

Book reviews

John D. Anderson, Jr, *Inventing Flight: the Wright Brothers and their Predecessors*, Johns Hopkins University Press, Baltimore MD (2004), 176 pp., US \$18.95.

At last, a serious etymology of flight! This is at once an enjoyable and solid resource, thanks to Anderson's pleasant style and the gravitas he brings to the subject. 'Imagine relaxing on a beach,' begins chapter 1. 'The sky is a light blue, making a sharp contrast at the horizon with the dark blue of the water. Profiled against this sky are white seagulls, seeming to fly effortlessly.' This style is matched by regular sidebars in which Anderson expands on and annotates concepts and formulas that appear in the text.

About half the book is a history of pre-flight, an account of those who examined aspects of aviation before the Wrights succeeded in putting it together correctly. Benjamin Robins built the first whirling arm in 1742, for example, and established several principles of aerodynamics that continue to hold true. Just as interesting, his experiments with rockets led him to conclude that when approaching supersonic speeds aerodynamic forces vary as the velocity *cubed* rather than squared, which was the operative rule at slower speeds. But he did not go further. Horatio Philips, unhappy with the research of his contemporary, Francis Wenham, concluded from his own work – correctly – that wings with camber are essential to overcome drag. But Philips did not try to build an aeroplane to prove his theories in flight; wind tunnels and whirling arms were sufficient for him.

Alphonse Penaud established the practice of setting the horizontal stabiliser at a negative angle of incidence relative to the wing chord, which provides longitudinal balance to an aircraft. This, coupled with locating the wing's centre of pressure aft of the centre of gravity, led

to longitudinal stability that amazed his contemporaries and proved vital for future aeronautical designers. The easy writing style draws the reader in, although never at the expense of the scholarly quality. But the closer to the Wrights we get the more difficult it is to mine new material on the brothers or their immediate contemporaries. This isn't surprising, given how often that subject has been sifted. And it is only a minor lament, for two reasons. First, a number of heftier books on the brothers are already available. Second, the strength of Anderson's book is that which came before the brothers from Ohio.

There is something poignant about the quest for flight: the professional academic community, the very group from which one would have expected the profoundest of scientifically based accomplishments, greeted the pursuit with disdain. It remained for the amateurs, the Cayleys, Lilienthals, Penauds, and Wrights, to achieve what Britain's Lord Kelvin, a remarkable scientist with diverse interests, insisted was an impossible goal: heavier-than-air flight. Self-educated inventors such as Hiram Maxim seemed to pull the quest for flight over the hump during the nineteenth century, achieving things the scientists could not or did not want to. Self-schooled in many respects, these 'dabblers' (although they were almost anything *but*) sometimes ignored apparent logic in their pursuit and still managed to make profound advances in flight. (Lilienthal's firm belief that the secret of flight lay in mimicking birds comes to mind.)

Why did the best scientific minds of the nineteenth century shun the quest for flight? Why did it fall to the unwashed to reach the goal? Public ridicule awaited any serious investigator of flight, as several in the book point out, but it does leave one wondering if there is something more to the human side of the story

that isn't visible. This scenario – the 'unqualified' taking the lead – is repeated elsewhere in history, after all; one has only to look at the computer revolution and count the seminal figures without college degrees whose efforts define the standards for personal computers and software.

This book raises a question for anyone paying close attention to the flux of scientific knowledge. Why was it that experiments in heavier-than-air flight took place in the West and not the East? There is evidence to conclude, for instance, that man-carrying kites were used in Japan in the twelfth century – Marco Polo was among those who recorded their use. Why did the Chinese and the Japanese not explore the details of control that we find in the works of Philips or Lilienthal? Is it entirely attributable to the scientific and industrial revolutions, which Anderson nods to? For whatever reason, flight is a peculiarly Western invention in so far as the objective of controlled, powered flight is concerned.

Finally, this book serves two important functions for historians of aviation. It offers a short, comprehensive look at the roots of flying, something many of us have wanted for quite some time. And it is a valuable classroom tool for histories of aviation, as it bridges the gap between the extremely technical and the superficial examinations of aerodynamics, managing to keep the engineering audience without chasing away the neophyte. This is an overdue book.

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Ferry de Goey (ed.), *Comparative Port History of Rotterdam and Antwerp, 1880–2000*, Aksant, Amsterdam (2004), 264 pp., €22.50.

Until about twenty years ago the history of ports was largely the preserve of economic geographers and of the writers of 'insider' commemorative narrative histories. This situation has changed dramatically, with papers on port topics appearing frequently in maritime, business, urban and technology journals as

well more general economic history. The rapid pace of change in the infrastructural needs of ports urged on by the 'shipping revolution' has also mandated an interest in the industrial archaeology of ports as huge areas of dock estates all around the world have been redeveloped for new uses. With the passage of relatively few years the amount of historical research available for publication has come far to exceed the capacities of such journals as *JTH*. The fruits of some research projects have appeared as monographs, but probably rather more have appeared as specialist collections of papers.

This book is one such. There has been a huge amount of research going on in Antwerp and Rotterdam for some years, involving the Universities of Antwerp, Leuven and Rotterdam, with substantial support from other public agencies. Previous collections of papers have been published as *Momentum: Antwerp's Port between 1880 and the Present Day* and *Struggling for Leadership: Antwerp–Rotterdam Port Competition between 1870–2000*, and several of the names of contributors to the work presently under consideration are also to be found in the earlier ones. The papers in *Comparative Port History* and *Struggling for Leadership* have been chewed over in international workshops involving port historians from many countries and the published versions refined in the light of those discussions.

The present collection consists of an introduction and eight papers, all either written or co-authored by Reginald Loyen, one of the most energetic of the younger school of port historians. They are grouped in three sections – 'Historiography and method', 'Cargo', 'Costs' – and are equipped, in addition to their references, with an extremely useful nineteen-page bibliography and a less thorough, but still very worthwhile, index to the whole volume.

The papers provide a thorough analysis of variations in the two ports' relative importance over time: the only area in which I felt that they were slightly deficient was in the question of port governance – policy making and imple-

mentation. But that is one of very few questions which are either ducked or evaded, for taken as a whole the collection does an excellent job in unpicking and scrutinising in detail most of what we thought we knew about the history of the two ports and, of course, revealing that it was all much more complicated than that.

