DRAFT

Hive, Queen, and Country

Tabletop Combat Rules V0.91

November 21, 2012

Who This Book Is For

The simple combat system presented in this book is suitable for tabletop wargaming and combats between several ships. For simplicity and ease of game play, the level of detail is lower than that in a role playing game which focuses on a smaller number of ships. For more detailed rules that are more suited to role playing see the RPG Combat Rules avaible at

http://www.hivequeenandcountry.com/

Quick Start Guide

1. These rules are based on a simple "d20 Opposed Roll" rule system.
In this system, the **acting** player rolls a d20 and the **opposing** player (or referee) rolls a d20. Modifiers are applied to the **acting** roll. The higher roll (after modification) wins. If the **acting** player wins, the action succeeds. If the **opposing** player wins, the action fails. "Ties" mean the **actor** wins and the action succeeds.

Example: The acting player tries to perform a "Cause Overshoot" action. This roll is modified by adding the actor's **maneuver** rating (+7) and subtracting the opposing player's **maneuver** rating (–1). The **actor** rolls a 5, which is modified to a 11 (5+7–1). The opposing player rolls a 13. 11 is less than 13, so the action **fails**.

2. The last page of this document summarizes the rest of the rules.

3. Have Fun.

Thanks

Photography by Terry Sofian and Shannon Sofian

Thanks go out to the amazing folks from the Hive, Queen and Country Yahoo! Group. Everyone there contributed but particular mention is deserved by: Alan Hamilton, Michael Fischer, Thomas Barnes, Donald McDonald, Brian Barrett, Phyllis G. Crecelius, David Tanner, Andrew Webb, Paul Mannering, Jon Klement, David Tanner, Gorka Martinez Mezo, Nick Johnston, David Schuey, Mike Creek, Raymond Parks, Dirk Festerling, Grant McKenna and Doug Holverson

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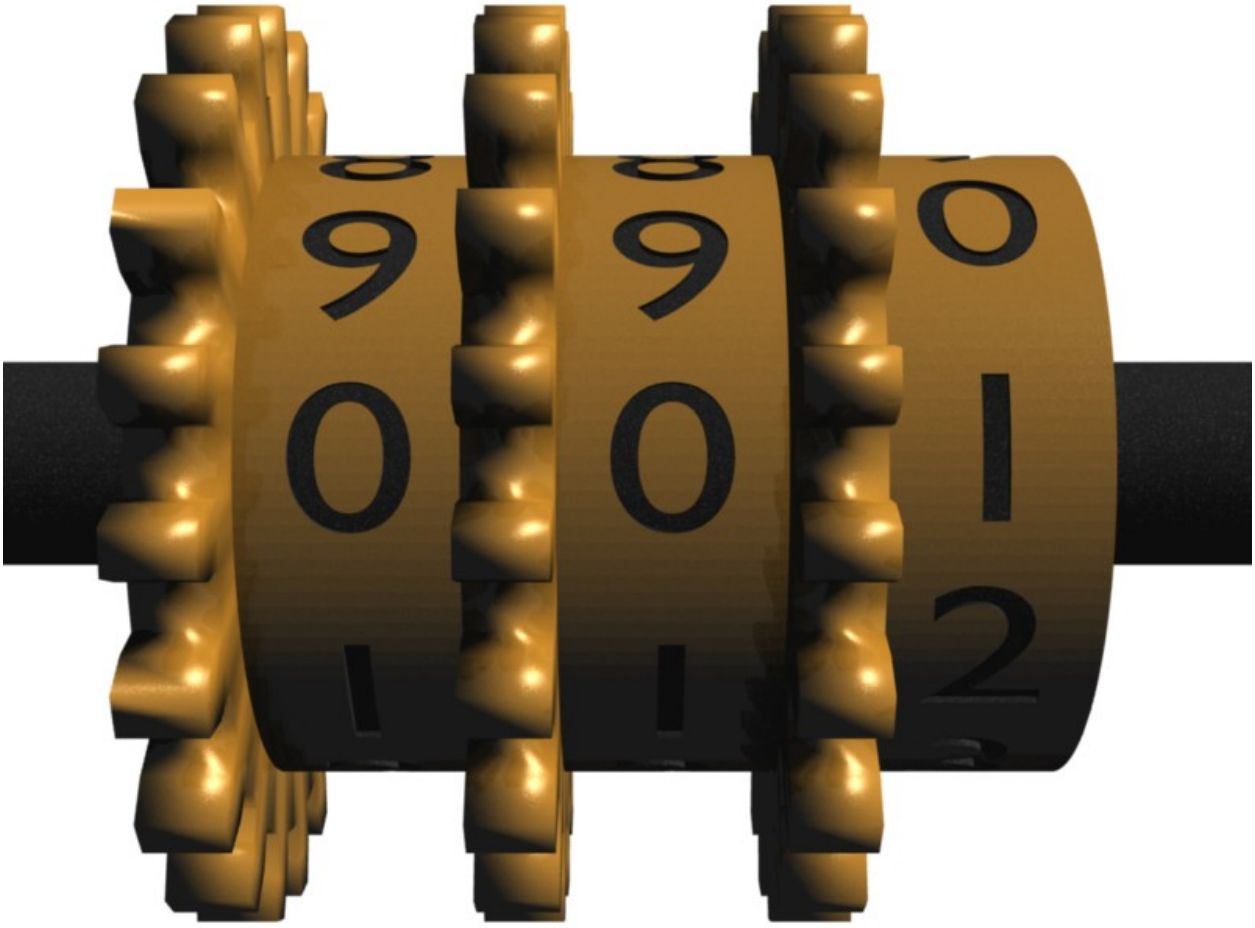
1.Introduction



1.1 What's in this Book

This book is a supplementary text for the Stars of Empire Roleplaying Game [***1***], and the *Flying Machines of the Worlds: 1902* source book [***2***]. This book provides the tabletop combat rules for aircraft in the Hive, Queen, and Country role-playing setting.

These rules are aimed at tabletop wargaming and combats between several ships. For more detialed rules that are more suited to small battles or role-playing games see the Simple Combat Rules avaible at

http://www.hivequeenandcountry.com/

This book includes:

- Rules for Tabletop Combat (Section 2)
- Rules to construct the Vehicle Design Sheets used in combat from the designs produced by the HQC Vehicle Design Rules [***3***] (Section 3)

1.2 A Note on the Current Date for Players and Referees

All the Hive, Queen, and Country products are set in an imaginary timeline that diverges from our own in the late 1700s and becomes increasingly different as it moves forward. The original campaigns were set in the years 1891-1893 which were those of the original Hive War, which latterly became known as the First Hive War or Anglo-Hive War. Stars of Empire is explicitly set in the years before 1894. All timelines march forward and that of the HQC Universe is no exception. This book is set in the year 1902, when the Second Hive War is at its peak, and covers many of the flying machines used in that conflict.

The people of Hive, Queen, and Country have been flying since the 1860s, and had mechanical computers since the 1830s. By the 1900s, aircraft have been being designed for 40 years, and computation has advanced the state of the art by another 5-10 years. Thus, the ships of the 1900s are in many ways more advanced than the aircraft of the late 1930s in our timeline (OTL). Unlike OTL, air travel has caught on much more quickly because Aerolyth is so much more effective. Additionally, with space travel being a reality, the people of HQC have discovered some aspects of high-speed aerodynamics. Even though steam engines and internal combustion engines (ICE) are only 10-15 years more advanced than our time line, the aircraft are much more aerodynamic.

1.3 Flying Machines of the Worlds: 1902

This book is a free supplement for *Flying Machines of the Worlds: 1902, a* source book for the Hive, Queen and Country Universe. *Flying Machines* introduces Victorian Science Fiction Roleplayers and War Gamers to the many aerial vessels of that Universe. Whether in the skies of Earth, Mars or Venus these powerful machines provide swift transport or deadly combat capabilities. This volume, heavily illustrated in full color, is modeled on period publications such as Jane's or The Naval Annual; Flying Machines of the Worlds features designs for 111 ships for use in any Steampunk or Victorian Science Fiction setting. In Hive, Queen and Country these are the vessels that patrol the skies of Earth, have fought with the Hives and are now opening the frontiers of Mars and Venus to colonization.

