inextricable relationship between the national and the international, see Glenda Sluga, *Internationalism in the Age of Nationalism* (Philadelphia, 2013). On global history and the nation, see Sebastian Conrad, *Globalisation and the Nation in Imperial Germany*, trans. Sorcha O'Hagan (Cambridge, 2010).

[68] LONA 8A/R6185/882, C.462.M.236.1933.III, League of Nations Health Organization Eastern Bureau, *Annual Report for 1932*, 2–3.

[69] Jonathan Gillis, "The History of the Patient History since 1850," *Bulletin of the History of Medicine* 80, no. 3 (2006): 490–512.

Rapports télégraphiques hebdomadaires sont reçus des 104 villes indiquées ci-dessous :
Weekly Telegraphic Reports are received from the 104 Towns shown below :

FIGURE 2: Map of port cities supplying information to the Eastern Bureau in 1926. Most of these cities initially cabled their weekly reports to Singapore and mailed supplemental, more detailed information. *Weekly Record No. 10 of Reports Regarding the Prevalence of Plague, Cholera, Yellow Fever, Typhus and Smallpox Received by the Health Section during the Week Ended June 3rd, 1926* (Geneva, June 4, 1926), 4, https://apps.who.int/iris/handle/10665/237367.

Over time, the Health Organization standardized both the content and the forms of epidemiological intelligence, which enabled information to spread further and in greater volume. The LNHO became the indispensable intermediary between territories whose notation systems were otherwise not mutually comprehensible. On an "Epidemiological Telegram Disposal Sheet" like the one pictured in Figure 4, officials created a standard format that seemed to render any disease comparable and comprehensible. It also fit into the League's broader initiative to standardize information like financial and economic data.[70]

The many boxes of statistics and disposal sheets obscure the essential roles of individuals in collecting and standardizing data. One British secretary in Geneva, Ursula Harding, devoted her days to gathering missing information from governments and standardizing what she received. Archives often make invisible the intricate and sometimes highly technical work of women at international institutions: Harding appeared in the documents only when she sent letters seeking further data.[71] But assiduously collected statistics relied on the assiduous work of women behind the scenes.[72] The Eastern Bureau's and LNHO's statistics also hid the hard work of doctors and locals on the

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[70] Patricia Clavin and Jens-Wilhelm Wessels, "Transnationalism and the League of Nations: Understanding the Work of Its Economic and Financial Organisation," *Contemporary European History* 14, no. 4 (2005): 465–492.

[71] These letters can be found in LONA 8D/R5966/64/57.

[72] On women in international history, see Glenda Sluga and Carolyn James, eds., *Women, Diplomacy and International Politics since 1500* (Abingdon, 2015).

FIGURE 3: Chinese statistics on notifiable diseases, January 1932. Already quite standardized, the table hints at the limits of collecting statistics and numerical representations. The bottom of the table states that the creators have adopted symbols due to "quantitative statistical figures not being obtainable." League of Nations Archives, Geneva, S1828. Reproduced by permission from the League of Nations Archives.

ground who gathered numbers in the first place—work that receives scant mention in the archives. People made statistics, but statistics concealed people.

Like any statistics, these numbers hid discontents and difficulties. The Eastern Bureau assumed that if no one was reporting on a disease, that meant there were no cases. Some governments, including the British, complained that their more accurate reporting made their territories look more disease-ridden. The German Public Health Office com-

FIGURE 4: Epidemiological Telegram Disposal Sheet (1928). The sheet noted the date and sender before displaying the telegram and reporting where and when it was sent. The two-letter combinations in the left-hand columns are the coded version of the telegram that is then decoded in the right-hand columns. League of Nations Archives, Geneva, 8D/R5975/430. Reproduced by permission from the League of Nations Archives.

plained on mathematical grounds. The *Weekly Epidemiological Record* was not providing statistics at all, at least not as German officials defined statistics. The *Record* provided a snapshot of disease every seven days, while the monthly reports supplied more detailed information about disease development. Germans found this insufficient because they believed that statistics needed to be diachronic as well as synchronic. Alongside weekly statistics, the *German Public Health Gazette* published the total figures for each week from the start of the year up to the present. This made it easy to recognize trends as well as to make comparisons between years. By applying this method, German officials reasoned, the League could transform its weekly bulletin from "simply a 'registration table'" into "a statistical table showing the general situation which is the real object of statistics."[73] Still, methodological complaints never stopped participation.

Information moved faster than the people who government and League officials feared would spread disease. After collating data, the Eastern Bureau and Geneva distributed the information either immediately or episodically. If a port or government health service cabled outside its normal time to file the first report of what appeared to be an epidemic, the Bureau would promptly cable the OIHP and vulnerable areas. League officials also sought out this information; they remained especially attuned to influenza. Fearing that the flu had returned in 1928, officials proactively scoured newspapers for information and sought clarification. Rajchman telegraphed U.S. Surgeon General Hugh S. Cumming in December for details of the "extensive epidemic" reported in newspapers. Cumming replied with details and a reassurance that this flu was milder. He deliberately avoided using the word "epidemic," calling it an "extensive outbreak." The Health Organization immediately telegraphed out Cumming's reply.[74] Although the United States had set quotas on the movement of people from Asia, Africa, and Eastern Europe with the Johnson-Reed Immigration Act of 1924, it increased information exchange to prevent a repeat of 1918–1919.

The Eastern Bureau created two standard weekly bulletins: the *Weekly Fasciculus*, a printed publication that was sent through the mail, and the *Weekly Health Bulletin* (or *Weekly Wireless Bulletin*). The Bureau was printing four hundred copies of the *Weekly Fasciculus* in 1927. By 1936, it reached forty-five countries.[75] Although cable transmission and postal delivery remained important, wireless was the Health Organization's main priority. It was the only way to reach moving ships at sea, and financially, it was cheaper than sending multiple cables. Several colonial governments also reduced prices for wireless transmissions or transmitted the information for free. Wireless was also the only point-to-many technology, enabling a broader and swifter distribution of information that League officials believed could stem or prevent epidemics. Even if a war broke out, wireless could reach across enemy lines, an essential calculus for an international organization mandated to remain neutral in conflict.

The Eastern Bureau's communication system was highlighted in its annual reports.

[73] LONA 12B/R993/57936, translation of a letter from the German Public Health Office, May 27, 1927. On German attitudes to statistics, see J. Adam Tooze, *Statistics and the German State, 1900–1945: The Making of Modern Economic Knowledge* (Cambridge, 2001).
[74] LONA 8D/R5970/57/127, telegram from Rajchman to Cumming, December 14, 1928, and telegram reply from Cumming, December 15, 1928.
[75] LONA 8D/R5980/435, C.179.M.55.1928.III, Eastern Bureau, *Annual Report for 1927 and Minutes of the Third Session of the Advisory Council Held in New Delhi, December 26 to 29, 1927*, 5; LONA 8A/R6198/341, C.H.1249, Eastern Bureau, *Annual Report for 1936*, 6.

