

**Notes from Hades**

No travel since the last issue since two trips were canceled. The state of the UN organization that I work with is in a bit of flux, which has disrupted the work somewhat. Things should hopefully settle down over the course of the summer, however.

No games finished this turn, although a couple look to be finishing in the near future. New game starts are still available, but I still need game fees before most of them can start.

The next deadline is **Tuesday, July 12 at 5:00 p.m. Pacific Time. Please do not call or fax orders after 10:00 p.m. Pacific time.** My wife and I tend to retire early. Also, if you want to fax in orders, call first. We hang up on unannounced faxes.

**Contents**

<b>Barking Up...</b>	Machiavelli	Page 1
<b>Bolognese</b>	Machiavelli Gamestart	Page 3
<b>Husky</b>	Power Grid	Page 3
<b>Pateel</b>	Kremlin	Page 3
<b>Frontier Dog</b>	Gunslinger	Page 4
<b>Procyon</b>	Merchant of Venus	Page 5
<b>Basset</b>	Outpost	Page 7
<b>Hunter</b>	Silverton	Page 8
<b>Dogbreath</b>	History of the World	Page 9
<b>Plantation Dog</b>	Puerto Rico	Page 10
<b>Pedagoguery</b>		Page 11

**Game Openings**

**Purebred.** Machiavelli. Have Ward Narhi(\$), Bob Robles(\$), Pasquale Giovine, Walt O'Hara, Mike Scott, Kevin Wilson(\$), Jerry Roalstad, Jack McHugh. This game is full.

**Golden Retriever.** Seafarers of Catan. Have Chris Geggus(\$), Dave Hooton, Mike Scott, Bill Scharf(\$). Will take up to 2 more.

**Rottweiler.** Industrial Waste. Have Andy York(\$), Eric Brosius(\$), Richard Weiss(\$), will take up to 1 more.

**Pick of the Litter.** Silverton. Will start after Hunter ends. Have Dave Hooton(\$), Paul Bolduc(\$), will take up to 4 more.

**Russian Wolfhound.** Kremlin. Will start after Pateel ends. Have Walt O'Hara, Mike Scott, Bob Robles(\$), Bill Scharf(\$), Jack McHugh. Will take up to 1 more.

**Dog Show.** Outpost. Will start after Basset ends. Have Eric Brosius(\$), Andy York(\$), Andy Lewis, Dave Hooton, Bill Scharf(\$), Kevin Wilson(\$), Dave Hood, will take up to 3 more.

**Portuguese Water Dog.** Goa. Have Brad Martin(\$), Chris Geggus(\$), will take up to 2 more.

**Dachshund.** Age of Renaissance. This will use the EuroGames rules. Have Paul Bolduc(\$), Chris Geggus(\$), Bob Robles(\$), Jack McHugh, will take up to 2 more. Players who have a (\$) after their name have paid the necessary game fee.

**Wish List**

**Power Grid.** Players will have the choice of 10 maps and several deck options. Have Dave Hooton, Chris Geggus, will take up to 4 more.

**Phoenicia.** A game similar to Outpost set in ancient times. Have Cary Nichols, Andy York, will take up to 8 more.

**Puerto Rico.** Will start after Plantation Dog ends. Have Chris Geggus, will take up to 4 more.

**Machiavelli.** This game will start after the next Machiavelli game finishes. Have Bob Robles, will take up to 7 more.

**Gunboat Machiavelli.** This game will start after the second Machiavelli game finishes. Have 1, will take up to 7 more. This box  will be checked if you have signed up.

**Robo Rally.** Map to be decided. Have Chris Geggus, will take up to 7 more.

**In general, game ownership is recommended, but not required.**

Note that a subscription to S.O.B. is not required to play in a game run by flier, but that a game fee will be charged to non-subbers.

S.O.B. is a zine of unusual postal games, and anything else I feel like including. Your publisher is:

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 On the Web at: <http://www.sob-zine.org>

Subscriptions cost \$3.00 per issue (\$4.50 overseas).

**Barking Up the Wrong Tree**

**Spring 1259**

**Miller Number 2007Bpw10**

**Advanced Rules, Natural Disasters, Special Military Units, Conquest, Gray Press, Ultimate Victory**

**Deadline Summer 1259 7/12, Tuesday**

*Florence now joins in the alliance with Aragon, the Pope, and Venice against Milan. Aragon and Milan each make successful and unsuccessful assaults. Venice defends his territory and maneuvers his forces.*

Fall 1258 Retreats

Aragon F Corsica retreats to Sardinia

Venice	Maintains all, no new builds	21
--------	------------------------------	----

Buils

		Cost
Aragon	Maintains all, no new builds	15
Florence	Maintains all, no new builds	3
Milan	Maintains A Tyrolea, Pavia, Modena, Avignon, F Provence, F (EM) Corsica, builds F Savoy, F Genoa, G Pavia	30
Papacy	Maintains F Rome, A Pisa, A Florence, A Urbino, builds A Ancona, G Rome	18

Expenditures

Aragon spends 12 ducats to disband Milan F Provence

Orders

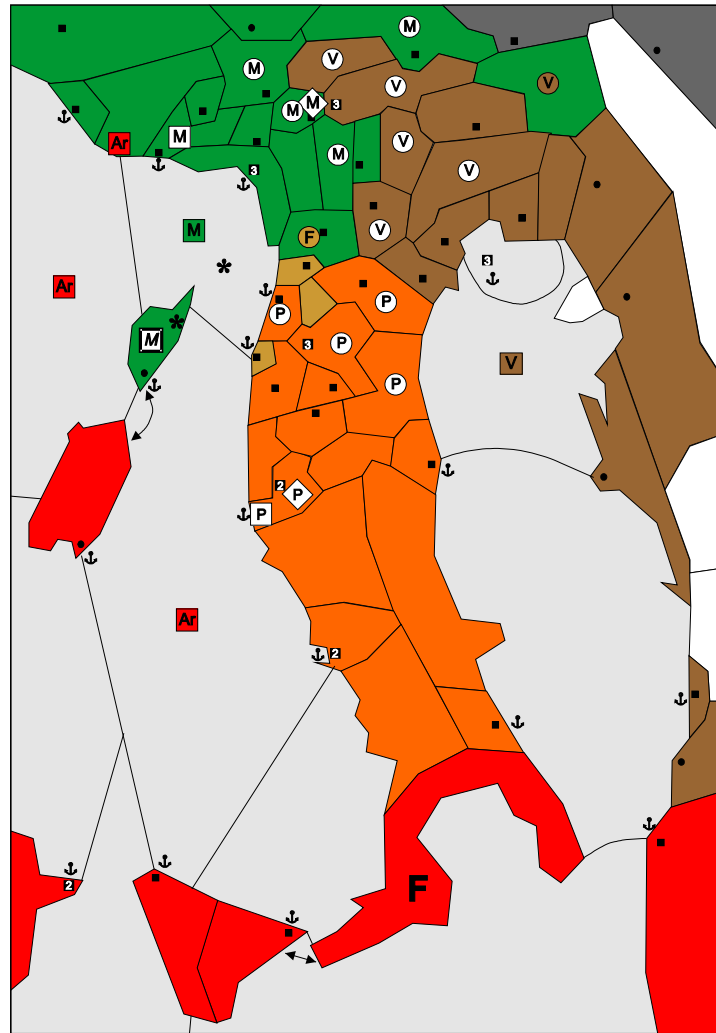
ARAGON (Scharf): F Ligurian Sea to Genoa (DISLOGGED, retreat Piombino, OTB), F Gulf of Lions to PROVENCE, F SARDINIA supports F Tyrrhenian Sea, F Western Mediterranean to GULF OF LIONS, F TYRRHENIAN SEA supports F Sardinia (cut)  
 FLORENCE (Whyte): A Lucca to MODENA

MILAN (Renken): A Avignon to TURIN, A TYROLEA to Como, A PAVIA supports A Tyrolea to Como, A Modena to PARMA, F Provence to Gulf of Lions (nsu), F (EM) CORSICA to Tyrrhenian Sea, F SAVOY supports F Genoa to Ligurian Sea, F Genoa to LIGURIAN SEA, G PAVIA supports A Pavia

PAPACY (Robles): A PISA supports Florence A Lucca holds (nso), A FLORENCE supports A Urbino to Bologna, A Urbino to BOLOGNA, A Ancona to URBINO, F ROME holds (u), G ROME holds

