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**[00:00:12] Jordan:** Hi, I'm Jordan.

**[00:00:14] Kit:** I'm Kit.

**[00:00:15] Jordan:** Welcome to *Starry Time*, where stars plus lines-

**[00:00:19] Kit:** -equals stories.

**[00:00:20] Jordan:** In today's episode, we'll be talking about the astronomy and other cosmic background of the Constellation Camelopardalis, the Spotted Camel, AKA the Giraffe.

**[00:00:32] Kit:** Although the ancient Greeks and Romans likely knew about giraffes, Camelopardalis comes from a Latin word, and this is not one of Ptolemy's great 48 constellations.

**[00:00:43] Jordan:** Camelopardalis was proposed by Petrus Plancius on a globe produced by him and Pieter van den Keere, in the early 1600s.

**[00:00:52] Kit:** Yes. We got some new constellation guys to talk about. Petrus Plancius, or Plancius, I'm not sure, was a Dutch Flemish astronomer/cartographer/member of clergy of the Dutch Reformed Church. He lived from 1552 to 1622, and he fled the Spanish Inquisition in the mid-1580s and made a lot of maps for the Dutch East India Company where he was an investor. He's out there making ocean maps and astronomical charts for sailors. He trained the chief pilot, also named Pieter, but this is Pieter Dirkszoon Keyser, I guess, to make observations of the night sky to help fill in the southern constellations. Even though this whole expedition seemed yikesy-wikesy, Keyser was able to catalog 135 new stars and propose 12 new constellations that were adopted in 1603 by, get ready, Johann Bayer.

**[00:02:00] Jordan:** All right, great. Well, it does tie together a little bit then, because our friend Bayer does get a shout-out this episode, even if Ptolemy missed out on this one.

**[00:02:09] Kit:** That's a little bit about Petrus Plancius, whose name, we don't totally know how to pronounce. Jordan, do you want to tell us a little bit about the globe-maker Pieter van den Keere?

**[00:02:20] Jordan:** Yes, van den Keere was a Flemish globe-maker/engraver/publisher. Of course, another multi-hyphenate from the 1600s. Van den Keere lived from 1571 to 1656.

**[00:02:37] Kit:** This constellation is, as we mentioned, relatively modern. It's 18th in size out of all the currently recognized IAU constellations. It's actually one of the northern constellations, despite Plancius's contribution to the southern celestial maps, as I mentioned.

**[00:02:53] Jordan:** Before we get more technical, how about we do our first impressions? What did this one look like to you, Kit?

**[00:03:00] Kit:** I couldn't really get to giraffe or camel for that matter. It looks like an upside down stick figure doing a handstand with its legs out, but without any head or arms. I'm not sure what that would be. I don't know. I didn't really, I couldn't get to creature. How about you? What were your first impressions of this constellation?

**[00:03:23] Jordan:** This one was hard because when I looked for the Google image search of it, I felt like I was seeing five different versions of this constellation. There were some where it looked like a fidget spinner. There were some where it looked much more like a crane or something, a long neck and legs, like something out of hangman or something. I definitely didn't see anything that made me go, out of any of the five that made me go, "That's definitely a giraffe." No.

**[00:03:52] Kit:** These descriptions may or may not be helpful. I think it's time that we do get technical.

**[00:04:01] Jordan:** This constellation has a right extension of about six hours. and a 70-degree north declination.

**[00:04:09] Kit:** It's visible between +90 and -10 latitudes. Again, definitely more of a northern hemisphere constellation, and it's best seen on February nights.

**[00:04:20] Jordan:** It borders some previously covered constellations that we've done, including Cassiopeia, Perseus, and Auriga.

**[00:04:28] Kit:** Auriga.

**[00:04:30] Jordan:** Auriga. It also borders Lynx, Ursa Major, Ursa Minor, as well as Draco.

**[00:04:39] Kit:** This constellation, as I mentioned, is pretty big, and it looks definitely like a gerrymandered map.

**[00:04:44] Jordan:** Definitely. That's what I'm saying, where you can see versions of it, like, "Am I seeing the right thing here?" It's highly irregular. Now let's talk about the stars.