But that does lead into what I think may be a weakness in the general approach. The papers are all pretty numerical, and numerical evidence, for these as for any other ports, is based on *prepared* data. By whom and for exactly what purpose the data were prepared and provided varies from port to port, but all such data sets have one thing in common, which is that they were prepared by insiders – typically a ruling clique within an ostensibly elective body – to present a picture to outsiders. That brings about a more insidious problem than the mere possibility of ‘spin doctors’ making the figures look pretty, because it assumes that the people who provided the figures knew what was *really* happening out on the quaysides. If, for example, expeditious berth allocation for inward-bound vessels depended on the payment of substantial bribes to the harbourmaster’s staff (which we know in some ports it did) that would be an operating cost known to, and taken into account by, port users but not known to the pallid-faced lad at a high desk in the dock offices who worked out all the figures, or to the more important people who relied on the figures he recorded. I know that in Liverpool in the late nineteenth century around 0.5 per cent of the entire lineal quayage was unusable because it was covered in rubbish: the lad did not know that. What he recorded was a rather theoretical state of affairs in which everything was as it should be. Was there ever any port anywhere of which that was entirely true? Clearly one has to use such information, because it’s the best available, but it has its limits.

I found this an extremely useful collection of papers, viewing two of the great present-day European ports in a relative historical perspective. I look forward (albeit with a little jealousy) to see-

ing further output from this highly productive team.

Adrian Jarvis, Centre for Port and Maritime History, Liverpool

Brian J. Cudahy, *How We got to Coney Island: the Development of Mass Transportation in Brooklyn and Kings County*, Fordham University Press, New York (2002) 364 pp., US\$25.00.

This is an example of a familiar and decidedly old-fashioned genre of transport history. It is primarily an examination of the business politics of railway development and amalgamation in Brooklyn and adjoining districts since the mid-nineteenth century, with excursions into competing modes of transport (the steamboat gets a good deal more attention than the internal combustion engine, in any of the latter’s incarnations), and with particular reference to the journey from Brooklyn in particular and New York more broadly to the popular resort areas and (increasingly) residential districts of Coney Island. The focus on Coney Island is much less strongly sustained in the text than the garish dust jacket suggests, and a great deal of detailed exposition is devoted to the development of routes and services that were of only incidental relevance to the Coney Island traffic; or at least, the exact nature of that relevance is not made clear.

This is only intermittently, and to a limited extent, an analytical work. The author’s main purpose is to offer blow-by-blow accounts of the battles for territory between businessmen and corporations, to provide detailed topographical expositions of the development of an extremely complicated metropolitan transport system, and to describe the rolling stock of the companies. In the process, a good deal of interesting material is provided on the history of transport technology in this setting (the electrification of most of the routes in the 1890s, the spread of the elevated railway, the – very briefly described – transition from trams to motor buses); on the shifting relationships between municipal gov-

ernment and increasingly corporate private enterprise, as the former took over the initiative from the latter; on the politics of gaining permission not just for the routes themselves but for their electrification and improvement; on the issues raised both by the long persistence of 'double fares' between central Brooklyn and Coney Island and by the persistence of an inelastic fares regime in a period of price inflation; and on the problems of congestion, safety and delays at particular bottlenecks along the routes. But there is disappointingly little on the users of these transport systems and on how they contributed to the relationships between home, work and leisure as experienced by those who travelled on them; and the sheer density and complexity of the local detail make the changing patterns of provision, and their implications, very hard for an outsider to grasp. Very little is said about the rise of the private car, a strange omission in this setting; and the passages on Coney Island itself remain isolated from the main narratives and arguments, with no attempt to engage with the question of just how the rise of electric railways, tramways and mass transit, as a process, affected the fortunes of the resort. Robert Moses gets a surprisingly good press, although without reference to Caro's classic critical biography of New York City's 'power broker'; and there are many other omissions from the bibliography. This is mainly a scholarly but antiquarian history of transport provision, and the wider connections have to be teased out, as far as the text allows, by the attentive reader.

Nor is the detail always accurate or the exposition clear, as in the claim (p. 33) that the first electric street tramway in the world 'to achieve permanent and lasting success' (*sic*) was in Richmond VA in 1888. Not so: it was in Blackpool, Britain's answer to Coney Island, three years earlier. It is not at all clear, for example, what made a Forney locomotive, as used on the elevated railways, so different from an ordinary tank engine that a patent could be taken out on it (p. 114). Too much ink is spilled on parochial issues of definition, such as the

identity of the first elevated railway in Kings County (p. 106). And towards the end of the book the author's priorities are given free rein (p. 271): 'There is one delightful trolley coach story dating from the years of the Second World War that, while undoubtedly untrue, bears repeating, especially since it involves service to and from Coney Island.' That is all very well; but why is it here, and what is the point of it? Too much of this book provokes such hostile questioning in the reader; and this is a pity, because a lot of labour has gone into its compilation, and there is a great deal of useful material to be quarried from its pages.

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Deborah A. Douglas, *American Women and Flight since 1940*. University Press of Kentucky, Lexington KY (2004), 359 pp., US\$29.95.

Deborah Douglas's *American Women and Flight since 1940* is an updated version of a work first published by the Smithsonian Institution Press in the early 1990s. The first work covered the period 1940 to 1985. This version, taking the narrative to the early twenty-first century, should bring what is an already valuable survey of the subject to a new and broader audience.

The book is divided into two parts. Part I covers the period from 1940 until 1945. These chapters introduce two groups of women whose stories will dominate the book – women flying for the military and flight attendants. The first chapter surveys the histories of organisations that actively recruited women into aviation, including the Civilian Pilot Training Program, the Ninety-nines, and the Civil Air Patrol. The second chapter focuses on women in non-flying work, including stewardesses, engineers, and test pilots as well as the significant number of wartime factory workers. The book then examines the events leading to the creation of an organisation to hire civilian women to fly for the military, Women's Auxiliary Ferrying Squadron. It also looks at the

aviation support jobs held by women in uniform during the war. Finally, this section of the book ends with a chapter on perhaps the most famous group of women pilots, the Women's Airforce Service Pilots (WASP).

Part II begins with a chapter surveying what happened to women in aviation in the demobilisation following the war. Echoing the standard literature on the history of American women, this chapter details a history of lay-offs and closed opportunities. The exception to this pattern was the case of flight attendants. This group of women found continued employment and began their long struggle to professionalise. Despite the general trend toward fewer women in aviation, this chapter details the efforts of a number of organisations to resist the trend. The next two chapters focus on efforts to expand the role of women in aviation, giving particular attention to 'success stories', including the formation of an organisation of women helicopter pilots, the continued efforts to professionalise flight attendants, and non-flying aviation support positions held by military women. The next chapter introduces a third group of women who quickly become a major focus of the rest of the work – women airline pilots. The 1970s were a period of great transition, not only in civil aviation but in military aviation as the services first opened flying positions to women during that decade. Chapter 9 is updated from the original to cover the period from 1980 to 1992. It focuses primarily on the first women military pilots, on diverse jobs held by women in general aviation, and on flight attendants.