VENICE (Partridge): A COMO supports A Milan (cut), A MILAN supports A Como, A BERGAMO supports A Milan, A VERONA supports A Carniola, A Carniola to CARINTHA, A MANTUA supports

**Barking Up the Wrong Tree**



○ Army □ Fleet ◇ Garrison ◆ Autonomous Garrison

Florence A Lucca to Modena, F UPPER ADRIATIC supports Papal A Urbino to Bologna

Your ducats:

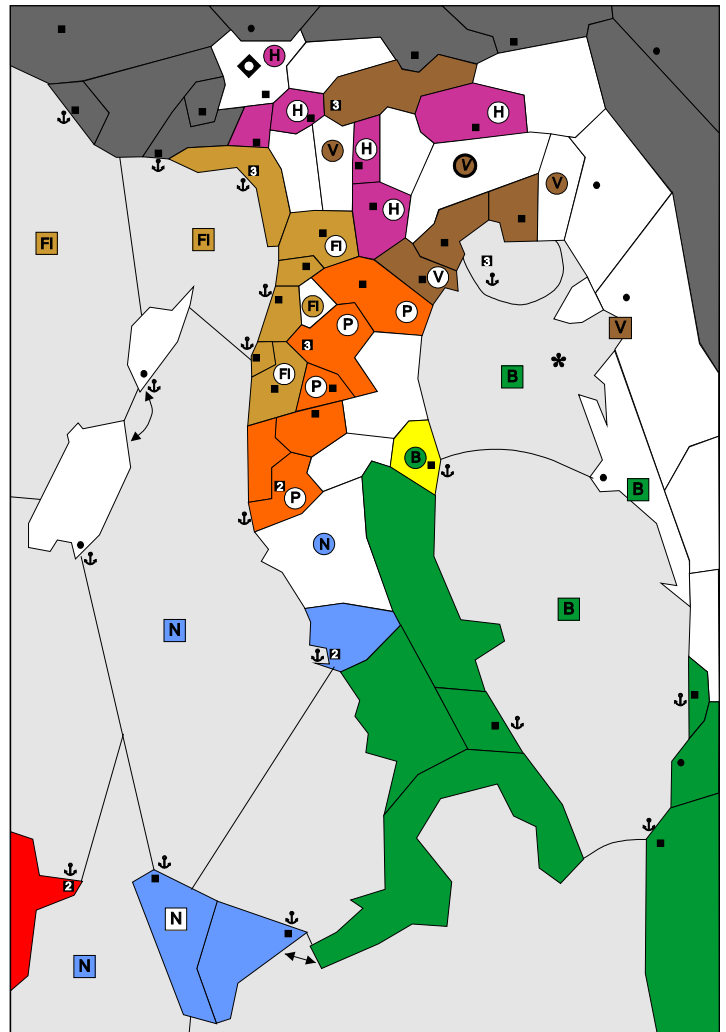
Press

Florence: I always wondered why I was mustard coloured: now I realize I'm spread thinly on the meat in the sandwich, and about to be consumed. Still, I do have exquisite taste!

Summer 1259 Plague

Good Year – No Plague!

**Bolognese**



○ Army □ Fleet ◇ Garrison ◆ Autonomous Garrison ◆ Besieged Garrison

**Bolognese**

Summer 1051

Miller Number 2010?????

**Advanced Rules, Special Military Units, Conquest, Gunboat, Gray Press, Ultimate Victory  
Deadline for Fall 1052 7/12, Tuesday**

The Normans gain against the Muslims while Pisa and the Pope stand guard against each other. The Holy Roman Empire and the Byzantines combine to stymie Venice.

Errata

The orders in the paper and PDF copies of the zine for the Normans and the Papacy were not correct last issue, and reflected the previous turn. The orders noted on the website and the results on the map were correct.

Spring 1052 Retreats

Venice A Milan retreats to Parma

Orders

BYZANTINES ☐: A Aquila to ANCONA, F Ancona to UPPER ADRIATIC, F LOWER ADRIATIC supports F Ancona to Upper Adriatic, F Herzegovina to DALMATIA

HOLY ROMAN EMPIRE ☐: A TURIN besieges, A Milan to PAVIA, A TRENT to Verona, A CREMONA to Milan, A MANTUA supports A Trent to Verona

NORMANS ☐: A Naples to CAPUA, F TYRRHENIAN SEA supports F Palermo to Central Mediterranean, F Palermo to CENTRAL

PAPACY ☐:

MEDITERRANEAN, F Messina to PALERMO

A BOLOGNA besieges (autonomous garrison destroyed), A FLORENCE supports A Bologna, A AREZZO to Perugia, A ROME to Perugia

PISA ☐:

A MODENA holds, A PISTOIA to Pisa, A SIENNA to Pisa, F GENOA to LIGURIAN SEA, F Ligurian Sea to GULF OF LIONS

VENICE ☐:

A PARMA to Milan, A (EM) VERONA to Trent, A FERRARA to Verona, A FRIULI to Dalmatia, F Upper Adriatic transports A Friuli to Dalmatia (DISLOADED, retreat Istria, Carniola, Venice, Urbino, OTB), F CROATIA supports A Friuli to Dalmatia

MUSLIMS:

F Central Mediterranean holds (DESTROYED)

Your ducats:

Press

Byzantines – Normans: Tun/Sar/Cor could help us control the south and west.

**Husky****End of Game Statements**

**Andy York (Deutsches Elektrisch Arbeit Direktor)** Chris, thanks for the running the game. I certainly didn't expect it to end when, and as, it did. I'm ready for another round!

**Dave Hooton (Volkisch Tzapverein)** Congratulations to Andy on the win. In case anyone wonders why I built to 19 cities, it is because I thought the number of cities, not cash, was the tie-breaker.

**Pateel****Turn 8, Cure through Health****Turn 8, Funeral Commission through Parade, 5/31 Tuesday**Cure Phase

No politicians take the cure. Niewitko ages to 81, Schukrutoff ages to 80, Strychnin ages to 80, Wasolin ages to 56, and Eatstumuch ages to 66.

Purge Phase

Zapadniye Front plays Plan to Export Russian Cars (29). The first purge must be against the Industry Minister at +3. TCC plays New Siberian Oilfield (3). Purge rolls against him are reduced by 3. Schukrutoff does not act, so Wasolin takes the opportunity (dr = 18 + 3 - 3, success), and then attempts to purge Schukrutoff (dr = 7+3, fails). Wasolin ages to 60.

Spy Investigation Phase

Talksalott calls a trial on Wasolin. Strychnin, Talksallott, and Satin vote guilty,

Politburo

Office	Policitian	Condition	Influence
Party Chief	Petr Niewitko (D)	81, +, ?	3 (PaH)
KGB Head	Lech Schukrutoff (B)	80, ++, ?	
Foreign	Mikail Strychnin (T)	80, +	1 (BBC)
Defense	Antonj Talksallott (J)	71	6 (BBC)
Ideology	Victor Wasolin (Z)	60	5 (KMFC)
Industry			
Economy	Ulan Putschnik (Y)	52	
Sport	Oleg Satin (O)	62	2 (Fin), 7 (BBC)

Candidates: I, P, U, V, W

Intrigue Cards

Niewitko and Wasolin vote innocent, Schurutoff and Putschnik abstain. Wasolin is acquitted, Talksallott ages to 71.

Health Phase

Niewitko (dr = 8) gets sick.  
Schukrutoff (dr = 9) falls ill.  
Strychnin (dr = 19) remains sick.  
Talksalott (dr = 16) remains healthy.  
Wasolin (dr = 8) remains healthy.  
Putschnik (dr = 13) remains healthy.  
Satin (dr = 12) remains healthy.

