Ringworld: AUTOPILOT PRINT-OUT

RINGWORLD

- ☐ Orientation In Space: Parallel to galactic plane. Ring does not occlude star as seen from any Known Space world.
- ☐ Mass: 2.1 x 10^{30}g
- ☐ Radius (distance of surface from star): 152,883,500km
- ☐ Circumference: 960,752,100 km
- ☐ Width: 1,604,000 km (125.8 Earth diameters)
- ☐ Surface Area: 9.66 x 10^{14} sq km (approx. 3 million times the total surface area of Earth).
- ☐ Biosphere: Inner surface layered with soil, oceans, atmosphere breathable by humans.
- ☐ Rim Walls: Approx. 1,600 km high, facing sunward.
- ☐ Spin: Direction of rotation — same as galactic disk, appears anticlockwise from Known Space (i.e. from 'below').
  Length of rotation — 7.2 Ringworld days (9 UNS days).
  Rate - 1239 kps (4,460,979.6 kph)
  Surface gravity induced by spin —.992 gee
- ☐ Average Temperature: Habitable surface — 290 Absolute (62.3 F).
  Outer (darkside) - 174 Absolute (-146 F).
- ☐ Atmospheric Composition: Nitrogen 74% Oxygen 22%, Argon 2%, Helium 1%, H2O, C02 and other gases less than 1%.
- ☐ Day/Night Cycle: induced by Shadow Squares - 30 UNS hours (av.)
  Average length of Full Daylight — 21 hrs.
  Average length of Eclipse Twilight — 45 min.
  Average length of Full Night — 7.5 hrs.
  Speed of terminator shadows with respect to Ring surface — 1.6 million kph.
- ☐ Oceans: Hydrosphere covers approx. 53% of habitable surface.
  Shallow Seas — range in size from 15,000 to 36 million sq. km. with an average depth of 6-9 m; composed of fresh water.
  Great Oceans — Numbering two: the Great Oval Ocean and the Great Star Ocean, counterbalanced 180 degrees apart on the Ring. Each has a surface area of approx. 2000 Earths, and an approx. volume of 20 Earths, Maximum depth of each is over 35 km. Minimum total length of the shoreline is 32,000,000 km. Each ocean is composed of salt-water.

RINGWORLD SUN

- ☐ Distance From Mean Galactic Plane: 248 light years.
- ☐ Distance From Solar System: 201 light years.
- ☐ Direction: Near north galactic pole.
- ☐ NGP Celestial Coordinates (epoch 2000):
  R.A. 12h51m.5; DEC'07'7m.7
- ☐ Catalog No./Name: 3027 Coma Berenices (UN).
- ☐ Summary: Normal solar-type main sequence early G isolated star, barely smaller and cooler than Sol. Nonvariable. Magnetic flare star; Zeeman line splitting, semi-periodic and irregular.
- ☐ Spectrum: dG3e verging on dG2e. Transient magnetic and H-emission anomalies. Infrared line broadening.
- ☐ Color: Yellow-white.
- ☐ Surface Temperature: 5,600 Absolute (10,000 F).
- ☐ Stellar Type: Population I (galactic disk).
- ☐ Luminosity Class: V (main sequence dwarf)
- ☐ Mass: 1.93x 10^{33}g
  0.97 Sol; 323,000 Earth masses
- ☐ Diameter: 1,359,858.5 km.
- ☐ Absolute Luminosity (energy output):
  3.6 x 10^{33} ergs/sec
  4.8 x 10^{23} horsepower
  3.6 x 10^{26} watts
- ☐ Absolute Magnitude: +5.0
- ☐ Apparent Magnitude Seen From Earth: +8.7
- ☐ Gravitational Acceleration At Photosphere: 27 gee
- ☐ Escape Velocity From System (near the Ring): 38.6 kps
- ☐ Companion Objects: Ringworld. No planets, moons, asteroids or short period comets. Nothing but the Ring itself — which is not detectable from Known Space by standard low-resolution remote survey techniques.

SHADOW SQUARES

- ☐ Number: 20.
- ☐ Shape: Rectangular.
- ☐ Dimensions: 1.6 million x 4.18 million km.
- ☐ Average Spacing: 9.66 million km
- ☐ Solar Energy Falling on Shadow Squares: 2.0 x 10^{31} ergs/sec (5.5% of sun's output).
- ☐ Rotation Period of Shadow Square Ring: 11.4 Ringworld days (14.2 UNS days).

FLOOR MATERIAL

- ☐ Average Thickness of Ring Floor: 30 m.
- ☐ Material Type: Ultrasolid, artificial.
- ☐ Manufacturing Technique: Unknown.
- ☐ Minimum Tensile Strength: Approx. 7.1 x 10^{14} kg per sq. cm.
- ☐ General Properties: blocks deep radar and hyperwave; absorbs 40% of neutrinos; absorbs nearly 100% of all other radiation and subatomic particles; rapidly dissipates heat; appears translucent, grayish in sunlight.

RINGWORLD FROM SPACE

"I remember how the Ring looked from deep space, like a thread of blue Christmas ribbon . . . ."

The Ringworld sun is a solar-type star, a shade less intense than Earth's own. From anywhere in Known Space it is several magnitudes too faint to see with the unaided eye. Through a telescope it looks like a perfectly ordinary example of the thousands of yellow dwarf stars within several hundred light years of Sol. Careful spectroscopic studies might reveal periodic magnetic anomalies and occasional intense flare activity; and extremely precise astrometric measurements might suggest the absence of any major planetary family, but that is about all. The plane of the ring is face-on to Human Space, so the disk of the star cannot be even partially occluded. The Ringworld would never be detected, unless the searcher knew exactly where to look.

From the edge of the Ringworld system, the G3 sun is nothing more than a blazing white point — but with a difference: this star wears a barely-visible halo. At a distance comparable to the gulf separating Earth from Pluto, Ringworld is already a naked-eye object, a shallow pencil-line of arc-blue with its sun nestled serenely at the center. As you decelerate into the system at 30 gees, the Ring shifts its position gradually, too slowly — evidently its diameter is huge, though in proportion it is thin and narrow, not much wider across than its star at its axis. Ringworld is a band of solid material, clearly an artifact. Its near side is a dim dead-black line occulting a few stars, sharp-edged where it cuts across the solar disk. The further side is a pale blue ribbon across space, with long streaks of glowing baby-blue interrupted by shorter strips of deep midnight blue. The surface looks as if it has been laid out in a series of regular, rectangular dots and dashes. There are no other objects visible on the way in — no planets, no asteroids, no periodic comets or meteoroid swarms, no interplanetary craft or space stations.