Chapter 10 is new in this edition and covers the period 1992–2000. Those familiar with the history of aviation and aerospace over the last decade will not be surprised to find a focus on women in combat, astronauts, and commercial airline pilots. And although these high-profile women make up most of the chapter, it does not neglect women participating in aviation in other roles, including mechanics and engineers.

When the original version of this work appeared, its primary strength was the

fact that, unlike much of the existing literature, it did not focus exclusively on women pilots. This work detailed the story of women in non-flying roles beyond the obvious one of flight attendant to give a sense of the diversity of jobs held by women, including that of air traffic controller, aeronautical/aerospace engineer, mechanic, flight instructor, aerobatic performer, and corporate executive.

If the book has a continued weakness, it is the fact that, despite efforts to broaden the narrative, it still focuses heavily on women pilots, especially military and commercial. And this focus contributes a great deal to the general celebratory tone of the work. This is not to deny the phenomenal work done by many of these women, but it does tend to give a notion of progress in this area that is if not entirely inevitable then highly desirable. A greater focus on the broader roles played by women and a more analytical examination of what the statistics on women engineers or women aerospace workers might mean would have given the work greater depth.

Overall, however, this is probably still the best single-volume introduction to the subject of women in aviation since 1940. It includes an extensive and valuable bibliography. And the introduction sets the story in a broader context and suggests many interesting avenues for future research.

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Robert E. Mohowski, *The New York Susquehanna & Western Railroad*, Johns Hopkins University Press, Baltimore MD (2003), 224 pp., US\$26.00.

The New York Susquehanna & Western Railroad was originally an anthracite railroad, founded in 1881 through the merger of six existing companies of varying sizes serving New Jersey and north-eastern Pennsylvania. It extended westwards in the mid-1890s via a wholly owned subsidiary, the Wilkes-Barre & Eastern Railroad (WB&E), into the extensive Wyoming hard-coal region. To

complement this lucrative source of traffic from the west, a large terminal facility was built on the Hudson, allowing transshipment to both coastal and ocean shipping. Developed as a means of breaking the control of rates and mining quotas exercised by established mining companies and their associated railroads such as the Philadelphia & Reading, the Susquehanna's days as a truly independent company were short. The overproduction of anthracite and the rate competition spurred in no small part by the Susquehanna's arrival encouraged a take-over in 1898, arranged by the financial and industrial magnate J. Pierpont Morgan, by the Erie Railroad. Although the Susquehanna retained its separate corporate status, it was no longer able to set lower rates and in business and operating terms increasingly became a subsidiary of the parent company.

In the early twentieth century this had benefits in terms of access to capital needed for improvements to infrastructure, motive power and rolling stock. However, in the Depression era falling anthracite and other traffic (notably natural ice) combined with the Erie's preference for its own, easier routes for much of the remainder forced the Susquehanna into bankruptcy, in 1937. A messy period of corporate reorganisation and physical retrenchment, including the abandonment of most of the WB&E, finally resulted in the Susquehanna regaining business and operational independence in 1940 under the court-appointed trustee Walter Kidde. Thereafter the railroad focused its operations on New Jersey, not the least of its achievements being an integrated rail-bus passenger operation, first operated in 1939 and later using lightweight streamlined diesel units for the rail journey, serving midtown Manhattan via the Lincoln road tunnel.

Although the railroad finally emerged from bankruptcy in 1954, passenger levels were already falling sharply and freight tonnages, especially those of connecting railroads, were little better. The railroad survived the 1960s, however, albeit operating over a much reduced mileage and completely shorn of passen-

ger services. By 1976 it was bankrupt again. But yet another revival was engineered, this time on the back of growing bridge traffic in containers. This returned a healthy profit until it too disappeared in the mid-1990s as the region's railroads reorganised in the aftermath of the sale of Conrail. Now the Susquehanna survives chiefly as a terminal road for a growing number of freight shippers.

This book is a solidly researched narrative history of the railroad from the inception of its predecessors through to the present. Its strengths and weaknesses are those of any well told narrative. The railroad is very much at the focus of the story, although we are given a more than adequate sense of the contextual factors that help to explain how and why it first emerged as a distinct road and then fell in and out of the ownership of the Erie. Though little attention is paid to important issues such as labour, we get a good sense of the business dynamics of the Susquehanna, of its leading managers, of the physical expansion and contraction of its routes and associated infrastructure and, in particular, of the railroad's innovative use of diesel equipment. All of this is nicely illustrated by way of photographs (if reproduced rather flatly), maps and other diagrams. However, the very readable text makes little reference to the wider academic historiography of railroads or of any other business activity, for that matter, leaving the reader to draw out the significance of the wealth of information contained therein. In short, this book will be required reading for scholars of eastern railroads and few others, but may be read for pleasure and no little gain by other transport historians.

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John A. Jakle and Keith A. Sculle, *Lots of Parking: Land Use in a Car Culture*, University of Virginia Press, Charlottesville VA (2004), 293 pp., US\$34.95.

The automobile and the effects of automobility have shaped built and social environments in the United States more

profoundly than any other invention. Jakle and Sculle have established themselves as the pre-eminent American writers about automobility, automobile environments, and roadside architecture. This latest book explores the consequences of cars not in motion but at rest. Why would anyone write about the seemingly mundane topic of parking? Because the majority of cars are in motion, as the authors point out, not more than 5 per cent of the time. The remaining 95 per cent of the time the vehicles must be stored. The evolution of where, when, and how American drivers store cars is presented as a blend of history, cultural geography, architecture, urbanism, and public policy.

The authors' central theme is that, although Americans' unprecedented automobility has generally led to a higher quality of life, the parking capacity required to support automobility has had significant, mostly detrimental, effects on our cities. The evolution of parking as a necessity and therefore a growth industry is effectively set against the backdrop of the decline of central cities and the growth of outlying suburbs.

In recounting the story of the rapid expansion of America's parking supply, the authors devote a great deal of attention, perhaps not surprisingly, to central business districts, where destruction resulting from the creation of abundant parking was more widely felt, especially in big cities, than in any other place. Downtowns were dissected in order to provide space to park (often two to three times the size of stores or offices). When kerb parking reached capacity, cities proceeded to build off-street parking, first in at-grade parking lots, then in structures, and finally, at great expense, below ground. Using Detroit and Indianapolis as effective case studies, the authors illustrate how parking lots caused an 'erosion' of downtowns, beginning in the 1960s. In these and other cities the objective of downtown interests was to sufficiently expand the parking supply so that no building was more than one block from a parking lot. Downtowns were eviscerated in the process, eventually becoming better suited to automobile

travel than to pedestrian travel. Nowadays the parking supply, which can make or break development deals, is a key component of downtown revitalisation projects – including malls, festival market places, convention centres, sports stadia, offices, and housing.