People:

F

Siberia:

L (68), X (61, ++), N, R (64), M (66)

Kremlin Wall:

A, E, S, K, H, G, C, Q

Players

Player

Faction Name

Bob Robles Karl Marx Fan Club  
Ward Narhi Finlandia  
Pasquale Giovine Bolshevics Born in Calabria  
Mike Scott The California Connection  
Bill Scharf People are Heroes  
Brad Martin Zapadniye Front

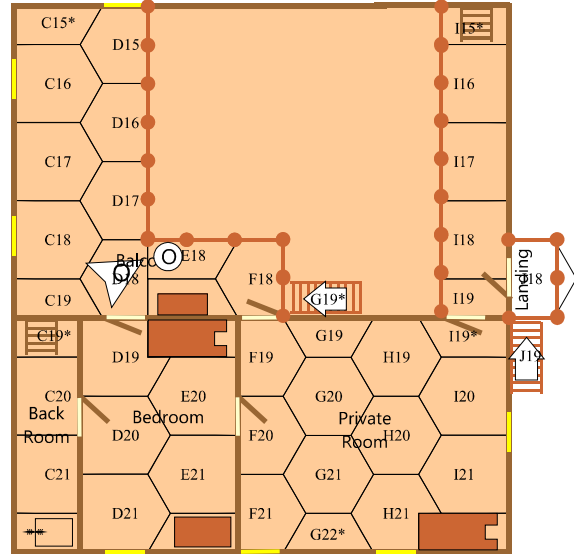
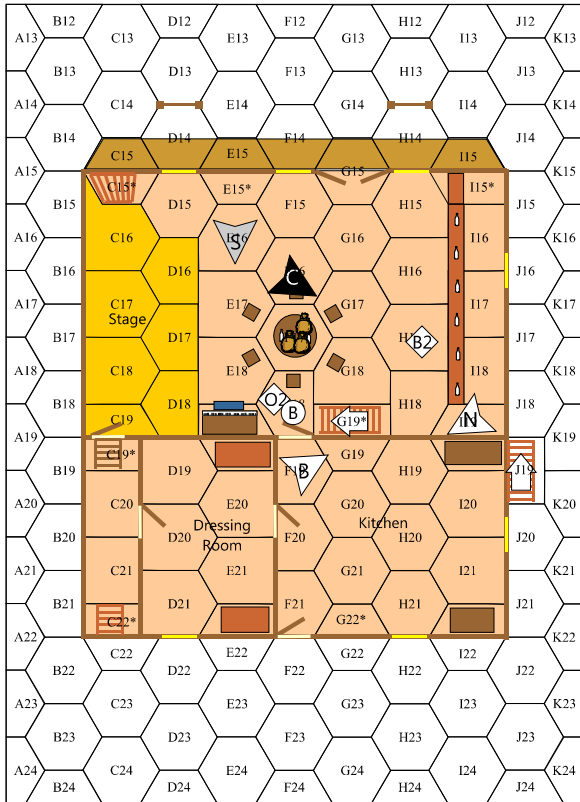
KMFC have one wave. ZF have one wave. PaH have one wave.

Undeclared Influence

**Frontier Dog**  
**Turn 17**  
**Turn 18, 7/12 Tuesday**

**Frontier Dog**

**Frontier Dog**  
**Second Story**



- |  |               |  |             |  |        |
|--|---------------|--|-------------|--|--------|
|  | Hitching Post |  | Door        |  | Bottle |
|  | Stairs        |  | Window      |  | Table  |
|  | Player        |  | Chair       |  | Gun    |
|  | Money Bag     |  | Player (up) |  | Knife  |
|  | Player (dead) |  | Aim Points  |  |        |
|  | Player (down) |  |             |  |        |

**Segment 1**

- Old Man:** Card (8) – Head Out (UE18), turn 1 of 2  
**Banker:** Card 5 – Cock/Aim/Shoot (Cock SW45), turn 1 of 2  
**NCO:** Card (4) – Leap, turn 1 of 1, draws 2 delay cards: 12 and 88, LOSE AIM and 0 delay points

**Segment 2**

- Old Man:** Card (8) – Head Out (UE18), turn 2 of 2  
**Banker:** Card 5 – Cock/Aim/Shoot (Cock SW45), turn 2 of 2  
**NCO:** Card (3) – Turn (ahead left to face H18), turn 1 of 1

**Segment 3**

- Old Man:** Card 6 – Cock/Aim/Shoot (Aim at F18), turn 1 of 2  
**Banker:** Card (3) – Turn (Ahead right to face G19), turn 1 of 1  
**NCO:** Card 1 – Advance (ahead left to I19), turn 1 of 2

**Segment 4**

- Old Man:** Card 6 – Cock/Aim/Shoot (Aim at F18), turn 2 of 2  
**Banker:** Card 6 – Cock/Aim/Shoot (aim at H17), turn 1 of 2  
**NCO:** Card 1 – Advance (ahead left to I19), turn 2 of 2, Head counter removed

**Segment 5**

- Old Man:** Card (3) – Turn (straight ahead), turn 1 of 1  
**Banker:** Card 6 – Cock/Aim/Shoot (aim at H17), turn 2 of 2  
**NCO:** Pass

**End of Turn**

No actions

**Press**

Shaggy – Banker: All those shots that did little for me and you get a BE, really??????

*Westerners*

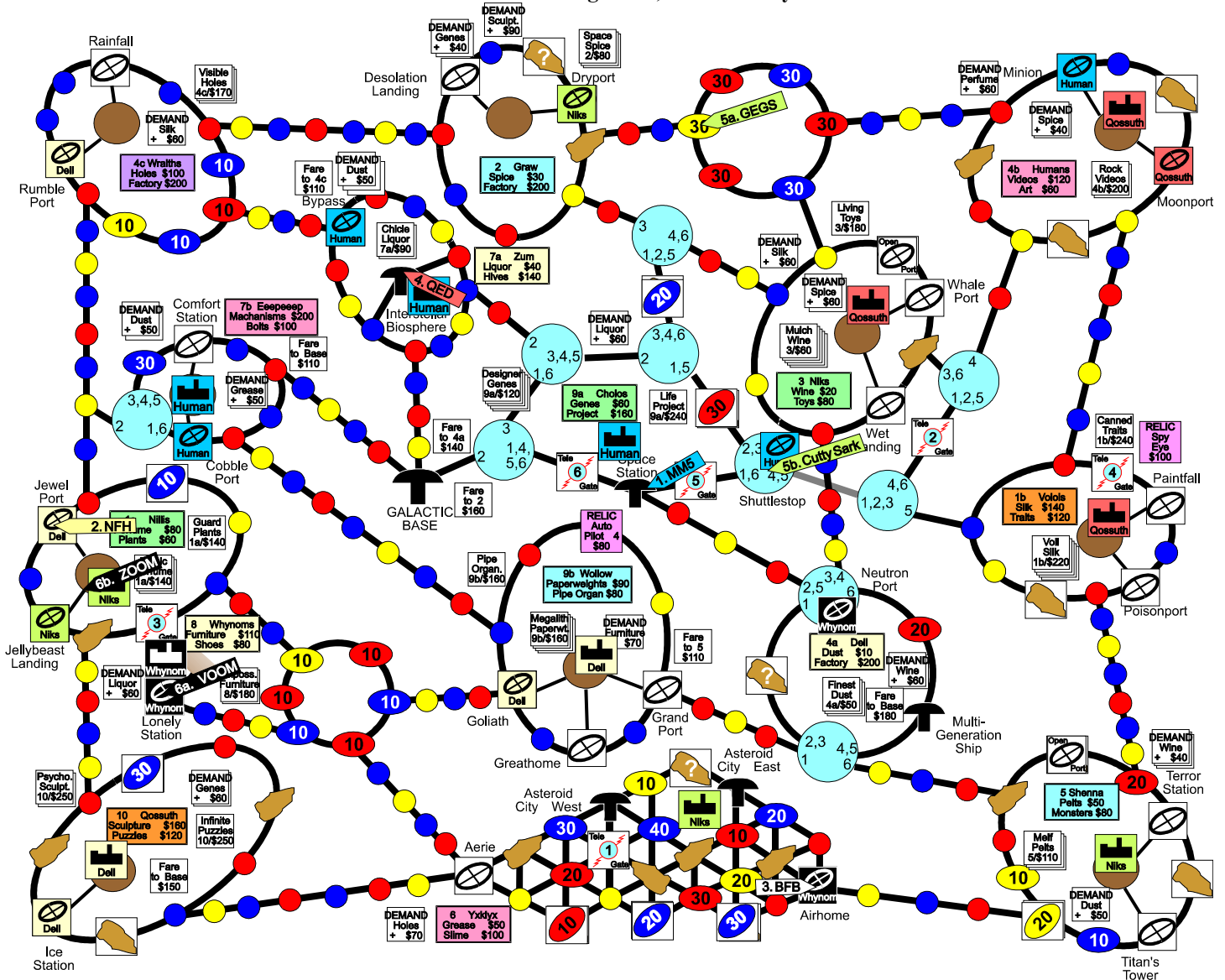
Side	Player	Character	Location	Bonus Cards	Skills	Delay	Endurance	Comments
A	Paul Bolduc	Old Man (O)	UD18>UE18	5, 7, 8	BR +1		25	HEAD in UE18, 2 AIM points in F18
B	Andy Lewis	Shaggy (C)	F16>G17				0	DEAD
C	James Pratt	Banker (B)	F19>G19				20	HEAD in F18, 2 AIM points in H17
D	Mike Scott	Smith (S)	E16>E17	8	BR +2	N/A	0	SERIOUS 3, UNCONSCIOUS
E	Chris Geggus	NCO (N)	I19>H19	9	BR +1		16	