Much closer to Ringworld, major details become discernible, first through telescopes and finally to the unaided eye as the structure looms near. The blue daylit rectangles of the Ring develop a complex, finely-etched, textured appearance at the limit of resolution, overlain with thin smudges of indistinct white cloud-cover. Faintly deeper-blue areas which might be land masses are intricately intertwined with patches of lighter blue which might be seas. Occasionally there is an unusual spot of brightness, like sunlight reflected from an ice field, a polished metal plate, or the surface of a calm ocean at just the right angle. The two Great Oceans can be picked out easily, if you look for them, 180° apart around the checkered surface of the Ring. One is oval in shape, the other a ragged four-pointed star. The shadowed regions are quite visible, blue-black with blurred straight edges for boundaries, containing a hint of differentiated shading. And a ring of 20 dark, rectangular outlines circle near to the Ringworld sun, like a swarm of huge black moths.

From a dim, sharply-defined line, the rim of Ringworld slowly grows by degrees, to a featureless straight black wall 1600km [1000 miles] high. The rotational velocity of the Ring is by now obtrusively apparent, requiring five gees acceleration to hold a constant curved path next to the wall. Close to the rim wall, or to the underside of the structure, half the sky seems a dark geometric abstraction, its edges converging to vanishing points at either end of the universe. From two of the points at infinity, narrow lines of baby-blue and midnight shoot straight upward. If you have picked the right spot on the rim, you may glimpse 160-km-diameter toroids, spaceport ledges (perhaps with intact craft), towers plainly for attitude jets, or (just as you maneuver over the top edge of the rim wall) the rectangular loops of a transport system. From this vantage point, 1600 kilometers above the Ring floor, no other signs of civilization are visible. Barely discernible are the curiously-regularly-spaced, half-conical bumps of nearly 50-km-high mountains far below, leaning against the base of the rim wall.

The panorama unfolds in breath-taking detail as you descend slowly toward the upper reaches of Ringworld's atmosphere. The Ring becomes a luminous parabolic arch above, and you lose all track of how the rim walls and Ring floor merge together as a single circular artifact. Below, rapidly expanding, all the surfaces of all the earthlike worlds in a dozen galaxies seem to be spread out flat for beholding. Swirled white cloud-decks resolve first, some bright enough to dazzle the eyes, in soft blankets and churning storms, in long parallel streamers, and in diminutive, dappled wooly fleece. Topography appears: continents and oceans, huge mountain chains, lakes, valleys, patterns of rivers and streams, endless flat plains, barren deserts, vast forests, snow fields, and odd patches of regularly textured land or dully gleaming spots that look disturbingly unnatural. The surface area is more than 50% water, with an endless sprinkling of small shallow seas and larger oceans, evenly distributed but scattered at seeming random. Their exotically convoluted shorelines display a striking variety of gulfs, bays, inlets, peninsulas, river deltas, natural harbors, and wide sandy beaches; while island archipelagos dot their faces. Sluggish, silt-laden rivers and extensive marshlands are visible, as well as colorful jungles and lush tropical rainforests. With a surface area three million times that of Earth, there is room enough for anything. It is easy for a traveler to lose perspective, to forget the scale of the artifact, and to habitually underestimate sizes and distances amid such a landscape. It is quite difficult to recall that the stunning variety and geographic splendor that is Ringworld did not evolve naturally — and even harder to understand that every topographic detail and major feature had to be carefully planned, meticulously designed, and molded in bas-relief in the ultrasolid foundation material.

THE INFINITY-HORIZON

Her eyes scanned the middle distance,
through a barrier of low hills . . .
They rose, and found infinity where they
had always before found limits ....

Ringworld has no horizon. From the viewpoint of a surface-dweller, there is only an endless abstract plain, a completely Euclidean landscape. On a normal spherical world, the horizon is seldom more than a few dozen kilometers distant. Even the tops of high mountain ranges are obscured from further off than a few hundred kilometers. On Ringworld, there is no line where land curves away from sky. Rather, land and sky merge into a uniform, hypnotic, horizontal band — a region where details the size of continents are mere points, where all colors blend gradually into the blue of sky. Mountain ranges or floating cities cannot drop below the horizon: as one travels further away, they merely recede and shrink. Details begin to smear, and are then lost. Huge landmarks become tiny, then vague, then indistinguishable and invisible in the disturbing blur of the "infinity horizon." It is a "vanishing-plane," made up of an infinite number of vanishing points in every horizontal direction. To look into the vanishing-plane is to step into another universe, one of true straight lines and impossible geometric distortions.

Ringworld's horizon, like the deeps of space, can grip the eye and mind. In space it is called "the far look." A sentient can lose his soul guiding a ship among the stars, while its mind travels in realms it cannot remember. On the great flat plateaus of Mt. Lookitthat (Plateau), a colonist may be found standing at the Void Edge, eyes fixed, looking down into the mist tracing the mountain's fluted side. Mt. Lookitthat is over 60 kilometers high, and a human eye finds infinity in the solid void of mist that stretches white and featureless and uniform to the world's horizon. There, the effect is called "Plateau trance." On Ringworld, the infinity-horizon seems to go on forever. The world is flat, and even the least suggestible human mind sometimes falls victim to "horizon hypnosis" while traveling for long periods. Kzinti claim to be immune to this effect. In darkness or at nightfall, the effect is no less unsettling. The missing horizon is a deep blackness born of night and chaos, beneath a navy sky in which the Arch glows spectrally.

Even in a landscape as flat and vast as that of Ringworld, a clear sense of the fundamental directions can be maintained. Spinward is the longitudinal reference, along the Ring, defined by the direction of rotation. Anti-spinward is 180 degrees opposite. The great Arch in the sky constantly reminds the visitor of these coordinates. The latitudinal directions are starboard and port (as on a ship) towards the rim walls. When facing spinward, starboard is to the right, port to the left. For comparison, "spinward" on the rotating spherical Earth would be east; "anti-spinward" west; "starboard" would be south, and "port" north.