What began as 'hands off' land use control, where the parking supply was concerned, eventually turned into municipal parking requirements for retail and commerce that became codified in local zoning ordinances and building codes. The legal requirement to provide parking now dominates nearly every type of development. Eventually, zoning ordinances influenced land use, design of buildings, and cost of development. In designing our modern conveniences – groceries, retail, strip plazas, motels, banks – traffic planners assume that people will not walk more than 300 ft.

The design sensibility of most parking lots is dismal and portrays 'low place imagery'. Jakle and Sculle argue that parking appears to be an afterthought of much development, with few aesthetic concerns in evidence beyond convenience and affordability. That there is little incentive for owners/operators to improve the aesthetics of parking lots can be explained by the notion that parking develops from two indirect demands. First, there is the demand to travel between two places that are spatially separated, and second there is the demand to store the vehicle at the end of the trip.

When the authors introduce the topic of free parking they wittily ask, 'Do most Americans think it could be any other way?' (p. 185). Subsidised (or free) parking encourages people to own more automobiles, to drive more frequently, to live farther away, and to demand even more free parking, which is then provided in subsequent development cycles. In this way, requiring developers to provide off-street parking profoundly raises the cost of development and distorts land markets. The exorbitant costs of parking, which, by recent estimates, can account for 40 per cent of the costs of new office development, are largely left by Jakle and Sculle for future investigation. The

authors elaborate on the physical effects of parking on built environments while giving insufficient attention to the economic effects of parking's hidden subsidies on American transport policy. This is a missed opportunity to shed light on price distortions that are not evident to the naked eye, since many drivers do not realise that their 'free' parking spaces may cost more than the parked vehicles.

The authors intersperse historical information with observations about context, design, and policy. There are images and technical diagrams, including a fascinating series of maps showing the gradual expansion of downtown Detroit's staggeringly large parking supply. In-depth discussions of parking in particular environments (such as downtowns and suburbs) as well as archetypal cities (such as Los Angeles and Allentown PA) help reinforce the arguments. The authors use a rich array of source material, including newspaper accounts, journal articles, planning reports, and interviews.

In the end, *Lots of Parking* and other works by Jakle and Sculle help us to understand how the built environment transformed slowly but dramatically to accommodate the automobile, and how automobility appealed to Americans' strong spirit of individualism and independence.

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David Pascoe, *Aircraft*, Reaktion Books,
London (2003), 240 pp., £14.95.

Anyone who enjoyed *Airspaces*, David Pascoe's book on airports (reviewed in the March 2004 issue), will find something of value in this companion volume on aircraft. Pascoe, who happily borrows the title from Le Corbusier's celebrated 1935 opus, brings an erudite, engaging and occasionally exasperating approach to the history of military and commercial aviation. Laden with illustrations of aircraft and paintings of aircraft (seventeen of which are in colour), *Aircraft* at once delights and disturbs with its allusions and cultural references. In a style closely resembling the earlier book, the author

explores the art and literature, the psychology and even the eroticism of aeronautical technology, moving in the process easily from Saint-Exupéry to Jules Verne, Bertolt Brecht to J. G. Ballard and H. G. Wells to Dr Strangelove.

Aircraft has four broad chapters, which, in no particular order or pretence to historical chronology, deal with aircraft design and engineering, war and weapons, eccentric pioneers and what one might term 'things to come'. A colour reproduction of the famous 1917 advertisement for Fokker fighters reminds us of the early marriage between aerospace and war: a sinister-looking German pilot peers down the barrel of his machine gun – rotary engine, propeller, gun sight, face and company name blended into a single plane. In the chapter 'Conquests of the air' Pascoe traces the long history of the bomber, arguably the most iconic artefact of the twentieth century. From Stanley Baldwin's gloomy warning of 1932 ('the bomber will always get through') to the horror of Heinkels over Guernica in 1937, to Anglo-Saxon euphoria at the strategic bombing of Germany in 1943, to the fear and loathing of the B-52 raids on Hanoi in 1972, to the 'surgical strikes' against Saddam Hussein, the bomber has evolved with every turn of aeronautical technology and kept us company through a violent century. Regarding the Boeing B-52, perhaps Pascoe misses a chance in his disjointed treatments of this fifty-year old monster to contrast alternative presentations: not only museum curators but historians generally would debate the relative 'correctness' of the imposing example in the US Air Museum at Duxford (UK) compared with the shattered copy resting in a giant crater in Hanoi (one of fifteen shot down over the city by North Vietnamese air defences in December 1972) and still leaking hydraulic fluid into a stagnant pool.

For scholars of *civil* aeronautics it is fascinating detail that Pascoe offers, rather than literary or philosophical reflections. Over seventy years before Airbus launched the A380, marking a return from the 'speed at all costs' doctrine of the Jet Age to the 'flying hotel' approach of the inter-war years, Norman

Bel Geddes presented his plans for 'airliner No. 4'. A mammoth flying boat for 606 passengers, the 'No. 4' had a crew of 155, twenty engines, nine decks, an orchestra platform, a library, two solaria, (separate for men and women), three kitchens and restaurant for 200 people; despite its 570 ton weight, Bel Geddes was confident it would lift off from the ocean waves. While the 'No. 4' never got beyond the drawing board, the Bristol Brabazon airliner, part of the post-war civil aircraft programme launched in Britain by the eponymous Lord Brabazon, got rather too far beyond it and consumed a vast amount of precious resources in the late 1940s to achieve precisely nothing. (All that remains of this white elephant is the nosewheel, housed somewhere in the London Science Museum.) The Brabazon, while not quite big enough to house two solaria, did offer a 'magnificent powder room ... [with] receptacles for the various lotions and powders used by the modern lady'. It was big enough, however, to require an extension of the runway at the manufacturers' plant for which they had to close a recently opened motorway and demolish half the village of Charlton, including the pub. The ultimate post-war airliner was undoubtedly the Lockheed Constellation. For aircraft aficionados there was something about its elegant and seductive shape which just looked right. The Connie was a swan in precisely that realm of aerodynamic aesthetics where the Brabazon was an extremely ugly duckling. Actually, according to Pascoe's hero, Le Corbusier, the Constellation was not so much a swan as a fish; in any case, for the great architect the aircraft 'contained a new harmony of the technological with the natural'.

The reviewer of this book in *Technology and Culture* concludes that it is 'disturbing ... focused as it is on what might be called the dark side of aviation'. Perhaps this is a gender thing; certainly men seem to have a greater propensity to fall in love with lumps of pleasingly shaped (and often deadly) metal. And perhaps there is indeed something disturbing about the male tendency to col-

lect and enthuse about the minutiae of aeronautical (usually military) technology. Certainly *Aircraft* has a slightly *Boy's Own* feel to it, and this reviewer (male) may not be alone in rejoicing in titbits such as the news that Howard Hughes loaded his Lockheed Lodestar with ping-pong balls for his 1938 flight around the world in case he was forced to ditch on the sea, or that the Convair B-58 Hustler heated up to 1,200°C at supersonic speed and its brazed stainless steel frame was so expensive that each bomber cost more than its weight in gold.