*Weapons*

Character	Holstered	Gun Hand	Other Hand	Both Hands	Ammo
Old Man	Knife	Empty	Empty	C36c, cocked	C36c: △△△△△⊗
Shaggy	Knife, Money Bag	C45, uncocked	Empty	Empty	C45: ○⊗⊗⊗⊗⊗
Banker	None	SW45, cocked	Empty	Empty	SW45: ○○○○○⊗
Smith	Knife	C45c, cocked	Empty	Empty	C45c: △△△△△△△
NCO	SBR	C41, uncocked	Empty	Empty	C41: ⊗⊗⊗⊗⊗⊗

**Procyon**

Turns 26.5 through 28.5  
Turns 28.6 through 30.6, 7/12 Tuesday



Turn 26

5<sup>th</sup>: Chris Geggus (Niks/Ganymede Enterprises Going South) Rolls Used: 1 2  
B30 – (R30) – B – Y – B.

6<sup>th</sup>: Dave Partridge (Whynoms/Venus-Orion Oligarch Mechantile) Rolls Used: 5 6  
Lonely Planet – Lonely Station – B – (R) – (Y) – B10 – (R10) – B – (Y) – B

– (R) – Aerie – (Y) – (R20) – (Y) – A – (R30) – (Y20) – (R) – Airhome.  
Agent buys a Clipper (ZOOM) for \$120 VOOM transfers one Impossible Furniture to it and buys 2 Immortal Grease for \$100. Receives \$22 in port commissions.

Turn 27

1<sup>st</sup>: Andy Lewis (Humans/Mystery Machine 5) Rolls Used: 1 1 5  
Interstellar Biosphere – B – Y – R – Bypass.  
Sells Rock Videos for \$200 (from the cup: Fare to 4a at Base). Sells Rock Videos for \$200 (from the cup: Psychotic Sculpture at 10). Buys Factory for \$200 and 2 Chicle Liquors for \$80. Receives \$68 in port commissions.

2<sup>nd</sup>: Paul Bolduc (Dell/Not for Hire) Uses Mulligan Gear: 3 becomes 4, Rolls Used: 4 \* 3  
Ice Station(p) – A – R – Y – B – R – Y – A – JellyBeast Landing(p) – B – Jewel Port(o) – Jewel Port(s).  
Buys Jewel Port for \$200.

3<sup>rd</sup>: Bob Robles (Eeep/ep/Bender's Freedom Brigade) Rolls Used: 1 6 6  
Airhome(p).  
Attempts to buy 2 Immortal Grease, but there are none available.

4<sup>th</sup>: Andy York (Qossuth/Qossuth Entrepreneur Division) Rolls Used: 3 3  
B – Interstellar Biosphere.

5<sup>th</sup>: Chris Geggus (Niks/Ganymede Enterprises Going South) Rolls Used: 2 3  
B – (R) – Minion.  
Sells Space Spice for \$80 plus \$160 demand (from the cup: Immortal Grease

at 6 and Voll Silk at 1b). Sells Space Spice for \$80 plus \$120 demand (from the cup: Finest Dust at 4a and Mulch Wine at 3). Sells Living Toys for \$180 (from the cup: Demand for Dust at 5). Agent buys a Clipper (Cutty Sark) for \$120. Cutty Sark buys Rock Videos for \$120. MM5 receives \$86 in port commissions. Servo-mechanism transferred from GEGS to Cutty Sark

6<sup>th</sup>: Dave Partridge (Whynoms)  
ZOOM: Rolls Used: 2 2 3 5  
Airhome – A – R10 – A – A – TeleGate 1 – TeleGate 3 – A – Jellybeast Landin(p) – Jellybeast Landing(s).  
Sells Impossible Furniture for \$180 (from the cup: Canned Traits at 1b).  
Venus-Orion Oligarch Mechantile Rolls Used: 3 5  
Airhome – (R10) – (Y20) – (R30) – A – (Y) – (R10) – (Y) – Aerie – (R) – B – (Y) – B – (R10) – B10 – (Y) – (R) – B – Lonely Station.  
Sells Immortal Grease for \$100 (from the cup: Demand for Wine at 5). Sells Immortal Grease for \$100 (from the cup: Demand for Silk at 3). Buys Impossible Furniture for \$110 and Other Shoes for \$80. Receives \$39 in port commissions and \$40 in factory commissions.

Turn 28

1<sup>st</sup>: Andy Lewis (Humans/Mystery Machine 5) Rolls Used: 1 6 6  
Bypass – Jump Start to TeleGate 6 – Space Station.  
Sells Chicle Liquor for \$90 plus \$120 demand (from the cup: Rock Videos at 4b and Rock Videos at 4b).

2<sup>nd</sup>: Paul Bolduc (Dell/Not for Hire) Rolls Used: 4 \* 3  
Jewel Port(s) – Jewel Port(p).  
Sells Psychotic Sculpture for \$250 (from the cup: Immortal Grease at 6). Buys Bionic Perfume for \$80. Receives \$33 in port commissions.

3<sup>rd</sup>: Bob Robles (Eeep/ep/Bender's Freedom Brigade) Rolls Used: 5 6 6  
Airhome.  
Buys 2 Immortal Grease for \$100. VOOM receives \$10 in port commissions.

4<sup>th</sup>: Andy York (Qossuth/Qossuth Entrepreneur Division) Rolls Used: 2 6  
Interstellar Biosphere.

Sells Immortal Grease for \$100 (from the cup: Melf Pelts at 5). Sells Pet Monsters for \$150 (from the cup: Demand for Wine at 4a). Sells Primitive Art for \$160 (from the cup: Living Toys at 3). Buys Custom Hives for \$140 and 2 Chicle Liquor for \$80. MM5 receives \$70 in factory commissions.

5<sup>th</sup>: Chris Geggus (Niks)  
Ganymede Enterprises Going South Rolls Used: 3 4  
Minion(p) – (R) – B – Y – B – (R30) – B30 – (R30) – Y30.  
Cutty Sark Rolls Used: 3 3 4 5  
Minion(p) – B – A – Moonport(p) – Y – A – Y – R – NC5 – TeleGate 2 – TeleGate 5 – Shuttlestop.  
Sells Servo-mechanism for \$300 (from the cup: Designer Genes at 9a). Buys Designer Genes for \$60 and a shield for \$60. MM5 receives \$42 in port commissions.

