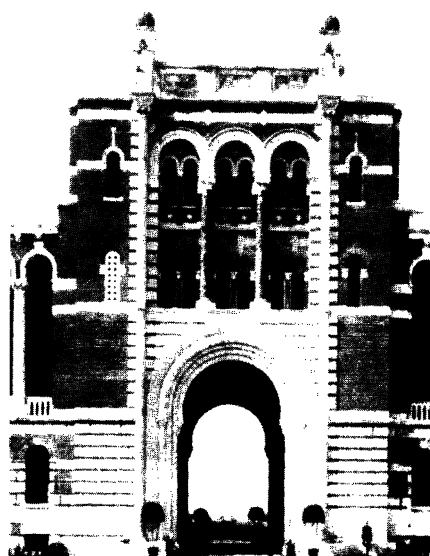


Central part of the Administration Building of Rice University, designed by Ralph Adams Cram and constructed 1910–1912. Finding, as he wrote later, “no historical or stylistic precedent, and no ideas imposed by the President or Trustees,” Cram “invented a style he considered suitable to a Mediterranean-like climate, combining ‘all the elements I could from Southern France and Italy, Dalmatia, the Peloponnesus, Byzantium, Anatolia, Syria, Sicily, Spain.’ In spite of this eclecticism of building style, “Cram’s overall plan for Rice followed standard Beaux-Arts principles, with groups of buildings forming open and closed courtyards, arranged hierarchically along major and minor axes.” [From *Campus: An American Planning Tradition*; Rice University Archives]



but he seems not to have been much engaged by some important recent work concerning changes in teaching and scholarly practices, changes in the recruitment of faculty and students, and changing relations between the university and the larger society. It is surprising that so little is made of such major developments in the history of higher education as the rise of disciplinary departments, the laboratory and seminar method of instruction, and the changing age structure and sex ratio of student populations. All of these changes seem to pose significant architectural problems that trustees and architects have had to confront. But Turner simply does not get that close to the actual experience of university life. In part this derives from the broad scope of his project, but one cannot avoid the conclusion that it proceeds as well from his definition of the task of architectural history.

Turner’s largest interpretative claim associates campuses with cities. He declares that campus planning in America is an episode in the history of American urbanism, that, in fact, American campuses are “cities in microcosm.” There are several problems with this thesis, but let me mention only two of a conceptual sort. First of all, Turner seems to think it reasonable to define a large building complex where many people are housed, fed, and employed for part of their lives as a city in miniature. Yet all of us who divide our lives between cities and universities surely recognize that profoundly different principles of order are at work in the two. To put it in the most simple way, cities and universities look and feel quite different. Second, by trying to identify the academy with the city, Turner has trouble interpreting a particular pattern of evidence that keeps emerging in his story, evidence that the university campus became over the course of the 19th century something of an alternative to the city.

When life in large cities became intimately multivalent in the second half of the 19th century, universities tried to assert their distinctive and superior values. Usually this involved some sort of physical isolation. The Johns Hopkins University, originally a cluster of buildings on adjacent city blocks, moved within a fairly short time to a more isolated and self-contained site. Harvard, which once opened onto the life of the community, turned inward. In 1904, in *The American Scene*, Henry James captured the spirit of the new Harvard when he praised the recently erected brick walls and iron gates as being “emblematic of cloistrality and restriction and exclusion.” The academy has acquired some precious virtues in this manner, but there are as well irrefutable disadvantages for the life of the mind and for the life of cities.

THOMAS BENDER

Department of History,
New York University,
New York, New York 10003

Early Aerial Ventures

The Eagle Aloft. Two Centuries of the Balloon in America. TOM D. CROUCH. Smithsonian Institution Press, Washington, D.C., 1983. 770 pp., illus. \$49.50.

This history is “an official book commemorating the 200th anniversary of human flight.” Beginning with “Flight and the founding fathers” and ending with “Ballooning in the space age,” it is an appropriate testimonial of the Air and Space Bicentennial of 1983. The author,

curator of aeronautics at the Smithsonian’s National Air and Space Museum, has written a well-researched narrative of 20 chapters concluding with notes, a bibliography, and an index that make the work a valuable reference for anyone interested in levitation. Whether full of hot air, gas, or iron fumes generated by oil of vitriol, the big bubbles that have risen from the territory of the United States since at least June 1784 are here chronicled in loving detail.

Strangely, another major bicentennial book, C. C. Gillispie’s study *The Montgolfier Brothers and the Invention of Aviation, 1783–1784* (Princeton University Press, 1983; reviewed in *Science*, 5 August 1983) is completely ignored herein. Although technical data and scientific interests are cited and often explained, the present work concentrates more on the humanistic adventures of aeronauts than on their quest for knowledge or control over atmospheric nature. Crouch concedes that the Montgolfiers have rival claimants as the first inspired to fly. He is fairly sure that Benjamin Franklin favored the hydrogen-filled *Globe* of J. A. C. Charles and the Robert brothers as far more promising than the larger, paper, smoke-filled Montgolfier balloons. Rivalry, competition, sport, and spectacle are emphasized as more noteworthy and newsworthy than curiosity about pneumatics or altitude and attitude control. Yet the coincidence of the birth of flight and that of the United States has made possible a very interesting social-technological story that parallels our political-diplomatic history. Clearly the encouragement of leaders like Thomas Jefferson, Washington himself, and the Adams family boosted the hopes of enthusiasts like Dr. John Foulke and Peter Carnes for ballooning. But, despite various trials, only a 13-year-old Baltimore lad named Edward Warren made an ascent (24 June 1784, tethered) prior to 1793. On 9 December of that year the Frenchman J. P. Blanchard rose above Philadelphia amid much official hoopla and traveled some 15 miles in 45 minutes. He repeatedly showed Americans over the next four years how to float with the aid of hydrogen. Earlier he had shown Dr. John Jeffries, American expatriate, rake, amateur philosopher, and patron, how to be first across the English Channel by air (7 January 1785). By the time of his death at age 56 in 1809, Blanchard, the irascible French republican, had amassed a grand total of 59 ascents and popularized the connection with France, where leadership in manned balloon flights remained. A. J. Garnerin demonstrated the first manned

