

Triton Fun Company

Science Newsletter July 2008

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Discovering a Peculiar Universe

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Special points of interest:

Galaxies galore

Triton Fun stuff

Superfluous questions

Our Astronomy Club trips have always been journeys of discovery. Telescopes in tow, we head to the exquisite dark skies of the White-Inyo Mountains, east of Bishop, California. By day, we explore the region's diverse geology, dive into beautiful Eastern Sierra lakes and float lazily down the Owens River. At night, we scan the heavens. This time, we discovered a peculiar universe.

Edwin Hubble introduced his famous galaxy classification scheme in 1926, and his system still holds up well today. We live in a vast realm of elliptical, spiral and irregular galaxies. Just as some people don't fit comfortably into groups, there are galaxies that defy easy classification. These are the province of Halton Christian ("Chip") Arp, a great figure in astronomy who is himself resistant to easy classification.

When Hubble wrote a letter recommending Arp for a position at the Mount Wilson Observatory, he noted Arp's "alertness to new phenomena." These words would prove prophetic, and Arp himself never forgot them. And yes, he got the job.

Arp's exhaustive studies of novae in the Andromeda Galaxy and Cepheid variables in the Small Magellanic Cloud (the latter from South Africa) greatly improved our

understanding of galactic distances. But his name will be forever linked to his *Atlas of Peculiar Galaxies*, where oddballs of the cosmos get a space of their own.

The Atlas features spirals with one arm, three arms, split arms, detached arms and "integral sign" shapes. Here, we find galaxies with rings, tails, loops, jets, counter tails, infall, outflow and filaments. Some are exceptionally bright, anomalously dim, fragmented, amorphous, absorbing, emitting, wind-modified, perturbed or just plain disturbed. A great many are seen to be interacting with other galaxies, which ultimately explains most of the cosmic mayhem. Others are inherently "patchy" dwarfs. A few defy any classification even here—outcasts among the outcasts.

Some peculiar galaxies are bright and easily observed, such as Arp 337 (M82), the famous "Cigar Galaxy". This Ursa Major starburst is classified as "unique". The more elusive Arp 214 (NGC 3718), also in Ursa Major, shows up nicely in a 17.5" telescope—but the only "bar" evident in this barred spiral is of absorbing dust, not stars! Many entries, like "The Grasshopper" and "Mayall's Object," beg for a 22" aperture or better, at a first-class observing



Amateur astronomers at the Owens Valley Radio Observatory in California

site. Even then, the peculiar features themselves may prove elusive.

Some day, when our Milky Way tangles with the Andromeda Galaxy, we may display a long tidal tail like that in the Tadpole Galaxy, Arp 188 (UGC 10214, in Draco). Most stars don't get flung so far out, but we'll know more about our sun's fate in a few billion years, so be patient. Perhaps we'll even end up in someone else's Arp Catalog.

Arp's cosmological views are as far from mainstream as the Tadpole Galaxy's overdrawn tail. To this day, he resists the idea of an expanding universe, and asserts that distant objects can have higher redshifts if their masses increase with time.

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We are always looking for **contributors** to the Science Newsletter. If you would like to write an article about a science subject you are excited about, or contribute a superfluous question, or if you would like to be on our **mailing list** for future newsletters, please e-mail us at:

info@tritonfun.com

Peculiar Universe: continued

Photos/Info: Sloan Digital Sky Survey/D.W. Hogg /M. R. Blanton/NASA/JPL/SMAAC

You can read Arp’s books “Quasars, Redshifts and Controversy” or “Seeing Red” if you’re interested, or check out his web page.

Ironically, in deep images taken by the Hubble Space Telescope, “peculiar” galaxies become the norm, and galaxies like ours might be called “peculiar”. Out there, in the distant, early universe, sparkle myriads of smaller, interacting galaxies that look like the building blocks of today’s great Milky Ways. Astronomers see these “Arp” type galaxies as grand evidence of an evolving, expanding universe in which space was once a scarce commodity. Well, most astronomers—Arp himself still disagrees.

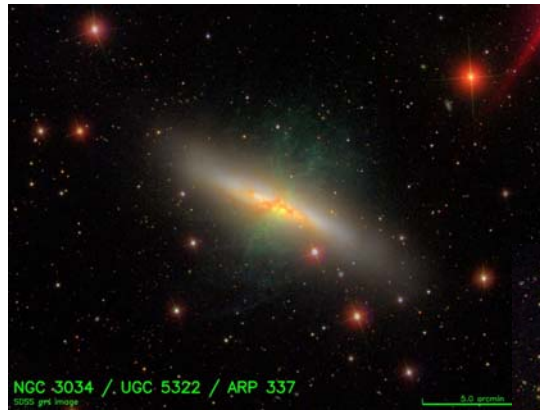
Every idea needs its challengers. If someone of great talent and insight can’t knock a hypothesis down, it emerges stronger. We ourselves should always be ‘alert to new phenomena.’ You can never be sure when the next great assumption will fall.

