Tribe Net V3 Research List

Introduction

This is a provisional list of topics that will be considered and reviewed on a case-by-case basis. In effect this means that I will respond to player requests (though should this result in a flood of requests the response time will be slow). Some of the listed topics might be modified depending on what happens with programming, play and general administration.

Should the running of a topic become too labour intensive I might have to adopt a cap (meaning that only a certain number of Tribes will be able to hold DL0 or better in the topic).

Where possible, players should supply the GM with the effects of their research (either in Orders - or in Combat Orders if these are more relevant). Most research processing is manual and over and above the standard processing - so the possibility of a rich range of research is contingent upon player co-operation re supplying figures, effects, equivalent numbers of workers etc. If this is not for you there are many topics that require little input from players, and you should look towards these instead.

In most cases where Research Prerequisites are required they have to be met within the same Tribe, and must be attained before the relevant research is commenced.

If a Tribe happens to complete all topics within a particular skill area there is no guarantee that more research will immediately be available in that area. In many cases though a default topic will be available, for example, Hunt11, Mining 11, Com13 etc.

New Research Topics – Player Driven

Players may submit one research topic per game year with the exception of a Tribe having all research topics within a given skill. If that is the case, then they may propose a new topic in that skill so no skill goes fallow.

Notes

Tribe Net is not restricted to a particular historical or cultural period (for example, from the outset you have Stone Axes alongside Iron Swords) though the aim is to reflect actual developments. The research is meant to represent vertical chronological developments in historical civilizations. However, if one were to look for an end point it would be found in the sort of technology that supports Siege Cannons, and Naval Siege Cannon. Combat related research will not progress into hand held gunpowder weapons, field Cannon, oil powered vehicles etc; ultimately the sword and shield will remain the focus of combat. While research nods in the direction of history it also adds to player interest and some items are constructed in the light of this. Thus any line drawn with respect to what is

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and what isn't appropriate development, what should be research and what should be standard, is going to be arbitrary to some extent and a fact of Tribe Net life.

There are currently 891 research topics in the database. Not all have been coded at this time. Some are legacy topics from the previous iteration. April 17th, 2018.

Research Topic Revision Change:

Date Added	Changes	
	Additions	**Revisions: (NGE = No Game Effect)**
1/5/20	**Colleges:** Added to Research **Disciplined Marines**: Added to Mariner **Fighting Seamen:** Added to Mariner **Fleet:** Added to Mariner **Island Fortress:** Added to Engineering **Island Fortress**: Added to Stonework **Junior Officer:** Added to Captaincy **Mariner 11**: Added to Mariner **Mariner 12:** Added to Mariner **Medicine 1:** Added to Healing **Medicine 2:** Added to Healing **Naval Coordination:** Added to Mariner **Naval Veterans Class I:** Added to Mariner **Recruitment**: Added to Captaincy **Resilience 1,2,3:** Added to Captaincy **Rousing Speech:** Added to Captaincy **Trusted Maps:** Added to Captaincy	**Import Mission:** Updated Quantities and Payout **Steel:** Removed Gold requirement for Swords
10/05/20	**Administration 11**: Added to Administration **Apiarism 11:** Added to Apiarism **Archery 11**: Added to Archery **Combat 12**: Added to Combat **Furrier 11:** Added to Furrier **Inter Spring Arts Festival Arts:** Added to Art **Inter Spring Arts Festival Dance:** Added to Dance **Inter Spring Arts Festival Music:** Added to Music	**Administration:** Updated topics to have standardized format. NGE **Alchemy:** Updated topics to have standardized format. NGE **Apiarism:** Updated topics to have standardized format. NGE **Apothecary:** Updated topics to have standardized format. NGE **Archaeology:** Updated topics to have standardized format. NGE **Architecture:** Updated topics to have standardized format. NGE **Archery:** Updated topics to have standardized format. NGE **Armour:** Updated topics to have standardized format. Included ArmourValues. NGE **Astronomy:** Updated topics to have standardized format. Included ArmourValues. NGE **Art:** Updated topics to have standardized format.

