

OBITUARY

Halton Christian (Chip) Arp, 1927–2013

Dr. Halton C. Arp (better known as “Chip” Arp), passed away on December 28, 2013, in Munich, Germany. Chip was honored by the Society for Scientific Exploration in 1996 with the award of the Dinsdale Prize. The citation reads:

For his extensive observational research concerning the redshift of quasars and other astronomical objects, and his perception and creativity concerning the role of redshift in cosmology.

As is typical of recipients of this Award, his scientific contributions were significant—and controversial.

Arp received his Bachelors degree from Harvard College in 1949 and his Ph.D. from the California Institute of Technology in 1953, both cum laude. Concerning his time as a student at Cal Tech, Arp recalls: “Professors at Cal Tech were very difficult. There was a tremendous emphasis on being knowledgeable and being right, and so forth.”

After receiving his Ph.D., he took an appointment at the Mt. Wilson and Palomar Observatories (also based in Pasadena, California) for two years, carrying out research on novae. Arp then spent two years in South Africa (supported by a National Science Foundation grant, nominally as a Research Associate at Indiana University) where his principal observations were of the Magellanic Clouds. Arp came to the conclusion that they do not have the same chemical composition as our Galaxy, which is metal-poor compared with both Clouds. He recalls that his conclusion “was immediately challenged by some of [his] colleagues who said it wasn’t so. . . . That was the first controversy I got into.” But it was subsequently accepted that Arp was correct.

In 1957, Arp took an appointment as Carnegie Fellow at the Mt. Wilson and Palomar Observatories. Walter Baade, Ira Bowen, Edwin Hubble, Milt Humason, Rudolph Minkowski, and Fritz Zwicky were some of the distinguished members of that organization. At that time, the Observatories were organizationally separate from Cal Tech, but there was close interaction between the Carnegie staff and the physics staff at Cal Tech. Arp recalls that “Hubble was a very formal person.” Before embarking on a night’s observing, astronomers would gather for dinner. “Hubble would sit down

in a very formal position at the head of the table, and the napkins would be laid out just right.”

Arp’s early astronomical research was mainly in stellar physics, studying Cepheid variables (which play a crucial role in determining the size of the universe), stellar populations, stellar evolution, etc. In recognition of his research, he received the Helen B. Warner Prize of the American Astronomical Society in 1960, and the Newcomb Cleveland Award of the American Association for the Advancement of Science, for his work on “Stellar Content of Galaxies” (Arp 1962), in the same year. He then became interested in interacting galaxies, and produced what is now a



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classic atlas (*The Arp Atlas of Peculiar Galaxies*) of those objects (see Arp 1987a, 1987b). Quasars were discovered in 1963, and Arp began to notice an apparent association between peculiar galaxies and nearby quasars. However, this was heresy! The accepted doctrine was (and is) that the redshift of a quasar is a measure of its distance, so that quasars are viewed as probes of the structure of the universe. Arp’s claim of an association between high-redshift quasars and low-redshift galaxies is completely incompatible with the standard interpretation. This purely scientific disagreement developed into a political conflict. Arp found it more and more difficult to get observing time on the telescopes, and eventually he was forbidden to continue on that line of research!

Arp could either acquiesce or resign—and (in 1983) he resigned his position at the Mt. Wilson and Palomar Observatories. Fortunately for him, the Max Planck Institute for Astrophysics in Munich, Germany, offered him a position as a visiting astronomer, and he was able to continue to observe, using European facilities.

Arp’s views concerning the meaning of redshifts remains very much a minority opinion, and remains highly controversial. Most scientists subscribe to the view that redshifts are due to a gravitational effect, a local velocity, or the expansion of the universe (or a combination of these effects). The issue can be settled only by the analysis of observations. At this time, the consensus is that further observations do not support Arp’s claim. If the

analysis has been unbiased, that settles the issue. If the analysis proves to have been biased, the issue remains unresolved.

Whether Arp was right or wrong, there is no doubt that he did not receive the appreciation and support he should have. One would hope that a scientific community would welcome and encourage anyone who questions standard beliefs. Alas, this tends not to happen. If Arp had had a faculty appointment with tenure, he might have received more considerate treatment. But, on the other hand, he might not have.

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References

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