"Moulton Taylor's 'Aerocar' was [one] of the air-road hybrids to appear after the Second World War. In designing his Aerocar to pull its wings and stabilizer along with it when on the highway, Taylor avoided the difficulty owners of Fulton Airphibians would face if caught somewhere without their wings." [From *The Winged Gospel*; National Air and Space Museum, Smithsonian Institution]

These questions deserved at least an attempt at an answer.

In conclusion, this book, which is based on the aviation literature of the time and pertinent secondary sources, is a short, well-written, and interesting study. Corn's creative attempt to show the relationship between the winged gospel and aviation technology is particularly valiant, but it is clear that in fact these attitudes had little or no effect on the mainstream of American aviation technology.

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Psychologist's Memoirs

In Search of Mind. Essays in Autobiography. JEROME BRUNER. Harper and Row, New York, 1983. xii, 306 pp. $20. The Alfred P. Sloan Foundation Series.

In writing his "intellectual autobiography" Jerome Bruner is in good company. The Alfred P. Sloan Foundation has commissioned autobiographies from Freeman Dyson, Peter Medawar, Lewis Thomas, and Hendrik Casimir. Like the others, Bruner has been at the forepoint of his subject—psychology—and like them he is an articulate, verbally gifted, self-conscious thinker and reporter. There is an inevitable compulsion to make a lifetime of research appear orderly, as though one interest led naturally to another. Bruner's unifying concern is perception: "What, in fact, do our observations tell us about the nature of the *world* and what about the nature of *mind*?" (p. 67).

As an undergraduate at Duke University, Bruner was influenced by recently transplanted Gestalt psychologists whose mission was a ferocious anti-behaviorism. His graduate studies at Harvard put him at least spatially near B. F. Skinner, the quintessential behaviorist, though there is no evidence that he was influenced one way or another by Skinner.

The first meteor that Bruner exploded over psychology was the "New Look" in perception. In the 19th century, the model for studying perception was that of psychophysics—the changes in the physical stimuli that were correlated with differences in discrimination. Bruner put the locus of interest in the perceiver. He said that perception was inferential and the inferences could be influenced by any characteristic of the perceiver. In a much-quoted study he showed that judgments of the size of coins depended on their values and, most interestingly, that poor children exaggerated sizes more than did wealthy children. Further, a series of studies on "perceptual defense" yielded startling results. Subjects either took a long time to recognize words that made them uncomfortable or they distorted the words so that they were senseless. "For how could people *know* that something was potentially threatening unless they could *see* it first? Was something passing through a Judas Eye, letting a perceiver decide whether to open the portal of perception to let it in?" (p. 80). The conundrum plagued the New Look psychologists until a decade later, when the British psychologist Arthur Broadbent devised a filter theory of attention that provided the rationale for the pre-look that informs the person that there is something to be defended against.

In 1960 Bruner organized the Center for Cognitive Studies in an attractive house near Harvard Yard. He was later joined as co-director by George Miller, now of Princeton. The Center may have been the most significant impetus to modern cognitive psychology, treating such matters as thinking, perception, language, and development. Bruner, with a talent for recognizing the promise of young scientists, invited many to spend time at the Center together with distinguished elders. The intellectual time was right, and the ambience of the Center created a yeasty mix whose influence is still felt in psychology 25 years later.

Actually the most interesting line of research at the Center did not involve Bruner directly. Miller and Chomsky collaborated on a program to use Chomsky's linguistic theory as a cognitive theory for understanding sentences. If true, the results would have been of staggering importance, not the least for a justification of interdisciplinary endeavor. Unfortunately, the theory was not true, but the enterprise must go down as a good mistake, something psychology had to go through.

Bruner is an honest appraiser of his own research on thinking. His subjects had the task of discovering the concepts manifested in a deck of cards that varied from each other in such attributes as kind and number of figures, color, and surrounding border. Concepts in real life rarely come in such fixed classes. Cognitive scientists now are concerned with the "ecological validity" of the experiments and strive to gather data from subjects performing meaningful life-like tasks.

After Sputnik, when the universities became interested in elementary and high school education, Bruner was a major player in the Cambridge group led by Zacharias and Wiesner. His widely translated (19 languages) book *The Process of Education* made him the darling of educators. Outside of experimental psychology, Bruner's reputation is based on this book, which is in fact a report on a summer conference during which he be-

came convinced that traditional psychological learning theory had little relevance to education. The book is the source of Bruner's controversial aphorism that "any subject can be taught to anybody at any age in some form that is honest." Later, with the help of a group of committed people such as he always has been able to inspire, he developed a curriculum, Man: A Course of Study, which is still the target of John Birchers and assorted creationists.