My prize for the best story comes out of the lengthy saga of Concorde and the American SST in the early 1970s. The Boeing SST was going to be built out of titanium (of which the Americans had plenty) and fly at 1,800 m.p.h. compared with the mere 1,400 m.p.h. of Europe's aluminium Concorde. We all thought that Congress cancelled the SST in 1971 because Pan American Airways had decided on size (wide bodies like the Boeing 747) rather than further gains in speed, but no, we were wrong. Pascoe, quoting Paul Virilio, tells us that the SST 'wasn't built because the Americans were very worried at the idea of building a civilian supersonic jet that would go faster than military jets'. And their worst nightmare came true a few years later when the pilots of a couple of Lockheed SR-71 Blackbird spy planes (fastest front-line aeroplane ever and titanium through and through) on a routine photographic mission at 60,000 ft over Cuba were told by air traffic control to move over twenty miles to the right because an (aluminium) Air France Concorde out of Caracas, 'with a hundred passengers sitting in shirt-sleeves drinking champagne', was coming through.

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Wendy Freer and Gill Foster, *Canal Boatmen's Missions*, Railway & Canal Historical Society, Oxford (2004), 72 pp., £12.50.

The British inland waterway system, flourishing in the early nineteenth cen-

ture, was staffed by a large body of bargees who, like the railway navvies, earned an unenviable reputation for roughness. They swore, drank too much, worked on Sundays and seemed untrustworthy because, always on the move, they could readily disappear with debts unpaid. The boat people were rootless, unrestrained by the ties of neighbourliness. Consequently they caused particular concern to the rising Evangelical movement, which, dedicated to bringing the gospel to every inhabitant, rose to the challenge posed by an especially disreputable section of the population. Wendy Freer, who has previously written about the women and children of the canals, and Gill Foster have written an engaging account of the boat men's missions conducted by Evangelicals during the nineteenth and twentieth centuries.

Originally the efforts for the bargees and their families were an offshoot of the missions to seafarers begun by George ('Bo'sun') Smith. His Soldiers' and Sailors' Bethel Union, established in 1826, was an undenominational body that held services and distributed Christian literature among seafarers. In 1827, under its auspices, a boat men's chapel was opened close to the City Road basin of the Regent's Park Canal in London. Another mission was begun in the capital at Paddington, and soon there were similar schemes in the provinces. Many were short-lived, lacking a firm institutional base. Others, however, were backed by a denomination, and so were sustained over many years. One such was set up in his Cheshire parish on the Bridgewater Canal as an Anglican venture by a clergyman named Dodgson who was the father of the author Lewis Carroll. Like several missions of the established Church, it enjoyed the support of the canal's owners.

Other undenominational bodies, however, entered the field in the second half of the nineteenth century, and several institutions serving the dwindling canal population continued their work down to the later twentieth century. There was still a barge maintained by an evangelistic organisation operating in the 1990s, but now there is only a Boaters' Christian Fellowship catering for leisure users of

the inland waterways. The authors have tracked down with immense care as many missions as possible, each recorded in a valuable gazetteer at the end of the book. Pictures illustrate many of the canalside buildings and floating chapels, while maps show their locations. And the authors are not content merely to record, for they present a final chapter that evaluates the achievement of the boatmen's missions. It is difficult to assess the numbers drawn into the places of worship, since usually people from other walks of life attended the missions, but it is clear that they strongly influenced many boat people. They gave up strong drink, learned to read and write, used the new recreational facilities and had their social needs relieved. The missionaries wrote letters for them free (while the public houses usually charged for the service) and represented their interests to the authorities. The authors recognise that there were elements of social control in the canal companies' support for some ventures, but conclude that these drawbacks were far outweighed by the benefits to the welfare of the canal population brought by the missions. This is a clear, thorough and well judged study of the main intersection between the histories of religion and of the British canal system.

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Klink Garrett, with Toby Smith, *Ten Turtles to Tucumcari: a Personal History of the Railway Express Agency*, University of New Mexico Press, Albuquerque NM (2003), 186 pp., US\$27.95.

Before there was Federal Express or UPS there was REA, the Railway Express Agency. Even though it pioneered the techniques employed by today's shippers, it succumbed to the same forces that devastated the US railroad industry following World War II. For nearly fifty years REA exemplified flexibility, dependability, and customer service as it shipped everything from radios to racehorses, from nasturtiums to nuclear weapon components – though never the apocryphal cargo that generated the

book's title. Klink Garrett's career, which spanned virtually all of REA's existence, took him from an agency outpost in rural South Dakota to a managerial position in the company's New York headquarters. His largely anecdotal reminiscences, written with the assistance of a professional journalist, provide a quick and entertaining read that nonetheless reveals a great deal about the social and political effects of this transport enterprise.

While railroads have always been extraordinarily efficient at hauling large quantities of undifferentiated commodities over long distances, such efficiencies did not apply to less than carload lot (LCL) traffic. REA bundled shipments into car load lots and consigned other shipments to the care of an on-train messenger, assigned to the express section of a railroad-owned baggage car. Beginning in the 1830s, William H. Harden exploited the speed and dependability of rail transport by serving as a personal courier for valuable and time-sensitive shipments. In true Horatio Alger fashion he rapidly worked his way up from a carpetbag to a sack to a trunk to a wheelbarrow, finally hiring other couriers and establishing national and international routes. Other companies soon emulated his success, thriving thanks to America's decentralised population and its lust for mass-produced consumer goods. Just as the federal government assumed control of the nation's railroads during World War I, so too did it control the express industry, mandating the consolidation of competing firms into the American Railway Express (ARE) as a wartime efficiency measure. The 1920 Transportation Act returned both the railroads and ARE to private control. In 1929 eighty-six railroads purchased ARE, by now reorganised as REA, in order to maintain control over its operations. REA became an indispensable, almost iconic adjunct to life in rural America, its agents held in high esteem by the local community. While Garrett blames REA's downfall on inept management and government-subsidised Parcel Post service, REA also fell victim to high labour costs and the emergence of more efficient distribution systems.

The company succumbed to bankruptcy in 1975 (a situation that clearly devastated Garrett), while several top executives went to prison for embezzlement.

REA's history closely paralleled the railroad industry upon which it depended. Both experienced similar regulatory and public policy issues, employed the same technology and organisational structure, embodied an *esprit de corps* coupled with paternalistic welfare capitalism, blamed the government and the highways for their problems, and coped with soaring labour costs after 1945. Interestingly, the railroad-owned REA moved far more successfully than the railroads themselves into integrated transport by offering coordinated rail-truck-air services.