**[00:04:52] Kit:** This constellation, despite being quite large, is pretty faint, which I think is pretty well evidenced by the fact that Greeks and Romans just basically ignored it. It does technically have eight main stars. The brightest star in this constellation is Beta Camelopardalis, or Beta Cam. For some also strange reason, these stars aren't in the genitive case. This is only true for one other constellation, which is Puppis.

**[00:05:19] Jordan:** Oh, you mean Puppis. Puppis, of course.

**[00:05:23] Kit:** Puppis, yes. The poop deck. I couldn't find out why the generative case isn't being used here. If anyone knows, feel free to let us know over on at StarryTimePod on the Universeodon server of Mastodon. What we do know about Beta Cam is that it has an apparent magnitude of 4.03. There's some conflicting data about whether or not it is or is not a double star.

**[00:05:45] Jordan:** Huh. All right. For a reminder, a double star can imply either a

binary system, where the stars are gravitationally bound, or an optical double, where the stars look close together from Earth, even if the stars themselves aren't actually all that close.

**[00:06:01] Kit:** Seems likely that it's not a binary star, but different sources had different information on whether or not it's a double or an optical double pair. Not clear. What is clear is that the brighter or only Beta Cam star is a yellow supergiant with an absolute magnitude of -3.40.

**[00:06:21] Jordan:** Oh, wow. Wow. It's pretty far away.

**[00:06:24] Kit:** It's about a thousand light years from Earth. This star is interesting because it's rotating a lot faster than expected for a supergiant. Astronomers have proposed that maybe it's doing so because it once had a hot Jupiter planet that it ate.

**[00:06:38] Jordan:** Om nom nom nom nom nom nom. Just eat that Jupiter, get that power boost.

**[00:06:44] Kit:** That's, I guess, a fun fact about Beta Cam.

**[00:06:46] Jordan:** Yes, for Beta Cam. Probably not so fun for the residents of Hot Jupiter, who became a little snack.

**[00:06:54] Kit:** Yes, no doubt.

**[00:06:56] Jordan:** That brings us to Bayer's Variable Star, where we follow the Greek alphabet to explore the Bayer-designated stars of the constellation. We're now at Epsilon, Camelopardalis, which, it's tough here because, doesn't exist.

**[00:07:13] Kit:** No, does not exist. The only Bayer-designated stars in this constellation are Alpha, Beta, and Gamma. As we mentioned before, Beta is the brightest one.

**[00:07:26] Jordan:** Tough.

**[00:07:27] Kit:** Very tough.

**[00:07:28] Jordan:** It's up to you. What would you like to do here?

**[00:07:30] Kit:** In the absence of Epsilon, I think it makes sense to shout out Alpha Cam, which has an apparent magnitude of 4.2, is 6,000 light years away, which makes it one of the farthest main stars in a constellation. It is an O-type blue-white supergiant that is massive, almost 40 times the mass of the Sun, and is a proposed runaway star that was ejected from the star cluster NGC 1502, either due to interactions with other stars or due to a really, really, really large companion exploding nearby. Recent estimates suggest that it's moving at 37 miles per second.

**[00:08:11] Jordan:** There's a lot going on here in this constellation, but all right, 37 miles per second. Carry the one divided by two. That's a cool 1.3 million miles an hour. Alpha Cam is cruising.

**[00:08:23] Kit:** Yes. It's bow shock, which is caused by supersonic movement

through interstellar media, has been imaged with the Wide-field Infrared Survey Explorer, or WISE.

**[00:08:34] Jordan:** Well, that's a convenient acronym. WISE is a space telescope that was launched in 2009. and is credited with identifying minor planets and finding the very first Y-type brown dwarf star. WISE, unfortunately, was placed into hibernation in 2011 before being rebooted to search for comets and asteroids that might eventually hit Earth, kind of important. Its work ended in July 2024 and re-entered and burned up in the Earth's atmosphere.

**[00:09:08] Kit:** Oh, rest in peace.

[music]

Let's take a quick break and then we'll return to find out what Jordan's gold star for the Constellation Camelopardalis is.