parachute drop from a balloon in 1797, and J. L. Gay-Lussac ascended to 23,000 feet for science in 1804.

In the 1820's L. C. Guille and Eugene Robertson gave numerous "entertainments" in the United States, providing the inspiration for the first generation of native American aeronauts. Aside from the mysterious "Mme. Johnson," perhaps the first American to make a solo flight, Charles F. Durant became the most inspiring scientist-aeronaut of the early 1830's. His 13 short flights prompted a dozen or more imitators who began about 1834 to carry ballooning into the heartland of America, north and south.

Crouch argues that Thomas Kirkby, Richard Clayton, William Paullin, and above all John Wise (1808-1879) ushered in a golden age for American ballooning that lasted from about 1844 to the advent of the Civil War. The growth of urbanization and industrialization during those years saw the substitution of city-illuminating gas for clumsy hydrogen generators and thus simplified the inflation problem. Many other technical improvements by the 1850's led airmen and airwomen to take greater risks. European colleagues like Ernest Petin and Eugen

Godard introduced new techniques of showmanship as well as airship designs for passenger flights. A remarkably good safety record was maintained until races, rivalry, and competition for new records of going higher and farther began to take their inevitable toll. The challenge of crossing the Atlantic Ocean, which John Wise kept in view and promoted, was accepted also by John LaMountain and Thaddeus S. C. Lowe, among others.

Aerostation, however, was beginning to be redefined by Rufus Porter and Joseph Henry as aerial navigation, requiring powered and directable airships. Although Henry Giffard in France in 1852 achieved the honor of designing and flying the world's first successful steam-powered airship, Porter, Solomon Andrews, and Frederick Marriott continued trying to perfect the technology and techniques for steam locomotion in the aerial medium. But then the Great War of Rebellion intervened. Crouch devotes two chapters to "The Civil War aloft," one on origins and another on operations, mostly featuring the reputation and character of Lowe.

The reconstruction period, about 1865-1880, Crouch sees as the "end of

an era" in aviation as the Allen family and daredevils like W. H. Donaldson gradually were supplemented by scientific aeronauts like Samuel A. King. Although show-business ascents continued to be staged by P. T. Barnum and other impresarios, the new hot-air balloon technology allowed more amateur entertainers and acrobats to gain attention. Inventors such as C. E. Myers, C. F. Ritchel, and P. C. Campbell made many improvements in the direction of controllable airships, but showmen like T. S. Baldwin and William Ivy continued to dominate the skies until the advent of the aeroplane.

In the 20th century professional aeronauts quickly abandoned aerostation for aviation. Yet, American socialites took up ballooning as a sport to parallel yachting and polo. Aero Clubs formed between 1900 and World War I became faddish, the James Gordon Bennett Races (1906-1938) being their focus. Crouch gives short shrift to the role of ballooning in World War I, but he does carry on well the narrative of the National Balloon Races (1919-1936) and their adventurous heroes.

Readers of *Science* will appreciate most Crouch's last two chapters, "Destination stratosphere" and "Ballooning in the space age." The former considers attempts in the United States from 1927 to 1937 to reach ever higher altitudes, and the latter is a 28-page summary of a few primary achievements up to 1983, including Maxie Anderson and Ben Abruzzo's transoceanic exploits. The Piccard family is duly honored as well as the astonishing revival of hot-air ballooning since the advent of Vulcoons in the 1960's.

As a commemorative book on the sport and spectacle of lighter-than-air flights in America, this is an excellent scholarly study. But it is not comprehensive or deeply analytical. Military use of barrage balloons and blimps is virtually ignored. "Dirigible" is not even indexed. Although Count Ferdinand von Zeppelin is featured, Alberto Santos-Dumont is not. There are more than 141 illustrations, but they are not well captioned. There are few tables, charts, or graphs, and little attention is given to primary technological or scientific problems. However, Crouch and his colleagues at the National Air and Space Museum will no doubt continue to rise to these and other challenges with complementary monographs.

LOYD S. SWENSON, JR.

Department of History,
University of Houston,
Houston, Texas 77004



A Japanese print commemorating the visit of the Baldwin brothers to Japan in 1890. The Baldwins made their first Tokyo balloon ascensions, which also featured parachute leaps, in December 1890. From Japan they moved on to fly from Shanghai, Hong Kong, the Straits Settlements, Singapore, three towns in Java, Saigon, Rangoon, Calcutta, Madras, and other Indian towns. [From *The Eagle Aloft*]