There’s a lot to think about while floating down the Owens River, anticipating another night of spectacular stargazing. This much can truly be said: If you think the universe is a peculiar place, you’re not alone.

Resources:

A) A great reference for observers and armchair explorers alike is “*The Arp Atlas of Peculiar Galaxies: A Chronicle and Observer’s Guide*,” by Jeff Kanipe and Dennis Webb

B) Halton Arp website:
<http://www.haltonarp.com> ;
 full of interesting, unorthodox astronomy information



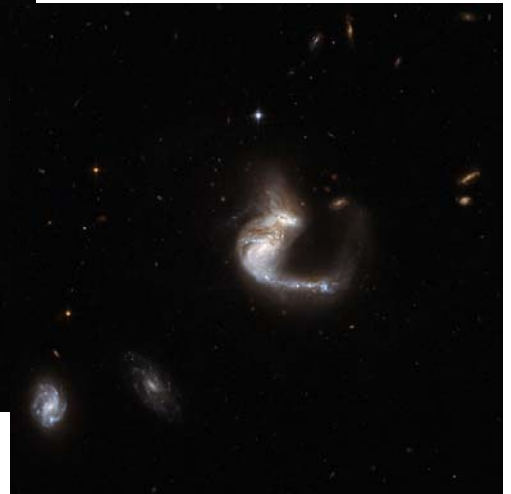
A)



B)



C)



D)

Four of Halton Arp’s peculiar galaxies

- A) **Arp 337** - the “Cigar Galaxy”
- B) **Arp 214** - a dust-filled barred spiral galaxy
- C) **Mayall’s Object** - looks like a dandelion or mushroom in space..
- D) **UGC 4881** - the “Grasshopper” - two merging galaxies

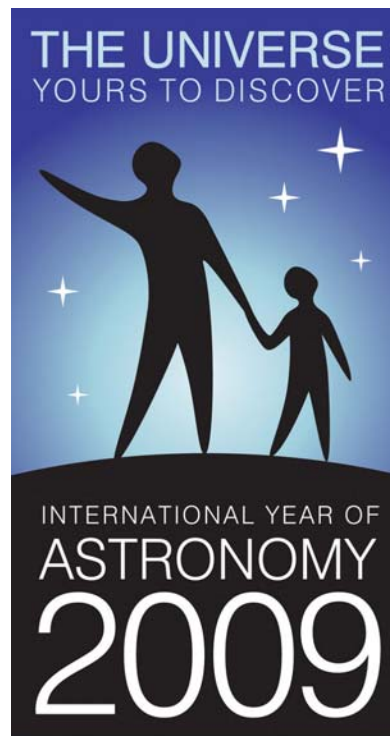
TRITON FUN PRODUCTS

2009 has been declared the "International Year of Astronomy". Events and activities to further the excitement of astronomy are being planned by IYA committees in over 100 countries. The logo for the IYA2009 is shown below. For more info on upcoming IYA2009 events, go to: <http://www.astronomy2009.org>

Triton Fun is an authorized distributor of T-shirts, sweatshirts and long-sleeve tees sporting this new logo. Part of the proceeds from the sale of these shirts will go to support astronomy clubs and astronomy activities connected with IYA2009 in California.

These shirts can be ordered online on our website:
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** Send us your superfluous questions for a future issue ! They can be on any subject. The funnier, the better. M.D., our editor, appreciates the help and will send you a free Triton Fun coffee mug as compensation for your question. Or write an article for us and be read by professional and amateur astronomers and scientists in the U.S. and Canada ! **

Superfluous Questions:

- 1) In the TV show *Will and Grace*, what Broadway diva played Karen Walker's sister ?
a) Patti LuPone b) Bette Midler c) Bernadette Peters d) Chita Rivera
- 2) The astronomer Carl Sagan received his bachelors degree in physics at *what* university?
a) Yale University b) New York University c) University of Maryland d) University of Chicago
- 3) Mike Scioscia is the current manager of the *Los Angeles Angels* major league baseball team. Earlier in his career, he played catcher for *what* other baseball team ?
a) Cincinnati Reds b) Los Angeles Dodgers c) San Francisco Giants d) Chicago Cubs
- 4) Where is the Burrard Street Bridge, an art deco-style steel bridge from the 1930's ?
a) Edinburgh, Scotland b) St Paul, Minnesota c) Vancouver, Canada d) Oxford, England

→ ANSWERS in next months issue of the Science Newsletter ! ←---

** ANSWERS to June's Superfluous Questions: 1. c) salami 2. c) Alex Karras 3. a) cyanogen 4. d) doctor