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THE END

UGC 8335

UGC 8335 is a strongly interacting pair of spiral galaxies resembling two ice skaters. The interaction has united the galaxies via a bridge of material and has yanked two strongly curved tails of gas and stars from the outer parts of their “bodies.” Both galaxies have dust lanes in their centers. UGC 8335 is located in the constellation of Ursa Major, the Great Bear, about 400 million light-years from Earth.

A fuzzy cloud of light in the constellation of Andromeda connects us to our future. The fate of the entire Milky Way Galaxy, and perhaps Earth itself, is intertwined with the Andromeda Galaxy. The latest astronomical evidence strongly suggests that the two giant spiral members of our Local Group are on a collision course, with a merger likely occurring in five billion years.

Galaxies were once thought of as “island universes,” evolving slowly in complete isolation. This is now known not to be the case. Galaxies interact in a variety of ways with satellite and neighboring galaxies, and collisions and mergers of galaxies are now believed to be the key evolutionary mechanism. There are probably very few galaxies in the universe that were not shaped by interactions, mergers, and acquisitions. The position of a galaxy in the Hubble sequence likely depends strongly on the number and severity of collisions in its past history. Spirals, formed from relatively isolated primordial gas clouds, appear at one end of the sequence, and giant ellipticals produced through the mergers of spirals and smaller galaxies, appear at the other. In between, mergers between galaxies of differing mass produce a variety of galaxies that can take all kinds of forms as they are merging.

Milkomeda, the End of the Milky Way

The Andromeda Galaxy is one of the most awe-inspiring astronomical objects visible in the northern sky. Though probably known since antiquity, it was first noted as a nebulous patch in the tenth century by the Persian astronomer Abd al-Sufi. We now know that this faint patch of light is actually a great spiral galaxy, an island of hundreds of billions of stars located about 2.5 million light-years away. It is the most distant object humans can see with the naked eye. Remarkably, the light we see from there began its journey at the dawn of humanity.

It is expected that, in the far future, our Milky Way will collide with the Andromeda Galaxy, our nearest large neighbor, generating a spectacle unmatched in our corner of the universe. Milkomeda is the name some astronomers have given to the end product of this merger.

The two galaxies are approaching each other at almost 500,000 kilometers per hour and, in three to five billion years, will collide head-on. The direct collision will lead to a magnificent merger between the two galaxies, during which the Milky Way will no longer be the spiral galaxy we are familiar with. Instead, together with the Andromeda Galaxy, over the course of a billion years it will evolve into a single, huge, elliptical galaxy.