Garrett does more than simply reminisce about his long and varied career. The authors provide a detailed description of the REA organisation, covering everything from waybill preparation to corporate structure. Historians may find the book overly anecdotal and simplistic (there is a short biography but no footnotes), and it is certainly not a substitute for an as yet unwritten organisational history of the REA. It is a good starting point, however. More important, lay readers will enjoy fascinating stories while being exposed, subtly, to key issues in transport history.

Albert Churella, Southern Polytechnic State University, Marietta GA

Brian Barker and David Lowe, *Norfolk Carrier: Memories of a Family Haulage Business: Barker & Sons, Wells next the Sea*, David Lowe www.davidlowe.org (2003), 96 pp., £7.50.

This little book provides a lively account of a small rural haulage business in the eighty years after the First World War. Like most of them, it had the most inconspicuous beginnings as a taxi firm founded by Leslie Barker, a one-time member of the Royal Flying Corps, in 1921. He supplemented his earnings from this source by supplying the locality with logs sawn from tree trimmings on the famous

Holkham estate. Expansion was very limited, especially in that its base, Wells next the Sea, enjoyed only half the territory which a motor transport business might rely upon, since it faced the big North Sea arc of the north Norfolk coast. In fact, its natural focus was Norwich, the East Anglian regional capital, thirty-two miles away. By 1940 the firm still only employed two lorries, one of which came to be requisitioned during the war.

Modest prosperity was first enjoyed by the tiny business in the 1950s. The account of the general carrying trade the firm was involved in during the next twenty years is delightfully recounted, often with long quotations from Brian Barker's lively reminiscences. The keystone of its success was reliability in the delivery of an incredible variety of goods from Norwich to the villages and small towns of north Norfolk. It evokes a lost world with great affection, stressing the diversity of the manufacturing and service trades of Norwich, and recalls the era before the village shop collapsed and the small-scale industries of England's country towns contracted.

Licensing restrictions imposed by the tight regulations of the Road and Rail Traffic Act, 1933, curtailed expansion. By the late 1960s the firm was at a crossroads. The general carrying trade withered as profound changes occurred in the distribution of goods and services in the countryside. The only avenue for expansion, with the deregulation of licence restrictions following the act of 1968, was to move into the long-distance haulage business. With nine lorries, this seemed to have been successfully achieved until a serious three-months-long strike engulfed the firm in 1970-71. Its long-distance transport side contracted, and was replaced by a warehousing and storage business on a nearby Second World War airfield, and by the distribution of imported fertiliser and feedstuffs which gave rise to a brief shipping boom in Wells during the 1980s. Again prosperity was transient. In 2000 the firm closed.

Norfolk Carrier is an unusual account of a neglected aspect of transport history. Its strength is its evocative recreation of

the complexities of distribution in rural areas in the twenty years after 1945. Lacking any financial dimension, or even much on the lives of its owners and employees, it nevertheless possesses both an immediacy and an insight which much academic writing on transport in the period fails to capture.

R. G. Wilson, University of East Anglia

Richard C. Carpenter. *A Railroad Atlas of the United States in 1946 I, The Mid-Atlantic States*, Johns Hopkins University Press, Baltimore MD (2004), 297 pp., US\$95.00.

Figures from a couple of years ago suggest that the gross revenues of America's railroads are about equal to those of the hamburger component of the country's fast food industry. American railroads are largely wholesalers of bulk commodity and intermodal freight movement, leaving few opportunities for the general public to interact with trains or their facilities. In all but a handful of locations where commuter and corridor trains have come back the railroad industry is invisible to most Americans. Sixty years ago conditions were vastly different. Railroading then was a retailing business that was in front of the public's collective eye. Rather than seven Class One railroads, there were 137. Both passenger and freight trains figured importantly in people's lives. Railroad facilities dominated parts of many towns and cities, and state highways followed railroad main lines, most of which carried numerous freight and passenger trains. Children and adults routinely encountered trains, their facilities and their employees, and generally admired them. The objective of this book is to document the railroad facilities that existed when American railroads were, at least according to its author, at the peak of their influence.

Richard Carpenter, who was for thirty-three years executive director of the South Western Regional Planning Agency in Connecticut, accomplishes his objective with 177 hand-drawn plates, each of which he calls a standard atlas, covering the mid-Atlantic states. There

also is a list of notes, one for each standard atlas. Additional lists include railroad stations, interlocking plants, viaducts, tunnels, coaling towers and water pans on main lines. Facilities on each list are keyed to standard atlas pages where they are portrayed. Each standard atlas covers thirty minutes of latitude and longitude at a scale of four miles to the inch, and fills one page in the book. In urban and industrial areas, or other locations with complex trackage, Carpenter provides additional smaller-scale detail plates, some covering one page, and some covering parts of additional pages. The base that Carpenter used for preparing the standard atlases is the United States Geological Survey (USGS) 1:250,000 scale series. Eight standard atlases fit over a one-degree by two-degree map of the USGS series.

The 177 atlases in Volume I cover Pennsylvania, New Jersey, West Virginia, Maryland, Delaware, West Virginia, Virginia, and the District of Columbia. Carpenter also includes parts of adjoining states, including the New York metropolitan area. These areas comprise the densest railroad development in the United States, making Volume I an ambitious beginning to a series intended to cover the whole nation.

Each atlas includes minimal non-railroad detail to avoid clutter. What non-railroad detail is included is intended to facilitate the location of railroad lines. They include water features and state, county, and city boundaries, as well as the longitude and latitude of each of the maps' corners. There also is a key map indicating all 177 atlases superimposed over the USGS one-degree by two-degree plates for the mid-Atlantic region. On the key that displays the official name the author names each of his atlases generally after the dominant station. The smaller-scale maps with additional detail are provided with the same number as the standard atlases that they describe, followed by letters. The more detailed maps appear following the standard atlas that they detail. For additional general information, such as topographic information or roads, the reader will have to

use the USGS or DeLorme Mapping Company maps to which the standard atlases are keyed.

Railroad features include routes of every railroad colour-coded with the railroad's initials. Initials also indicate trackage rights or cases of joint or associated ownership. Lines on the map generally indicate routes without identifying the number of tracks, but there are numerous exceptions where Carpenter indicates routes splitting into two or more tracks. This happens particularly at junctions and crossings, where he shows connecting tracks and grade separations. At yards and terminals, thin lines are used to indicate the outlines of the limit of trackage. The maps also indicate viaducts and major bridges as well as tunnels. Along the lines Carpenter provides mileposts at five-mile intervals, station locations and names on each railroad, differentiated between those stations serving passengers and those not, interlocking towers with names and telegraph identification codes, block limits and names, coaling towers on main tracks but not in yards, water pans, and crew change points. Carpenter includes not only functioning facilities, but also abandoned lines and facilities. Information sources include railroad employee timetables, railroad histories, track charts, lists of stations, and official guides.