RINGWORLD EXPLORER SHEET

Front

Explorer's Name . . . . . Player . . . . .

Gender . . . . . Chronological Age . . . . . Physiological Age . . . . . Species . . . . .

Homeworld . . . . . Gravity . . . . . Credit Rating . . . . .

STR . . . . . Damage Modifier . . . . .

MAS . . . . . General Hit Points . . . . .

CON . . . . . Health Roll . . . . .

INT . . . . . Reasoning Roll. . . . . .

POW . . . . . Luck Roll . . . . .

DEX . . . . . Dodge Roll . . . . .

APP . . . . . Defects. . . . . .

EDU . . . . . .

AGILITY Root Maximum . . . . %

Archaic Melee Weap. (05%)R . . . . % ☐

. . . . % ☐

Archaic Ranged Weap. (03%)R . . . % ☐

. . . . % ☐

Athletics (15%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Hide (10%) . . . . % ☐

Sneak (05%) . . . . % ☐

Unarmed Combat (00%) . . . . % ☐

V. Sword, F. Laser (15%)R . . . . % ☐

COMMUNICATION Root Max. . . . . %

Bargain (10%) . . . . % ☐

Debate (05%) . . . . % ☐

Fast Talk (10%) . . . . % ☐

Fine Arts (05%)R . . . . % ☐

. . . . % ☐

Musicianship (05%)R . . . . % ☐

. . . . % ☐

Orate (05%) . . . . % ☐

Own Language (INTx5) . . . . % ☐

Perform (05%)R . . . . % ☐

. . . . % ☐

Psychology (00%)R . . . . % ☐

. . . . % ☐

KNOWLEDGE Root Max. . . . . %

Anthropology (00%)R . . . . %

. . . . %

. . . . %

Astronomy (00%)R . . . . %

. . . . %

Biology (00%)R . . . . %

. . . . %

. . . . %

Botany (00%)R . . . . %

. . . . %

. . . . %

Chemistry (00%)R . . . . %

. . . . %

. . . . % ☐

Computers (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Emergency Treatment (01%)R . . . % ☐

. . . . % ☐

Engineering (00%) . . . . %

Farming (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

History (05%)R . . . . %

. . . . % ☐

. . . . % ☐

Law (00%)R . . . . %

. . . . % ☐

. . . . % ☐

. . . . % ☐

Mathematics (00%)R . . . . %

. . . . % ☐

. . . . % ☐

Physics (00%)R . . . . %

. . . . % ☐

. . . . % ☐

Planetology (00%)R . . . . %

. . . . % ☐

Second Languages (00%)R . . . . % ☐

. . . . % ☐

Strategy (00%) . . . . % ☐

Theology (00%)R . . . . %

. . . . % ☐

. . . . % ☐

. . . . % ☐

Zoology (00%)R . . . . %

. . . . % ☐

PERCEPTION Root Max. . . . . %

Handgun, energy (05%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Handgun, projectile (03%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Heavy Weapon, energy (05%)R . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Heavy Weapon, projec. (03%)R . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Listen (05%) . . . . % ☐

Observe (05%) . . . . % ☐

Scent (00%) . . . . % ☐

Search (05%) . . . . % ☐

Track (05%) . . . . % ☐

TECHNICAL Root Max. . . . . %

Aquatic Vehicle (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Atmospheric Craft (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Ground Vehicle (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Hyperdrive (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Personal Flyer (15%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Reaction Drive (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Reactionless Drive (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Repair (00%) . . . . % ☐

Ringworld (00%) . . . . %

Weapons System (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Other ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

RINGWORLD EXPLORER SHEET

Back

Explorer's Name . . . . . Player . . . . .

Gender . . . . . Chronological Age . . . . . Physiological Age . . . . . Species . . . . .

Homeworld . . . . . Gravity . . . . . Credit Rating . . . . .

STR . . . . . Damage Modifier . . . . . Money . . . . . In Bank . . . . .

MAS . . . . . General Hit Points . . . . . Equipment (on body) . . . . .

CON . . . . . Health Roll . . . . .

INT . . . . . Reasoning Roll . . . . .

POW . . . . . Luck Roll . . . . .

DEX . . . . . Dodge Roll . . . . .

APP . . . . . Defects . . . . .

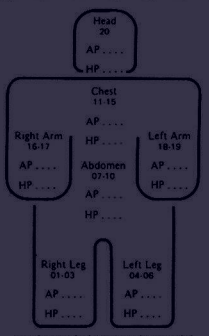
EDU . . . . . .

Pursuits Workspace	Years	Occ. Points/Wealth

Education	Years	Occ. Points

HIT POINT TALLY:

1 2 3 4 5 6 7
8 9 10 11 12 13 14 15 16 17 18
19 20 21 22 23 24 25 26 27 28 29
31 32 33 34 35 36 37 38 39 40 41
42 43 44 45 46 47 48 49 50



ranged weapon hit location numbers provided.

HIT POINTS BY LOCATION

r/leg . . . . .
l/leg . . . . .
abdomen . . .
chest . . . . .
l/arm . . . . .
r/arm . . . . .
head . . . . .

Unconsciousness Level . . . . .

WEAPONS

Weapon	Applic. Skill	Weight	Power Supply	Energy Draw	Damage	Range	ATT%

Action Ranking . . . .

Impulse of Completion

Movement rate . . . .

Psionic Ability: Yes ☐ No ☐

. . . . . .

. . . . . .

Equipment	Weight

RINGWORLD EXPLORER SHEET

Front

Explorer's Name . . . . . Player . . . . .

Gender . . . . . Chronological Age . . . . . Physiological Age . . . . . Species . . . . .

Homeworld . . . . . Gravity . . . . . Credit Rating . . . . .

STR . . . . . Damage Modifier . . . . .

MAS . . . . . General Hit Points . . . . .

CON . . . . . Health Roll . . . . .

INT . . . . . Reasoning Roll. . . . . .

POW . . . . . Luck Roll . . . . .

DEX . . . . . Dodge Roll . . . . .

