

Building Superman

The man who sought to improve the human race through breeding.

A LIFE OF SIR FRANCIS GALTON

From African Exploration to the Birth of Eugenics.
By Nicholas Wright Gillham.
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By David Reich

FRANCIS GALTON is the pioneer of modern studies of heredity — even more than his cousin Charles Darwin — so why have today's geneticists developed a collective amnesia about him? The problem is that Galton is also the founder of eugenics, which in the early part of the 20th century led to the forced sterilization of hundreds of thousands of people, in the United States and elsewhere, with the goal of "improving" the human genetic stock.

Ninety years after Galton's death, the same questions that prompted him to propose eugenics — whether selective breeding could be used to reduce a population's burden of disease or even to increase intelligence — are again rising to the fore as new technologies make it increasingly possible to predict complex genetic traits. Nicholas Wright Gillham's extensively researched biography of Galton thus could not come at a more opportune time. Gillham, a biology professor at Duke University and a geneticist himself, fashions Galton's biography in light of his relevance to today's science.

At the Galton Laboratory, founded at University College London after Galton's death in 1911 and today crowded with ultramodern machines for sequencing DNA, visitors could easily overlook an ancient display case devoted to the once-famous scientist. In the center of the display is a pair of images of Galton, a kind of mug shot in profile and head-on, taken in 1893 when he was 71. A brilliant amateur who made significant contributions to fields ranging from meteorology to criminal science, Galton was getting his measurements taken according to the method of Alphonse Bertillon, who had developed a new approach for classifying criminals. Galton is smiling in the photograph, perhaps because he knew that he had recently developed a far better method: a mathematical system for identifying people according to their fingerprints.

Galton loved measurements: heights, weights, strength of squeeze or pull, fidget rates, levels of beauty and intelligence and anything else he could convert into a number. His goal was to understand how these quantities related and how they were transmitted across generations. Over the course of his life he took hundreds of thousands of measurements and invented new mathematical techniques to study these quantities. The methods he pioneered, including pedigree analysis and twin studies, are still fundamental to modern genetics. The mathematical tools he invented — regression and the correlation coefficient — are also used universally today.

As Gillham describes him, Galton was a competent scientist who knew the difference between solid evidence and flimsy supporting arguments. How then did he come to espouse eugenics? Gillham is convinced that Galton's support for eugenics was rooted in a sense of the superi-

ority of his own family and social class. It's clear from his account that Galton was also influenced by his expedition to southern Africa in the early 1850's, where he was the first European to explore parts of what is now Namibia. Encounters there with different tribal groups confirmed in Galton's mind that Europeans were more intelligent than Africans, and even that some African tribes were more intelligent than others. These prejudices were the starting point for his work in eugenics. He not only coined the word but was also its earliest promoter. He argued that to improve a population, those who are most physically fit and able should be encouraged to have many children and, conversely, that the less well endowed should be discouraged. (The coercive policies — involving forced sterilizations and worse — that would characterize the movement later were not part of his vision.)

Gillham's fascinating account also brings out a second feature in Galton's work — his combination of professionalism and amateurism. On the one hand, Galton published papers on the uniqueness of fingerprints or the inheritability of sweet-pea characteristics that would stand up to scrutiny in modern journals. But he also published studies that were not adequately supported by scientific evidence. For example, his argument that intelligence and ability are hereditary was largely based on data showing that the relatives of successful people are unusually successful themselves, dismissing the possibility that nurture rather than nature explained those results.

In the years following Galton's death, not all geneticists shared his views about the desirability of eugenics. But the idea caught on nevertheless, especially in the United States. By 1931 more than half the states had passed forced sterilization laws aimed at those deemed mentally, physically or even morally and socially unfit, and sporadic sterilizations continued in America and elsewhere until the 1970's.

The burning question for us, of course, is: not whether we will return to eugenics in our own day, but rather how to guard against the potential for misuse of modern genetic information. How will predictive genetic tests — for example, tests for susceptibility to breast cancer or Alzheimer's disease — affect the way we view ourselves and treat others? How will employers and health insurance companies deal with this information?

The latest research into human genetic variation, interestingly enough, is rewriting the rules, raising questions about the validity of race as a tool for understanding human heredity. A recent study carried out, appropriately, by scientists at the Galton Laboratory, compared two different population categorizations — one based on commonly used ethnic labels like African-American, Asian, or Caucasian, and the other divided according to purely genetic criteria — to see which classification system better predicted individuals' responses to therapeutic drugs. The results showed that the purely genetic classification had much more utility than race in predicting how individuals might respond to therapeutic treatment, indicating that science, now as in Galton's time, is still far too heavily influenced by factors like skin color.

Galton would have been intrigued by such results, because, as Gillham shows us, he was a nuanced scientist who was generally open to new perspectives. One can only hope that if he were alive today, he would be less enthusiastic about the movement he started. □

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