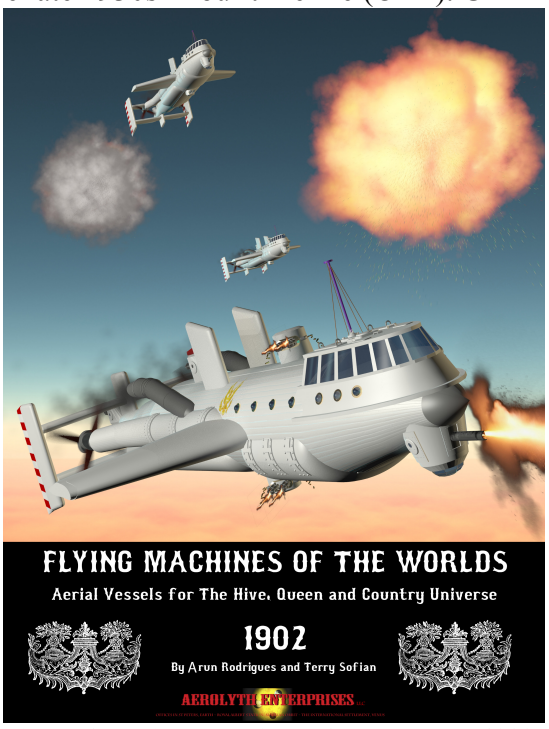


Figure 1: Flying Machines of the Worlds: 1902

This 256 page full color book includes:

- Details on the aerospace technology and how it can used in a Stars of Empire adventure

- Descriptions of many of the ships which populate the skies of the HQC Universe
- Real World Vehicle Statistics to allow conversion to any combat rules
- Notes on Currency and Unit conversions
- Referee's information on the HQC universe
- A scratchbuiling/kitbashing chapter including detailed directions on how to build your own Shakespeare Class Aerolyth Flyer

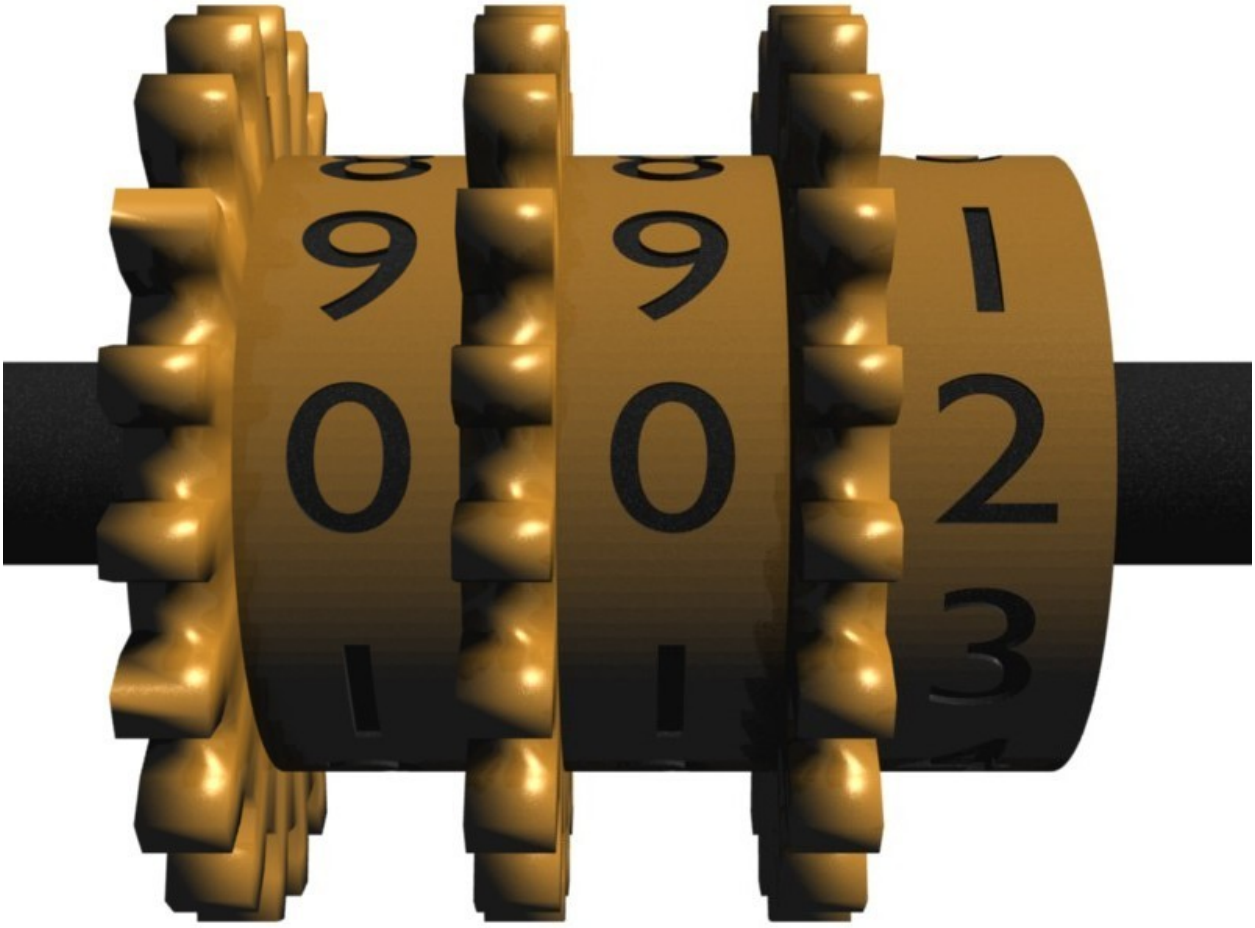
Flying Machines is available from:

- **Createspace**: https://www.createspace.com/4015022
- **Amazon**: http://www.amazon.com/Flying-Machines-Worlds-1902-Universe/dp/1480035815/
- **RPGNow**: http://www.rpgnow.com/product/106515/Flying-Machines-of-the-Worlds-1902

A line of miniatures based on the ships from the book are available from:

- **Objects May Appear…**: http://www.shapeways.com/shops/objects

2.The Combat Round



2.1 The Combat Round

Combat is conducted as a series of "rounds" during which each ship on the opposing sides performs a series of actions. Each round represents 1 minute. Each round, every vehicle is allowed to perform a number of actions (see Table 1) up to its action points.
Before combat begins, assign one side to be "odd" and the other "even"
For each round:

1. Roll a d20 to determine whether a ship from the "odd" or "even" side will act next.

2. The selected side selects a ship that has not yet acted this round. If all ships from that side has already acted, the other side selects a ship
    a. The ship's position is adjusted based on its current speed
    b. The selected ship performs major action (see Table 1) and up to two Minor actions.
    c. (Optional Rule) If the selected ship is on fire, calculate the fire's damage (See Damage Effects on page 17)
3. If all ships have acted, the round ends and the next round begins. Otherwise, repeat step 1.

Step 2.c is only used if the optional rules for **Critical Hits** (Section **Error! Reference source not found.**) are being used.

2.2 Opposed Roll Rule Systems

These rules are based on a simple "d20 Opposed Roll" rule system.
In this system, the **acting** player rolls a d20 and the **opposing** player (or referee) rolls a d20. Modifiers may be applied to the **acting** roll. The higher roll (after modification) wins. If the **acting** player wins, the action succeeds. If the **opposing** player wins, the action fails. "Ties" mean the **actor** wins and the action succeeds.

Example: The acting player tries to perform a "Cause Overshoot" action. This roll is modified by adding the actor's **maneuver** rating (+7) and subtracting the opposing player's **maneuver** rating (–1). The **actor** rolls a 5, which is modified to a 11 (5+7–1). The opposing player rolls a 13. 11 is less than 13, so the action **fails**.