In documenting its activities for headquarters in Geneva, the Bureau also attempted to provide justification for the Rockefeller Foundation's continued investment. Every annual report trumpeted progress in wireless and a reduction in cabling. The number of correspondents using cable transmissions dropped from twenty-one early in 1927 to fifteen by November.[76] By 1936, only Vladivostok in the Soviet Union, Bushehr in Iran, Aden in Yemen, and Victoria in the Seychelles received the weekly bulletin over cable.[77] Cables remained an essential backup, because atmospheric conditions like typhoons and monsoons occasionally affected wireless reception, particularly in the late 1920s, before the introduction of shortwave.[78] At the same time, officials sought to create a system of multiple wireless towers to rebroadcast the bulletin, hoping to obviate the need for cables, and eventually be able to rely upon the air alone.

League officials focused on mapping space not by distance but by wireless towers, showcasing how the League had brought together different polities to cooperate by sharing health information. The maps in the Eastern Bureau's annual reports reveal how League officials represented their own bureau to themselves and to the Bureau's main funder, the Rockefeller Foundation. The maps emphasized infrastructure above all else. They showed the new predominance of the air: coastlines were window dressing; the real focus was the straight lines connecting wireless towers. The world in these maps was more sea and air than land. Starting in 1928, almost every report contained maps presenting communications as the Bureau's raison d'être. In this unusual representation, Saigon and Singapore were more central than Europe. Western Europe does not even appear: the maps highlight only the German tower at Nauen (just outside Berlin).[79] In one sense, this depicted a new world centered on the Pacific and Indian Oceans, with the League as the essential institution connecting empires and nation-states.[80] In another sense, it reproduced colonial assumptions by presenting Africa and Asia as disease incubators.

Maps like the one in Figure 5 emphasized imperial cooperation in the development of an international information infrastructure by highlighting connections between wireless towers across land borders. Imperial hierarchies, priorities, and capital shaped the nature of cooperation. But the cartography implied that only an international organization could broker shared sovereignty over the air. The accompanying text in the reports emphasized increased participation in the system: information was still moving across borders even when such movement was being restricted and reduced for people and

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[76] LONA 8D/R5980/435, C.179.M.55.1928.III, Eastern Bureau, *Annual Report for 1927*, 4.

[77] LONA 8A/R6198/341, C.H.1249, Eastern Bureau, *Annual Report for 1936*, 4. The Eastern Bureau still cabled information to Geneva on Wednesdays and Thursdays. Geneva or Singapore would cable Alexandria on Thursdays.

[78] From 1933, Saigon transmitted over shortwave rather than longwave. LONA 8A/R6185/882, C.166. M.70.1934.III, Eastern Bureau, *Annual Report for 1933 and Summary of the Eighth Session of the Advisory Council Held at Singapore, February 8 and 9, 1934*, 3.

[79] On the politics of cartography, see James R. Akerman, ed., *The Imperial Map: Cartography and the Mastery of Empire* (Chicago, 2009); Mark Monmonier, ed., *Cartography in the Twentieth Century* (Chicago, 2015). On how maps affected views of the world, see Quinn Slobodian, "How to See the World Economy: Statistics, Maps, and Schumpeter's Camera in the First Age of Globalization," *Journal of Global History* 10, no. 2 (2015): 307–332.

[80] While states had long sought to control oceans, wireless reframed that aspiration by enabling communications at sea. On seas, empires, and sovereignty, see David Armitage, *The Ideological Origins of the British Empire* (Cambridge, 2000); Lauren Benton, *A Search for Sovereignty: Law and Geography in European Empires, 1400–1900* (Cambridge, 2010). Andrew Fitzmaurice examines land and sea in *Sovereignty, Property and Empire, 1500–2000* (Cambridge, 2014).
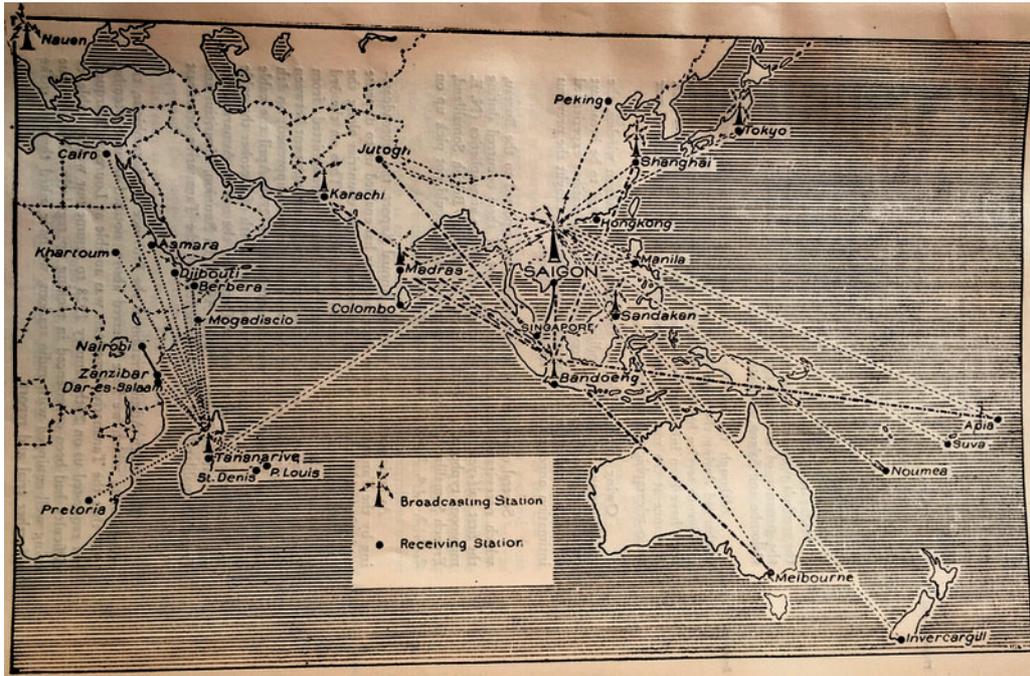
FIGURE 5: Map of wireless stations that participated in the League's epidemiological intelligence system in 1928. Receiving stations could only receive information, not send it. Broadcasting stations could both send and receive. League of Nations Archives, Geneva, 8D/R5980/435, C.48.M.29.1929.III, Eastern Bureau, *Annual Report for 1928 and Minutes of the Fourth Session of the Advisory Council Held in Singapore, February 14 to 16, 1929*, 3. Reproduced by permission from the League of Nations Archives.

goods. At the same time, the maps concealed the hierarchies of access to information: only colonial and elite public health officials and ships' captains received the information; colonial populations were excluded from receiving it or deciding how to act on it.