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		NGE **Bagpipes:** Differentiated General/Military Morale gains. **Baking:** Updated topics to have standardized format. NGE **Banking:** Updated topics to have standardized format. NGE **Banquet:** Differentiated General/Military Morale gains. **Banqueting Hall:** Differentiated General/Military Morale gains. **Blasting Powder:** Updated reference to Powder vs Jar in description. NGE **Brickmaking:** Updated topics to have standardized format. NGE **Capital:** Differentiated General/Military Morale gains. **Captaincy:** Updated topics to have standardized format. NGE **Castle:** Updated DL to match Database **Circus Troupe:** Differentiated General/Military Morale gains. **Colosseum:** Differentiated General/Military Morale gains. **Corps Diplomatique:** Differentiated General/Military Morale gains. **Corps Diplomatique:** Added note about Depot/GT **Daimyo:** Differentiated General/Military Morale gains. **Epic Tapestry:** Differentiated General/Military Morale gains. Updated Recipe. **Exhibition:** Differentiated General/Military Morale gains. **Exotic Weaving:** Updated selling and added clarification. **Federal Community of Clans:** Differentiated General/Military Morale gains. **Felucca 2**: Reduced DL to match Database. **Golden Age:** Updated DL to match Database **Great Work:** Differentiated General/Military Morale gains. **Haiku:** Differentiated General/Military Morale gains. **Heraldry:** Added clarification regarding ransom payment. **Holy Artefact:** Differentiated General/Military

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		Morale gains. **Improved Stable Builders:** Updated description to reference Stables. **Magnificent Exhibition:** Differentiated General/Military Morale gains. **Military Band:** Differentiated General/Military Morale gains. **Mission:** Differentiated General/Military Morale gains. **Mongol Hunt:** Updated code note from 40 to 20, NGE. **Music in the Field:** Differentiated General/Military Morale gains. **Palace Renovation Gardens:** Differentiated General/Military Morale gains. **Pastry:** Differentiated General/Military Morale gains. **Resilience:** Differentiated General/Military Morale gains. **Roman Crane:** Updated DL to match Database **Sea Borne Trade:** Updated DL to match Database. Updated name callouts to be correct. **Siege Cannon:** Updated database to match Doc. **Site Survey II:** Differentiated General/Military Morale gains. **Spring Arts Festival:** Differentiated General/Military Morale gains. **Terracotta Army:** Updated DL to match Database **The Lighted Dome of Iron and Steel:** Differentiated General/Military Morale gains. **Tomb Robbers:** Added clarification notes and updated description. **Trade Route:** Added note about Depot/GT **Trebuchet:** Reduced DL to match Database
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Acknowledgements

There are many players past and present who have contributed proposals and modifications to this document. Your contributions are appreciated.

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Administration

Name	**Administration 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	**Bonus:** • **Skill Level Bonus:** ○ Administration +1 (example from Adm 10 to Adm 11) • **Specialists:** This Tribe may begin to train Administration based specialists **Requirements: N/A** **Restrictions: N/A** **Notes:** • There are little to no administration based tasks that would require Specialists.
Summary	*Skill Level Increase - Administration, Specialists*

Name	**Agent**
DL	2
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	The Tribe that possesses this research gains access to Agents, one man Trade Village merchants who buy and sell to their hearts content. **Bonus:** • New Skill – Agent (Group B): Each level of Agent skill allows the Tribe to place a 1 person unit in a Trade Village. • Agent: Agents buy and sell at the Trade Village on the Tribe's behalf. Goods are bought and sold normally at the Trade Village. Goods bought and sold at the Trade Village must be picked up and delivered by other units as the Agent may not move on its own. **Requirements: N/A** **Restrictions:** • Immobile: Agents may not move on their own. They must FOLLOW other units

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	to get to where they will be stations. • Activities: Agents may not perform any activities and may not scout. • Food: Agents still consume food (Provs) and must be supplied with the food or they will starve to death. **Notes:** • Trade Villages are listed on the TribeNet website.
Summary	*New unit type for Trade Town interaction*

Name	**Bureaucracy 1, 2, 3….**
DL	1,2,3
Pre-Req	Bureaucracy 1: N/A Bureaucracy 2: Bureaucracy 1 (Administration research) ……
Recipe	N/A
Leads To:	Bureaucracy 1: Bureaucracy 2 Bureaucracy 2: Bureaucracy 3 ….