2.3 Representing Combat

Combat between several ships can quickly get complicated. A convenient way to track the complexities of combat is to use models or counters to track the location of different ships and their relation to each other. Common devices to help track and represent combat:

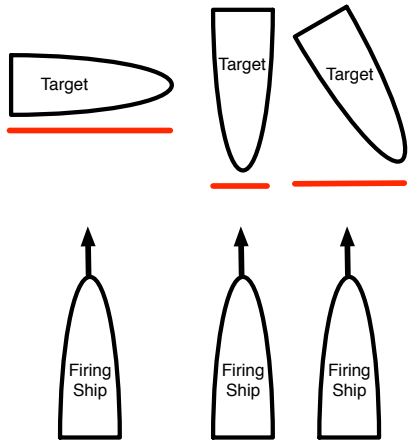
- **Models:** A number of manufacturers make models of ships or planes that can be converted to resemble these ships. Additionally, several models, in multiple scales, of the ships in this book can be found through Objects May Appear (See the ads at the back of this book).
- **Scratchpad:** Scratch paper to track ship damage, speed, and any other details.
- **Scaled Ruler(s):** (Some rulers at different scales are provided in the back of this book or online at http://hivequeenandcountry.com/)

Air-to-Air combat can cover large areas, so it is necessary to use a scaled representation of the combat board. A 10000:1 scale (10 km=1 meter) allows a 10km by 10km battlefield to be represented on a reasonable size card table. However, at such a scale even a large ship would be only a few millimeters in scale. So, it is recommended that players use ships of a smaller scale (1200:1 works well) on the larger scale playing surface.

2.4 Combat Actions

All actions must complete an opposed roll unless they are labeled as "automatic".

Table 1: Combat Actions

Action	Type	Description	Modifiers to roll
Movement Actions			
Turn	Minor	Change heading by up to the **Turn Rate** from the VDS.	Automatic
Climb	Minor	Increase altitude	Automatic
Increase Turn rate by 15°	Minor	Turn 15° more than the normal turn rate. If the roll is failed the ship remains at its current heading.	–5 + **Maneuver** from VDS
Increase Turn rate by 45°	Major	Turn 45° more than the normal turn rate. If roll is failed, ship loses 100m in altitude and remains at its current heading.	–10 + **Maneuver** from VDS
Increase Turn rate by 90°	Major	Turn 90° more than the normal turn rate. If roll is failed, ship loses 200m altitude and remains at its current heading.	–15 + **Maneuver** from VDS
Evasive Maneuvers	Major	Begin maneuvering erratically. Effective speed is reduced by 50%.	Automatic
Combat Actions			
Brace for Impact	Major	Crew braces for impact and secures internal hatches to reduce damage.	Automatic
Fire!	Major	Fire weapons at a given target. A successful roll means the target is hit and must roll for penetration and damage (see Section 2.5) Note: The '**Fire**' rolls do **not** use the '1 is 1' rule.  **Figure 2: Target Facing (in red) showing Broadside, End-on, and angled**	– Target's **Maneuver** if Target under Evasive Maneuvers – Actor's **Maneuver/2** if Acting Ship under Evasive Maneuvers **Weapon Accuracy:** From Table 4 or the VDS **Target Size Effect:** Based on facing –4 <20m facing –0 20-40m +4 40-80m +10 >80m **Range**: +16 0 < 500 m +8 500-1000m +4 1-2km –0 2-4km –4 4-8km –12 8-16km –24 16-32km

Action	Type	Description	Modifiers to roll
			–32 >32km
Ram	Major	Ram a target ship. To accomplish this, the ship must be traveling at sufficient speed to be able to close the distance with the target ship. If successful, the procedure to calculate damage can be found in Section 2.9	– 10 + Ramming ship **Maneuver** – Target ship **Maneuver** **Target Size Effect:** Based on facing –6 <10m facing –3 10-20m –0 20-40m +3 40-80m +6 80-160m +12 >160m
Carried Vehicle Handling			
Launch Vehicles	5	Launch one carried vehicle from each vehicle deployment area.	Automatic
Recover Vehicle	Minor	Recover one vehicle into each vehicle landing area. If roll fails, the landing and the receiving vehicle are damaged (1d20)	+10 +landing craft's **maneuver**
Refuel & Refit Vehicle	Minor	Refuel, rearm, and perform minor repairs on one carried vehicle for each vehicle deployment area. If successful, vehicle may launch the next round.	Automatic
Damage Control			
Damage Control	Minor	Repair damage. Roll die according to the **Repair Rate** factor in the ship's vehicle sheet.	Automatic
Repair System	Major	Repair a damaged Weapon Battery. If the **Critical Hit** optional rule is being used, a 'Repair System' action restores a major ship component (e.g. engines, electrical) to use.	+ **Damage Ctrl**
Extinguish Fire	Minor	Extinguish one fire per d20 of Repair Rate. Note, fire damage is applied after the ship's actions for that turn, so if the fire is immediately extinguished, no damage is done.	+ **Damage Ctrl** + **Fire Ex** + **Crew Mod** +1 per additional action point spent
Misc.			

Action	Type	Description	Modifiers to roll
Screen	Major	Position the active ship to block fire directed at another ship or target. The active ship must be moving at the same speed as the defended ship or target and must be between the defended ship and the attacking ship. See Below. If successful, attacks during the next round aimed at the defended ship or target will strike the active ship instead	+ **Maneuver * 2**

2.5 Shooting

A common series of actions in combat is to fire weapons at a target. This involves up to three rolls:

- **Fire (Action)**: An opposed roll to determine if the salvo struck the target (See Table 1)
- **Roll to Penetrate**: If the 'Fire' action is successful, roll to determine if the salvo penetrates the target's armor. This is an oppse roll modified by + the weapon's **penetration** and + the target's **armor** along the appropriate facing.
- **Assess Damage**: If the Roll to Penetrate succeeded, the amount of damage inflicted is found by rolling the dice as shown for the weapon on the VDS. If the round did not penetrate, the amount of damage is one point per die rolled. Damage is applied to the target by subtracting the damage from the target's **Hit Points.** If you are using the optional **Critical Hit** rules, consult Section 2.6.

Example: A Zongtang-class (See *Flying Machines of the Worlds: 1902,* Section 13.2) ship (target mod +5), fires on an Aerial Sovereign-class (See *Flying Machines,* Section 5.8) ship (109m long). The Aerial Sovereign is 5km away and its broadside is facing the Zongtang.

The Zongtang rolls a modified 16 (5+5(target mod)+10(Target Size)–4(range) opposed by an 18, therefore the shot misses.

One turn later, the Zongtang has closed to 3km. The Zongtang fire againand rolls a 20 (5+5(target mod)+10(Target Size)–0(range)), opposed by a 16 – a hit!

2.6 (Optional) Critical Hits

If an attack penetrates, roll for damage. Every die that rolled a '19' or '20' causes one critical hit. For each critical hit, pull a card from a standard playing deck and consult Table 3.
Alternatively, if no cards are available, you can use dice. To do this, first roll 1d20 to determine the house of the roll (using Table 2) and then 2d20 to determine the value using column two of Table 3.
If a flamethrower hits, on a '10' or greater it causes a **fire** critical hit **in addition** to any regular critical hit and damage.