The connections between towers resulted from new kinds of inter-imperial cooperation cultivated by the LNHO between Britain, France, and the Netherlands. Once the Eastern Bureau had collated and coded the data on Thursdays, it was cabled from Singapore to the French colonial city of Saigon. As there was no suitable wireless tower in Singapore, the Indochinese government agreed in 1926 to transmit the broadcast every Friday through the Radio Electric Service at Saigon. In October 1927, the service expanded when the Tananarive station on Madagascar began rebroadcasting the coded messages sent from Saigon. In the early 1930s, the station at Malabar on Java in the Dutch East Indies also began rebroadcasting Saigon's messages on Saturdays. The Dutch had long invested in wireless telegraphy and radio as the simplest way to connect the Netherlands to the Dutch East Indies, which were far away and thus expensive to link with cables.[81] By sharing infrastructure, public health officials created a system of communicative "intercolonialism."[82]

[81] Vincent Kuitenbrouwer, "Radio as a Tool of Empire: Intercontinental Broadcasting from the Netherlands to the Dutch East Indies in the 1920s and 1930s," *Itinerario* 40, no. 1 (2016): 83–103.

[82] Tomoko Akami, "Imperial Polities, Intercolonialism, and the Shaping of Global Governing Norms: Public Health Expert Networks in Asia and the League of Nations Health Organization, 1908–37," *Journal of Global History* 12, no. 1 (2017): 4–25.
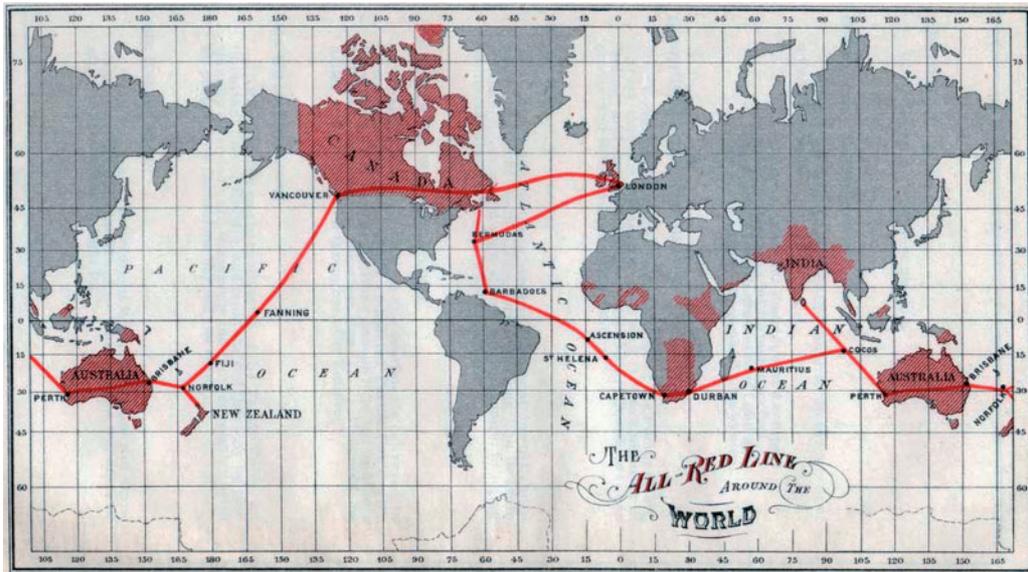
FIGURE 6: Map of British "All-Red Line around the World" from 1902. The map conflates two cable systems: landlines and submarine cables. Submarine cables were generally privately owned, while some landline systems were state-owned, as in Great Britain. George Johnson, ed., *The All Red Line: The Annals and Aims of the Pacific Cable Project* (Ottawa, 1903), facing p. 1.

Communicative cooperation using wireless contrasted with earlier competition over cables, which had begun to intensify in the 1890s.[83] In 1904, the Dutch Telegraph Administration had established a joint cable company with the Germans, the Deutsch-Niederländische Telegraphengesellschaft, to link German and Dutch colonies in the Pacific with the American Pacific cable. The Japanese cooperated with the Danish to create a Great Northern Cable Company. The British "All-Red Line" of submarine cables around the world depicted in Figure 6 was completed with the last link between Vancouver and Australia in 1902. These efforts resulted in overlap, because governments feared that the British in particular might use the cable system to censor content.

By contrast, the League brokered inter-imperial sharing of wireless health information. The essential participation of empires was a clear indication that the LNHO had not created a neutral information network. Rather, it relied fundamentally on colonial hierarchies and technologies that aided information exchange. The imperial underpinnings of the League's system troubled some states at the time, particularly in Latin America. Although Latin American countries supplied health information to the LNHO, they did not allow it to be included in the *Weekly Epidemiological Record*. Latin America was a key site for the Rockefeller Foundation's health initiatives and participated extensively in League initiatives.[84] Countries like Brazil regarded the League as an important clearing-

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[83] Simone M. Müller and Heidi J. S. Tworek, "'The Telegraph and the Bank': On the Interdependence of Global Communications and Capitalism, 1866–1914," *Journal of Global History* 10, no. 2 (2015): 259–283.

[84] Paul Weindling, "As origens da participaçãoda América Latina na Organização de Saúde da Liga das Nações, 1920 a 1940/The League of Nations Health Organization and the Rise of Latin American Participation, 1920–40," *História, Ciências, Saúde—Manguinhos* 13, no. 3 (2006): 555–570. On Latin America's relationship with the League, see Alan McPherson and Yannick Wehrli, eds., *Beyond Geopolitics: New Histories of Latin America at the League of Nations* (Albuquerque, N.Mex., 2015).

house for information.[85] But they remained ambivalent about the organization as a representation of imperial internationalism, particularly because public health had long intertwined with nation-building, and some saw the Rockefeller Foundation as representing American empire. These concerns kept Latin America out of an otherwise global system.

While Latin America chose not to be part of the LNHO's system for fear of epidemiological imperialism, other nations, including Germany, participated in order to bolster their global stature in communications. Six months before the Tananarive station began rebroadcasting the messages from Saigon, the wireless tower at Nauen was broadcasting the full coded wireless message every Saturday for European and non-European health administrations.[86] Germans had invested heavily in wireless since around 1900, because it did not require them to use British-dominated submarine cables. The Germans briefly possessed an "all-wireless route" around the world in 1914 connecting their disparate colonies. During World War I, the German government and military officials invested in wireless because the British had cut Germany's cable access to the outside world. Nauen's wireless tower was the world's tallest in 1917.[87] It still had the most powerful reception and transmission in the world in the 1920s. Despite an economy devastated by the war and hyperinflation in the early 1920s, and despite strong autarchic nationalist voices, Germany continued to invest massively in infrastructure to disseminate information across borders.

Just as financing for the Health Organization came predominantly from a philanthropic organization located in a non-member country (the United States), information infrastructure required non-League members, too. German officials and scientists had begun taking part in Health Organization conferences in the early 1920s, years before Germany entered the League in September 1926.[88] Their participation was part of a concerted German effort to engage in international coordination on issues like economics, minority politics, and the press during the late 1920s.[89] It also demonstrated the Germans' excellence in communications technology, particularly when Nauen was chosen over Paris as the home of European broadcasting. Nauen continued to broadcast the weekly bulletin long after Nazi Germany had left the League in October 1933. As with minority politics in Silesia, the Nazis' cooperation in the League lasted beyond 1933.[90] This mirrored their continued participation in the international cartel of news agencies until the outbreak of World War II in Europe in 1939.[91] Global communications outweighed political particularities.