Description	**Bonus:**
	• Skill Level Bonus:
	  ○ Bureaucracy 1: +1 Level to Administration (ex. Adm 10 to Adm 11)
	  ○ Bureaucracy 2: +3 Level to Administration (ex. Adm 11 to Adm 14)
	  ○ Bureaucracy 3: +5 Level to Administration (ex. Adm 14 to Adm 19)
	• New Skill – Bureaucracy (Group C): Once Bureaucracy 1 research topic has been completed, the Tribe may learn a new skill called Bureaucracy. It is a Group C skill. Bureaucracy skill is purely a skill to access Bureaucracy research topics Bureaucracy 4 and beyond.
	• Additional Skill Level Bonus: Every research topic of Bureaucracy 4 or higher adds an additional +6 Administration levels.
	
	Requirements:
	• Bureaucracy 4,5,6… research topics: Once Bureaucracy Skill Level 10 is reached, the Tribe may research Bureaucracy 4 and higher.
	
	Restrictions: N/A
	
	Notes: N/A

Summary	*Skill Level Increase - Administration*

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Name	**Extra Element**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	**Bonus:** • Bonus Element: Tribe gains a bonus Element that does not require Administration levels. • Bonus Scout Groups: This Element gains an additional 8 Scout Groups that does not count against the Tribe's limit of 8 Scout Groups (in effect, this tribe has a total of 16 scout groups, but 8 must come from this extra element). ~~However, only once per year may the scouting patterns be changed.~~ **Requirements:** • Immobile: This bonus element may not move except that it may move to its permanent location. Once in position, it may not move further. • Restricted Activities: May perform Activities as per Element but is limited to 2 Activities per turn in addition to Hunting, Herding and the three defensive suite activities (Defence, Suppression, Security). Note: Metalwork / Traps and Metalwork / Shovels counts as two activities. • Cost: $0.70 / Turn **Restrictions: N/A** **Notes:** • **Multiple Completions:** This research topic may be taken up to three (3) times per Tribe.
Summary	*Extra Element but immobile*

Name	**Extra Movement 4**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To:	Extra Movement 4 (Administration research)
Description	**Bonus:** • Tribe and Elements: +4 MV **Requirements: N/A** **Restrictions:**

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	• You can not opt in Orders to not use EM once it is in place – should you not want to move the full MV you should specify only the hexes you do want to move. • Does not apply to Fleets, Garrisons or Couriers. **Notes:** • (This has now been coded to automatically add in to the primary tribe. In movement, it picks up the primary tribes modifier and applies it to all sub groups)
Summary	*Bonus Movement to Tribe and Elements*

Name	**Extra Movement 6**
DL	4
Pre-Req	Extra Movement 4 (Administration research)
Recipe	N/A
Leads To:	N/A
Description	**Bonus:** • Tribe and Elements: +2 MV (+6 total with EM4) **Requirements:** **Restrictions:** • You can not opt in Orders to not use EM once it is in place – should you not want to move the full MV you should specify only the hexes you do want to move. • Does not apply to Fleets, Garrisons or Couriers. **Notes:** • (This has now been coded to automatically add in to the primary tribe. In movement, it picks up the primary tribes modifier and applies it to all sub groups)
Summary	*Bonus Movement to Tribe and Elements*

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Alchemy

Name	**Alchemy 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	**Bonus:** • **Skill Level Bonus:** ○ Alchemy +1 (example from Alc 10 to Alc 11) • **Specialists:** This Tribe may begin to train Alchemy based specialists **Requirements: N/A** **Restrictions: N/A** **Notes: N/A**
Summary	*Skill Level Increase - Alchemy, Specialists*

Name	**Blasting Jar**
DL	5
Pre-Req	Access to Saltpetre
Recipe	1 Blasting Jar: People2, Jar 1, Sulphur 4, Saltpetre 10
Leads To:	Blasting Powder (Alchemy research) Siege Cannon (Siege Equipment research)
Description	**Bonus:** • **Destructive Engineering:** During destructive Engineering Research projects such as Canals, removing Fords, etc, each person with a Blasting Jar does the work of 10 people. For example, to convert a Ford into a Canal normally requires 1000 Workers with tools (either Picks, Shovels, or Mattocks or combination), 20 Wagons, 10 Cattle/Horses. However, 100 workers with 100 Blasting Jars (and with 100 tools), 20 Wagons, 10 Cattle/Horses will do the same job. Blasting Jars are sent to usage once used. • **Siege Artillery:** Siege equipment may require Blasting Jars or better. Blasting Jars are considered the base ammo requirement. Other ammo may provided enhanced abilities. **Requirements:**