Table 2: d20 to House Conversion

Roll	House
1-5	♦
6-10	♣
11-15	♥
16-20	♠

Table 3: Critical Hits

Card	Die	Effect
2-10♦	1-25	Additional Damage. Roll 1d20 for each card value (e.g. a 5♦ would roll 5d20).
2-10♣	1-25	Cascading failure. Roll 1d20 for each card value (e.g. a 5♣ would roll 5d20). For each die larger than 15, roll an additional die. (e.g. a 7♣ is drawn, so 7d20 are rolled, with values of 4,4,5,9,12,17, and 18. Two of those are larger than 15, so 2d20 are rolled. Resulting in a 13 and 16. One of these are greater than 15, so another 1d20 is rolled, getting a 17. This is greater than 15, so another 1d20 is rolled, getting a 5. All of these rolls are totaled (4 + 4 + 5 + 9 + 12 + 17 + 18 + 13 + 16 + 17 + 5=120) for 120 total points of damage.
2-10♥	1-25	Crew Damage. The ship is only able to perform 'Minor' actions for 1 round for each card value (e.g. a 5♥ would mean the ship is incapacitated for five rounds).
2-6♠	1-18	One fire starts. Each fire does 5d20 damage each round, until extinguished.
7-9♠	19-23	Two fires start. Each fire does 5d20 damage each round, until extinguished.
10♠	24-25	Three fires start. Each fire does 5d20 damage each round, until extinguished.
Jack	26-27	One Minor system disabled. No combat effects.
Q♣	28-30	Engine disabled. 1d20 damage points, plus the engine stops producing power. The ship begins decelerating and Aerolyth panels fail and other electrical devices fail, unless there is a battery backup or redundant engine. Requires a 'Repair System' action to repair.
Q♦	28-30	Propulsion disabled. The propulsion system stops propelling. The ship begins decelerating. Requires a 'Repair System' action to repair.
Q♥	28-30	Maneuver disabled. The ship is unable to unable to turn or take evasive maneuvers until a 'Repair System' action succeeds.
Q♠	28-30	Electrical system disabled. All electrical systems fail (including Aerolyth panels and batteries) until a 'Repair System' action succeeds.
K♣	31-34	Bridge hit. The ship is unable to perform any 'Major' actions until a 'Repair System' action succeeds.
K♦	31-34	Control Systems. 1d20 damage point, The ship is unable to perform any 'Major' actions until a 'Repair System' action succeeds.
K♥	31-34	Blast. a fire starts, plus an explosion occurs. The explosion causes 1d20 points of cascading damage (die >15 cascade).
K♠	31-34	Blast. two fires start, plus an explosion occurs. The explosion causes 1d20 points of cascading (die >15 cascade).
A♣	35-40	Blast. a fire starts, plus an explosion occurs. The explosion causes 1d20 points

Card	Die	Effect
		of cascading (die >15 cascade).
A♦	35-40	Structural failure. Severe damage to the structure of the vehicle. 1d20 damage now, and 1d20 damage each time the ship attempts to accelerate, turn, land, or travel at more than one-quarter speed. Repair requires major overhaul with extensive repair facilities.
A♥	35-40	Hidden Failure. Something goes wrong, but it is not immediately apparent. In 1d20/5 rounds, draw and apply two more critical hits.
A♠	35-40	Disaster! The magazine explodes, the Aerolyth misaligns, the boiler bursts, and the cat gets sick. The ship explodes.

Example: Two salvos from BL 6-inch/25.5 Mk III guns (penetration +113, damage 1d20) hit a ship.

The first salvo penetrates. It rolls 1d20 and gets a 2, so it does 2 points of damage to the target. The second salvo does not penetrate. It rolls 1d20 and gets 12, so it does 1 point of damage to the target (12/10=1.2)

2.7 Damage Effects

Fire: If a ship is on fire, it receives 5d20 damage each round for each fire that has started, until extinguished. Note, fire damage is applied after the ship's actions for that turn, so if the fire is immediately extinguished, no damage is done. An uncontested fire doubles in size every round. If efforts are made to combat the fire, even if they are not successful, the fire only increases by 50% per round or at least one. However, it is not extinguished.

Severely Damaged: If the ship loses half or more of its hit points, half of its weapons systems are disabled. Each battery of weapons fires at half strength (rounding down) and any individual weapons are disabled. Weapon batteries may be restored to full finction with a 'Repair System' action. The ship may begin losing altitude (See Table 4).

Disabled: If the ship loses more than three-quarters of its hit points, each weapon battery is reduced to one-quarter strength (rounding down) and any individual weapons are disabled. Weapon batteries may be restored to full finction with a 'Repair System' action. The ship will begin losing altitude (See Table 4). Additionally, its maximum speed is reduced by 50%.

Destroyed: If the ship loses all of its hit points, it is considered destroyed. It immediately suffers failures in all of its major systems, and enters an uncontrollable free fall. The crew can only evacuate in the next round, and hopefully someone brought parachutes. The ship will begin losing altitude (See Table 4).

Table 4: Damage effects on Altitude in meters per minute

Damage Level	Cayley	Zeppelin	Aerolyth
Severe	Cannot Climb	Cannot Climb	100
Disabled	If $V_{max} < V_{stall}$, 500	100	1000
Destroyed	5000	1200	13000
Note: Craft fitted with Emergency Lift systems will not begin losing altitude until they are Destroyed, but cannot climb.			

2.8 Screening

One ship can protect another ship by interposing itself between that ship and an attacker. This is known as 'screening'. To set a screen, a ship must:

- Travel at the same speed as the ship to be protected
- Travel at a similar altitude as the ship to be protected
- Be located in between the ship to be protected and the attacking ship
- Be roughly the same size or larger than the ship to be protected
- Sucessfully perform a "Screen" action.

2.9 Ramming

If a vehicle successfully rams a target ship, roll an oppsed roll to penetrate modified by + penetration value from Table 5 and – the **armor** of the target craft. The attack inflicts a given amount of damage based on the relative speed of the two ships and the **hit points** of the ramming ship, rounded up (Table 5). This damage is allocated between the two ships, depending on if the attacking ship has a ramming plate and if it "penetrates" the target ship (Table 6). Damage portioning is rounded up.

Table 5: Ramming Damage

Relative velocity (m/m)	Penetration (mm)	Damage per 5 HP
>900-1800	4	1d20 / 2
1801-2700	10	2d20
2701-3600	18	5d20
>3600	27	10d20

Table 6: Ramming Damage Division

Condition	Rammer	Target
No ram plate	50%	50%
Ram plate **or** penetrate	33%	67%
Ram plate **and** penetrate	20%	80%

If either the rammer or the target has hull strengthening, the damage they received is halved. If the damage inflicted on either ship is more than one quarter of the ship's damage points and that ship is an Aerolyth ship, it must make a roll against its maneuver rating or it has been tilted beyond the limits of its Aerolyth. Note, Hive creatures do not receive damage if they are ramming, but they do if they are the target.