1. Mystery Machine 5 <b>\$691</b>			
Transport			
29: 5 6 6 //30: 1 6 6			
Hold1	Hold2	Hold3	Hull
Chicle Liquor 7a/\$90		Pedigree Bolts. 7b/\$200	Shield (\$60)
Cholos \$200	Cobble Port \$200	Eeep/ep \$100	RELIC Jump Start \$120
Shuttlestop \$200	Minion \$200	Bypass \$200	Zum \$200

3. Bender's Freedom Brigade <b>\$950</b>			
Transport			
29: 1 3 3 // 30: 2 3 5			
Hold1	Hold2	Hold3	Hull
Immortal Grease 6/\$100	Immortal Grease 6/\$100		7a \$80
			RELIC Switch Switch \$100

5a. Ganymede Enterprises Going South <b>\$812</b>			
Freighter			
29: 5 5 //30: 2 3			
Hold1	Hold2	Hold3	Hull
		Red Dye (\$120)	Shield (\$60)
Shenna \$100	Yxklyx \$200	Jellybeast Landing \$200	
Nillis \$100	Dryport \$200		

2. Not for Hire <b>\$240</b>		
Needle		
29: 1 5//30: 2 5 (use 1*)		
Hold1	Hold2	Hull
Bionic Perfume 1a/\$140		RELIC Mulligan Gear \$120
Ice Station \$200	Qossuth \$200	Shield (\$60)
Rumble Port \$200	Goliath \$200	
Wollow \$100	Jewelport \$200	

4. Qossuth Entrepreneur Division <b>\$710</b>				
Scow				
29: 1 2 3 5//30: 1 3 6 6 (use 2)				
Hold1	Hold2	Hold3	Hold4	Hull
Custom Hives 7a/\$220	Chicle Liquor 7a/\$90	Chicle Liquor 7a/\$90	Comb. Dye (\$300)	7a \$60
Niks \$200	Volois \$200	Moonport \$200	Human \$100	RELIC Gate Lock \$100
				Shield (\$60)

5b. Cutty Sark		
Clipper		
29: 2 3 5 6//30: 1 5 5 6		
Hold1	Hold2	Hull
Rock Videos 4b/\$200	Designer Genes 9a/\$120	Shield (\$60)



<b>6a. VOOM</b>					<b>\$1353</b>
Merchantman					
28: 4 5 5//29: 2 2 3//30: 1 3 5 (use 2)					
Hold1	Hold2	Hold3	Hold4	Hull	
Imposs. Furniture 8/\$180	Imposs. Furniture 8/\$180	Other Shoes 8/\$160	Red Drive (\$120)	RELIC Yellow Drive \$80	
Airhome \$200	Neutron Port \$200	Whynoms \$100			
Lonely Station \$200					

<b>6b. ZOOM</b>				
Clipper				
28: 2 4 6 6//29: 5 5 5 6//30: 1 2 3 6				
Hold1	Hold2	Hull		

Current status:

- 1a (Nillis):** 3 Bionic Perfume, Guard Plants
- 1b (Volois):** 5 Voll Silk, Spy Eye Relic, Canned Traits
- 2 (Graw):** 3 Space Spice, 2 Demand for Designer Genes (+\$40), Demand for Impossible Sculpture (+\$90)
- 3 (Niks):** 2 Demand for Space Spice (+\$60), 5 Mulch Wine, 1 Demand for Voll Silk (+\$60), Living Toys
- 4a (Dell):** 3 Finest Dust, 2 Demand for Mulch Wine (+\$60), Fare to Base (\$180)
- 4b (Humans):** 2 Demand for Space Spice (+\$40), Demand for Bionic Perfume (+\$60), 2 Rock Videos
- 4c (Wraiths):** Demand for Voll Silk (+\$60), 3 Visible Holes
- 5 (Shenna):** 3 Demand for Mulch Wine (+\$40), 3 Melf Pelts, Demand for Finest Dust (+\$50)

- 6 (Yxklyx):** Demand for Visible Holes (+\$70)
- 7a (Zum):** 2 Chicle Liquor, 3 Demand for Finest Dust (+\$50), Fare to 4c (\$110)
- 7b (Eeepeep):** 2 Demand for Immortal Grease (+\$50), 2 Demand for Finest Dust (+\$50), Fare to Base (\$110)
- 8 (Whynoms):** 2 Impossible Furniture, Demand for Chicle Liquor (+\$60)
- 9a (Chola):** 1 Demand for Chicle Liquor (+\$60), Life Project, 5 Designer Genes
- 9b (Wollow):** 4 Megalith Paperweight, Demand for Impossible Furniture (+\$70), Fare to 5 (\$110), Portable Pipe Organ
- 10 (Qossuth):** 2 Demand for Designer Genes (+\$60), Infinite Puzzles, Fare to Base (\$150), 2 Psychotic Sculpture
- Base:** Fare to 2 (\$160), Fare to 4a (\$140)

**Basset**

**Turn 15**

**Turn 16, 7/12 Tuesday**

Commander Actions

**Lowreyville** opens up the bidding on a Moon Base at 201 and HOB0 gets it for 207 (Wa4, Wa5, Wa6, Wa6, Wa7, Wa7, Wa7, Wa10, MWa, Re11, Re11, Re12, Re13, Re14, Re15, Re15, Re17, Re17). Opens up the bidding on a Moon Base at 201 and MMC gets it for 202 (Or2, MWa, MTi, Mi14, Mi14, Mi16, Mi17, OM30, OM35). Opens up the bidding on a Moon Base at 201 and gets it (Or3, Or4, Or5, MWa, MTi, Re10, Re16, NC16, NC18, OM25, OM30). Uses excess population to man the Moon Base.  
**MMC** buys 3 population factors (Mi16).  
**Little Green Men** opens the bidding on the Space Station at 120 and gets it (Or3, Wa8, Wa8, MWa, Re12, Re13, Re14, Mi16, Mi16). Shifts a population factor from an ore factory to man it.

**Cosmic Nomads** opens the bidding on an Orbital Lab at 50 and BarterTown gets it for 60 (Wa7, Ti7, Ti11, Ti12, Ti12, Re11). Buys a research factory (Wa5, Wa5, Wa6, Wa7, Wa7) and 3 robots (Re13, Re17).  
**BarterTown** buys a research factory (Wa7, Wa7, Wa7, Ti9) and moves a robot from an ore factory to man it.  
**HBDC** builds a research factory (Wa4, Wa6, Wa6, Wa7, Wa7) and moves a population factor from an ore factory to man it.  
**ShaggyMobile** opens the bidding on the Planetary Cruiser for 160 and gets it (Wa5, Wa7, Wa7, Wa9, MWa, MWa, MWa, Ti7, Ti7, Ti7, Ti9, Ti12). Buys a population factor to man it (Ti10).  
**HOB0** moves a population factor from a water factory to the Moon Base.

The Players

	Outpost Name	Commander	Factories	Upgrades	VP
1	Lowreyville	Michael Lowrey	OrF, OrF, WaF, WaF, WaF, WaF, TiF, TiF, TiF, TiF, NCF, NCF	No, HE, 2Sc, Ou, Ec, <b>SS, MB</b>	67
2	MMC	Eric Brosius	OrF, OrF, WaF, WaF, WaF, WaF, TiF, TiF, TiF, TiF	HE, No, 3OL, Ec, Ou, <b>SS, MB</b>	66
3	Little Green Men	Dave Partridge	OrF, OrF, WaF, WaF, WaF, WaF, WaF, ReF	No, 2Ec, Wa, OL, Sc, La, Ro, <b>SS</b>	43
4	HOB0	Dave Hooton	OrF, OrF, WaF, WaF, WaF, WaF, ReF, ReF	No, DL, Wa, La, Sc, <b>MB</b>	38
5	ShaggyMobile	Andy Lewis	OrF, OrF, WaF, WaF, WaF, WaF, TiF, TiF	2HE, Wa, 2Ou, <b>PC</b>	36
6	Cosmic Nomads	Cary Nichols	OrF, OrF, WaF, WaF, WaF, WaF, WaF, ReF, ReF, ReF, ReF	2DL, No, Wa, Ec, La, Sc, Ro	35
7	BarterTown	Andy York	OrF, OrF, WaF, WaF, WaF, WaF, TiF, TiF, TiF, TiF, TiF, ReF, ReF	HE, 2Ro, La, OL	34
8	HBDC	Kevin Wilson	OrF, OrF, WaF, WaF, WaF, WaF, WaF, TiF, ReF, ReF, ReF	2DL, Wa, La, Ou	27

HBDC is Heavenly Bodies Development Corporation. MMC is Mud Mining Corporation. HOB0 is High Orbit Biological

Available Upgrades

Production Cards

New Arrivals: Space Station, Moon Base, Space Station, Moon Base, Planetary Cruiser, Planetary Cruiser

Upgrade	Minimum Bid	Available	Not Yet Delivered
Robots (Ro)	50	1	0
Space Station (SS)	120	2	2
Planetary Cruiser (PC)	160	2	4
Moon Base (MB)	200	3	0

MMC, Lowreyville, LGM, ShaggyMobile, Cosmic Nomads, and HBDC took MegaWater cards. MMC and Lowreyville took MTi cards.

**Hunter**  
**Turn 12, Phases IV – VI, Turn 13, Phases I - III**  
**Turn 13, Phases IV – VI, Turn 14 Phases I - III, 4/19 Tuesday**  
**Turn 12**

Operations

**Red** (Nichols) declines claim #28, operates #63 (\$50, 3 lumber) and #53 (\$30, depleted). No deliveries due to snow. Gains \$130 in passenger revenue.