APP . . . . . Defects. . . . . .

EDU . . . . . .

AGILITY Root Maximum . . . . %

Archaic Melee Weap. (05%)R . . . . % ☐

. . . . % ☐

Archaic Ranged Weap. (03%)R . . . % ☐

. . . . % ☐

Athletics (15%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Hide (10%) . . . . % ☐

Sneak (05%) . . . . % ☐

Unarmed Combat (00%) . . . . % ☐

V. Sword, F. Laser (15%)R . . . . % ☐

COMMUNICATION Root Max. . . . . %

Bargain (10%) . . . . % ☐

Debate (05%) . . . . % ☐

Fast Talk (10%) . . . . % ☐

Fine Arts (05%)R . . . . % ☐

. . . . % ☐

Musicianship (05%)R . . . . % ☐

. . . . % ☐

Orate (05%) . . . . % ☐

Own Language (INTx5) . . . . % ☐

Perform (05%)R . . . . % ☐

. . . . % ☐

Psychology (00%)R . . . . % ☐

. . . . % ☐

KNOWLEDGE Root Max. . . . . %

Anthropology (00%)R . . . . %

. . . . %

. . . . %

Astronomy (00%)R . . . . %

. . . . %

Biology (00%)R . . . . %

. . . . %

. . . . %

Botany (00%)R . . . . %

. . . . %

. . . . %

Chemistry (00%)R . . . . %

. . . . %

. . . . % ☐

Computers (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Emergency Treatment (01%)R . . . % ☐

. . . . % ☐

Engineering (00%) . . . . %

Farming (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

History (05%)R . . . . %

. . . . % ☐

. . . . % ☐

Law (00%)R . . . . %

. . . . % ☐

. . . . % ☐

. . . . % ☐

Mathematics (00%)R . . . . %

. . . . % ☐

. . . . % ☐

Physics (00%)R . . . . %

. . . . % ☐

. . . . % ☐

Planetology (00%)R . . . . %

. . . . % ☐

Second Languages (00%)R . . . . % ☐

. . . . % ☐

Strategy (00%) . . . . % ☐

Theology (00%)R . . . . %

. . . . % ☐

. . . . % ☐

. . . . % ☐

Zoology (00%)R . . . . %

. . . . % ☐

PERCEPTION Root Max. . . . . %

Handgun, energy (05%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Handgun, projectile (03%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Heavy Weapon, energy (05%)R . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Heavy Weapon, projec. (03%)R . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Listen (05%) . . . . % ☐

Observe (05%) . . . . % ☐

Scent (00%) . . . . % ☐

Search (05%) . . . . % ☐

Track (05%) . . . . % ☐

TECHNICAL Root Max. . . . . %

Aquatic Vehicle (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Atmospheric Craft (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Ground Vehicle (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Hyperdrive (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Personal Flyer (15%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Reaction Drive (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Reactionless Drive (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Repair (00%) . . . . % ☐

Ringworld (00%) . . . . %

Weapons System (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Other ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

RINGWORLD EXPLORER SHEET

Back

Explorer's Name . . . . . Player . . . . .

Gender . . . . . Chronological Age . . . . . Physiological Age . . . . . Species . . . . .

Homeworld . . . . . Gravity . . . . . Credit Rating . . . . .

STR . . . . . Damage Modifier . . . . . Money . . . . . In Bank . . . . .

MAS . . . . . General Hit Points . . . . . Equipment (on body) . . . . .

CON . . . . . Health Roll . . . . .

INT . . . . . Reasoning Roll . . . . .

POW . . . . . Luck Roll . . . . .

DEX . . . . . Dodge Roll . . . . .

APP . . . . . Defects . . . . .

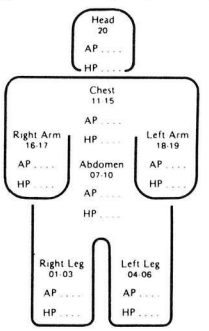
EDU . . . . . .

Pursuits Workspace	Years	Occ. Points/Wealth

Education	Years	Occ. Points

HIT POINT TALLY:

1 2 3 4 5 6 7
8 9 10 11 12 13 14 15 16 17 18
19 20 21 22 23 24 25 26 27 28 29
31 32 33 34 35 36 37 38 39 40 41
42 43 44 45 46 47 48 49 50



HIT POINTS BY LOCATION

r/leg . . . . .
l/leg . . . . .
abdomen . . .
chest . . . . .
l/arm . . . . .
r/arm . . . . .
head . . . . .

Unconsciousness Level . . . . .

WEAPONS

Weapon	Applic. Skill	Weight	Power Supply	Energy Draw	Damage	Range	ATT%

Action Ranking . . . .

Impulse of Completion

Movement rate . . . .

Psionic Ability: Yes ☐ No ☐

. . . . . .

. . . . . .

Equipment	Weight

RINGWORLD EXPLORER SHEET

Front

Explorer's Name . . . . . Player . . . . .

Gender . . . . . Chronological Age . . . . . Physiological Age . . . . . Species . . . . .

Homeworld . . . . . Gravity . . . . . Credit Rating . . . . .

STR . . . . . Damage Modifier . . . . .

MAS . . . . . General Hit Points . . . . .

CON . . . . . Health Roll . . . . .

INT . . . . . Reasoning Roll. . . . . .

POW . . . . . Luck Roll . . . . .

DEX . . . . . Dodge Roll . . . . .

APP . . . . . Defects. . . . . .

EDU . . . . . .