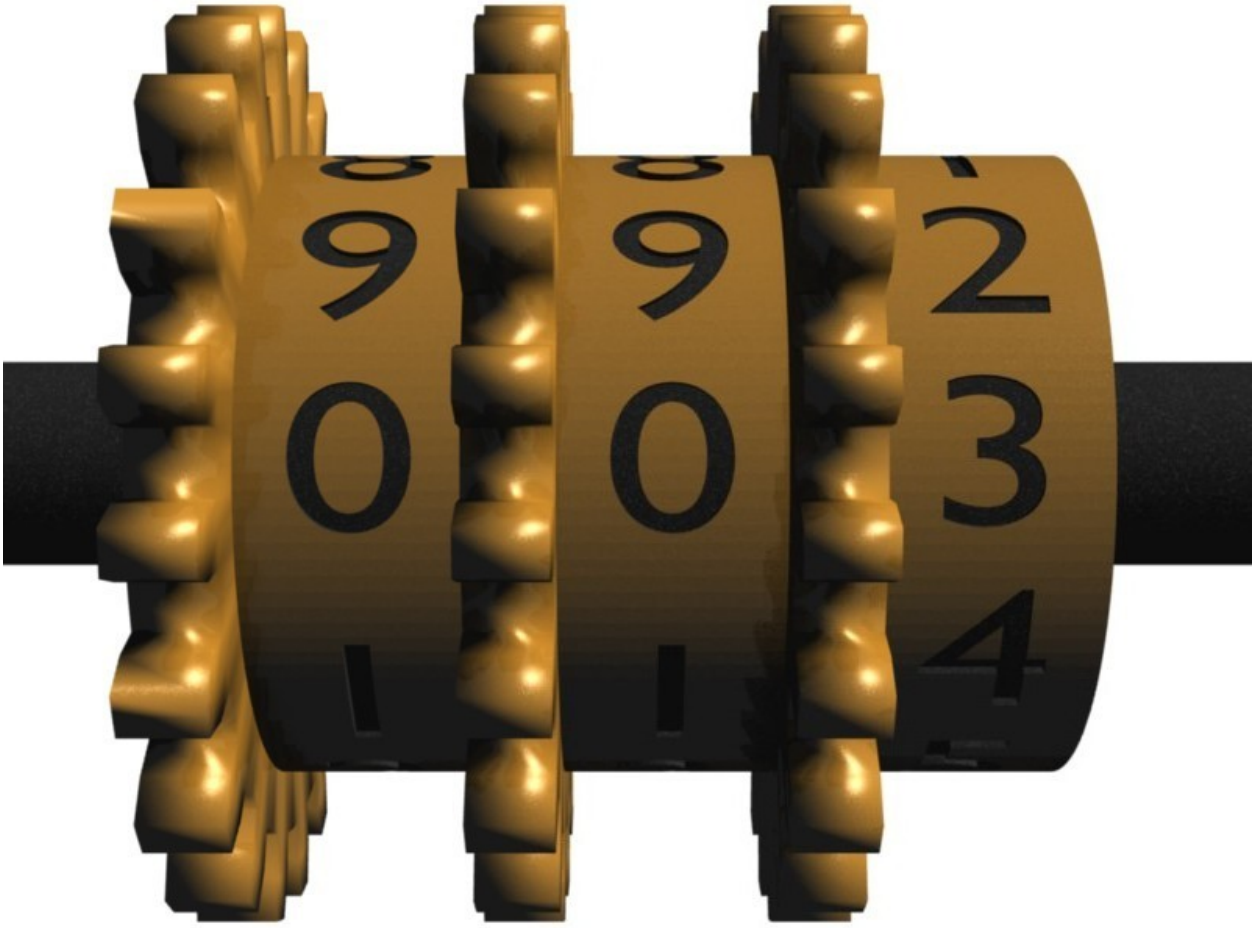
Example: A Huiji II (229 tons), traveling at 2100m/m, collides with a stationary ship with 0.5 cm of armor. At that speed, the ship does 2d20 of damage per 10 tons, so (23*2)=46d20. Rolls indicate 419 points of damage. The Huiji penetrates the target's armor (10>5), but does not have a ramming plate. Therefore, the damage is allocated 33% to the Rammer (0.33*419)=139 and 67% to the target (0.67*419)=281.

2.10 Movement

2.11 Air/Ground/Sea Combat

For rules on bombing, see the *Bombing Rules V0.9* on http://hivequeenandcountry.com/.

3.Simple Vehicle Design Sheet



The Vehicle Design Sheet (VDS) provides a quick reference for important combat qualities of different ships. The VDS is based on a vehicle design created with the HQC Vehicle Design Rules [*3*]. Pre-made VDS are available on http://www.hivequeenandcountry.com/ .

3.1 Die Rolls

Many of the die rolls for combat could involve large numbers of die. If the players have a random number generator program to simulate large numbers of die rolls, an automatic die-rolling machine, or just really enjoy summing long lists of numbers, this may not be an issue. However,

they may prefer to simplify die rolls by dividing the number of die to be rolled by a constant and then multiplying the result by that constant with some rounding.
For example, instead of rolling 48d20, simply roll 5d20*10 or 8d20*6. The exact division is left to the Referee's discretion.

3.2 Vehicle Design Sheet

Each ship has a **Vehicle Description Sheet** (VDS) that summarizes its relevant characteristics and capabilities. A sample VDS is shown in Table 7. The Sheet's fields – and how to fill them out – are explained in Table 8.

Table 7: Blank Vehicle Data Sheet

Ship Name:					
Hit Points	/ /	**Current**:			
Target Mod			**Armor Mod**		
Maneuver/Turn	/ º	**Front/Back**			
Repair Rate		**Top/Bottom**			
Speed/Accel.	/	**Sides**			
Weapon Battery		**Acc**	**Rng**	**Pen**	**Dmg**

Table 8: Vehicle Design Sheet Key

Sheet Field	Description
Ship Name	The name of the ship or class of ships
Hit Points	The number of hit points a ship has indicates the amount of damage it can take before it ceases function. The number of hit points is based on the loaded mass of the ship [***4***] [***5***] and any strengthening systems (see Section 3.3.1 of the *HQC Vehicle Design Rules* [***3***]). If the ship masses less than 1200 tons (i.e. less than 1,200,000kg) the number of HP is 0.5 * M, rounded up, where M is the ship's loaded mass in tons. If the ship is more than 1200 tons, the HP is 56*M^(1/3), rounded up. Notes: • If the ship's hull is made of wood, the HP is decreased by 30%, rounded down. • Hull strengthening increases Hit points by 20% (Level 1) or 30% (Level 2) • Improved Component location increases hit points by 10% • Increased Compartmentalization increases hit points by 20% (Level 1) 30% (Level 2) • Hive creatures Hit Points are multiplied by 3.5 For convenience, The Hit Points are listed as three values cooresponding to

<table>
<tr><th>Sheet Field</th><th>Description</th></tr>
<tr><td></td><td>the maximum number of hit points, 50% of hit points (Severely Damaged), and 25% of hit points (Disabled), all rounded down. Space is also left to list the ship's current number of Hit Points remaining.</td></tr>
<tr><td>Speed/Accel</td><td>Maximum speed and acceleration, as calculated in Section 3.4 of the HQC Vehicle Design Rules. This is written in terms of distance traveled (in meters) and speed accelerated (in meters per minute) in a round, which is one minute (60 seconds).</td></tr>
<tr><td>Armor Mod</td><td>Modifier used for penetration rolls when the craft it hit, depending on facing. The modifier is the number of tenths of centimeters of steel armor equivalent, or fraction there of. E.g. 2.4cm of steel would be +24, 1.25cm of steel would be +13.
<table>
<tr><th>Armor Type</th><th>Modifier or Steel Equiv</th></tr>
<tr><td>Open Frame</td><td>Automatic Penetrate</td></tr>
<tr><td>Light or Medium fabric or canvas</td><td>+ 5</td></tr>
<tr><td>Heavy canvas</td><td>+0</td></tr>
<tr><td>Teak / Elm / Oak</td><td>–0.35 per cm</td></tr>
<tr><td>Pine</td><td>–0.3 per cm</td></tr>
<tr><td>Concrete</td><td>–1 per cm</td></tr>
<tr><td>Granite</td><td>–1.1 per cm</td></tr>
<tr><td>Iron</td><td>–9 per cm</td></tr>
<tr><td>Hive Chitin</td><td>–39 per cm</td></tr>
<tr><td>Steel</td><td>–10 per cm</td></tr>
<tr><td>Wootz Steel</td><td>–11 per cm</td></tr>
<tr><td>Aluminum</td><td>–3.8 per cm</td></tr>
</table></td></tr>
<tr><td>Repair Rate</td><td>1d20 per 120 crew or fraction thereof. Note, repair and replenishment systems (see Section 3.3.6 of the HQC Vehicle Design Rules) may increase additional repair rate. A ship must have at least 20 crew to perform repairs in battle.
Modifiers:
<table>
<tr><td>+1 for Shoring Kit</td><td>+2 for Automated Damage Controls</td></tr>
<tr><td>+2 for Structural Repair Kit</td><td>+1 for Fire Exstiguishers</td></tr>
<tr><td>+1 for Mini Shop</td><td>+1 for Fireproofing 1</td></tr>
<tr><td>+2 for Field or Portable Shop</td><td>+2 for Fireproofing 2</td></tr>
<tr><td>+4 for Forward Shop</td><td></td></tr>
</table></td></tr>
<tr><td>Target Mod</td><td>Modifier for estimating range. +1 per m of best rangefinder, +1 per additional rangefinder. For example, a ship with three 4m rangefinders would have a Range Mod of +7 (+4+3). Max +10