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	• Weapons Skill Level 1: Wpn 1 is required to make Blasting Jars. Creation of Blasting Jars is a Weapons activity. • Quarrying Skill Level 10: Qry 10 is required to make Blasting Jars. **Restrictions: N/A** **Notes:** • "A Tribe that wants to learn Blasting Jar needs access to Saltpetre but does not need the research itself". • Sulphur may be obtained from mining at Volcanoes. All Volcanoes have Sulphur. If your personal Volcano does not, contact the GM. • Saltpetre may be obtained from research in Refining or Farming • Weight: 10 lbs
Summary	*New Item - Boost to Digging / Canal Building and Siege Cannon effectiveness*

Name	**Blasting Powder**
DL	6
Pre-Req	Blasting Jar (Alchemy research)
Recipe	1 Blasting Powder: People 1, Alc 10, Blasting Jar 1, Saltpetre 20
Leads To:	N/A
Description	Beyond making preset Blasting Jars, the Tribe and its elements with this research may create Blasting Powder instead. Blasting Powder is a more shelf stable but also more versatile version of Blasting Jars. **Bonus:** • **Destructive Engineering:** During destructive Engineering Research projects such as Canals, removing Fords, etc, each person with a Blasting Jar does the work of 20 people. For example, to convert a Ford into a Canal normally requires 1000 Workers with tools (either Picks, Shovels, or Mattocks or combination), 20 Wagons, 10 Cattle/Horses. However, 100 workers with 100 Blasting Jars (and with 100 tools), 20 Wagons, 10 Cattle/Horses will do the same job. Blasting Jars are sent to usage once used. • **Siege Artillery:** Defender defensive factor bonus is reduced by 25 base instead of 20% as per Blasting Jars. **Requirements:** • Weapons Skill Level 1: Wpn 1 is required to make Blasting Powder. Creation of Blasting Powder is a Weapons activity. • Quarrying Skill Level 10: Qry 10 is required to make Blasting Powder.

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	Restrictions: N/A **Notes:** • **Effectiveness Numbers:** Regular Blasting Jar has an AM cost of approximately 5.81 and provides +9 AM for a total of 3.19 AM boost. Blasting Powder requires an additional 3 AM for a total of 8.81 AM cost and provides 19 AM for a total boost of 10.19 AM • **Weight:** 10 lbs
Summary	*New Item - Upgrade to Blasting Jar*

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Apiarism

Name	**Apiaries with Reusable Frames**
DL	3
Pre-Req	N/A
Recipe	Eng6, Mtl3, Wd6 + Apiary Recipe
Leads To:	N/A
Description	Apiaries built with reusable wooden frames use the same materials as regular apiaries. However the superior design involves reusable frames so the bees do not have to rebuild the structural elements (cones) of the hive after every harvest. **Bonus:** • **Seeking:** Doubles the number of Hives received from Seeking in Spring 01. **Requirements:** • **Construction:** Requires the Apaiaries with Reusable Frames to be constructed **Restrictions: N/A** **Notes: N/A**
Summary	*Seeking Boost - Double Hives*

Name	**Apiarism *11***
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To:	Apiology I (Apiarism research)
Description	**Bonus:** • Skill Level Bonus: ○ Apiarism +1 (example from Api 10 to Api 11) • Specialists: This Tribe may begin to train Apiarism based specialists **Requirements: N/A** **Restrictions: N/A** **Notes: N/A**
Summary	*Skill Level Increase - Apiarism, Specialists*

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Name	**Apiology I, Apiology II, Apiology III…**
DL	1, 2, 3
Pre-Req	Apiarism 11 (Apiarism research)
Recipe	N/A
Leads To:	Apiology I: Apiology 2 Apiology 2: Apiology 3 ….

Description	The effect of gaining an Apiology topic is to add levels to your Api Skill.
	