AGILITY Root Maximum . . . . %

Archaic Melee Weap. (05%)R . . . . % ☐

. . . . % ☐

Archaic Ranged Weap. (03%)R . . . % ☐

. . . . % ☐

Athletics (15%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Hide (10%) . . . . % ☐

Sneak (05%) . . . . % ☐

Unarmed Combat (00%) . . . . % ☐

V. Sword, F. Laser (15%)R . . . . % ☐

COMMUNICATION Root Max. . . . . %

Bargain (10%) . . . . % ☐

Debate (05%) . . . . % ☐

Fast Talk (10%) . . . . % ☐

Fine Arts (05%)R . . . . % ☐

. . . . % ☐

Musicianship (05%)R . . . . % ☐

. . . . % ☐

Orate (05%) . . . . % ☐

Own Language (INTx5) . . . . % ☐

Perform (05%)R . . . . % ☐

. . . . % ☐

Psychology (00%)R . . . . % ☐

. . . . % ☐

KNOWLEDGE Root Max. . . . . %

Anthropology (00%)R . . . . %

. . . . %

. . . . %

Astronomy (00%)R . . . . %

. . . . %

Biology (00%)R . . . . %

. . . . %

. . . . %

Botany (00%)R . . . . %

. . . . %

. . . . %

Chemistry (00%)R . . . . %

. . . . %

. . . . % ☐

Computers (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Emergency Treatment (01%)R . . . % ☐

. . . . % ☐

Engineering (00%) . . . . %

Farming (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

History (05%)R . . . . %

. . . . % ☐

. . . . % ☐

Law (00%)R . . . . %

. . . . % ☐

. . . . % ☐

. . . . % ☐

Mathematics (00%)R . . . . %

. . . . % ☐

. . . . % ☐

Physics (00%)R . . . . %

. . . . % ☐

. . . . % ☐

Planetology (00%)R . . . . %

. . . . % ☐

Second Languages (00%)R . . . . % ☐

. . . . % ☐

Strategy (00%) . . . . % ☐

Theology (00%)R . . . . %

. . . . % ☐

. . . . % ☐

. . . . % ☐

Zoology (00%)R . . . . %

. . . . % ☐

PERCEPTION Root Max. . . . . %

Handgun, energy (05%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Handgun, projectile (03%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Heavy Weapon, energy (05%)R . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Heavy Weapon, projec. (03%)R . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Listen (05%) . . . . % ☐

Observe (05%) . . . . % ☐

Scent (00%) . . . . % ☐

Search (05%) . . . . % ☐

Track (05%) . . . . % ☐

TECHNICAL Root Max. . . . . %

Aquatic Vehicle (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Atmospheric Craft (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Ground Vehicle (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Hyperdrive (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Personal Flyer (15%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Reaction Drive (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Reactionless Drive (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Repair (00%) . . . . % ☐

Ringworld (00%) . . . . %

Weapons System (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Other ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

RINGWORLD EXPLORER SHEET

Back

Explorer's Name . . . . . Player . . . . .

Gender . . . . . Chronological Age . . . . . Physiological Age . . . . . Species . . . . .

Homeworld . . . . . Gravity . . . . . Credit Rating . . . . .

STR . . . . . Damage Modifier . . . . . Money . . . . . In Bank . . . . .

MAS . . . . . General Hit Points . . . . . Equipment (on body) . . . . .

CON . . . . . Health Roll . . . . .

INT . . . . . Reasoning Roll . . . . .

POW . . . . . Luck Roll . . . . .

DEX . . . . . Dodge Roll . . . . .

APP . . . . . Defects . . . . .

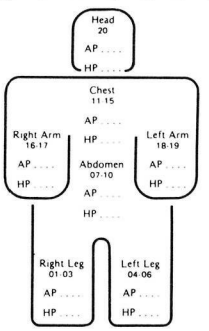
EDU . . . . . .

Pursuits Workspace	Years	Occ. Points/Wealth

Education	Years	Occ. Points

HIT POINT TALLY:

1 2 3 4 5 6 7
8 9 10 11 12 13 14 15 16 17 18
19 20 21 22 23 24 25 26 27 28 29
31 32 33 34 35 36 37 38 39 40 41
42 43 44 45 46 47 48 49 50



HIT POINTS BY LOCATION

r/leg . . . . .
l/leg . . . . .
abdomen . . .
chest . . . . .
l/arm . . . . .
r/arm . . . . .
head . . . . .

Unconsciousness Level . . . . .

WEAPONS

Weapon	Applic. Skill	Weight	Power Supply	Energy Draw	Damage	Range	ATT%

Action Ranking . . . .

Impulse of Completion

Movement rate . . . .

Psionic Ability: Yes ☐ No ☐

. . . . . .

. . . . . .

Equipment	Weight

RINGWORLD EXPLORER SHEET

Front

Explorer's Name . . . . . Player . . . . .

Gender . . . . . Chronological Age . . . . . Physiological Age . . . . . Species . . . . .

Homeworld . . . . . Gravity . . . . . Credit Rating . . . . .

STR . . . . . Damage Modifier . . . . .

MAS . . . . . General Hit Points . . . . .

CON . . . . . Health Roll . . . . .

INT . . . . . Reasoning Roll. . . . . .

POW . . . . . Luck Roll . . . . .

DEX . . . . . Dodge Roll . . . . .

APP . . . . . Defects. . . . . .

EDU . . . . . .

AGILITY Root Maximum . . . . %

Archaic Melee Weap. (05%)R . . . . % ☐

. . . . % ☐

Archaic Ranged Weap. (03%)R . . . % ☐

. . . . % ☐

Athletics (15%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Hide (10%) . . . . % ☐

Sneak (05%) . . . . % ☐

Unarmed Combat (00%) . . . . % ☐

V. Sword, F. Laser (15%)R . . . . % ☐

COMMUNICATION Root Max. . . . . %

Bargain (10%) . . . . % ☐

Debate (05%) . . . . % ☐

Fast Talk (10%) . . . . % ☐

Fine Arts (05%)R . . . . % ☐

. . . . % ☐

Musicianship (05%)R . . . . % ☐

. . . . % ☐

Orate (05%) . . . . % ☐

Own Language (INTx5) . . . . % ☐

Perform (05%)R . . . . % ☐

. . . . % ☐

Psychology (00%)R . . . . % ☐

. . . . % ☐

KNOWLEDGE Root Max. . . . . %

Anthropology (00%)R . . . . %

. . . . %

. . . . %

Astronomy (00%)R . . . . %

. . . . %

Biology (00%)R . . . . %

. . . . %

. . . . %

Botany (00%)R . . . . %

. . . . %

. . . . %

Chemistry (00%)R . . . . %

. . . . %

. . . . % ☐

Computers (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Emergency Treatment (01%)R . . . % ☐