**Orange** (Hooton) no operations. Collects \$20 in passenger revenue.

**Green** (Longdin) operates #116 (\$30, 1 lumber), #109 (\$20, 2 copper), and #105 (\$40, depletes), no deliveries due to snow, gains \$200 in passenger revenue.

**Brown** (Partridge) operates #76 (\$20, 3 coal), #36 (\$50, 1 silver), #75 (\$20, 5 coal), delivers 4 coal from Craig to Salt Lake City for \$400 and 1 silver from Eureka to Salt Lake City for \$400, gains \$410 in passenger revenue.

**Blue** (Scharf) operates #86 (\$20, 2 coal), #42 (\$40, 2 silver), delivers 5 coal from Canon City to Denver for \$700 and 2 silver from Leadville to Denver for \$800.

**Aqua** (Brosius) uses snowplow on Cuba to Blanco (automatic), operates #58 (\$40, 2 lumber), #119 (\$40, 2 coal), and #122 (\$20, 3 coal), delivers 1 coal from Cuba to Santa Fe for \$120, 2 lumber from Dolores to Santa Fe for \$320, and 3 coal from Farmington to Santa Fe for \$360, collects \$90 in passenger revenue.

Determine Price Changes

Gold: +2 to \$275

Copper: +1 to \$200

Silver: Remains at \$400

	Denver	Salt Lake City	Pueblo	Santa Fe	El Paso
Lumber:	Remains at \$200	Remains at \$300	Remains at \$200	Remains at \$160	Remains at \$200
Coal:	-1 to \$120	Remains at \$100	Remains at \$80	Remains at \$120	Remains at \$140

**Turn 13**

Move Prospectors and Surveyors

**Red** (Nichols) surveys Dolores to Montecello and Lumberton to El Vado, prospects the deck.

**Orange** (Hooton) surveys Grand Junction to Mack, prospects #40.

**Green** (Longdin) surveys Alamagordo to Cloudcroft and La Madera to Vallecitos, prospects #117

**Brown** (Partridge) prospects #67 and #72, no surveying

**Blue** (Scharf) surveys Walsenburg to Alamo, prospects #43

**Aqua** (Brosius) surveys Newcomb to Gallup and Belen to Socorro, prospects #114

Dispute Resolution

Red draws claim #31 (gold at Cripple Creek) and has first right of refusal. No disputes. Red spends \$220, Orange spends \$80, Green spends \$400, Brown spends \$120, Blue spends \$260, and Aqua spends \$320.

The Players

Player	Color	Starting Location	Money	Trains	Snowplows	Personnel
Cary Nichols	Red	Denver	\$830	9, 15		S, S, P
Dave Hooton	Orange	Denver	\$140	9	+2	S+2, S, P
Michael Longdin	Green	El Paso	\$4,560	9, 15, 24		S, S, P
Dave Partridge	Brown	Salt Lake City	\$3,915	9, 24		S, S, P+1, P
Bill Scharf	Blue	Pueblo	\$2,720	9, 15, 24		S+1, S, P+1
Eric Brosius	Aqua	Santa Fe	\$730	9, 15, 24	+3	S, S, P+1

Purchased Claims

#	City	Owner	Type	Goods	Operation
63	Lumberton	Red	Lumber	4	\$50
47	Ouray	Orange	Silver	10	Depleted
40	Aspen	Orange	Silver	N	\$40
108	Lordsburg	Green	Copper	11	Depleted
107	Santa Rita	Green	Copper	6	Depleted
116	Pinos Altos	Green	Lumber	8	\$30
109	Pinos Altos	Green	Copper	8	\$20
117	Cloudcroft	Green	Lumber	N	\$50
25	Bingham	Brown	Gold	6	Depleted
68	Scofield	Brown	Coal	1	Depleted
26	Marysvale	Brown	Gold	1	Depleted
76	Craig	Brown	Coal	3	\$20
36	Eureka	Brown	Silver	1	\$50
75	Rangely	Brown	Coal	5	\$20
67	Coalville	Brown	Coal	N	\$30
72	Emery	Brown	Coal	N	\$30
49	Silverton	Blue	Silver	3	Depleted
86	Canon City	Blue	Coal	0	\$20
50	Silverton	Blue	Silver	N	\$50

#	City	Owner	Type	Goods	Operation
42	Leadville	Blue	Silver	0	\$40
43	Leadville	Blue	Silver	N	\$50
120	Cuba	Aqua	Coal	1	Depleted
106	Cuba	Aqua	Copper	1	Depleted
119	Farmington	Aqua	Coal	10	\$40
58	Dolores	Aqua	Lumber	4	\$40
122	Lee Ranch West	Aqua	Coal	3	\$20
114	McGaffey	Aqua	Lumber	N	\$30

Purchased Passenger Lines

#	Type	Route	Payoff	Owner	Notes
3	A	Denver – Colorado Springs	\$50	Red	
5	A	Denver – Pueblo	\$80	Red	
1	A	Denver – Boulder	\$20	Orange	
9	B	Denver – Leadville	\$120	Orange	
8	A	Denver – Leadville	\$260	Orange	1
4	A	El Paso – Deming	\$60	Green	
13	B	El Paso – Santa Fe	\$140	Green	
2	A	Salt Lake City – Provo	\$20	Brown	



#	Type	Route	Payoff	Owner	Notes
16	B	Salt Lake City – Grand Jct.	\$250	Brown	2
11	B	Salt Lake City – Grand Jct.	\$140	Brown	3
6	A	Santa Fe – Albuquerque	\$90	Aqua	

<sup>1</sup> Discard after 4 Leadville depletions

<sup>2</sup> Discard when 22 is taken. Good for \$250 toward card 22.

<sup>3</sup> Discard when 20 is taken. Good for \$140 toward card 20 or 21.

#### Available Claims

#	City	Type	Claim	Operation
78	Bowie	Coal	\$80	\$40
28	Leadville	Gold	\$240	\$60
48	Ouray	Silver	\$60	\$40
66	Vallecitos	Lumber	\$60	\$30
89	Walsenburg	Coal	\$60	\$30
97	Elizabethtown	Gold	\$140	\$40
54	Steamboat	Lumber	\$80	\$40

#### Available Trains

Type	# Available	Cost
9	0	\$80
15	2	\$120
24	6	\$200
42	8	320
72	8	\$500

#### S.O.B.

#	City	Type	Claim	Operation
<i>31</i>	<i>Cripple Creek</i>	<i>Gold</i>	<i>\$320</i>	<i>\$80</i>

Claims in italics are under first right of refusal.

#### Available Passenger Lines

#	Type	Route	Payoff	Cost	Notes
14	B	El Paso – Albuquerque	\$220	\$405	
21	C	Salt Lake City – Colorado Springs	\$600	\$930	
20	C	Salt Lake City – Pueblo	\$600	\$930	
10	B	Denver – Aspen	\$130	\$250	
12	B	Pueblo – Grand Jct.	\$150	\$310	4
23	C	Salt Lake City – Santa Fe	\$900	\$1340	
23	C	Salt Lake City – Santa Fe	\$900	\$1340	
7	A	Pueblo – Santa Fe	\$120	\$280	

<sup>4</sup> Discard when 20 is taken. Good for \$150 toward card 20 or 21.

#### Available Snowplows

Type	# Available	Cost
Die +2	2	\$40
Die +3	3	\$80
Die +4	5	\$140
Die +5	6	\$200

## Dogbreath

### Epoch IV Guptas, Goths, and Huns

#### Epoch IV Byzantines, T'ang Dynasty, Arabs, and Khmers, 7/12 Tuesday

**The Questioner** (Partridge) plays Pestilence in the Hindu Kush. Sassanid armies in Hindu Kush and Persian Plateau are eliminated. GUPTAS: Plays Allies, Army and Capital Eastern Deccan (Mauryan army eliminated), fleet Bay of Bengal, army Western Deccan (vs. Macedonians; G: 5, 4; M: 4; wins), Upper Indus (vs. Romans; G: 5, 1; R: 3; wins), Hindu Kush, Persian Plateau, Turanian Plain (vs. Sassanids; G: 6, 5; S: 2; wins), Eastern Steppe, Zagros (vs. Sassanids; G: 3, 3; S: 6; loses), Zagros (vs. Sassanids; G: 5, 2; S: 4; wins, Capital reduced to city). Builds Monument Eastern Deccan. Points: Dominance in China (6), India (6), Presence in Middle East (3), Southeast Asia (2), 1 Capital (2), 1 city (1), 2 Seas (2), and 3 Monuments (3) for 25 points.