	Bonus:
	• Skill Level Bonus:
	  ○ Apiology 1: +1 Level to Apiarism (ex. Api 11 to Api 12)
	  ○ Apiology 2: +3 Level to Apiarism (ex. Api 12 to Api 15)
	  ○ Apiology 3: +5 Level to Apiarism (ex. Api 15 to Api 20)
	• New Skill – Apiology (Group C): Once Apiology 1 research topic has been completed, the Tribe may learn a new skill called Apiology. It is a Group C skill. Apiology skill is purely a skill to access Apiology research topics Apiology 4 and beyond.
	• Additional Skill Level Bonus: Every research topic of Apiology 4 or higher adds an additional +6 Apiarism levels.
	
	Requirements:
	• Apiology 4,5,6… research topics: Once Apiology Skill Level 10 is reached, the Tribe may research Apiology 4 and higher.
	
	Restrictions: N/A
	
	Notes:
	• Books may be written.

Summary	*Skill Level Increase - Apiarism*

Name	**Breed New Queens**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	**Bonus:** • Yearly Increase: Once per year, on Spring month 1, Bee swarms produce 24 new Hives in the Tribe with this research topic. **Requirements: N/A**

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	Restrictions: N/A **Notes:** • Coded to automatically add Hives with no manual activity.
Summary	*Yearly increase of Hives (+24)*

Name	**Pastry**
DL	4
Pre-Req	N/A
Recipe	Allows FOUR different types of Pastries to be made, each with its own recipe: A) Baklava & Coffee - 2 people, BAK 4, 10 honey, 20 flour and 1 Coffee B) Baklava & Tea – 2 people, BAK 4, 10 honey, 20 flour and 1 Tea C) Napoleon & Coffee - 2 people, BAK 4, 10 sugar, 20 flour and 1 Coffee D) Napoleon & Tea - 2 people, BAK 4, 10 sugar, 20 flour and 1 Tea
Leads To:	N/A

Description	Pastries cover a wide variety of desserts made with honey/sugar and flour. Making luxury foodstuffs such as desserts available to a tribe, should slightly increase its morale. The Pastry research allows the Tribe to create and serve pastry to other Tribes, thereby gaining and giving General Morale.
	
	Bonus:
	• **Serving Pastry:**
	  ○ The Tribe serving the pastry gains +0.04 General Morale.
	  ○ The Tribe being served the pastry gains +0.02 General Morale.
	  ○ Players should indicate to the GM in Comments which Tribes are receiving Morale increases.
	
	Requirements:
	• **Pastry Quantities:** The recipes given are what is required to serve 100 people. If the population (W/A/I) of the specified Tribe is 5,000 then 50 Baklava & Tea would be required consuming Honey 500, Flour 1,000 and Tea 50.
	• **Baking Knowledge:** The Unit that is creating the Pastry must have Baking 4.
	• **Usage:** Pastry needs to be transferred to unit 1263 (Usage) in AutoOrders.
	• **Location:** The unit serving the pastry and the **Tribe** being served must be located in the same Hex.
	
	Restrictions:
	• **Number of Guests per Year**
	  ○ Pastry may be served to any given Clan no more than once per Year.
	  ○ Pastry is served to **one** specified Tribe within a clan.

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	○ Any number of other Clans may be served in a given year. • **Tribe Being Served:** Only Tribes may be served Pastries. Elements, Fleets, Garrisons, Agents, Couriers and any other non-Tribe Unit may not be served Pastry. **Notes:** • **Tracking:** Players are required to keep their own records of which units have been served Pastry and when. It is recommended that this be kept as a running track in the notes/comments tab for easy review as needed.
Summary	*New Item - Pastries - Boosts Morale to Self / Others*

Name	**Propolis**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	Propolis is a reddish waxy resin used by Bees to repair cells and is commonly used as a healing agent. **Bonus:** • **Collecting:** The Tribe with this research may collect Propolis from Hives. • **Healing:** Propolis may be used as a Healing agent. It is twice as powerful as Herbs when used for healing. **Requirements: N/A** **Restrictions:** • **Collecting:** Only Tribes (not Elements, etc) may collect this. **Notes:** • Coded to allow use in Combat • Coded to be collected • Weight: 1lb
Summary	*New Item - Propolis - Used to heal, double Herb effectiveness*

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Apothecary

Name	**Hashish**
DL	2
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A

Description	"Hashish, or hash, is a drug made from the resin of the cannabis plant. It is consumed by inhaling from a small" pipe. - *Wikipedia*
	
	Bonus:
	• **Yearly Harvesting:** A crop will produce Hashish 1000 in Spring month 03 of each year but not on any other month.
	• **Trading:** Hashish may be traded at any of the major cities.
	  ○ For example, Shanghai will trade Opium 100 for Hashish 1000.
	