[85] For example, the director of public health in Brazil, Dr. Clementino Fraga, found the Health Organization's monthly bulletins very important. LONA 8D/R5966/57/63, letter from Fraga to Rajchman, May 30, 1929.

[86] LONA 8D/R5980/435, C.179.M.55.1928.III, Eastern Bureau, *Annual Report for 1927*, 3.

[87] Heidi J. S. Tworek, "How Not to Build a World Wireless Network: German-British Rivalry and Visions of Global Communications in the Early Twentieth Century," *History and Technology* 32, no. 2 (2016): 178–200.

[88] Borowy, *Coming to Terms with World Health*, 93; Joachim Wintzer, *Deutschland und der Völkerbund, 1918–1926* (Paderborn, 2006).

[89] Carole Fink, *Defending the Rights of Others: The Great Powers, the Jews, and International Minority Protection, 1878–1938* (Cambridge, 2004); Matthias Schulz, *Deutschland, der Völkerbund und die Frage der europäischen Wirtschaftsordnung* (Hamburg, 1997); Heidi J. S. Tworek, "Journalistic Statesmanship: Protecting the Press in Weimar Germany and Abroad," *German History* 32, no. 4 (2014): 559–578.

[90] Brendan Karch, "A Jewish 'Nature Preserve': League of Nations Minority Protections in Nazi Upper Silesia, 1933–1937," *Central European History* 46, no. 1 (2013): 124–160.

[91] Heidi J. S. Tworek, "The Creation of European News: News Agency Cooperation in Interwar Europe," *Journalism Studies* 14, no. 5 (2013): 730–742.

The League stopped asking Nauen to disseminate the bulletin only in September 1939, after Germany had invaded Poland. It justified its actions by claiming that Nauen was mainly used for transmission across the Atlantic, and traffic there had decreased dramatically since the outbreak of the war. Certain League officials had campaigned for a tower built specifically for the League since 1926, thinking that it would ensure a neutral means of communication during wartime. But Swiss officials delayed the tower's erection until 1932.[92] Only in February 1939 did the Health Organization feel sufficiently satisfied with the range and reliability of the League's tower to start broadcasting three times every Friday; the map in Figure 7 shows this new system. The wireless tower could also receive epidemiological broadcasts from Singapore, which was cheaper than cable transmission.[93] Still, a Health Organization official noted to Secretary-General Joseph Avenol that by removing Nauen, the League had indicated that it was "no longer observing strict neutrality during the current conflict."[94] The LNHO could no longer broker between competing parties to facilitate world epidemiological intelligence.

Government and League officials had strongly hoped that this new information infrastructure would increase international interactions. These hopes were distinct from the ideas about publicity that historians have already explored in the history of the League—its efforts to disseminate information to a broad public, as well as colonized and indigenous peoples' attempts to use petitions to the League to publicize their causes.[95] By contrast, health officials focused on sending information to a technical elite: public health officials, colonial administrators, and ships' captains. This cooperation succeeded precisely because it occurred below the radar, administered by bureaucrats who dreamed of statistics, not stories. Officials did not generally issue public statements or write self-aggrandizing autobiographies; rather, their attention to the minutiae of standardized statistics assumed a grand, universalizing vision that information could cure disease. The epidemiological intelligence system attracted very little attention beyond public health officials, shipping companies, and military personnel. A similar story played out with the WHO's role in brokering cooperation between the U.S. and the USSR to eradicate smallpox in the 1970s.[96] Broad publicity was not the only reason for disseminating information.

Nevertheless, the Eastern Bureau tried to reach everyone in its target groups of public health officials and ships' personnel by making its wireless messages as easy to re-

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[92] LONA 9G/R2590/639/225, memorandum from the Swiss Federal Political Department on the establishment of a League of Nations wireless station, Berne, January 18, 1928; LONA 9G/R2602/36741/36590, Études comparatives de différents systèmes d'exploitation de la station radioelectrique appurtenant à la Société des Nations, July 1932.

[93] BL IOR L/E/8/1565, Report by Colonel Sir Alexander Russell on the 31st Session of the Health Committee of the League of Nations, November 1939.

[94] LONA 8A/R6196/341, letter from Gautier to Secretary-General Avenol, September 14, 1939.

[95] Ravi de Costa, "Identity, Authority, and the Moral Worlds of Indigenous Petitions," *Comparative Studies in Society and History* 48, no. 3 (2006): 669–698; Susan Pedersen, "Back to the League of Nations," *American Historical Review* 112, no. 4 (October 2007): 1091–1117; Pedersen, *The Guardians: The League of Nations and the Crisis of Empire* (Oxford, 2015).

[96] Sanjoy Bhattacharya, "International Health and the Limits of Its Global Influence: Bhutan and the Worldwide Smallpox Eradication Programme," *Medical History* 57, no. 4 (2013): 461–486; Erez Manela, "A Pox on Your Narrative: Writing Disease Control into Cold War History," *Diplomatic History* 34, no. 2 (2010): 299–323; Bob H. Reinhardt, *The End of a Global Pox: America and the Eradication of Smallpox in the Cold War Era* (Chapel Hill, N.C., 2015).
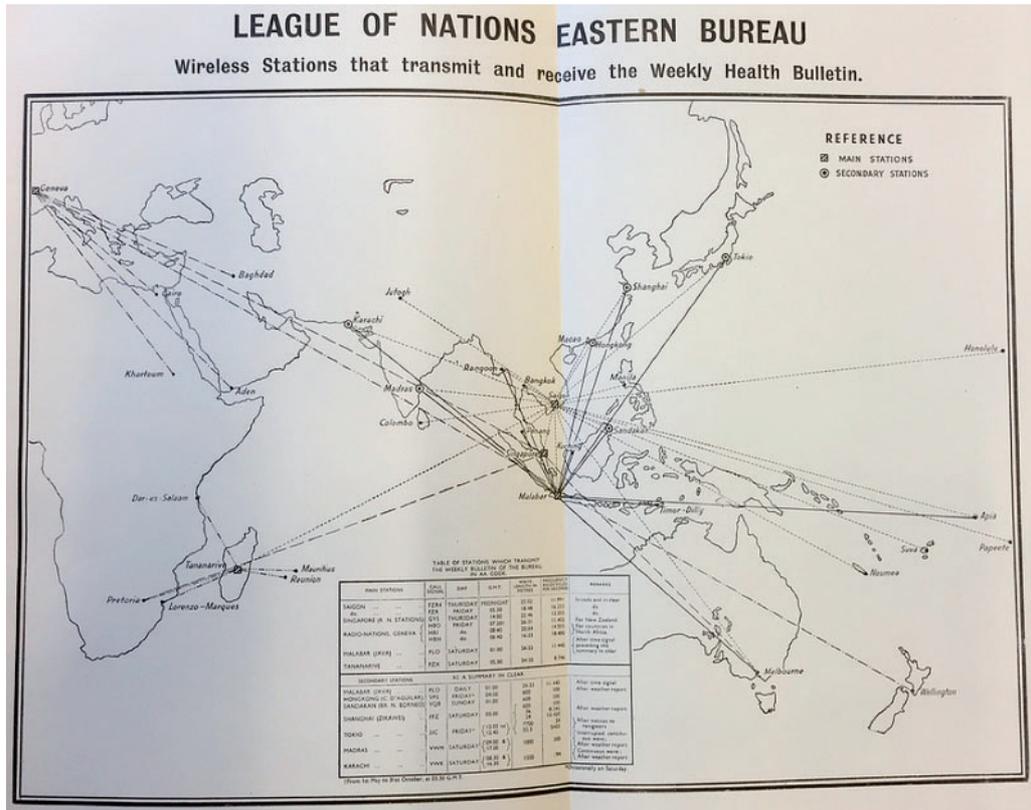
FIGURE 7: Map of the major wireless towers broadcasting the League of Nations Health Organization's *Weekly Health Bulletin* in 1939. Geneva was by then the only broadcast tower in Europe. More powerful shortwave transmission stations meant that fewer were necessary to transmit messages further and to more recipients. The map shows only stations sending the broadcast, not those receiving it, like ships and smaller wireless towers. League of Nations Archives, Geneva, 8D/R6199/341, C.H.1450, Eastern Bureau, *Annual Report for 1939*, between 2 and 3. Reproduced by permission from the League of Nations Archives.