In 1972, after 27 years at Harvard, Bruner accepted a chair at Wolfson College, Oxford. The happiest part of that decision was his arrival—with friends he sailed his own boat to England. He found and announced that British psychology was parochial, its principal ties being to reductionistic biology. To counter these public criticisms his Oxford colleagues organized a seminar on Bruner's views called, not very affectionately, the Bruner bashing seminar. Still, he made overtures to the philosophers (he believes that cognitive psychology cannot be done without the involvement of philosophy of mind), to other social scientists, and to like-minded psychologists in Britain. His graduate students were international. He was much influenced by the Oxford philosopher John Austin and carried on a program of research on the pragmatics of language acquisition. His data came from the intensive observation of a few children during the early periods of learning to talk. His findings led him to emphasize the practical course of children communicating with their mothers in such homey games as hide and seek. He is unclear whether his conclusions supplement or replace Chomsky's genetic theory of language acquisition. The research does indicate a scientist who sees the importance of observing children and mothers doing things that are significant to them. This and his work on education are far cries from the Bruner who studied thinking by the way subjects sorted cards.

As a research practitioner, Bruner is an "in and outer." He likes to open a topic, skim the top, and let others take over. He is impatient with details and bored after he can see where the project is going. These habits of work fit well with the needs of psychology as a field, or perhaps of any field, where there are phalanxes ready to push forward when they have been shown the direction. There is an in-house adage, to know where psychology will be in five years see what Bruner is working on today. Though often said with a smirk, it is indeed an accolade.

Judging from their choices, it was one of the Sloan Foundation's criteria that their autobiographers write well. This book reads easily, and though its focus is personal it provides an excellent introduction to modern cognitive psychology and its 30-year history. Bruner writes as he researches—on a large canvas with broad brush. He is a polymath and his erudition is reflected in the range of knowledge displayed, from music to art history to single-cell recording in the brain. The writing is sometimes fevered: "I decided that the exercises that constituted Bach's *Art of the Fugue* bore the same kind of relationship to his *B-Minor Mass* that, say, spherical geometry bore to Copernicus's theory of the movement of heavenly bodies, or that combinatorial mathematics bears to gene coding, and so on ad infinitum" (p. 207). His intellectual biography shows why Jerome Bruner is today's best-known psychologist.

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Correlates of Fame

Genius, Creativity, and Leadership. Historiometric Inquiries. DEAN KEITH SIMONTON. Harvard University Press, Cambridge, Mass., 1984. xii, 231 pp., illus. $20.

Why have so many dreamed of attaining fame? What explains the success of the comparative few who reach this elusive goal? Over the ages these questions have been addressed with considerable insight by the poets. Dante, for instance, was surely not far wrong when he linked the desire for fame to a hope of leaving a more enduring mark on history than does "smoke in air or foam on water." And Shakespeare, although he was only seeking to amuse, showed no little perspicacity when he had Malvolio declaim, "Some are born to greatness, some achieve greatness, and some have greatness thrust upon them."

Indeed, Simonton's central concern in the present book is to identify the respective contributions of birth, merit, and fortune in producing eminent people. However, dissatisfied with traditional approaches, he seeks to bring the study of famous men and women into the realm of science. In particular, he believes that the time is ripe for analyzing the quantitative studies of history's renowned creators and leaders that have appeared in the last century. His objective in doing so is to discern universal "laws" applicable to creativity and leadership. He goes about the task by reviewing the methods and findings of the "historiometric" literature in eight substantive chapters (on progenitors, genes, and generations; personality and character; education; productivity and influence; age and achievement; aesthetics and charisma; Zeitgeist; and political violence). The resulting volume, although fairly comprehensive, is insufficiently focused and self-contained to communicate a deep knowledge of its subject or to engender strong confidence in its claims.

A brief look at Simonton's chapter on the relations between education and ranked eminence illustrates the advantages and limitations of his approach. In the course of the chapter, he refers to some 30 inquiries, drawing empirical results from quantitative studies of various historical and contemporary populations, interpretations from more theoretical works, and illustrative quotations from two books on Einstein. He uses this material to address several issues—for example, the relations between formal education and ultimate fame for leaders and for creators; the connection between education and dogmatism in American presidents; the optimal educational levels for creativity in the arts and in the sciences; and the relation between academic honors and creative fame. The strongest claim to emerge from his discussion is that a "transhistorically invariant" arch-shaped curve relates educational level and ranked eminence in both the arts and the sciences; that is, among famous artists and scientists those with little or much formal training have been less likely to reach the pinnacles of renown than those of moderate educational attainments. Simonton's relation is certainly plausible, for it is easy to see how too little education can impoverish creativity and too much stultify it. But until someone carries out an investigation of the relation between training and eminence that takes adequate account of both national differences in educational systems and their historical evolution there is little reason to think that Simonton has made a genuine scientific discovery.

Simonton has performed a valuable service by reviewing the literature, raising issues, and advancing hypotheses. But he has not, in my judgment, taken the study of fame significantly beyond the insights of the poets, philosophers, and biographers.

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