[music]

Welcome back. This segment is called Gold Star. In this segment, we alternate picking the star or space object in our constellation of the month that captured our mind, our hearts are, and our very souls. It was up to you this month, Jordan. Where did you go with Camelopardalis?

**[00:09:47] Jordan:** As mentioned, Camelopardalis bumps up against a bunch of other constellations and covers a pretty large area of the night sky. It's not surprising that there's going to be a lot going on and competing for my gold star. I do have a few honorable mentions. First, we'll do a general shout out because there are a couple of starburst galaxies in this constellation, including NGC 2146, AKA the Dusty Hand Galaxy, as well as NGC 1569.

**[00:10:21] Kit:** Oh, there's great Hubble images of both of these starburst galaxies, and I will definitely post them over on our socials once this episode comes out. We did talk about starburst galaxies back in our Ursa Major episode, which is where we met our good friend Fritz Zwicky.

**Jordan:** Fritz Zwicky, "a genius and a curmudgeon for Wikipedia." Hashtag gold. I also want to shout out U Cam, which is a carbon star. which means it contains more carbon than oxygen in its atmosphere. U Cam is nearing the end of its star life. Every few thousand years, it expels a sphere of helium around it, which ends up looking weirdly like an eyeball when you look at the pictures of it in astrophotography. Definitely eerie. Also got to give U Cam a shout out because it was identified in 1891 as a variable star. Bye. Williamina Fleming, who we definitely will and need to do an asterism about.

**[00:11:24] Kit:** I completely agree. She was a colleague of Annie Jump Cannon, who we covered in Season 2. Along with Annie Jump Cannon, was a member of the first group of human computers.

**[00:11:33] Jordan:** We are really tripping down memory lane after doing this podcast a little while. Annie Jump Cannon, Fritz Zwicky, of course, our good friend Bayer, and adding some new names too, that we definitely are great at pronouncing.

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A final honorable mention goes to Kemble's Cascade, which sounds like something out of *Doctor Who*, but it's an asterism of about 20 stars that seemed to go in a straight line, covering about five moon diameters.

Ultimately, though, Kit, the Gold Star winner is NGC 1501, also known as the Camel's Eye Nebula, and the Oyster Nebula. It's about 3,800 light years from us, and it's a planetary nebula.

**[00:12:23] Kit:** We have covered planetary nebulae before. The too long didn't listen is that it has nothing to do with planets and is very likely how our sun will end its life.

**[00:12:35] Jordan:** The interesting thing about this particular planetary nebula is that its central star is still hot and luminous, and it's pulsating. It changes in brightness, but it does so in the span of a half hour or so.

**[00:12:49] Kit:** Whoa. Hmm. This is interesting because most variable stars are not, as it were, in planetary nebulae. This is a pretty short period of pulsating.

**[00:12:58] Jordan:** Truly one of a kind. Plus, the images of this nebula are super cool and unique as well. We need to post some of those as well.

**[00:13:05] Kit:** Absolutely. Welcome to the Gold Star of the Month Club, NGC 1501, AKA Camel's Eye Nebula, AKA the Oyster Nebula.

**[00:13:15] Jordan:** That brings us to the end of our exploration of the cosmic background of the Constellation Camelopardalis. There are some real tongue twisters this week, but thank you for being patient with us. Next week, we'll be exploring giraffes in folklore and creating our own myths for the constellation.

**[00:13:33] Kit:** Yes, I usually end here by just saying that it was me, but I do want to just briefly apologize in this wrap-up, because I have definitely pronounced the name of this constellation incorrectly during this podcast, I really want to call it Camelopardalis, but there's Camelopardalis. I really messed that up several times. Deepest apologies.

[music]

This has been Kit.

**[00:14:02] Jordan:** And Jordan.

**[00:14:03] Kit:** Sisters who loves stars and stories.

**[00:14:07] Jordan:** We'll see you next time.

**[00:14:08] Kit:** On *Starry Time*.

[music]

**[00:14:29] [END OF AUDIO]**