ceive as possible. At the request of many countries and shipping companies, the Bureau pushed for Nauen and the other stations to transmit messages "in the clear." This meant broadcasting a decoded version for recipients like ships' captains who might not possess the epidemiological code used by the League. It was expensive to broadcast a clear message, however, because it took longer. Slowly but surely, the efficacy of the *Weekly Epidemiological Record* convinced various governments. Bandung, Madras, Karachi, and Tokyo started broadcasting summaries in the clear in 1928, followed by Sandakan and Shanghai in 1929.[97] In 1933, Saigon began transmitting the bulletin both in code and in the clear.[98] Starting in the early 1930s, Malabar retransmitted the weekly bulletin daily in the clear and included additional information about quarantine restrictions on ports. The daily broadcast enabled the Eastern Bureau to add important messages received during the week. For the Bureau, this was "an essential part of the service, the value of

[97] LONA 8D/R5980/435, C.48.M.29.1929.III, Eastern Bureau, *Annual Report for 1928 and Minutes of the Fourth Session of the Advisory Council Held in Singapore, February 14 to 16, 1929*, 6.

[98] LONA 8A/R6185/882, C.166.M.70.1934.III, Eastern Bureau, *Annual Report for 1933*, 3.

which cannot be overestimated."[99] Tests showed that in 1930, ships received 80 percent of the bulletins from wireless stations like Malabar or Karachi, 91 percent from Tokyo and Shanghai, and 100 percent from Hong Kong.[100]

The League's information system continued to grow, in part because Eastern Bureau and colonial officials took every precaution to ensure its trustworthiness. The Bureau developed an elaborate system for monitoring the broadcast after several mistakes in 1933 by the cable offices in Singapore and Saigon. The wireless station at Kranji on His Majesty's Naval Base Singapore agreed to transcribe the broadcast from Saigon and telephone it to the Bureau.[101] The director of public health in Bangkok and the assistant engineer at the Penaga wireless station also picked up the message from Saigon and Malabar and sent it verbatim to the Eastern Bureau.[102]

Errors became exceedingly rare. Only one occurred in 1936, for example, when a bulletin erroneously transmitted ZUFEQ (meaning smallpox in Calcutta) as SUFEQ (meaning plague in Calcutta). The Singapore office immediately noted and corrected the mistake after the naval station at Kranji telephoned to report it. The Bureau consistently transmitted city names in the same order, and the order of transmission for each disease was also fixed: plague, cholera, and smallpox. Receiving towers would know that something was wrong if that order changed. In this case, therefore, because this error meant that plague had come after cholera rather than before it, recipients would have spotted the problem.[103] To maintain trust, the service had to be flawless. And that trust relied upon cooperation between communications officials in the French and British empires.

Another reason that the League's system still functioned in the 1930s is that it brokered information, not interpretation or advice. This seemed to be the only way to encourage and maintain cooperation. The weekly bulletin listed the number of cases without designating a certain number as the threshold for an epidemic. The LNHO deliberately allowed each country and port to decide that question for itself.[104] "Arbitrary standards are adopted in various countries and individual ports," wrote the head of the Eastern Bureau in 1938, "and it is obvious that no single numerical standard could be applied universally."[105] League officials believed that communications could work only if local authorities were allowed to take action instead of being forced to follow a specified international standard.

LEAGUE AND GOVERNMENT officials saw the LNHO's epidemiological intelligence system as providing three types of benefits, each of which engendered cooperation with different partners. First, information could prevent the disruption of commerce. Second, the

[99] LONA 8A/R6198/341, C.H.1421, Eastern Bureau, *Annual Report for 1938*, 3.

[100] LONA 8D/R5979/430, C.95.M.35.1931.III, Eastern Bureau, *Annual Report for 1930 and Minutes of the Sixth Session of the Advisory Council Held in Singapore, December 27 to 30, 1930*, 4.

[101] LONA 8A/R6185/882, C.166.M.70.1934.III, Eastern Bureau, *Annual Report for 1933*, 4.

[102] LONA 8A/R6198/341, C.H.1249, Eastern Bureau, *Annual Report for 1936*, 6.

[103] LONA 8A/R6198/341, C.H.1249, Eastern Bureau, *Annual Report for 1936*, wireless bulletin for week ending September 5, 1936, 4.

[104] On defining an epidemic, see Charles E. Rosenberg's classic article "What Is an Epidemic? AIDS in Historical Perspective," *Daedalus* 118, no. 2 (1989): 1–17.

[105] LONA 8A/R6186/204, letter from Eastern Bureau director C. L. Park to Yves Biraud, July 13, 1938.

system could make the League the central node of knowledge about disease. Third, information could stop a military panic or enable armies to travel safely without worrying about infection. Not all of these intentions were benign. They often concealed violent motives or colonial ambitions. These overlapping incentives helped to increase information exchange just as many polities experienced dramatic reductions in migration and trade.