Modifier for computing a target solution.
–10 if no computer, gunnery software, or plotting board
+ 1 Gunnery SW I
+ 2 Gunnery SW II
+ 3 Gunnery SW III</td></tr>
</table>

Sheet Field	Description
	+ 4 Gunnery SW IV + Plotting Board Factor (See Section 3.3.11 of the *HQC Vehicle Design Rules*: I:+1, II:+2; III:+4, IV:+5, V:+6) + 5 if Babbage Inc. Computer – 0 if ABM computer – 5 in Scheutzian computer
Maneuver / Turn Rate	Maneuver modifier and Maximum turning rate, in degrees per minutes from Section 3.4.3 of the *HQC Vehicle Design Rules*.
Weapon	Name of a weapon system. Multiple weapons of the same type can be combined into a battery (See below).
Accuracy	From Table 9. This may refer to a group of weapons, or to a single weapon of that type. If so, it will be marked "(single)" or "(s)"
Range	in meters, from Table 9
Penetration	From Table 9
Damage	From Table 9. This may refer to a group of weapons, or to a single weapon of that type. If so, it will be marked "(single)" or "(s)"
Other Systems	Any other notable system on the ship such as carried marines, repair facilities, etc…

3.2.1 Weapons Tables

Weapons characteristics are summarized in the table below. Note that rockets have different values depending on if they are fired from a launcher or if they are in a fixed external mount. Launchers contain equipment to aim and precisely calibrate the fuel burn rate on rockets, allowing much greater accuracy. Some rockets even have adjustable stabilization fins that can be timed to deploy at different times, enabling a primitive form of guidance.

Table 9: Weapon Effects

Name	Accuracy Mod	Range (m)	Penetration	Damage	Rate of Fire (Turns)
1-inch Nordfelt gun	0	5300	11	1d20	1
11-inch 25ton RML	–1	10100	111	5d20	10
BL 12 inch naval gun	0	16600	212	6d20*2	1
BL 13.5 inch naval gun Mk I	+1	19600	302	4d20*6	1
BL 4-inch/25 gun Mk I	+1	12300	82	1d20/4	1
BL 6-inch/25.5 gun Mk III	0	14100	113	1d20	1
BLR gun, 10-inch	+1	20800	299	6d20*2	1
BLR gun, 12-inch	+1	22100	360	5d20*5	1
BLR gun, 14-inch	+1	23300	424	5d20*10	1
BLR gun, 16-inch	+1	23300	445	7d20*10	1
BLR gun, 3-inch	0	14300	96	1d20/4	1
BLR gun, 5-inch	0	14800	120	1d20	1

Name	Accuracy Mod	Range (m)	Penetration	Damage	Rate of Fire (Turns)
BLR gun, 6-inch	0	16200	153	1d20	1
BLR gun, 8-inch	+1	18600	224	5d20	1
Bomb, 100kg			16	10d20	
Bomb, 10kg			7	1d20	
Bullet Caste, 10kg	0	1100	6	11d20	1
Bullet Caste, 1kg	+1	6900	18	3d20	1
Flamethrower, Large*	+3	200	1	4d20	1
Flamethrower, Small*	+2	100	1	1d20/2	1
Gatling Gun	+2	3500	10	1d20/2	1
Grapple Arrow	–2	100	9	0	2
HA bomb, 10 ton			2854	10d20*200	1
HA bomb, 20 ton			3648	10d20*460	1
HA bomb, 5500kg			2304	10d20*100	1
Hotchkiss Revolving Cannon 37mm/5	+1	5500	13	1d20/4	1
Hotchkiss Revolving Steam Cannon 37mm/5	+1	5500	13	1d20	1
Howell Torpedo Launcher	–0	900	2	7d20	2
Mallet Mortar	–2	3800	36	5d20*7	15
Maxim Gun	+2	4200	9	1	1
QF 6 inch /40 naval gun	+1	15100	129	8d20	1
Rapid Fire Gun, 1-pounder	–1	5700	13	1d20/4	1
Rapid Fire Gun, 3-pounder	0	9900	40	1d20	1
Rapid Fire Gun, 6-pounder	0	10700	47	2d20	1
RBL 20 pounder Armstrong gun	–2	6500	24	1	1
RBL 40 pounder Armstrong gun	–1	7600	37	1d20/4	2
RBL 7 inch Armstrong gun	–1	7700	46	1d20/2	3
RML 16 inch 81 ton gun	0	13900	218	3d20*10	14
RML 17.7 inch	0	13500	217	4d20*10	15
Rocket (External), 12 inch	–4	22300	33	8d20*2	1
Rocket (External), 12 pdr	–2	9600	9	1d20/2	1

Name	Accuracy Mod	Range (m)	Penetration	Damage	Rate of Fire (Turns)
Rocket (External), 16 inch	–4	25800	46	4d20*10	1
Rocket (External), 24 pdr	–3	13500	11	1d20/2	1
Rocket (External), 6 inch	–3	16500	16	2d20	1
Rocket (External), 6 pdr	–2	8600	6	1	1
Rocket (External), 9 pdr	–2	8900	7	1	1
Rocket (External), 9.2 inch	–3	19500	24	7d20	1
Rocket (External), Bolshoi	–2	81600	124	5d20*9	1
Rocket (External), Chetvert	0	16700	44	2d20	1
Rocket (External), Sazhen	–1	24800	89	9d20*2	1
Rocket Launcher, 12 inch	+3	22300	33	8d20*2	3
Rocket Launcher, 12 pdr	+5	9600	9	1d20/2	1
Rocket Launcher, 16 inch	+3	25800	46	4d20*10	4
Rocket Launcher, 24 pdr	+4	13500	11	1d20/2	1
Rocket Launcher, 6 inch	+4	16500	16	2d20	2
Rocket Launcher, 6 pdr	+5	8600	6	1	1
Rocket Launcher, 9 pdr	+5	8900	7	1	1
Rocket Launcher, 9.2 inch	+4	19500	24	7d20	2
Rocket Launcher, Bolshoi	+5	81600	124	5d20*9	4
Rocket Launcher, Chetvert	+7	16700	44	2d20	2
Rocket Launcher, Sazhen	+6	24800	89	9d20*2	3
Sea King Ballista	+2	4200	44	2	5
Sea King Corvus (10m)	+0	10	5	2	5
Sea King Polybolos	+2	2800	17	1	4
Torpedo Launcher, Whitehead 14-inch	+0	1100	1	7d20*2	2
Torpedo Launcher, Whitehead 15-inch	+0	1400	1	7d20*3	2
Venusian Lightning Gun	+4	1400	Auto	10d20*2	
Venusian Railgun, Large	+3	8600	59	1d20/2	1
Venusian Railgun, Small	+2	5500	18	1d20/4	1

Note: the rate of fire may include multiple rounds fired in the same turn for automatic weapons.
Note(*): flamethrowers cause a critical ‘fire’ hit

3.2.1 Combining Weapons

Multiple weapons of the same type can be combined into a single entry on the vehicle design sheet, and fired as one. The vehicle sheet entry for that weapon is filled out according to Table 10.