Unfortunately Carpenter does not give the reader the criteria that he used to select railroads. Generally it appears that he includes all routes of companies that interchanged freight cars with each other. These would appear in the *Official Guide of the Railways*. He does not include most streetcar or rapid transit systems unless they were operated by a railroad that operated a freight service, such as parts of the Hudson & Manhattan (operated by the Pennsylvania Railroad) and the Staten Island Rapid Transit (operated by the Baltimore & Ohio). By 1946 most electric interurban lines were abandoned; of those still operating, Carpenter shows those that interchanged freight, such as the Potomac Edison, the Baltimore & Annapolis, the New York Westfield & Northwestern Railway, and the Lackawanna & Wyoming Valley.

However he does not show others, such as the Lehigh Valley Transit, the Philadelphia & Western, or the West Penn, which did not interchange freight.

To appreciate the usefulness of the atlas, the reader needs to follow particular railroad routes between important termini. Until I did this, the atlas did not seem particularly useful, but as I began to follow routes and understand their relationship with other routes, I began to visualise the complexity of the railroad network and the degree to which it was an adjunct not only to the cities that it served but also to the coal, steel, and manufacturing centres of the region. The work is a labour of love that generally reaches its objective of portraying the extent of the railroad infrastructure, if not when railroads were at their most influential in the United States, then at least at the height of the country's manufacturing prowess.

There are some omissions. Given Carpenter's objective of portraying the physical facilities of railroads, I would like to have seen the maps indicate the form of traction (electric, steam, or diesel), whether automatic block signals existed on particular routes, and the number of main-line tracks on particular routes. Carpenter himself calls attention to such facilities in his introduction when describing his visual impressions of what a railroad meant to the public in 1946, and this type of information is provided in employee timetables and other sources that he used. In most of the country the distinction between electric and other traction would not be important, but in the mid-Atlantic states it was. I found two instances of interurban lines where Carpenter used cross-hatches to indicate that they were electric, but he made no indication for other interurbans nor for any of the main-line and commuter electrifications so prevalent in the region. Another observation is that the moment when railroads were at the peak of their influence in the United States was closer to 1910 than to 1946. After 1910 American *per capita* expenditures on railroad services began their long decline. Between 1920 and 1933 Class I railroads lost more than 80 per cent of their pas-

senger revenue, most of which was not regained during the streamliner era that came later. Large classes of freight traffic were lost, as well, never to be regained. Had Carpenter included all interurbans in his work, the maps would have been littered with the remains of abandoned interurban lines, harbingers of the waning railroad fortunes of 1946. In reading the maps portraying railroads in the New Jersey seashore areas one gets a sense of this decline.

This is a fascinating work documenting railroad facilities, if not at their peak, then at least at a time when they still mattered, both economically and culturally. The atlas promises to become an important economic and cultural reference work. The author not only deserves applause for completing Volume I but, more important, support for the whole series for the United States.

Gregory L. Thompson, Florida State University, Tallahassee FL

Georges Livet, *Histoire des routes et des transports en Europe : des chemins de Saint-Jacques à l'âge d'or des diligences*, Presses Universitaires de Strasbourg, Strasbourg (2003), 608 pp., €36.10.

David Harvey, *Paris, Capital of Modernity*, Routledge, New York (2003), 372 pp., US\$31.95.

These two books bring a holistic approach to the analysis of transport and transport networks. Livet's work is a model for all aspiring transport historians. He spans the medieval and modern ages, offering a synthesised account of the impact of roads and differing transport modes in Europe. His main argument is that by the end of the eighteenth century the system of traditional post services, carriage and stage coaches reached a point of near-perfect operation. Of course, this could not last, as the temporal and spatial impact of railways, mechanisation and new conceptions of networks produced a revolution in transport thinking. Nonetheless the new age was shaped perhaps more by the old than historians have been ready to admit. Livet's approach is influenced by Fer-

nand Braudel, who tried to conceptualise history as *longue durée*. All chapters are oriented by a time schedule framed by large conceptual spaces, concerning the economy, changes in science and technology.

Livet, who died before the book's publication, capitalises on his experience at Strasbourg University, where he was an expert on road use and where he brought alive past societies' travel cultures. More prosaically he also brought to life a former work culture centred upon the horse. Many documents, maps, graphs, photographs and prints help to reconstruct everyday life within the format of a large-scale analysis. The major weakness is the lack of an index, a serious omission in a book such as this.

Paris remains a publishers' favourite topic. Alongside recent works in English by Patrice Higonnet and Philip Mansel we also have the latest offering from David Harvey. A distinguished Marxist geographer and famously the author of *The Condition of Postmodernity*, Harvey has long been fascinated by the French capital – indeed, this book is a reworking of an edition from 1975. His writing on Paris is framed within a familiar Marxist theory of urban space. The originality here comes from his concern with modernity and modernisation as expressed in literature from authors such as Honoré de Balzac, Charles Baudelaire and Emile Zola and the cartoons of Honoré Daumier. Harvey examines the disjuncture of everyday life in the city brought about by revolution, with Paris conceived as a living laboratory of social and urban change. This ambiguous space could not last, however, with tensions over the street being played out between the French State and the followers of Marx and Saint-Simon. Nineteenth-century French society was no guarantor of stability, as the 1871 Commune made clear when all these tensions were brought out into the open.

Harvey's book sits within a classic genre familiar to those versed in the works of Jacques Rougerie, Louis Chevalier, Gérard Jacquemet or Jeanne Gailard. However, for historians of transport and town planning the work

suffers from lack of attention to recent studies on 'Haussmannisation' such as Pierre Casselle's *Commission des embellissements de Paris : rapport à l'empereur Napoléon III* or Nicolas Chaudin's *Haussmann au crible*. Nonetheless the reader will appreciate the maps and statistical data, not to mention the humour of the final picture of a Statue of Liberty built on the Butte Montmartre, involved in a peaceful intellectual fight against the Sacré-Coeur basilica.

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A. K. B. Evans and J. V. Gough (eds), *The Impact of the Railway on Society in Britain: Essays in honour of Jack Simmons*, Ashgate, Aldershot (2003), 240 pp., £20.