One way in which wireless information could benefit commercial operations was by reducing the turnaround times of ships in ports. If port officials knew that an infected ship was arriving, for example, they could speedily institute a quarantine. Knowing the exact date of an outbreak on a ship also decreased the time that ship would have to spend in quarantine, enabling it to resume travel more quickly, and reducing commercial losses from time spent at harbor. Even after the Great Depression had dramatically reduced global trade flows, epidemiological information was exchanged between more places than before. Former LNHO official Frank Boudreau found the system so effective that he praised it in biblical terms in January 1940: "The truth shall make men free, said the prophet, and to know the truth about disease means freedom for passenger and freight traffic, freedom from disease and from unnecessary restrictions." With accurate information about diseases, officials could take precautions only against infected ships and could stop "such general interference with all traffic as occurs when nothing is known but all is suspected."[106]

League officials believed that the weekly bulletins were reducing the number of cases of smallpox and cholera aboard ships. As more ports and more data were included, the average length of wireless coded bulletins increased from thirty-two words in 1927, to forty-four in 1928, to fifty-one in 1929. The length then decreased to forty-six words in 1930 because the number of infected ports declined, or so officials claimed.[107] The annual report for the Eastern Bureau in 1936 proudly displayed a map of infected ships with only twenty-three cases. Although they did not have direct proof, officials firmly believed that their swift provision of information had reduced the incidence of disease.[108] Authorities knew about infected ships in advance and could more effectively enact quarantine measures. These experiences also reinforced the idea that wireless had made the sea safer. The infrastructure of epidemiological intelligence offered a justification for the Health Organization's existence: without providing concrete proof, officials asserted that information made the League indispensable.

League officials like Yves Biraud—the youngest-ever person in France to qualify as a doctor, receiving his diploma in 1923—also garnered support by styling the LNHO as a vital clearinghouse of information.[109] In the early 1930s, Poland, Czechoslovakia, and Hungary all independently contacted Biraud, asking him to collect data on more communicable diseases than smallpox, cholera, and plague. Epidemiologists also wanted weekly information about conditions like typhoid, diphtheria, and poliomyelitis.[110] The Health Organization had long provided this sort of information on an emergency basis during outbreaks of flu and poliomyelitis. While Biraud welcomed the request from

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[106] Boudreau, *Ancient Diseases—Modern Defences*, 5.

[107] LONA 8D/R5980/435, C.48.M.29.1929.III, Eastern Bureau, *Annual Report for 1928*, 5; LONA 8D/R5979/430, C.95.M.35.1931.III, Eastern Bureau, *Annual Report for 1930*, 2.

[108] LONA 8D/R6198/341, C.H.1249, Eastern Bureau, *Annual Report for 1936*, map 11, 53.

[109] Biraud was 22 or 23 when he qualified. "Obituary for Yves Biraud," *The Lancet* 286, no. 7403 (July 17, 1965): 137.

[110] LONA 8D/R5968, letter from Biraud to Dr. Bela John, director of the Hungarian State Hygienic Institute, December 19, 1932.

Eastern European states for more information, financial considerations prevailed. By the early 1930s, the Depression had decimated funding. Biraud had another suggestion: The Health Organization would not provide a weekly bulletin, but would collect information on these diseases and maintain a card index for Central Europe.[111] It then would publish material on a disease only if "anything abnormal was occurring."[112] If a government heard nothing from the League, officials could concentrate on other issues.

Biraud's main problem was not the Health Organization's willingness, but the quality and regularity of the information it received. Polish information was "excellent in its presentation," but it arrived irregularly. The Soviet Union's information was often months out of date. Hungary mailed data every two weeks that was generally already four weeks old. "It is obvious," wrote Biraud to a Polish epidemiologist in 1932, "that we can only give back what is given to us."[113] Epidemiological information could prevent disease from disrupting everyday life, but only if every government supplied the League with accurate information. Moreover, the Health Organization's card index system could alleviate angst only if every state believed that the League possessed reliable statistics. Biraud successfully pushed Hungary to provide weekly information in December 1932. The Health Organization persuaded the Estonian government in 1928 to start collecting weekly statistics on typhus and smallpox.[114] It also convinced the Estonians to mandate uniform statistics from the country's thirty-one health insurance funds.[115] But information mailed and cabled from Eastern Europe and the Baltics seemed less complete than statistics from colonial administrations in Asia and Africa. Communications to Geneva worked less well over land than through the air and on the sea.

While the League envisioned a beneficial role for its information system in protecting the health of military personnel, state incentives were not always benign. As World War II progressed, idealistic League officials were shocked by the military purposes for which epidemiological intelligence was being used. Japanese officials had first suggested that a League of Nations health bureau be established in Asia in the early 1920s to collect more information about disease in China for military purposes.[116] If an army were to invade, generals needed to know that they would not lose troops to disease. The Eastern Bureau was the cheapest and most reliable method for obtaining that information. In many ways, the Bureau was part of a broader military investment in the air. Many countries created air forces during or just after World War I. The British Royal Air Force was founded in 1918, for example, and many countries invested heavily in airplanes to make the air a military arena, including in colonial spaces after World War I.[117] International organizations' aspirations could serve imperial and military ends.

[111] On card index systems as media, see Markus Krajewski, *Paper Machines: About Cards & Catalogs, 1548–1929* (Cambridge, Mass., 2011).

[112] LONA 8D/R5969, letter from Biraud to Dr. M. Kacprzak, State School of Hygiene, Warsaw, December 19, 1932.

[113] Ibid.

[114] LONA 8D/R5967/57/78, letter from E. Lasberg to K. Stouman, June 21, 1928.

[115] LONA 8D/R5971/430, correspondence with Dr. Lasberg, Estonia, 1928.

[116] Tomoko Akami, "A Quest to Be Global: The League of Nations Health Organization and Inter-Colonial Regional Governing Agendas of the Far Eastern Association of Tropical Medicine, 1910–25," *International History Review* 38, no. 1 (2016): 1–23. On Japan's relationship to the League, see Thomas W. Burkman, *Japan and the League of Nations: Empire and World Order, 1914–1938* (Honolulu, 2008).

[117] Priya Satia, "Developing Iraq: Britain, India and the Redemption of Empire and Technology in the First World War," *Past & Present*, no. 197 (November 2007): 211–255.

Still, the *Weekly Epidemiological Record* could bolster the League's claims to neutrality. The weekly bulletin continued to be issued even after the Japanese invasion of China in 1937 and the outbreak of World War II in Europe in 1939. Every country and port except the USSR continued to contribute, including Japan, which had left the League of Nations in 1933. In late 1939, Eastern Bureau officials believed this showed "how well established is the international system of epidemiological intelligence."[118] As the League's political power waned in the 1930s, it increasingly focused on purportedly technical divisions like the Health Organization to justify its existence. Epidemiological intelligence featured prominently in the League of Nations exhibit at the New York World's Fair of 1939–1940.[119] Even if the League had not prevented war, at least it could claim to have prevented epidemics and expanded information exchange.