**Great Explorers Grabbing Samples** (Geggus) plays Kingdom in the Highlands, army, city and fort in Highlands. Plays Rebellion in Eastern Deccan (vs. Guptas; R: 5, 2; G: 1; wins, Capital reduced to city). GOTHs: Army Danubia (Greek army retreats to Balkans), Dneipr (vs. Celts; automatic), Central Europe (vs. Romans; G: 6, 1; R: 6; G: 5, 3; R: 2; wins), Dalmatia, Northern Appenines (vs. Romans; G: 5, 4; R: 1; wins), Southern Appenines (vs. Romans; G: 3, 2; R: 2; wins, Capital reduced to city), Pindus (vs. Civil War; G: 6, 1; C: 5, 1; wins, city eliminated), Western Anatolia (vs. Assyria; G: 2, 1; A: 6, 1; loses), Western

Anatolia (vs. Assyria; G: 6, 1; A: 5, 3; wins), Morea (vs. Romans; G: 3, 1; R: 2; wins). Points: Dominance in Southern Europe (6), Northern Europe (4), Presence in Middle East (3), India (3), 3 cities (3), 1 Sea (1), 3 Monuments (3) for 23 points. Time Traveler (Anderson) plays Kingdom in the Malayan Peninsula (Roman army retreats to Ganges Delta, army, city and fort in Malayan Peninsula). HUNS: Army Western Steppe (Scythian army destroyed), Eastern Steppe (vs. Guptas; H: 4, 3; G: 4; H: 6, 6; G: 2; wins), Tarim Basin (vs. Sassanids; H: 5, 3; S: 5, 1; H: 5, 3; S: 6, 5; loses), Tarim Basin (vs. Sassanids; H: 5, 2; S: 6, 1; loses), Tarim Basin (vs. Sassanids; H: 5, 2; S: 6, 2; loses), Tarim Basin (vs. Sassanids; H: 4, 2; S: 4, 1; H: 4, 3; S: 4, 2; H: 6, 1; S: 4, 4; wins), Dniepr (vs. Goths; H: 4, 1; G: 1; wins), Caucuses (vs. Celts; H: 4, 2; C: 2; wins), Eastern Anatolia (vs. Macedonians; automatic victory), Zagros (vs. Guptas; H: 6, 1; G: 2; wins, city eliminated), Baltic Seaboard (vs. Greek City States; H: 3, 1; G: 1; H: 5, 5; G: 4; wins), Lower Rhein (vs. Romans; H: 6, 5; R: 5; wins), Central Europe (vs. Goths; H: 3, 2; G: 1; wins), Northern Gaul (vs. Romans; H: 5, 4; R: 5, 3; H: 6, 1; R: 6, 6; H: 6, 3; R: 4, 3; wins). Builds Monument Central Europe. Points: Dominance in Middle East (6), Northern Europe (4), Presence in China (3), India (3), Southeast Asia (2), 3 cities (3), and 3 Monuments (3) for 24 points.

#### Players

Player Name	Player Faction Name/Color	Empire Strength Points	Victory Points
Andy Lewis	Marching Through the Ages (red)	21	40
Paul Bolduc	Arachnids (blue)	22	52
Chris Geggus	Great Explorers Grabbing Samples (yellow)	32	78
Kevin Wilson	Royal Manticoran Historical Society (purple)	37	76
Dave Partridge	The Questioner (green)	39	77
Dave Anderson	Time Traveler (orange)	39	76

#### Positions

**Arachnids:** NILE KINGDOM: Army, city, and fort Upper Nile. MAURYA: Armies Sumatra, Mekong.

**Time Traeler:** MACEDONIANS: Army and city Lower Tigris, Lower Indus, armies Persian Salt Desert, Western Ghats. KINGDOM: Army, city, fort Malayan Peninsula. HUNS: Army and Monument Zagros, Tarim Basin, Central Europe, armies Eastern Steppe, Western Steppe, Dniepr, Caucuses, Eastern Anatolia, Baltic Seaboard, Lower Rhein, Northern Gaul.

**Marching Through the Ages:** ASSYRIA: Army Palestine. SASSANIDS: Army, city, and Monument Great Plain of China, army and Monument Upper Tigris, army

Wei River.

**Royal Manticoran Historical Society:** Fleets Red Sea, Western Mediterranean, Eastern Mediterranean. CARTHAGINIA: Army, Capital, and Monument Shatts Plateau, army and Monument Nile Delta, armies Libya, Nubia, Southern Iberia. MAYANS: Two armies and Capital Central America. ROMANS: Army, city, and Monument Crete, two armies and Monument Middle Tigris, Ganges Delta, army and Monument Albion, armies Central Massif, Levant, Ganges Plain.

**The Questioner:** Fleets South China Sea, Bay of Bengal. PERSIA: Army Eastern Ghats. HAN DYNASTY: Armies Yellow River, Yangtse Kian, Chekiang, Si-Kyang, Szechuan, Irrawaddy. GUPTAS: Army and Monument Persian Plateau, armies Western Deccan, Upper Indus, Hindu Kush, Turanian Plain.

**Great Explorers Grabbing Samples:** Fleet Black Sea. GREEK CITY STATES: Two armies Balkans. SCOTTS: Army, city, and fort Highlands. REBELLION: Army, city, and Monument Eastern Deccan. GOTHS: Army, city, and Monument Southern Appenines, army and Monument Morea, armies Danubia, Dalmatia, Northern Appenines, Pindus, Western Anatolia.

Epoch IV Empire

Event Cards

**Plantation Dog**

**Turn 9**

**Turn 10, 7/12 Tuesday**

**Andy Y.** selects the Craftsman, producing 5 sugar and 1 corn, Andy L. produces 2 coffee, 1 indigo, and 2 corn, Paul produces 2 indigo, Chris produces 2 indigo, 1 sugar, and 1 tobacco, and gains 2 doubloons from the Factory, and Richard produces 1 indigo and 2 coffee.

**Andy L.** selects the Builder, gains 1 doubloon, and buys a Trading Post (1 Quarry, Builder privilege, 3 doubloons), Paul passes, Chris builds a Coffee Roaster (1 Quarry, 5 doubloons), Richard builds a small sugar mill (1 Quarry, 1 doubloon), and Andy Y. passes.

**Paul** selects the Trader, selling 1 indigo for 4 doubloons (1 base, +1 Trader privilege, +2 Large Market), Chris sells tobacco for 3 doubloons, Richard sells coffee for 5 doubloons (4 base, +1 Small Market), Andy Y. sells sugar for 2 doubloons.

**Chris** selects the Mayor and places colonists on a tobacco plantation, Tobacco Storage, and the Coffee Roaster, Richard places colonists on the corn plantation and the Small Sugar Mill, Andy Y. places colonists on the tobacco plantation and Small Indigo Plant, Andy L. places a colonist on the Trading Post, and Paul places a colonist on the sugar plantation.

Richard selects the Prospector and receives 2 doubloons.

The Players

Player Name	Role	Plantations	Buildings	San Juan	Doubloons	Stored Production	VP
Paul Bolduc	Trader	<b>Indigo, Indigo, Quarry, Quarry, Quarry, Coffee, Sugar</b>	Connection Hut, <b>Indigo Plant (2), Small Sugar Mill, Church, Large Market</b>		5	1 Indigo	5
Chris Geggus	Mayor	<b>Indigo, Quarry, Tobacco, Corn, Sugar, Indigo, Tobacco</b>	<b>Indigo Plant (1), Aquaduct, Black Market, Tobacco Storage (2), Small Sugar Mill, Factory, Coffee Roaster (1)</b>		5	2 indigo, 1 sugar	7
Richard Weiss	Prospector	<b>Indigo, Coffee, Quarry, Corn, Quarry, Coffee, Corn</b>	<b>Small Market, Coffee Roaster (2), Small Indigo Plant, Harbour, Small Sugar Mill</b>	2	8	1 Indigo, 2 Coffee	4
Andy York	Craftsman	<b>Corn, Sugar, Sugar, Tobacco, Sugar, Sugar, Sugar</b>	<b>Sugar Mill (3), Small Sugar Mill, Small Indigo Plant, Small Warehouse</b>		4	1 Corn, 4 Sugar	20
<b>Andy Lewis</b>	Builder	<b>Corn, Coffee, Coffee, Indigo, Corn, Quarry, Corn, Corn, Sugar, Sugar</b>	Hacienda, <b>Storehouse, Coffee Roaster (2), Small Indigo Plant, Trading Post</b>		3	2 Corn, 1 Indigo, 4 Coffee	14

Player in bold is the Governor for next turn. Plantations and buildings in bold are manned. Buildings that can be manned by more than one colonist will have the number manning them in parentheses after the building name.