. . . . % ☐

Engineering (00%) . . . . %

Farming (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

History (05%)R . . . . %

. . . . % ☐

. . . . % ☐

Law (00%)R . . . . %

. . . . % ☐

. . . . % ☐

. . . . % ☐

Mathematics (00%)R . . . . %

. . . . % ☐

. . . . % ☐

Physics (00%)R . . . . %

. . . . % ☐

. . . . % ☐

Planetology (00%)R . . . . %

. . . . % ☐

Second Languages (00%)R . . . . % ☐

. . . . % ☐

Strategy (00%) . . . . % ☐

Theology (00%)R . . . . %

. . . . % ☐

. . . . % ☐

. . . . % ☐

Zoology (00%)R . . . . %

. . . . % ☐

PERCEPTION Root Max. . . . . %

Handgun, energy (05%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Handgun, projectile (03%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Heavy Weapon, energy (05%)R . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Heavy Weapon, projec. (03%)R . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Listen (05%) . . . . % ☐

Observe (05%) . . . . % ☐

Scent (00%) . . . . % ☐

Search (05%) . . . . % ☐

Track (05%) . . . . % ☐

TECHNICAL Root Max. . . . . %

Aquatic Vehicle (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Atmospheric Craft (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Ground Vehicle (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

Hyperdrive (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Personal Flyer (15%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Reaction Drive (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Reactionless Drive (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Repair (00%) . . . . % ☐

Ringworld (00%) . . . . %

Weapons System (00%)R . . . . % ☐

. . . . % ☐

. . . . % ☐

Other ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

. . . . % ☐

RINGWORLD EXPLORER SHEET

Back

Explorer's Name . . . . . Player . . . . .

Gender . . . . . Chronological Age . . . . . Physiological Age . . . . . Species . . . . .

Homeworld . . . . . Gravity . . . . . Credit Rating . . . . .

STR . . . . . Damage Modifier . . . . . Money . . . . . In Bank . . . . .

MAS . . . . . General Hit Points . . . . . Equipment (on body) . . . . .

CON . . . . . Health Roll . . . . .

INT . . . . . Reasoning Roll . . . . .

POW . . . . . Luck Roll . . . . .

DEX . . . . . Dodge Roll . . . . .

APP . . . . . Defects . . . . .

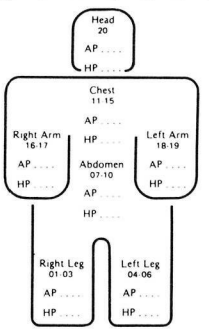
EDU . . . . . .

Pursuits Workspace	Years	Occ. Points/Wealth

Education	Years	Occ. Points

HIT POINT TALLY:

1 2 3 4 5 6 7
8 9 10 11 12 13 14 15 16 17 18
19 20 21 22 23 24 25 26 27 28 29
31 32 33 34 35 36 37 38 39 40 41
42 43 44 45 46 47 48 49 50



HIT POINTS BY LOCATION

r/leg . . . . .
l/leg . . . . .
abdomen . . .
chest . . . . .
l/arm . . . . .
r/arm . . . . .
head . . . . .

Unconsciousness Level . . . . .

WEAPONS

Weapon	Applic. Skill	Weight	Power Supply	Energy Draw	Damage	Range	ATT%

Action Ranking . . . .

Impulse of Completion

Movement rate . . . .

Psionic Ability: Yes ☐ No ☐

. . . . . .

. . . . . .

Equipment	Weight

A DAY ON RINGWORLD

"And so I will live to see another sunset," the kzin said softly.

Dawn is different on the Ringworld. Some flatlanders find it so unsettling they can never get used to it. No gradual glow brightens along the eastern horizon to herald the coming daylight. In fact there is no eastern horizon at all. Night is just a measured interval of uniform and periodic darkness. There are no global season on Ringworld to make wintery nights longer or summer nights too brief. Bluish archlight paints the landscape in ghostly shadows; there is true darkness only when thick stormclouds obscure the sky. A ring of black rectangles swarms in the zenith, the one hiding the sun framed with pearly coronal glow. Over it all, bisecting the star-dotted sky is the slender broken line of the arch, blue-white.and luminous, a finely-etched parabolic band swirled with white cloud. A brighter glow along one edge of the central shadow square is the only hint that dawn is near, rushing toward you at over 1,300 kilometers per second (700 mph).

The line dividing day from night is called the terminator. On Earth this zone of twilight is visible from the Moon, or from orbit; but it cannot be seen from the Earth's surface. On Ringworld, though, the straight lines dividing light from dark on the arch are all terminators. As daybreak approaches, a terminator line sweeps toward you from spinward like destiny made visible, an onrushing wall too big to go around. From ground to sky it runs, from infinity-port to infinity-starboard. Overhead the corona brightens rapidly, then blazes, as the withdrawing shadow square exposes a piece of the edge of the solar disk. Suddenly the night is to your left (facing port), the darkness deepening with distance. To the right, to spinward, it is full day. The terminator shadow recedes rapidly across the endless, Euclidean landscape, exposing the sharp outlines of remote mountain peaks. It is "half daylight" now: a strange unnatural dawn. The shadows are peculiar, and somehow wrong. The light seems washed out and spectral, the colors weak. Overhead a tiny sliver of golden noonday sun squints down upon the wakening lands.

The sun never rises or sets on Ringworld. It is always straight overhead, high noon by day or eclipsed by night. There are no lengthening shadows to mark the passage of the hours during the long day. At night there is only the gradually changing elevation of the dark rectangles on the Arch, and the slowly shifting canopy of stars. Time seems frozen in the constant noon of full day. Morning and afternoon are identical. Sky and landscape are like two flat plates, infinitely wide, pressed together — and travelers are as microbes crawling forever between the plates. Decisions seem somehow less than permanent. Reality seems less than real. Like the instant of time spent in displacement between transfer booths, a day on Ringworld is a capricious, indefinite moment, stretched out forever. Some find themselves thinking of Dante's *Divine Comedy.* Dante's universe had been a complex artifact, with the souls of men and angels as precisely machined parts of the vast structure. The Ringworld is such an artifact, too, an obtrusively made thing. You cannot forget it even for an instant; with the handle of the Arch rising overhead, huge and blue and checkered.