But the Health Organization learned that some governments saw epidemiological intelligence as a weapon of war, too. The technical was also political.[120] After September 1940, American health officials stopped sending information to the League. In November 1940, the government of India also stopped cabling information to the Eastern Bureau because the British did not want reports about diseases to fall into the hands of the OIHP headquarters in Paris or hostile countries. The French had surrendered to the invading Nazi army in June 1940. Paris was occupied, and so were the OIHP headquarters. Since the International Sanitary Convention of 1926, the OIHP had coordinated epidemiological intelligence with the Health Organization and the Eastern Bureau. The British worried that health information would give the enemy a tactical advantage. They were particularly concerned about communicating over wireless where they could not control the recipients. Instead, the British cabled statistics directly to other countries through diplomatic channels.[121] They still sent information to Singapore, but it now went first to the civil director of medical services, who examined the material and excised anything potentially sensitive before passing the data on to the Eastern Bureau.[122]

This was a disaster for perplexed League officials, who saw information as a neutral good.[123] "The attitude of our friends from India is a puzzle to me," wrote Yves Biraud, now the head of the Epidemiological Intelligence Section, in November 1941.[124] The government of India had even pushed in late 1939 for an Indian representative to be-

[118] LONA 8A/R6199/341, C.H.1450, Eastern Bureau, *Annual Report for 1939*, 1.

[119] David Allen, "International Exhibitionism: The League of Nations at the New York World's Fair, 1939–1940," in Brendebach, Herzer, and Tworek, *International Organizations and the Media in the Nineteenth and Twentieth Centuries*, 91–116.

[120] Some recognized this at the time. See, for example, Pitman B. Potter, "Note on the Distinction between Political and Technical Questions," *Political Science Quarterly* 50, no. 2 (1935): 264–271.

[121] LONA 8A/R6199/341, C.H.1452, Eastern Bureau, *Annual Report for 1940*, 1 (reproduction of British cable); BL IOR M/3/319, telegram from Government of India, Department of Education, Health and Lands, to Secretary of State for India, November 23, 1940.

[122] BL IOR M/3/319, telegram from Secretary of State for India to Government of India, Department of Education, Health and Lands, June 20, 1941, describing secret telegram of December 7, 1940.

[123] There was widespread optimism that neutrality could solve international problems in interwar Europe. See Rebecka Lettevall, Geert Somsen, and Sven Widmalm, eds., *Neutrality in Twentieth-Century Europe: Intersections of Science, Culture, and Politics after the First World War* (New York, 2012). It also became a staple underpinning of many international initiatives, such as humanitarianism. G. Daniel Cohen, "Elusive Neutrality: Christian Humanitarianism and the Question of Palestine, 1948–1967," *Humanity: An International Journal of Human Rights, Humanitarianism, and Development* 5, no. 2 (2014): 183–210; Darcie Fontaine, "The Politics of Neutrality: Cimade, Humanitarianism, and State Power in Modern France," *Humanity: An International Journal of Human Rights, Humanitarianism, and Development* 9, no. 2 (2018): 245–270.

[124] LONA 8A/R6198/341, letter from Biraud to Park, November 28, 1941.

come the new deputy director of the Singapore Bureau.[125] But League officials had heard that the British feared the League would "misuse . . . all kinds of statistics, financial and economic in particular."[126] Eastern Bureau officials did not think that India had to supply the OIHP with information, because India had signed neither the 1926 International Sanitary Convention nor the International Sanitary Convention for Aerial Navigation of 1933, which mandated that information on certain epidemics be supplied to the OIHP.[127] For League officials, health communications was a neutral, apolitical enterprise that involved virtually every country in preventing the spread of disease. They seemed not to understand why British colonial officials were worried that the same information could aid the enemy's military planning.

Despite praising the "irreproachable attitude" of League officials, British health officials in Whitehall finally stopped sending any information on their territories in September 1941.[128] The strengths of wireless had become its weaknesses. Over the course of the 1930s, the Eastern Bureau had persuaded various wireless towers to send the weekly bulletin in the clear. This made it easier for ships to receive the information. From a British perspective in 1941, that made the bulletin vulnerable to interception. Moreover, wireless information exchange between Singapore and Geneva seemed unsafe to British officials, who were well aware of Germany's excellent wireless capabilities.

The Japanese invasion of Southeast Asia closed the Eastern Bureau entirely, as the staff fled to Australia in February 1942. The director, Dr. C. L. Park, failed to revive the weekly bulletin from Canberra, and the Bureau itself was officially disbanded for the duration of the war in October 1942.[129] The *Weekly Epidemiological Record*, however, survived the demise of the Bureau. With virtually no staff and no support, Biraud kept the publication alive in Europe because he saw it as key to the argument for building a new health organization after the war ended. He was right: the communication space of health did not disappear after 1945.

World War II was a less radical break for epidemiological information than it was for other forms of globalization. The League's epidemiological intelligence infrastructure persisted after World War II through its personnel, publications, and philosophy. When the WHO emerged, its health communications bore a familiar stamp. A cadre of international civil servants, including Biraud and Gautier, had careers spanning the League and the WHO. Gautier, the first director of the Eastern Bureau, had served as acting director of the LNHO from 1939 until 1942, when he traveled to London and Washington to plan for postwar European public health initiatives. Biraud and Gautier both pushed for a world health organization headquartered in Geneva to build upon the League's success.[130] Gautier became assistant director-general of the WHO in 1948,

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[125] No deputy director was appointed in the end. BL IOR L/E/8/1565, telegram from Government of India, Department for Education, Health and Lands, to Secretary of State for India, New Delhi, November 6, 1939.

[126] LONA 8A/R6198/341, letter from Biraud to Park, November 28, 1941.

[127] LONA 8A/R6188/224, letter from Park to Biraud, September 30, 1941.

[128] LONA 8A/R6188/224, letter from Neville Goodman, Ministry of Health, Whitehall, to Biraud, September 22, 1941.

[129] LONA 8A/R6199/341, note by Secretary-General Sean Lester on "Eastern Bureau of the Health Organization at Singapore," Geneva, April 1943.

[130] Borowy, *Coming to Terms with World Health*, 431–444. On the creation of the WHO, particularly the American role, see Thomas Zimmer, *Welt ohne Krankheit: Geschichte der internationalen Gesundheitspolitik, 1940–1970* (Göttingen, 2017).

serving in that role until his retirement in 1950. Colleagues later described the first director of the Eastern Bureau, the driving force in creating the wireless epidemiological service, as "truly the soul of the World Health Organization."[131]

If Gautier was the soul of the WHO, then that soul was an administrative one. Gautier and Biraud dreamed of statistics and standardization as the path to peace. Biraud was a bureaucrat so devoted to collating information that he spent much of World War II producing a dictionary of all the known names for communicable diseases in twenty-three European languages and Latin.[132] He also headed the secretariat for the World Health Conference in 1946 that created the WHO. After the WHO emerged in 1948, he became director of the Service of Epidemiological Intelligence and Public Health Statistics. The history of health communications is only partially known because it is a history of doctors who dealt in statistics, not stories.

Led by officials like Biraud, the WHO kept Singapore, Geneva, and Alexandria as epidemic intelligence stations and continued a wireless system backed up by cables. By 1951, Biraud would declare the world "substantially covered" except for the USSR.[133] Just as some participants in the League's epidemiological intelligence system were not League members during the 1930s, not all participants in the 1950s were members of the United Nations. Spanish health officials were deeply involved in the World Health Organization even though Spain was not allowed to join the UN until 1955.[134] International information networks could emerge in different places and at different times than other types of international flows or strategic alliances like NATO or the Non-Aligned Movement.

