

Creating the measure of Chandrasekhar's life

In his review of my book *Empire of the Stars: Obsession, Friendship, and Betrayal in the Quest for Black Holes* (PHYSICS TODAY, February 2006, page 53), Kameshwar Wali refers to his own biography of Subrahmanyan Chandrasekhar,¹ “based on more than a decade of extensive conversations with him,” and asserts that “Miller’s account is totally different from Chandra’s.”

Quite so! As historians of science worth their salt are well aware, there is a vast difference between what a subject tells you in an interview and what is to be found in the archives. It is the historian’s job to probe beyond the subject’s own assertions. Wali had very limited access to Chandra’s letters, manuscripts, and other papers, and he elected to believe to the word Chandra’s account of events that had occurred 40 years before. His book is now outdated.

My book was based on the huge Chandrasekhar archive in the Joseph Regenstein Library at the University of Chicago, together with other extensive primary and secondary materials. Such resources are absent from Wali’s book, and nowhere in his review does he support his allegations with historical evidence. Instead, yet again, he tells us to believe what Chandra told him.

What I discovered through my research was a complex man, as we would expect of someone of Chandra’s brilliance, who never recovered from his 1935 encounter with Arthur Stanley Eddington at the Royal Astronomical Society. In public Chandra pretended that the Eddington episode was behind him—as it should have been. But, as I learned from diary entries, letters, and interviews with his friends, he could not shake it off.

Wali dismisses my suggestion that Eddington was homosexual. My argu-

ment is complex and based on historical evidence. Many people have made the same suggestion, and indeed homosexuality was not unusual among Oxbridge dons in the 1930s. Living “a life of concealment” at a time when draconian laws prohibited homosexuality meant that Eddington’s psychological well-being was fragile. His life’s work was his fundamental theory—which would be threatened if Chandra’s theory of white dwarf stars was right. Wali is the only person who has publicly questioned my interpretation of Eddington’s personal life.

Wali claims that Chandra’s theory of white dwarf stars “was not the theory of black holes.” But that was not what I said. What Chandra’s theory did was to show, for the first time, that after burning up their fuel, stars could begin an eternal collapse to an infinitely tiny point of infinite density. The dramatic collapse contained the seeds of the concept of black holes. General relativity was not necessary to come up with the insight. But no one believed it, not even Eddington, who had speculated on just that in his 1926 book, *The Internal Constitution of the Stars* (Cambridge U. Press), using general relativity—albeit tongue in cheek.

Wali says that Chandra “did not have to fight for recognition” of his theory of white dwarf stars and asserts that Ralph Howard Fowler, for one, supported him. To the contrary, I have documented this at great length and Wali seems to have forgotten that he, too, made this same point in his biography of Chandra. After quoting from a footnote in Fowler’s 1936 book on statistical mechanics² in which Fowler points out Eddington’s disagreement with Chandra’s theory of white dwarf stars, Wali states that Fowler did “not come out to say that he” disagreed with Eddington.³

Certainly, Eddington took Chandra to a tennis match and on bicycle rides. But that does not contradict the evidence of the heated exchanges they had over the years. Wali writes in his review that Eddington’s later letters to Chandra were “full of warmth, humor, and affection.” In fact, there was very little warmth between the two, and they

certainly avoided discussing the death of stars.

Wali questions my comments on racism in 1930s Britain. Chandra was the first Indian to lecture on astrophysics, but no one offered him a position, even though positions were available. Chandra wrote to his father in 1936 that there was “some prejudice giving Indians a definite appointment” at Cambridge University.

Indeed, Chandra must have been delighted when Wali appeared at his door in 1977. He could finally put on record through a biographer that he had set the Eddington episode behind him. Perhaps Chandra forgot that two years earlier he had made the following diary entry:

I recall that during my first year in Cambridge (in 1930–31), I saw Eddington, going by on the other side of the street, smoking his pipe as usual, looking so confident and serene. And I thought to myself: how wonderful it must be to be secure in one’s accomplishments with the recognitions of one’s fellow scientist. And I thought of being [a fellow of the Royal Society], a Gold medallist of the Royal Astronomical Society, and being famous. I suppose that I have all the tangible recognitions that Eddington had at that time received. But in my heart I have none of the serenity that I thought I saw in Eddington’s face, 45 years ago.

References

1. K. C. Wali, *Chandra: A Biography of S. Chandrasekhar*, U. Chicago Press, Chicago (1991).
2. R. H. Fowler, *Statistical Mechanics*, 2nd ed., Cambridge U. Press, Cambridge, UK (1936), p. 652.
3. Ref. 1, p. 145.

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Kameshwar Wali’s review of *Empire of the Stars: Obsession, Friendship, and Betrayal in the Quest for Black Holes* exposes

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