This is a very wide and varied book that is both a tribute to the life and work of the late Jack Simmons and, in some ways, a reflection of the legacy that he has left behind. These two aspects of tribute and legacy are present throughout the book, as it is both a remembrance of Jack Simmons and a collection of essays on 'the railway' from many of the leading practitioners in many different current fields of history. His life, work and thought had a terrific impact on our understanding of the phenomenon of the railway and how it shaped, and continues to shape, British society. In his numerous writings Simmons not only covered a huge range of topics but also developed a rich vision of the railway and its wider social and cultural impact. He instigated a well informed methodological approach to 'railway history', drawing on a range of historical sources such as literature, illustrations and paintings that were, at that time, not the usual 'stuff' of railway history. Much of this 'Simmons legacy' is recorded here, but the book is, overall, a rather uneven compendium of writings on all aspects of the railway in Britain where some chapters succeed in considering the railway as a part of wider society as Simmons saw it, and some do not.

Notable individuals pay tribute to Simmons at the start of the book by provid-

ing their own personal memories of him and an assessment of his influence upon three different areas: local history, Victorian studies and museums. Michael Robbins's consideration of Simmons's illustrious career is very personal and heartfelt while providing advice for current transport and railway historians. Robbins notes that 'Jack was not solely a railway historian ... comprehensiveness was his hallmark. Indeed the strength of Jack's work as a railway historian came precisely from the fact that he was not just a railway historian.'

This ideal of comprehensiveness has certainly been taken up in some of the chapters. As it moves from tributes to appraising Simmons's legacy the book takes up four themes: 'Origins and working', 'Spirit, mind and eye', 'The opening up of Britain' and 'Heritage and history'. The book therefore not only examines various aspects of rail's impact upon past British society but also considers the role that the recording of that past has in present-day British society. Each of the twenty-one chapters practises that legacy to a lesser or greater degree, with some explicitly drawing upon Simmons's work and methodological approach while others fail to comment on the social impact of the railway, as their case studies are not placed in a wider context.

It is the first part of the book on the origins of the railway that tends to provide these rather contained studies of railways and aspects of railway technology, giving a vision of the railway as an entity in itself rather than as part of wider society. Despite this, each chapter is more than worth while in its own right. Thus we learn about matters as diverse as pre-locomotive railways of Leicestershire and south Derbyshire, aspects of rolling stock and the financing of the 'Bagdad-bahn'.

The linkages between the railway and wider British society become much more apparent in the chapters in the book's subsequent parts. In 'Spirit, mind and eye' and 'The opening up of Britain' there are some inspiring chapters on different social aspects of Britain and its railways, from the metaphor that railways provided for contemporary religion

to its place within rural tradition. The arts and the railway is the focus of chapters on John Ruskin and Philip Larkin. Both echo Simmons's concern to view the railway as cultural artefact by employing a wide use of cultural sources.

The book's final section engages with another aspect of the Simmons legacy, namely the current impact of the railway on British society in the relation to heritage and history. Some of the major names in the field, including Dieter Hopkin, Colin Divall, Andrew Scott, Terry Gourvish and George Ottly appear in this part, providing perhaps a greater cohesiveness than is to be found in other parts of the book.

This book is a fitting tribute to Jack Simmons. It is also a worthwhile collection of a variety of research subjects which can sometimes seem rather disparate in Britain at present. However, both as a comprehensive vision of the impact that the railway had and continues to have on British society and as an exponent of some of Simmons's important advice for conducting railway and transport history, certain parts and chapters of this book unfortunately miss the mark.

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Thomas A. Kinney, *The Carriage Trade: Making Horse-drawn Vehicles in America*, Johns Hopkins University Press, Baltimore MD (2004), 392 pp., US\$49.95.

This book is an indispensable resource for anyone interested in the manufacture of horse-drawn vehicles, as well as a pleasure to read. Kinney's grasp of his subject is impressive and he covers all aspects of this complex but forgotten trade from the early beginnings of the craft tradition to its ultimate demise with the advent of the automobile. Moreover *The Carriage Trade* redresses a woeful imbalance in transport history, which has largely ignored the carriage industry. The manufacture of horse-drawn vehicles was one of the most significant American industries of the nineteenth century, yet there has been a conspicuous dearth of

scholarly publications on the subject. Kinney's book is therefore a welcome contribution to this field of study.

Kinney is strong in his analysis of the diverse manifestations of the trade which was marked by multifarious systems that changed over time. American horse-drawn vehicle manufacture was relatively short in duration, with a surge in production around 1850. Its subsequent ascendancy in the years 1870–1900 represented the height of production and was defined by increasing mechanisation. Kinney describes shop culture, with its reliance on hand tools, apprenticeships and journeymen. Over time, those trained in the traditional shop adapted to machine production and 'rational' systems of labour organisation. Indeed, the composite make-up of carriages always mandated multiple skills, from body maker to smith, from trimmer to painter. Kinney explains the rationalisation of these skills into distinct and specialised tasks, conforming in part to the model articulated by Adam Smith, but with many different methodologies. His analysis delineates central trends in the industry, in which vestiges of the craft tradition survived or were augmented by machinery. He explores the industry's growth, including the challenge of a growing demand for business acumen as companies expanded, or as workers were replaced by specialised machinery, which removed much of the labour-intensive drudgery of preparing raw material.

As the industry progressed and carriages proliferated, many different manufacturing systems came to represent the trade, from the large high-yield factories of Studebaker Brothers to Brewster & Co., which evolved into exclusive manufacturing catering to the growing market for luxury vehicles in the Gilded Age. Kinney also describes small shops that relied on parts and accessories firms, functioning as assemblers, or were dependent on the sale of work produced by larger companies. Even as the factory system became more widespread, some small shops continued practising craft traditions or dedicated their business to

repairs and 'jobbing'.

Drawing on an exhaustive and tangled corpus of material, Kinney examines the many facets of these enterprises. In addition to statistics and dates, he interweaves the stories of different firms by exploring the biographies of their founders. He puts a human face on history, tracing the personalities and motivations of his subjects and how they influenced business practices, and both their successes and failures. Kinney shows how the industry was shaped, not as an abstraction, but as inhabited by people. In his descriptions of the apprenticeship tradition as well as of the ultimate expansion of the industry he examines how workers coped with the rapid changes precipitated by industrialisation. His poignant examination of the end of the carriage era culminates in his depiction of the final gathering of the members of the Carriage Builders' National Association in 1926.

By way of criticism, one would note that the paucity of illustrations and failure to integrate illustrations with the text prove frustrating. The inclusion of illustrations of surviving artefacts or historical illustrations would have assisted the visualisation of different styles of horse-drawn vehicle. How these styles emerged or changed over time is important because carriages of all sorts were subject to the changing mandates of fashion. As much as the industrial process, including the use of interchangeable parts, created redundant types for mass production, it also offered diversity and customisation. An illustrative chronology of vehicular types would have been helpful, since styles are very much wedded to cultural tastes. Nonetheless, the book's impressive command of its subject, and its positioning of horse-drawn vehicles in the historical context of nineteenth-century American industrialisation, make it an important read for transport historians.

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