

Authors' Note

In 1966, Halton “Chip” Arp published his extraordinary *Atlas of Peculiar Galaxies*, a compilation of 338 of the most bizarrely shaped galaxies and galaxy associations that had been photographed with a large telescope. Few of the galaxies in Arp’s *Atlas* corresponded to the symmetrical forms specified in the Hubble sequence of spirals and ellipticals, the most prevalent galaxy classification scheme in use at the time. Given that the *Atlas* was published in the *Astrophysical Journal Supplement*, the audience, at first, was almost exclusively limited to professional astronomers who were accustomed to ignoring the occasional pathological galaxy. The sight of so many variations in one place, however, was startling. Obviously, quite a few galaxies could not be facily placed into the elliptical- or spiral-shaped bins that astronomers had fashioned for most of the galaxies then known. The significance of this revelation, however, would not be fully appreciated until years later when increasingly more peculiar galaxies turned up in deep images, and the advent of multi-wavelength observations clearly showed that many galaxies had unique and asymmetrical features, at least to some extent.

To commemorate the 40th anniversary of its publication, we present this new reproduction of the *Atlas of Peculiar Galaxies* consisting of all 338 original images, newly scanned and digitally swept of artifacts. Paging through the images arranged as Arp had originally arranged them, one begins to see how the peculiar forms relate to each other. Spirals with heavy arms, detached segments, or ellipticals “connected” to spirals all seem logically bound within their particular category of peculiarity. But then the inevitable question arises. Why do they look the way they do? Do their inherent patterns represent just different stops along the evolutionary paths of all galaxies, or are they each unique unto themselves, no more alike or linked than one turbulent eddy is to another? Such questions lie at the heart of the *Atlas of Peculiar Galaxies*.

In addition to Arp’s original gallery of galactic exotica, we present the complete Arp galaxies imaged in the main by amateur astronomers, complete with 26 regional charts showing the location of each Arp system, detailed schematic representations of each field, observing notes, eyepiece impressions, and Arp’s own comments about the various peculiarities. We think our *Atlas* recreation fittingly demonstrates how far amateur astronomy has come in 40 years. Advances in imaging software, digital astronomical cameras, and telescope mounts have improved amateur imaging to the point that it rivals large professional film imaging of 40 years

ago. But visual observing has come a long way, as well. Those who consider themselves expert galaxy hunters will find new and humbling challenges here, while those who think they know their limitations may find the inspiration to surpass them.

Although we could have stopped there, we felt it important to provide a historical account of Arp’s work and the controversy it has provoked. Unfortunately, this controversy has evolved into a phobia of almost institutional proportions, making research into Arp’s story problematic. In some circles, to admit that we were working on a book about Arp would elicit wary glances, groans, and some, though not many, closed doors. Although we draw no conclusions, we do present some of Arp’s classic cases as well as recent results concerning discordant redshift research. Readers curious about his claims, however, would be best served by perusing his books, *Quasars, Redshifts, and Controversy* (1987, Interstellar Media), *Seeing Red* (1998, Apeiron), or *Catalogue of Discordant Redshift Associations* (2003, Apeiron). Those looking for more about Arp’s life and work at Mount Wilson and Palomar, as well as how he came to “bear the cross of crankdom,” should read ours.

Amateur astronomers and science enthusiasts have the luxury to pursue this aspect of the story as far as they wish. Some have penetrated to their chosen level and found Arp’s assertions unacceptable, contending they shouldn’t even be discussed. Others follow their curiosity, intrigued by the controversy. In any case, arguing for or against discordant redshift research is not the point of this book, it is only a part of Arp’s story that has brought peculiar galaxies to the forefront.

Halton Arp’s research may be considered *scientia non grata* by many astronomers, but his saga affords us a fascinating perspective on how astrophysical research was conducted in the mid-twentieth century, and how the repercussions of the redshift controversy still influence the course of research today. Readers who disagree with him about the reality of intrinsic redshifts, can still enjoy exploring his *Atlas of Peculiar Galaxies*. Arp has stayed the course of his convictions, earning him respect and admiration from both sides of the redshift controversy. Said one astronomer who does not support Arp’s views, “Chip Arp has done a great service to astronomy and remains one of nature’s gentlemen.”

We think Halton Arp’s journey is a great story and his *Atlas* a worthy object of amateur study and observation.

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