At the end of each day on Ringworld there is another period of fading peculiar half-daylight. The on-rushing shadow of the terminator comes in from spinward like a black curtain. Just before nightfall there is a series of semi-regular fluctuations in the intensity of the weak illumination — the "shadow bands," caused by diffraction effects at the shadow squared edges (also seen at dawn). A patch of night swiftly envelopes the surrounding lands, and the great arch blazes in the heavens. Once again, the star sprinkled sky is filled with odd, unfamiliar constellations, above a dark band of chaos where any normal world would have put its horizon.

THE DARKSIDE OF RINGWORLD

"You can learn a lot about a world," thought Louis Wu, "by looking at its underside . . . . "

A visit to the dark outer surface of the Ring is instructive. It looks nothing at all like the exterior of a space colony, orbital station, or starship hull. One finds there no antennas, solar collector arrays, fuel tanks, storage pods, docking modules, giant airlocks, nor observation ports. Were such structures present, they would be invisibly small — built on any scale we are used to. From a distance of several hundred thousand kilometers, the underside of Ringworld seems featureless, a dim but sharply defined abstraction. Even large details are blurred by the fantastic rotational velocity. As one matches speeds for a closer approach, though, the black surface takes on a finely-etched appearance, and then looks almost organic. It is not smooth, except on the large scale. The surface dips and rises irregularly, with countless bulges and indentations interconnected by an incredibly intricate tracery of fine, slightly-raised ridges. The effect is more like a high-magnification, low-illumination tridee view of a cross-section of abnormal brain tissue than the outer shell of an engineered structure.

The darkside of Ringworld is like the mask of a planet — the reverse face of a thin plastiform topographical map painted flat black. Everything has been molded in. Every major positive contour of the habitable surface shows up in negative relief on the farside. Wherever one sees a bulge, there is a valley or sea on the sunlit side. Mountain ranges show as gullies, river systems look like veins in a weight lifter's arm. Ringworld imitates the topography of earthlike worlds, but there are no tectonic processes to do the carving: even the river deltas had to be sculpted into the structure.

Lit only by starlight, the darkside of Ringworld, with its chiseled indentations, anomalous flattened bulges, and raised, meandering rilles, is reminiscent of some dim, stark lunar surface. The finest details appear to be smoothed over by a 300-meter coating of spongy-looking foamed material which perhaps acts as meteor shielding. This material is very light absorptive. Apparently most meteoroids, even falling in from interstellar space, leave only minor wormholes or conical pits in the buffer layer before vaporizing completely. Rarely, an object seems to have driven all the way down to a foundation level, leaving a hole with a shiny bottom. Astoundingly, the foundation level seems to be only about 30-35 meters thick. But only a few asteroid-sized bodies have ever punctured the Ring floor, stretching the foundation material phenomenally to finally punch through the landscape above. Left unrepaired, such a puncture resembles a tiny dimple from the darkside, filled with bright fog. On the corresponding sunlit side, the shattered terrain is usually barren and inhospitable, beneath a vast, rolling eyestorm. Fortunately, there is relatively little debris between the stars at the location of Ringworld, 250 light years above the mean galactic plane. Natural punctures must be very rare.

The average temperature of the underside surface is minus 140° F, with wide variations. Infrared enhancement reveals a large-scale pattern of rectangular bands: the darkside of day glowing brighter than the night-shadowed lands. A variety of topographical features show different temperatures, too, with wide rivers and seas slightly darker by day, and lighter at night. Along the base of the rim walls are regular, triangular shadows of coolness with a darker line at the bottom — the outlines of regularly-spaced gigantic mountains, among the few features not molded into the foundation material. The brightest objects visible in infrared from the farside are perhaps the most bizarre. At the bottoms of the deep oceans (and in a few other locations), there are projecting black radiator fins, narrow and triangular with a myriad of adjustable horizontal flaps, silver above, black below. These may be designed to keep the ocean bottoms cold, to refrigerate simulated polar icelands and arctic tundra, and even to create "seasonal" temperature variations in certain limited regions.

THE STARRY NIGHT SKY OF RINGWORLD

Where the new constellations nightly rise,
Lustrous in the northern skies.

-OVID

To the casual observer, the starry night sky of Ringworld is utterly alien. All the constellations seem totally unfamiliar. There is no Pole Star, and the Big Dipper is gone. From spinward to anti-spinward the celestial sphere is bisected vertically by the luminous slender dashed line of the great Arch, dividing the sky-dome into exact halves. Near the Arch the stars glitter like a swarm of fireflies tangled in a silver braid. The stars of Known Space, very low in the starboard sky to galactic south, are mostly invisible. Of the constellations most prominent in the starboard sky, some are inverted, transposed versions of terrestrial asterisms — intermingled, compressed and grossly-distorted. In the port sky the suns of galactic north form mysterious new patterns whose names and legends are recognized only by Ringworld natives. The constellations shift position much too slowly. Moving nearly ten times less rapidly than in the starry sphere of Earth, they traverse less than six degrees in the course of a single night. The stars travel vertically, parallel to the Arch. Directly to starboard and port they describe tight semicircles above the infinity horizon, like Earth's polar stars viewed from its equator. Few faint stars, and no distant galaxies, are visible because of the glowing Archlight. There are no wandering planets to keep track of; and, of course, there is no Moon. Travelers to Ringworld might feel lost, without a considerable knowledge of astronomy, even as they behold the dazzling alien splendor above.

The distant bubble of Known Space stars covers a patch only fifteen degrees across in the sky of Ringworld, entered on the starboard horizon. It is always difficult to observe, Most of the stars which make up the familiar constellations in the night skies of Earth lie within a thirty-degree-radius circle of the same spot. The sun and other solar-type yellow dwarfs (such as Alpha Centauri or Tau Ceti) are eighth-magnitude objects, far below the level of naked-eye visibility. Binoculars are needed to see them at all! Considerably brighter Sirius-type suns (main sequence A stars) would be just barely detectable to unaided vision — if it weren't for the glowing Archlight and low angle of elevation. Sirius itself is 23 times brighter than Sol, Procyon 7.6 times, Altair 9 times, and Vega 58 times; but they are all dim, unexceptional stars in the sky of Ringworld. Clearly seen near the apparent center of Known Space stars, though, is the luminous bluish giant Achernar ("The Star at the End of the River"), actually 1 20 light years from Earth in roughly the opposite direction. At 650 times solar luminosity, it appears only two magnitudes fainter in Ringworld skies. The topaz star Arcturus ("The Guardian") is only 37 light years from Earth in the approximate direction of Ringworld. Since its true brightness is 115 times that of Sol, it is also a readily-visible object of third magnitude. Brilliant Canopus ("The Great Star of the South"), shines near the apparent border of the bubble of Known Space stars. Even though it is 125 light years distant from Earth it appears only slightly less intense, with an intrinsic luminosity 1,400 times greater than the Sun.