Table 10: Combined Weapon Vehicle Sheet Entry

VDS field	Calculation
Accuracy	From Table 9, +1 for each additional gun in the salvo, up to +5
Range	From Table 9
Penetration	From Table 9
Damage	From Table 9 * the number of guns

Example: A group of four BL 6-inch/25.5 Mk III guns

Weapon	Accuracy	Range	Penetration	Damage
4x BL 6-inch/25.5 Mk III	0	14100	+113	4d20

3.2.2 Combining Ships (Swarms)

Ships that have less than 10 Hit Points can be combined into collections or 'swarms.' This is particularly true of smaller Hive creatures, like Lancers or to represent large numbers of fighters attacking a large Aerolyth ship. These combinations of ships maneuver, fire, and take damage like normal ships, but are not susceptible to fire, critical hits, or being boarded. A VDS for a swarm is filled out as follows:

Ship Name:					
Hit Points	Sum		**Current**:		
Target Mod	As single ship			**Armor Mod**	
Maneuver/Turn	As single ship	**Front/Back**		As single ship	
Repair Rate	As single ship	**Top/Bottom**			
Speed/Accel.	As single ship	**Sides**			
Weapon Battery		**Acc**	**Rng**	**Pen**	**Dmg**
Combine All Weapons as per Section 3.2.1, above					

3.3 Sample Vehicle Design Sheets

3.3.1 Torpedo Flyer #1

From p35 of *Flying Machines of the Worlds:*

Ship Name: Torpedo Flyer #1					
Hit Points	10 / 5 / 2		**Current**:		
Target Mod	–10			**Armor Mod**	
Maneuver/Turn	+5 / 530º	**Front/Back**		–6	–6
Repair Rate	0	**Top/Bottom**		–3	–12
Speed/Accel.	4730 / 984	**Sides**		–6	
Weapon Battery		**Acc**	**Rng**	**Pen**	**Dmg**
2x Torpedo Launch (2)		+1	1100	1	7d20*4
2x Hotchkiss 37mm/5		+2	5500	13	2d20

3.3.1 EMB2

From p57 of *Flying Machines of the Worlds:*

Ship Name: EMB2					
Hit Points	149 / 74 / 37		**Current**:		
Target Mod	–8			**Armor Mod**	
Maneuver/Turn	+1 / 71º	**Front/Back**		–25	–25
Repair Rate	2d20	**Top/Bottom**		–25	–25
Speed/Accel.	2580 / 333	**Sides**		–25	
Weapon Battery		**Acc**	**Rng**	**Pen**	**Dmg**
4x Hotchkiss		+4	5500	13	4d20
1x QF 6”/40		+1	15100	129	8d20
4x 9.2inch (24 rockets)		+4	19500	24	7d20

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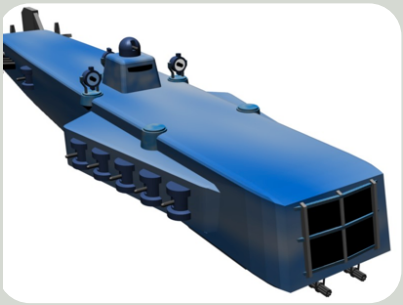

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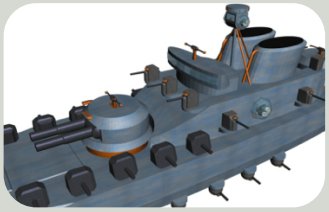

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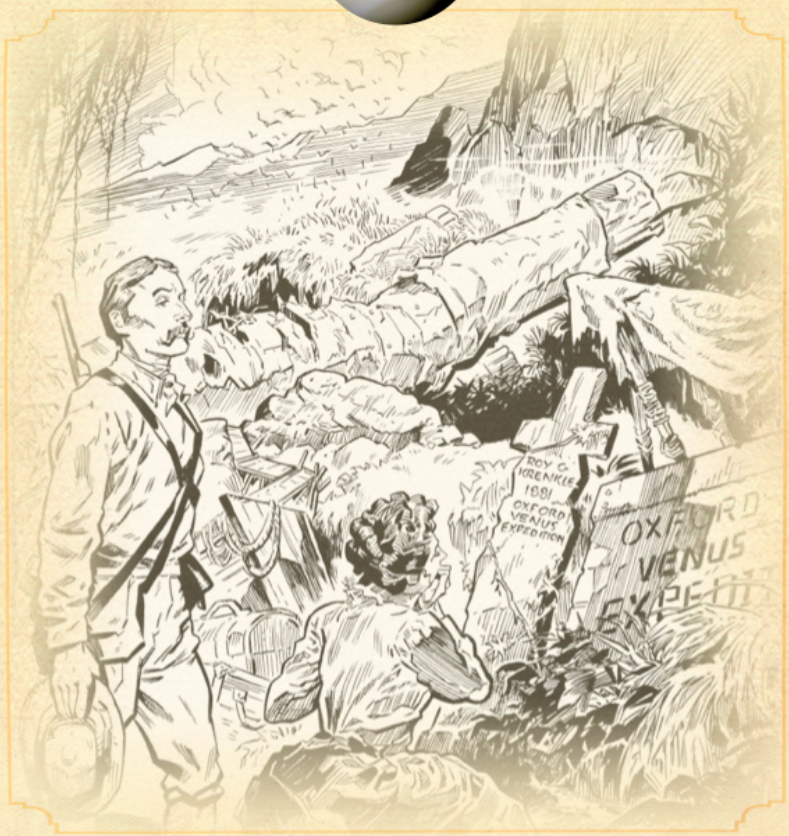