Available Items

**Colonists:** Supply: 25      Colonist Ship: 6      **Trading House:**      **Victory Points:** 72  
**Cargo Ships:** Ship 1 (capacity 6):      Ship 2 (capacity 7):      Ship 3 (capacity 8):      7 Corn

Commodities

**Corn:**      0      **Indigo:**      6      **Sugar:**      6      **Tobacco:**      9      **Coffee:**      3

Buildings

Column 1	Column 2	Column 3	Column 4
Small Indigo Plant (1d, 1VP)	Indigo Plant (3d, 2VP)	Tobacco Storage (5d, 3VP) (x2)	Guild Hall (10d, 4VP)
	Sugar Mill (4d, 2VP) (x2)	Lighthouse (7d, 3VP)	Residence (10d, 4VP)
	Hospice (4d, 2VP)	University (8d, 3VP)	Fortress (10d, 4VP)
	Guesthouse (4d, 2VP)	Library (8d, 3VP)	Customs House (10d, 4VP)
	Office (5d, 2VP)	Specialty Factory (8d, 3VP)	City Hall (10d, 4VP)
	Small Wharf (6d, 2VP)	Union Hall (9d, 3VP)	Cloister (10d, 4VP)

Column 1	Column 2	Column 3	Column 4
Forest House (2d, 1VP)	Large Warehouse (6d, 2VP)	Wharf (9d, 3VP)	Statue (10d, 8VP)

### Roles

Builder, Captain(1d), Craftsman, Mayor, Prospector, Prospector (2d), Settler(1d), Trader

### Plantations

Quarry, Forest (x12), Tobacco, Tobacco, Corn, Corn, Coffee, Sugar

Discard Pile: Tobacco, Tobacco, Indigo, Indigo, Indigo, Indigo, Tobacco, Tobacco, Coffee, Indigo, Coffee, Indigo, Sugar

### Pedagoguery

When Isaac Newton formulated the laws of universal gravitation, it was believed that the orbits of the planets could be predicted with perfect accuracy. If the Sun were the only gravitating body in the solar system, then that would in fact be the case. However, the planets exert small gravitational tugs on each other, and those tugs can sometime add up to devastating effect.

Recent observations of other planetary systems have demonstrated this. For example, the star Upsilon Andromedae has three known planets. The outer two planets have highly eccentric orbits (meaning they are highly elliptical) which can be explained by the gravitational ejection of a fourth planet at sometime in the past. In fact, calculations find that the two planets return to the configuration that existed just after the disaster every 8000 years.

The key to understanding potential orbital instabilities is the concept of resonances. These are circumstances where two bodies have a simple ratio of orbital periods. For example, Neptune and Pluto have a 3:2 resonance: Neptune makes three orbits for every two of Pluto's. In this case, it has a stabilizing effect – it ensures that neither body is anywhere near the other when Pluto crosses Neptune's orbit.

Another example is the Galilean moons of Jupiter. The innermost three, Io, Europa, and Ganymede, have a 4:2:1 resonance with each other. The net result of this is that Io's orbit is distinctly elliptical, resulting in a great deal of tidal heating. The result has made Io the most volcanically active body in the solar system. However, the eccentricity of the orbits of those three moons has other effects. Take, Io, for example. Io's gravity raises a tidal bulge on Jupiter. Due to Jupiter's fast rotation in comparison to Io's orbit (10 hours as compared to 42 hours), the tidal bulge exerts a gravitational pull on Io that tends to accelerate it in its orbit, causing the orbit to spiral outward. A similar effect exists with the Earth and the Moon. However, Jupiter also raises a tidal bulge on Io, and since Io rotates at the same 42 hour period as its orbit around Jupiter, this tidal bulge falls behind,

pulling Io backward in its orbit and causing it to spiral inward. As it turns out, the latter effect predominates for Io, but the former effect dominates for Europa and Ganymede. As a result, the satellites are gradually falling out of resonance. When that happens, Io's orbit will circularize, lessening the effect of the spiraling inward effect and causing it to move outward again. At that point, it could fall back into resonance with Europa and Ganymede, perhaps starting the whole cycle over again.

These two examples are stable. However, there is a chance of a highly unstable resonance. It also involves Jupiter, but the second body is Mercury. Mercury has a modestly eccentric orbit. Jupiter's orbit is also eccentric, but less so. Currently, the lines of apsides of the two planets do not line up. The line of apsides is the line between the perihelion (the closest point in the orbit to the sun) and the aphelion (the furthest point). If the lines were start to align, and the precession of Mercury's orbit makes this a possibility, successive tugs by Jupiter on Mercury would cause Mercury's orbit to get more and more eccentric. If this were to continue, Mercury's orbit would eventually cross that of Venus. If that happens, all bets are off. The chance of a close encounter between Venus and Mercury is quite high, and it is anybody's guess what would happen, up to and including a planet getting thrown in Earth's direction.

It wouldn't even necessarily need to be a direct hit to doom life on Earth. A close enough near miss would result in enough tidal heating of Earth to completely melt the mantle and crust, turning Earth into a world of lava.

The chances of such an event are small; current calculations put it at less than 1%, but when considered over the course of billions of years, such numbers can add up. The problem is that because the orbital interactions are chaotic (in a mathematical sense), no one can predict them with any certainty. All we can do is monitor the situation.

Next time, a new generation of neutrino telescopes.



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Standbys

Anybody who gets onto my standby list automatically receives one free issue of *S.O.B.* In addition, if you actually submit standby orders, you get another free issue. So, let's get those people standing by. The current standby list is:

**Machiavelli (gunboat and regular):** Steve Koehler, Bill Scharf, Bob Robles, Mike Scott, Ward Narhi, Paul Bolduc, Pasquale Giovine, Andy York, Cary Nichols, Lee McConnell, Dave Partridge, Dale Horsely, Brad Martin **Dune:** Steve Koehler, Paul Bolduc, Kevin Wilson, Ward Narhi, Andy York, Cary Nichols, Bill Scharf, Dave Partridge, Brad Martin **New World:** Andy York, Bill Scharf, Cary Nichols, Dave Partridge, Brad Martin **Merchant of Venus:** Paul Bolduc, Carrie Lewis, Bob Robles, Andy York, Cary Nichols, Dave Partridge **Outpost:** Michael Lowrey, Kevin Wilson, Andy York, Cary Nichols, Bill Scharf, Dave Partridge, Brad Martin **History of the World:** Andy Lewis, Paul Bolduc, Kevin Wilson, Chris Geggus, Andy York, Cary Nichols, Dave Partridge, Brad Martin **Stellar Conquest:** Paul Bolduc, Kevin Wilson, Andy York, Cary Nichols, Dave Partridge, Brad Martin **Liftoff!:** Dennis Cain, Andy York, Cary Nichols, Bill Scharf, Dave Partridge, Brad Martin **Age of Renaissance:** Bob Robles, Michael Lowrey, Cary Nichols, Dave Partridge, Michael Longdin, Brad Martin **Kremlin:** Andy York, Andy Lewis, Pasquale Giovine, Cary Nichols, Bill Scharf, Dave Partridge, Michael Longdin, Brad Martin **Silverton:** Cary Nichols, Bill Scharf, Dave Partridge, Brad Martin, Andy York, Eric Brosius **Settlers of Catan:** Michael Lowrey, Chris Geggus, Cary Nichols, Dave Partridge, Brad Martin, Andy York **Gunslinger:** none **Industrial Waste:** Michael Longdin, Brad Martin **Puerto Rico:** Brad Martin, Andy York **Power Grid:** Brad Martin, Andy York **Robo Rally:** Andy York

Standby Calls

None this issue!