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The Highway Revolution, 1895–1925: How the United States Got Out of the Mud.

By I. B. Holley Jr. Durham, N.C.: Carolina Academic Press, 2008.

Pp. ix+204. \$40.

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The Highway Revolution is, at least in small part, family history. I. B. Holley Jr.'s father was a highway contractor in Connecticut and New York State during the early twentieth century, and a discovery of a cache of his father's business papers led him to a deeper exploration of the history of road building in the United States. Over the past quarter century, scholars have developed a rich understanding of twentieth-century transportation politics, but Holley offers something different. This text is a "muddy-boots view" of road building "at the tactical level," and it is an account that reflects the lived experience of the small-scale highway contractors who played a decisive role in the hard-surfacing of the nation's dirt roads (p. vii). The "revolution" of Holley's title, then, has as much to do with the dramatic increase in miles of paved highway between 1895 and 1925 as it does with the rapid growth of the road-building industry, the mastery of new technologies, the expansion and dissemination of engineering knowledge, and the establishment of an organizational framework that effectively channeled public revenue to myriad contracting agents.

Drawing on extensive historical research in engineering journals, industry publications, and road-building manuals, Holley explores the multiple factors that comprised this highway revolution: finance mechanisms, emerging interest groups that sought to direct highway improvement in one direction or another, and, most important to Holley's narrative, the rise of a host of specialized machines and materials. Holley's account of the highway revolution is at its strongest when he is relating tales of technical innovation, pushed forward by highway workers seeking some labor-saving device. For instance, repeated modifications to horse-drawn drags, scrapers, graders, and dump wagons are a reminder of just how labor-intensive early road building was, and how rising interest in road improvement generated countless acts of localized experimentation with equipment.

In Holley's telling, it was the road contractor—the mostly small-scale operator who "kept his office under his hat"—who served as the nexus between newly empowered state highway commissions and emerging road-building technologies, such as stone crushers, steamrollers, and steam shovels (p. 75). His father's road-building enterprise reveals the wide range of daily uncertainties that complicated contractors' efforts to pull the nation out of the mud. Most troublesome were the innumerable cost factors that were nearly impossible to predict with any accuracy: labor costs fluctuated wildly; the real cost of excavation was anyone's guess until serious digging began; reliable methods of accounting were lacking for the depreciation of the

mechanical equipment that displaced horse-powered tools; and no formula existed to manage the timing of the transition to these new technologies.

The great strength of Holley's text is also its great weakness. By defining the highway revolution in primarily technical terms, Holley offers little in the way of critical perspective on the consequences of gaining tactical mastery over road-building processes. He acknowledges the "highly political arena in which building public highways" took place (p. 138). But he repeatedly sidesteps important political debates that shaped the American highway revolution, and he misses an opportunity to fully explore the extent to which technical choices were contingent on political ones. For instance, in analyzing the shift from asphalt to concrete paving during the 1920s, Holley thoroughly explores the relative impact of tire thrust on paving materials. Yet he gives short shrift to the triumph of engineers' traffic-service vision of highway development or the interest-group politics that underpinned this development. Even Holley's small-time contractors appear to operate outside of politics, when contractors were, in fact, deeply enmeshed in a patronage system that depended on loyalty, and often blatant kickbacks, to party organizations. Highway contractors bidding on rural paving jobs learned their trade working in urban street and sidewalk construction and were, no doubt, well aware of the protocols of patronage.

Finally, Holley tends to uncritically adopt engineers' dismissive attitude toward agrarian resistance to road improvement—rooted in legitimate political and economic anxieties—as antithetical to the demands of bureaucratic efficiency and technical progress. And yet, a curious paradox emerges when one considers the important role Holley assigns to the adaptation of farming machinery to new road-building purposes. When agricultural communities and technologies can both propel the highway revolution and exert a powerful drag on it, one starts to wonder if cultural and political factors played a more dominant role than Holley allows for in determining how and when the nation would get out of the mud.

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The World beyond the Windshield: Roads and Landscapes in the United States and Europe.

Edited by Christof Mauch and Thomas Zeller. Athens: Ohio University Press, 2008. Pp. xv+283. \$49.95/\$22.95.

Just as Christof Mauch and Thomas Zeller claim, the contributors to this anthology "teach us . . . to read the world beyond the windshield," mindful of the "historical processes that have jointly helped to shape . . . roads and