Porrima system

“The British Government today announced the foundation of a new outpost, Warkington’s Drift, on a newly surveyed garden world in the Gamma Virginis system. This represents a return to the pre-war agenda of the British Space Service.

The system was secretly surveyed by Simpson Apex Ltd (a Wellon exploration corporation) in collaboration with the British Space Service. So far the Wolf Cluster has been a great disappointment, despite the early high hopes inflated by the Klaxun at DM+17 2611 and the habitability of Freiland. None of the surveyed systems have contained any habitable worlds or relevant finds. An initial positive Simpson Apex survey of the system last year was suppressed until a proper manned expedition could visit and confirm the presence of a habitable planet.

The planet, named Carmentia, masses 1.43 earth masses, with a surface gravity 15% larger than Earth. The day is a little above 19 hours and the axial tilt is a low 6 degrees. 50% of the surface is covered with oceans, with a sizeable fraction of water locked in large icecaps.

“We think the ecology of Carmentia will prove a fascinating subject of study over the next decades” says Sir Roderick Wright-Molina, head of the British Space Survey. “The grand seasons caused by the eccentric orbit of the suns are likely more severe than on any other garden world in explored space. They are expected to involve very significant climate alterations and ecological shifts – we suspect that the icecaps are incredibly dynamic and move over the span of decades rather than millennia.

Carmentia appears to lack significant tectonic activity, which has contributed to the relatively low carbon dioxide levels in the atmosphere, the small oceans and the perhaps suprising coolness of the surface. Much of the surface is covered with praries, shallow seas and swamps. However, there are numerous forests and what appears to be jungles: the planet promises to be just as rich in biological surprises as Earth.”

The decision to set up a research station on Carmentia (named after Sir Edward Warkington’s famous camp on New Highland) may or may not be the first step in a colony venture. Experts at the Colonization Policy Foundation, a Wellon think tank, warned that any serious colonization would require Freihafen to expand its infrastructure to handle passing ships and likely also require construction of an outpost at one of the intermediary systems.

In the meantime, the IEX and University of Wellon have expressed interest in a biological survey. For the first years Warkington’s Drift will likely survey the local ecology and resources, in order to provide the UK (and ESA) with a sound basis to make a decision on. Simpson Apex will likely use the outpost for further exploration of the fingers of the Wolf Cluster, giving it an advantage over competitors like Trilon and Tarr Interplanetary Excursions. “

Gamma Virginis

Gamma Virginis is called Porrima or Arich. It is a binary star with a highly eccentric 171 year period orbit. Both A and B are F0 blue-white stars, hotter than the sun. Normally separated by about 40 AU, at perihelion they are less than 4 AU from each other.

	Name	**Orbit (AU)**	**Diameter (km)**	**Density (earths)**	
A	Evander	0.7	7,000	.6	Desert
	Egeria	1.02	8,000	.5	Desert
	Carmentia	2.14	14,000	1.1	Garden
B	Antevorta	0.4	11,000	1.1	Hothouse
	Postvorta	1.6	6,000	1.1	Desert

The B system holds little of interest, a typical hothouse named Antevorta and a desert world named Postvorta.

The innermost two worlds of the A system are two very light desert worlds, possibly escaped moons of a lost gas giant or Moon-like remnants of the mantle of some protoplanet that once collided with another protoplanet.

Carmentia

Carmentia is the system's only habitable world. It masses 1.43 earth masses, producing a noticeable 1.15 G gravity. It lacks moon. The axial tilt is a mild 6 degrees, making seasons minor at present. The day is 19.06 hours long.

The orbit is locked in a resonance with the two stars, which stabilizes its orbit and obliquity somewhat. It is believed that it was originally a hothouse or ocean world that got much of its atmosphere and hydrosphere stripped by UV radiation from the stars until it could develop into a garden world. However, given the current loss of hydrogen and weak tectonics the planet may not be able to sustain a biosphere in a few hundreds of million years.

Carmentia is covered with mainly shallow oceans (50% of the surface) and large plains. There are also swamplands, prairies, forests as well as some extensive deserts. No real counterparts to Earth's tropical rainforests or boreal conifer forest band exist. Weather is relatively stable, with the warm seas casting off regular mini-hurricanes that sweep the lowlands before dissipating with heavy rains in the uplands.

The grand seasons cause significant temperature variations. During the hot season temperatures rise by more than ten degrees, the ice caps melt and many of the swamps and praries bloom – plants make use of the double sunlight and increased moisture. The seas expand noticeably and change ecologically as the salinity shifts.

As B withdraws a period of cool and rainy weather begins. The icecaps begin to grow again, slowly recovering until next warm season. The lowlands dry out and become less productive, the forests slowly expand and the seas shrink, leaving huge swamplands.

Biology

The biochemistry was found to be highly earthlike, which is both a blessing and a problem – at least some local toxins are risky for humans. There are kingdoms of animals, microorganisms and algae – there is no plant kingdom, a first for a garden world.