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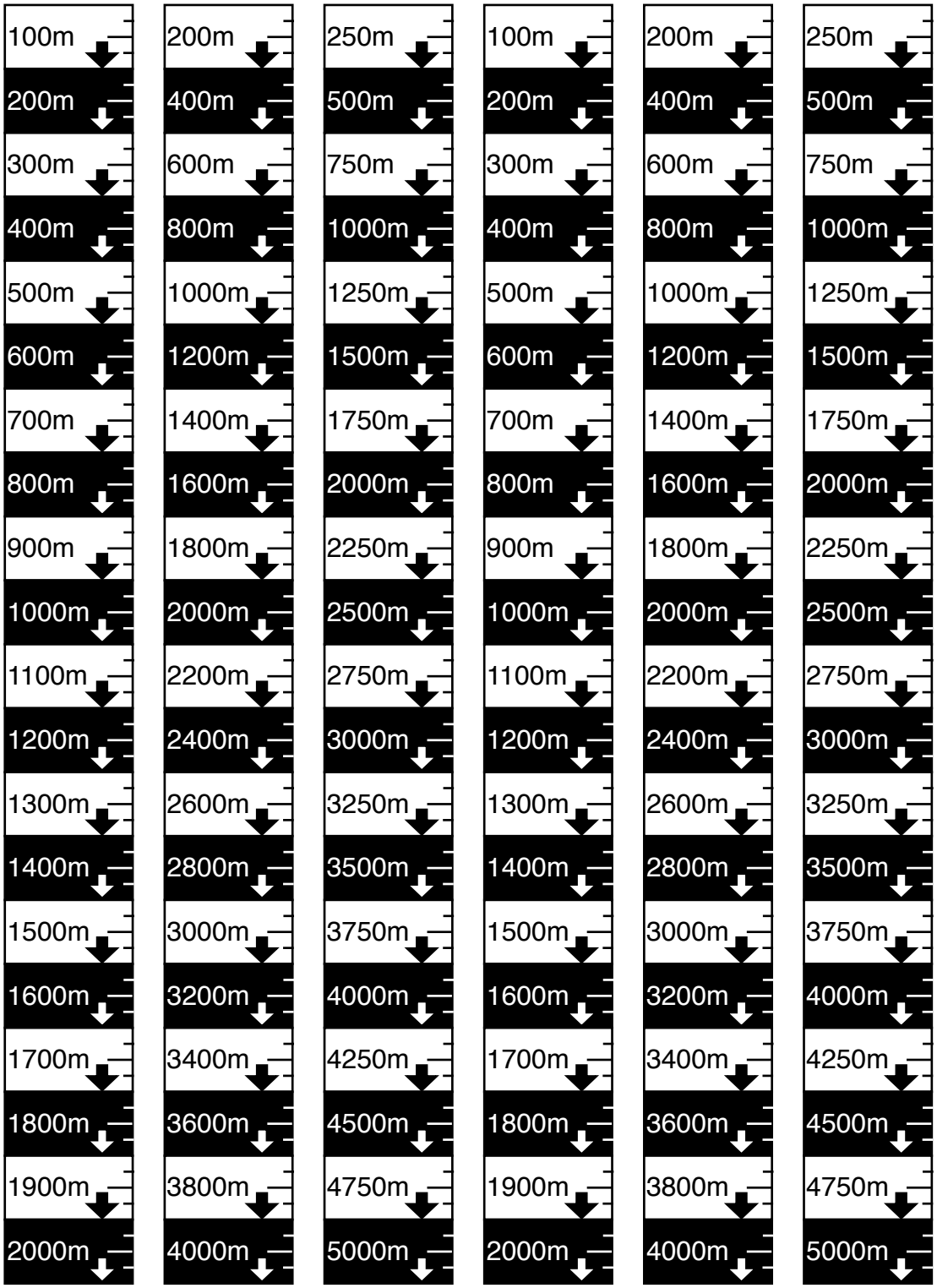
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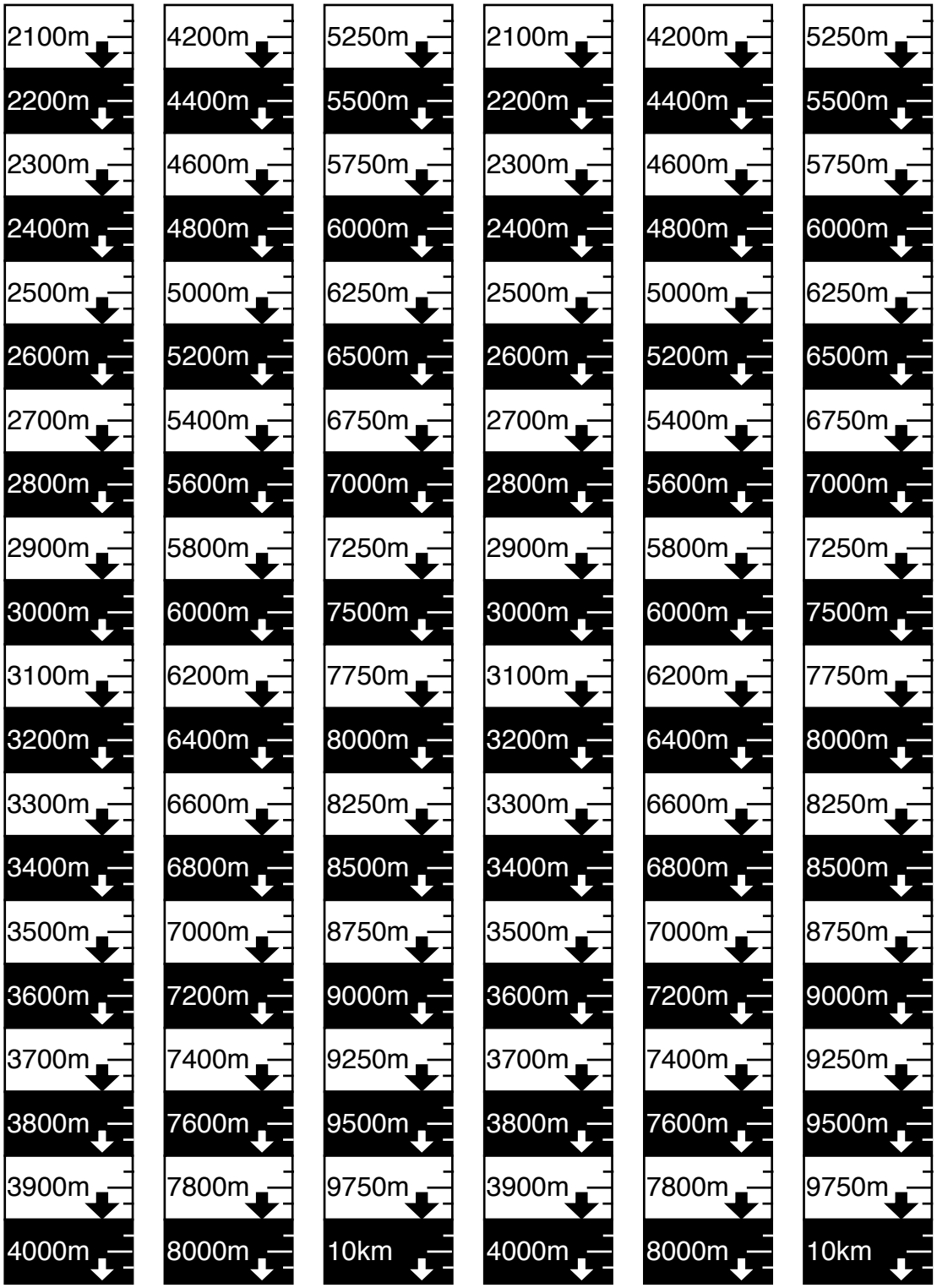
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Table Top Quick Reference

Combat Round

1. Roll a d20 to determine whether a ship from the "odd" or "even" side will act next.
2. The selected side selects a ship that has not yet acted this round. If all ships from that side has already acted, the other side selects a ship
   a. The ship's position is adjusted based on its current speed
   b. The selected ship performs major action (see Table 1) and up to two Minor actions.
   c. (Optional Rule) If the selected ship is on fire, calculate the fire's damage (See Damage Effects on page 20)
3. If all ships have acted, the round ends and the next round begins. Otherwise, repeat step 1.

Firing Modifiers

– Target's **Maneuver** (if Evasive Maneuvers)
– Actor's **Maneuver/2** (if Evasive Maneuvers)
Weapon Accuracy:
From Table 7 or the VDS
Target Size Effect:
–4 <20m facing
–0 20-40m
+4 40-80m
+10 >80m

Range:
+16 0 < 500 m
+8 500-1000m
+4 1-2km
–0 2-4km
–4 4-8km
–12 8-16km
–24 16-32km
–32 >32km

Penetration

Opposed rolled modified by target's **Armor Mod** the weapon's **penetration**.

Hits

•If hit **did not** penetrate, damage is as if rolled all '1s'
•If the hit **did** penetrate
  •Apply full damage
  •(Optional) Every '19' or '20' causes one critical hit.
  •(Optional) Flamethrower hits '10' or greater causes a fire critical hit **in addition** to any regular critical hit

(Optional) Critical Hits		
2-10♦	1-25	1d20 damage for each card value
2-10♣	1-25	1d20 damage for each card value. For each die larger than 15, roll an additional die.
2-10♥	1-25	Crew Damage. The ship can only perform 'Minor' actions for 1 round for each card value
2-6♠	1-18	One fire starts. 5d20 damage each round
7-9♠	19-23	Two fires start.
10♠	24-25	Three fires start.
Jack	26-27	One Minor system disabled. No combat effects.
Q♣	28-30	Engine disabled. 1d20 damage points, plus the engine stops producing power.
Q♦	28-30	Propulsion disabled.
Q♥	28-30	Maneuver disabled.
Q♠	28-30	Electrical system disabled.
K♣	31-34	Bridge hit. No 'Major' Actions
K♦	31-34	Control Systems. 1d20 damage point, No Major actions till repaired.
K♥	31-34	Blast. A fire starts, plus 1d20 points of cascading (die >15 cascade) damage.
K♠	31-34	Blast. A fire starts, plus 2d20 points of cascading (die >15 cascade) damage.
A♣	35-40	Blast. A fire starts, plus 1d20 points of cascading (die >15 cascade) damage.
A♦	35-40	Structural failure. 1d20 damage now, and 1d20 damage each time the ship maneuvers or travels at more than one-quarter speed.
A♥	35-40	Hidden Failure. In 1d20/5 rounds, draw and apply two more critical hits.
A♠	35-40	Disaster! The magazine explodes, the Aerolyth misaligns, the boiler bursts, and the cat gets sick. The ship explodes.

Damage		Effect	Altitude Effect		
			Cayley	Zeppelin	Aerolyth
Fire		5d20 damage / turn. Uncontested fire doubles each turn. Contested fire, but unextinguished increases 50% per turn.	No Effect		
Severe	<50% HP	Weapons at half strength	Can't Climb	Can't Climb	100
Disabled	<25% HP	Weapons at one quarter strength, max speed 50%	If stalled: 500	100	1000
Destroyed	0 HP	Can only evacuate	5000	1200	13000