

Facts of Science Fiction **in Planet of the Cats and Jack Bones** by Hans Ness

Rolo on the Planet of the Cats and *Rolo and the Legend of Jack Bones* take place on Earth far in the future (2409) with highly advanced genetic engineering, resulting in talking animals, bio-machines, and meat crops. This may seem like comic goofiness, but it is more plausible than most people assume.

Genetically Advanced Animals — In the books, genetically engineered animals have human-like intelligence, vocal tracts to talk, and dexterous paws to use tools. Since we discovered DNA in 1953, less than a century ago, we have learned to genetically modify plants and animals, so imagine how much more we can learn in hundreds more years. While there are ethical concerns about “playing gods”, we now modify genes with better precision and purpose than what results from random mutations. In 2026 scientists genetically engineered a new microorganism. Eventually, with enough time and knowledge, we could design any kind of living organism we want.

Bio-Machines — The books feature bio-machines, aka animachines, which are organisms genetically engineered for specific purposes, like vehicles with legs and a Roomba-like device that licks the floor clean. Like animals, these machines use muscles instead of motors to move, and nervous systems instead of chips and wires. But like plants, they have no brains or consciousness, and can sit dormant. And like both, they can heal, reducing maintenance. Bio-motors turn the propellers on airships. While organisms cannot have spinning axles, a bio-motor could have muscles that pull something attached to a crankshaft. All this is theoretically plausible.

Sucro-Fuel — The bio-machines are powered metabolically by simple digestive systems that run on sugar water, called sucro-fuel. This is also plausible. In fact, sugar water is what hummingbirds drink from bird feeders. Most of what animals eat is converted to glucose (a type of sugar) through digestion. Sugar-water bypasses the need for such complicated digestion.

Crop Meats — In the books, instead of raising livestock, they have genetically engineered plants that grow muscle tissue for meat, and other animal products like eggs (and probably dairy and leather, though they are never mentioned). They even grow cocoa in mug-shaped shells. Like the bio-machines, this is theoretically possible with enough advances in genetic engineering. It would be much more economical to grow meat as plants than to grow food to feed livestock every day till they’re old enough to slaughter.

Super Wood — The airships are made of wood that is genetically engineered to be stronger and lighter than metal, rot-resistant, and fireproof. We already have genetically modified trees that grow faster and sequester more carbon. In 2024 scientists genetically engineered a “super wood” as strong as aluminum.

No Petroleum — The books have no jets or internal combustion engines. Perhaps the Earth ran out of petroleum, or perhaps they stopped burning fossil fuels for environmental reasons. This explains why air travel is slower. It takes the propeller airship nearly two days to cross the Atlantic Ocean, which is slightly faster than what it took old dirigibles like the Hindenburg.

Electronics — The books include technological equipment and “scrollscreens” which are like a tablet, but they are not described in detail. They might be electronic or replaced with bio-machines using nervous systems instead of wires and microchips.

Radio & Radar — In the books, they use radio waves for communication like we do now with cell phones and radios. They also have satellites and radar. All of these have the same limitations as today’s technology bound by the laws of physics.

Space Travel — They do have rockets, though it does not describe how they are powered. They have off-world colonies, but it does not say where. They have never met aliens, so perhaps they have never left the solar system and cannot exceed the speed of light. This contrasts with the first book, where Rolo is on an alien planet and travels to Earth through wormholes.

Anti-Gravity — The airships, air-bikes, ocean skimmers, and Aerus City have tanks of “anti-grav” oil to make them float. This oil is matter with negative mass, which repels away from regular mass, so it falls up instead of down as it repels from the Earth. All other forces in nature can repel, like magnetism and electrical charges, so in theory, there might be an equivalent repulsion for gravity, but we have no evidence that it exists. (Anti-matter does not have negative mass.) The air-buggies and air-bikes look like blimps, but negative mass is very different from helium, which has regular mass but at a lower density than air. Based on the illustrations and descriptions, the Aerus City anti-grav tanks are relatively small compared to the airships, so they must use a higher density anti-grav (more negative weight in a smaller volume). All these floating objects and vehicles must have ballast tanks like dirigibles to adjust their buoyancy and altitude.

Floating Cities — Aerus City is made of several skyscraper buildings, lifted by anti-grav tanks at their tops. Assuming negative mass exists, this would be technically possible; however, it doesn’t seem practical. They would need some propulsion to keep the city from blowing around the world in the air currents. And if a structure cracks, the gravity would pull it apart rather than compressing it together, so it would be more fragile and dangerous.

NYC Ruins — In the second book, New York City is in ruins because of a past war. It is plausible that people would abandon a city if most of it was ruined beyond repair. And without ongoing maintenance, buildings do deteriorate. Central Park has overgrown into a jungle, which is feasible if they have so many genetically altered plants in the future.

Submarines — The houndrel ships convert to submarines. Technically, this is possible, like the U-boats from WWII. But based on the illustrations, the large volume of air trapped in the ship would make it implausible to submerge.

Internet — The “terranel” is a modern version of the internet, connecting everything and everyone worldwide. The catling government blocks the houndrels from accessing the terranel, but the houndrels have tricks to slip through the filters using techniques comparable to today’s technology.

Glowing Crystals — The city of Zorx has alien crystals that glow. In nature, some gemstones do have luminescence, plus in nature there is bioluminescence (fireflies, etc.), phosphorescence (“glow in the dark”), and fluorescence. But these all require energy in the form of receiving light, electrons, or food, and they’re relatively dim. It’s unclear what provides the energy to these alien crystals, especially abandoned underground in the dark. They would need to be extremely efficient at converting radioactive decay into light, or absorbing and converting heat or radiation from the environment. The gems in the blorxian key glow based on distance and direction to the secret portal. This might be technology, or it might be a reaction to a specific radiation from the portal, with polarization based on the direction of the radiation.