There are no true plants; rather, there exist numerous single-celled algae species that form symbiosis with other organisms, similar to how lichens work on earth. On Carmentia this has been taken to an extreme: the "moss", "grasses", "herbs" and "trees" are actually compex symbiotic colonies where different species form nutrient-conducting fibers, leafs, structural support, roots and defenses. The result is a staggering diversity, since many of these species are interchangeable (not unlike the organisms of Zeta Tucanae, although there the modularity is on the macroscale). There are no real species among plants, rather there are common mutualistic templates. Every tree in a forest can be unique in shape and adaptation. One plant can have several kinds of leaves and structural supports at the same time; although as a rule only one or two types tend to co-exist. As the environment changes different species become more or less widespread, changing the kinds of plants that can be seen. There is a rich micro-ecology of mutualisms, special adaptations, chemical messages, defections and defenses going on across the plant world. Botanists will have plenty to do for a long time, especially since the larger set of component organisms enable some possibilities not found among Earthly plants and their handfull of tissue types – there exist plants incorporating animals for motility, plants that literally suck out and kidnap the algae of neighbouring plants, plants with stings and even plants with rudimentary nervous systems.

Land plants are mildly turquise in color rather than green, an adaptation to the UV-rich bluish sunlight. However, as the hot and bright season arrives plant colors start to shift – some long-lived kinds begin to express different algae, and short-lived kinds with different colors become more common. As light becomes very plentiful and the weather becomes moister the normally water-saving pigments are replaced by more thirsty pigments or pigments that produce less free radicals. During the peak of the bright season plants show a range of colors from whitish blue to deep red.

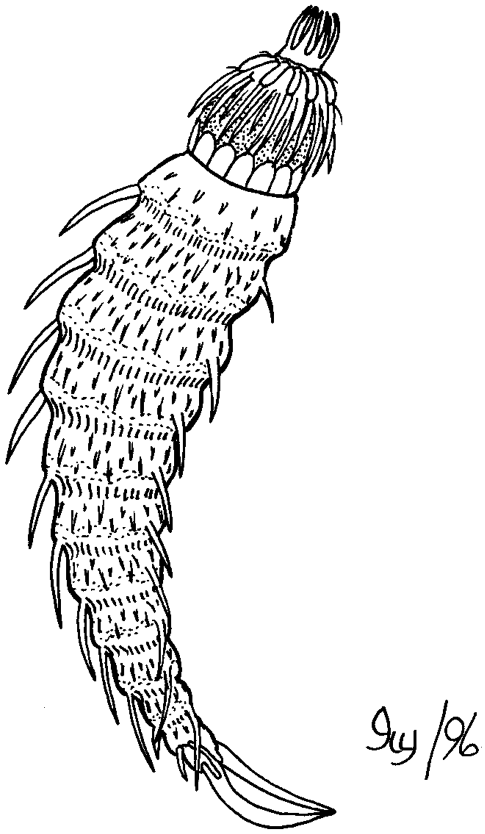
Bacteria, algae, sand plankton and plants make use of pollen, cysts or spores that get swept up by the winds and distributed through the air. This has led to a thriving ecology of "ice plankton" and "ice scavengers" scouring the surface of the ice sheets for downed nutrients. Some plants make use of fires to hoist spore packages aloft, or grow giant "puffballs" that cover passing animals with spores they can spread.

The most extended animal phylym consists of loricifera-like creatures, tiny "sand plankton" that live in the seas, ice, mud, silt and soil everywhere. They become at most a few millimeters long but constitute a significant part of the planets animal biomass.

The most visible animal phylym look like kinorhynchan mud-dragons. They evolved to eat the sand plankton, and most species are small wormlike creatures that dig through sediments, using barbs to anchor themselves in place and for defense. A successful offshoot has evolved into fish-like organisms, some of which in turn has emerged on land. The sea kinorhynchans have extended their barbs into graceful fins, sometimes richly colored for signalling and mating, sometimes equipped with poisonous stingers. The land kinorhynchans look like snakes or lizards. Their long sinous bodies are covered with scales and sometimes with protective barbs. In the swamps they dig under the surface, churning the mud and filtering out sand plankton. Some are sizeable predators, looking and behaving similar to crocodiles. There are smaller "snakes" that spit gluey venom to trap and poison their prey.

One family is adapted to bushfires and emerge from the ground only to feed and mate after the fires. So far no land species have developed limbs, although several species use long barbs or specially adapted mouthparts for locomotion.

In the seas another key phylum consists of gelatinous, drifting tubes covered with cilia filtering the water, not unlike terrestrial sponges. These creatures form large floating reefs, themselves food for swimmers. They are also home for a wide variety of parasites/symbiotes that use them for reproducing. These parasites often contribute defenses against predators, or in some cases help lure plankton into the tube creatures. Some parasites make use of the predators and infest them in turn, using the predators as their primary reproduction mode. The resulting larvae then migrate to the tube reefs to be eaten.



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A common sea organism is a long (up to several meter) hair-like transparent worm that carries algae inside its body. Able to move to good locations the hairworms form vast forests that can turn to swimming masses. Such organisms expand greatly during the dynamic ecological shifts of the hot season. They are in turn the staple for many of the kinorhynchan “fishes”.