Publications like the printed *Weekly Epidemiological Record* continued unchanged. The first iteration under UN auspices appeared on September 5, 1946. The short preface noted that the *Record* would temporarily retain the same layout and provide the same information.[135] A new format never came. The publication kept its two columns side by side, one in English and one in French. It continued to present information in lists of numbers, graphs, and figures to create statistical "legibility." Even today, the *Record* looks remarkably similar to the 1920s version. The technologies of distribution have changed, but the belief in numbers has not.

The philosophy of disease prevention has also retained the idea that communication could eradicate communicable disease. The League system supplied information to health officials, but it formed the basis for a system that informed (and still informs) the general public. Although the WHO's main target audience changed in the 1950s and 1960s from public health officials and academics to society as a whole, the organization saw statistical information as a panacea. Health experts today emphasize more two-way communication and argue that "biomedical interventions alone are unlikely to succeed without communication support."[136] Even as conventional methods of communication

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[131] "Raymond Gautier, M.D.," *British Medical Journal* 1, no. 5027 (May 11, 1957): 1127.

[132] "Fevers in Every Tongue," *The Lancet* 245, no. 6333 (January 13, 1945): 59.

[133] "Epidemiology and the World Health Organisation," *The Lancet* 257, no. 6652 (February 24, 1951): 457–458, here 457.

[134] David Brydan, "Franco's Internationalists: Spanish Health and Welfare Experts on the World Stage, 1939–1959" (doctoral thesis, Birkbeck, University of London, 2016).

[135] LONA 8A/R6187/204.

[136] Douglas Storey, Kim Seifert-Ahanda, Adriana Andaluz, Benjamin Tsoi, Jennifer Medina Matsuki, and Blayne Cutler, "What Is Health Communication and How Does It Affect the HIV/AIDS Continuum

sometimes fail to achieve better health outcomes, officials transferred their faith in communication among experts to faith in communication with the public.[137]

DEBATES ABOUT THE EFFICACY and importance of international health communications have remained central to epidemic management. In the largest-ever outbreak of Ebola in 2014–2016, over 11,300 lives were lost in Sierra Leone, Guinea, and Liberia.[138] As the blame game raged afterward, the Médecins Sans Frontières emergency coordinator for Ebola in Guinea admitted that it had been "a big mistake" to focus on treatment rather than on communicating with Guineans about good hygiene practices.[139] Alongside poor coordination between international scientific institutions, West African countries failed to exchange information promptly about critical issues like the movement of people across borders. A researcher at the London School of Hygiene and Tropical Medicine, Elizabeth Smout, concluded that "only through open information sharing and dialogue at all levels can challenges be overcome, trust gained and epidemics as devastating as Ebola be stopped." Smout advised creating a central node of communications to coordinate responses.[140] The embattled WHO agreed. Its "Blueprint for Action to Prevent Epidemics," developed at the World Health Assembly in May 2016, proposed that the WHO's Global Observatory on Health Research and Development should facilitate "rapid information sharing" between governments, NGOs, private sector stakeholders, and scientists.[141] The culprit for the extent of the Ebola outbreak was not poor treatment. The culprit was poor communications.

This focus (and lack of focus) on communications was not new. But it took concrete, infrastructural form in the 1920s, when the League of Nations coordinated the creation of an international health communications system. Information infrastructures have become so apparently seamless that their role in different phenomena like capitalism or health has faded from historical view. The vibrant field of health communications focuses on the present and draws almost exclusively from the behavioral sciences.[142] Leading historians of health have generally downplayed the importance of information, noting that "[a]lthough information can inform policy making, the choice of strategies

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of Care? A Brief Primer and Case Study from New York City," *Journal of Acquired Immune Deficiency Syndromes* 66, suppl. 3 (2014): S241–S249, here S247.

[137] Recent experiments have found that public communications on vital issues like vaccines are often ineffective, or worse. Brendan Nyhan, Jason Reifler, Sean Richey, and Gary L. Freed, "Effective Messages in Vaccine Promotion: A Randomized Trial," *Pediatrics* 133, no. 4 (2014): 835–842.

[138] Centers for Disease Control and Prevention, "2014–2016 Ebola Outbreak in West Africa: Case Counts," https://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/case-counts.html.

[139] Misha Hussain, "MSF Says Lack of Public Health Messages on Ebola 'Big Mistake,'" Reuters, February 4, 2015, https://www.reuters.com/article/us-health-ebola-msf-idUSKBN0L81QF20150204.

[140] Elizabeth Smout, "Communicating in a Crisis like Ebola: Facts and Figures," SciDev.Net, April 29, 2015, https://www.scidev.net/global/ebola/feature/communicating-crisis-ebola-facts-figures.html#.

[141] World Health Organization, "An R&D Blueprint for Action to Prevent Epidemics," May 2016, https://www.who.int/blueprint/about/r_d_blueprint_plan_of_action.pdf, 20.

[142] Muhiuddin Haider, ed., *Global Public Health Communication: Challenges, Perspectives, and Strategies* (Sudbury, Mass., 2005), xxvi. Some have criticized these top-down Western-centric ideas or sought to move beyond paternalistic prescriptions from physicians. Liew Kai Khiun, "Introduction," in Liew Kai Khiun, ed., *Liberalizing, Feminizing and Popularizing Health Communications in Asia* (Burlington, Vt., 2010), 1–14. Any histories of health communications generally start with 1945; see, for example, Richard K. Thomas, *Health Communication* (New York, 2006), chap. 4.

to deal with health and disease is ultimately political."[143] Yet information strategies are also political.

Information did not necessarily move across borders in the same way that people and goods did. The LNHO's world epidemiological intelligence system was able to emerge at a moment of apparent deglobalization because it operated in new spaces and offered different benefits to different participants. Health information was meant to prevent epidemics; it enabled the LNHO to justify its own existence as a broker for standardized, technical information; it helped imperial powers like Britain and France to share the financial burden of empire; it provided others, like Japan, with military advantages; and it enabled Germany to participate in international endeavors to regain national prestige. Often information was used for instrumental reasons that bore little relation to the content itself. The new interwar communication space of epidemiological intelligence was not just a technological development. Health communications created new hubs for information exchange across borders precisely as liberal internationalism was challenged by competing ideologies of fascism and communism. After World War II, those hubs and the practices of health communications would swiftly reassert their importance.

The current moment and much international history tempt us to see any breakdowns in international exchanges as uniform: if trade decreases, everything else must go, too. The history of health information and infrastructure tells a different story. Information can continue to flow across borders even if other forms of interaction have ceased to function.

[143] Susan Gross Solomon, Lion Murard, and Patrick Zylberman, "Introduction," in Solomon, Murard, and Zylberman, eds., *Shifting Boundaries of Public Health: Europe in the Twentieth Century* (Rochester, N.Y., 2008), 1–20, here 9.

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