Most of the bright stars tracing the strange constellations of the Ringworld's sky are relatively local Sirius-type suns — with a sprinkling of smaller, closer neighbors. If we look carefully, though, we can identify some familiar celestial faces. The extremely remote, fabulously-luminous blue-white stars of Orion (B supergiants) are remarkably unchanged in apparent brightness. The outlines of the Giant Swordsman remain incongruously undistorted transposed from the sky of Earth, except for a disturbing shift in the position of Betelgeuse. Also called Borgil, Betelgeuse (pronounced "beetle juice") is a huge M supergiant, a red-orange sapphire star whose luminosity changes from 7,600 suns to over 14,000 in a six-UNS-year cycle. Six of the well-known stars in the Big Dipper (Ursa Major, the Great Bear) lie roughly between one-third and one-half the way to Ringworld. Only moderately changed in brightness, the asterism appears grotesquely reversed and deformed, though well-placed in the starboard sky. The seventh star of the Big Dipper, Alkaid, is one of the most brilliant in the heavens of Ringworld. Just 75 light years distant, the B3 V star (sometimes called Benetnasch) emits 630 times more radiation than the sun. Only two stars in the sky of Earth, Sirius and Canopus, outshine Alkaid as it is seen in Ringworld skies. The brilliant helium-type star Spica marks the constellation Virgo in the terrestrial zodiac, representing Isis, Ishtar, "the Queen of the Stars," or the "Mother Goddess of the Harvest," in various cultures. Several times closer to Ringworld than Earth, she is among the most conspicuous to Arch-dwellers, with her intrinsic output of 2300 suns. Also gleaming distinctly is Regulus ("The Heart of the Royal Lion"), a first-magnitude star projected into the Known Space patch. Seen in Leo on Earth, Regulus is 84 light years in the general direction of Ringworld, 160 times brighter than Sol.

Very distant extremely luminous stellar beacons such as Deneb and Antares look much the same as they do on Earth. Antares is a huge fiery vermilion star much like Betelgeuse, with an average brilliance of 9,000 suns. It is called "Heart of the Scorpion" or the "King of Lightning," and is also known as "The Fire Star of the Azure Dragon." Antares is located 520 light years from Ringworld, near the Arch in the starboard sky. Deneb is a blue-white supergiant, seen from Earth in the constellation Cygnus, or Northern Cross. In ancient times it represented "The Tail of the Roc" and was also referred to as "The Hindmost" in Arabic. At a distance of more than 1,600 light years along the galactic plane its luminosity of nearly 60,000 suns makes it a first-magnitude star in the stellar canopy of Ringworld, very near the starboard edge of the Arch. Rigel, in Orion, is similar to Deneb and also plainly visible.

Certain red giants are more conspicuous in Ringworld skies than Earth's, among them Ras Algethi and La Superba. Both stars have a deep crimson color and vary significantly in brightness. La Superba is a carbon star whose intensity changes by a factor of four over a period of 160 days. Also known as Y Canum, La Superba is half as far from Ringworld as from Earth. Ras Algethi (Alpha Herculis) is considerably more distant, but with a maximum luminosity of 850 suns it is easily seen from Ringworld. The star has been called "Throne of the Emperor" and "Head of the Kneeling Phantom," and was associated with Gilgamesh and Nimrod in terrestrial antiquity. One red giant well-known to most star-gazers, Mira, is two magnitudes fainter from Ringworld.

Polaris shines only moderately brighter than seen from Earth. Near the Arch in the starboard sky, it no longer marks any particularly-important direction. There are some interesting positional transpositions, though. Cor Caroli, for instance, is a beautiful twin-star system located roughly halfway between Ringworld and Known Space, almost along a direct line. Its remarkable lilac and copper suns appear equally bright in both skies, but their apparent position shifts nearly 1 80 degrees. Both of the familiar star-clusters the Hyades and the Pleiades are fainter and more compact seen from Ringworld. In fact many of the rich stellar associations along the galactic plane are distributed unevenly, compressed into the starboard sky, far below the Ring. The thin central band of the Milky Way is always hidden by the Arch, but the great star-clouds of Sagittarius and Scorpius spill around its edges several degrees to either side. Naturally, the remote globular clusters in our galaxy *appear* in the same directions from Ringworld as from Earth, though they are difficult to observe.

Astronomy is different on Ringworld. One revolution of the celestial sphere with respect to the sun takes just $7_{1/2}$ thirty-hour days instead of a UNS year. Parallax measurements, which give the distance of nearby stars are correspondingly easier. Tracking for long-exposure spectrography is easier, without the rapid sky-motion of a 24-hour rotation cycle. Solar astronomy is made very convenient, with night-long eclipses by the shadow-squares. Studies of distant regions of the Arch itself no doubt consume the energies of many Ring astronomers. The Ringworld's surface area of three million earthlike planets provides ample opportunity for specialization and endless cataloguing. On the theory that sentient life may have arisen elsewhere on the Arch, scientists have even attempted (and sometimes succeeded) establishing two-way communications using microwave telescopes and tight-beam optical links. Unfortunately, observations of faint stars and external galaxies are hampered by the Archlight, which changes only a little in any given direction over the course of a night. Studies of the very core of the Milky Way galaxy are not possible, since the Ring always occludes it. Tiny meteoroids naturally are ignored by the meteor defense system. They burn fiercely, often exploding in intense horizontal streaks far above the Ring floor, vaporizing high in the stratosphere. There are no periodic comets like Halley's but once in a great while a fresh rogue comet does fall into the inner Ringworld system from a distant Oort cloud. Then the heavens blaze, first with the growing splendor of the celestial visitor, and finally with its incandescent annihilation!