	Requirements:
	• **Cultivating:** 10 People per month must be allocated to plant/maintain/cultivate the crop for at least six months before the first production and constantly throughout the year there on out.
	
	Restrictions:
	• **Oversupply:** If a constant supply is maintained, the rewards will be increased (Contact GM), however do not be surprised if the city in question seeks help in eradicating this problem.
	• **Terrain:** Hashish may not be cultivated in the following Terrains:
	  ○ Any Snow
	  ○ Any Water
	  ○ Desert
	  ○ Arid
	• **Limited Acreage:** A Tribe is limited to a total of Hashish 1000 in Spring month 03.
	• **One Plot:** A Tribe is limited to a single Plot of Hashish.
	
	Notes: N/A

Summary	*New Crop - Hashish, tradeable to International Cities*

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Archaeology

Major Updated NOTE (Should/When this affects you, please let the GM know):

1) Player Artefact Sites no longer give an item with the name "Artefact"
2) When an Artefact site is created, the Clan Chief gives the Artefact Site a name "Mesopotamian" or "Blue Sky" or some other name that signifies what they're calling the people the artefact site once belonged to.
3) When excavating, the item that the excavator receives is now called "Artefact <Name from #2>" and "Relic <Name from #2>". For example, "Artefact Mesopotamian" or "Relic Blue Sky".
4) NPC Relic sites that provide "Relics" now provide a Relic with a name unique to that site.
5) These now named Artefacts/Relics are all identical and meet the requirements for all topics/uses that require a standard Artefact / Relic.

Name	**Exhibition**
DL	5
Pre-Req	Museum Art 6 Literacy 6
Recipe	1 Exhibition: People 27, Eng 6, Log 50, Iron 10, Stone 5
Leads To:	Exhibition Curators (Archaeology research) Magnificent Exhibition (Archaeology research)
	On completion of the research an Archaeology tribe gains the ability to install a single Exhibition in their Museum. To do this, a unit from the tribe with Exhibition must build the Exhibition building (Joint project rules apply). Once the Exhibition building is built, the Clan may now populate the Exhibition with Artefacts. **Benefits:** 1) **Annual Display:** Immediately upon reaching 5 unique Artefacts, and then annually on the anniversary of the founding of the Home City that contains the Exhibition, the Exhibition provides a bonus to the Tribe operating the Museum. a. **Annual Morale Increase**: During the Annual Display, the Tribe that operates the museum gains a General Morale increase based upon the number of Unique Artefacts it holds at that time in inventory (or via Goods Tribe relationship). i. 5-9 Unique Artefacts: 0.010 General Morale increase ii. 10-14 Unique Artefacts: 0.015 General Morale increase iii. 15-19 Unique Artefacts: 0.020 General Morale increase iv. 20-24 Unique Artefacts: 0.025 General Morale increase v. 25+ Unique Artefacts: 0.030 General Morale increase b. **Annual Population Gain**: During the Annual Display, the Tribe that operates the Museum gains a number of Actives that join the Tribe from the surrounding countryside. i. 5-9 Unique Artefacts: 5 Actives per Artefact ii. 10-14 Unique Artefacts: 5 Actives per Artefact iii. 15-19 Unique Artefacts: 10 Actives per Artefact iv. 20-24 Unique Artefacts: 10 Actives per Artefact

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	v. 25+ Unique Artefacts: 15 Actives per Artefact c. **Annual Auxiliary Gain:** During the Annual Display, the Tribe that operates the Museum gains a number of Auxiliaries that join the Home City from the surrounding country side. These Auxiliaries join whichever unit, if any, that already has Auxiliaries from Local Support. If no unit currently has Auxiliaries, they can join any unit at the Home City. These are standard Auxiliaries per the Local Support rules. i. 5-9 Unique Artefacts: 0 Auxiliaries per Artefact ii. 10-14 Unique Artefacts: 5 Auxiliaries per Artefact iii. 15-19 Unique Artefacts: 5 Auxiliaries per Artefact iv. 20-24 Unique Artefacts: 10 Auxiliaries per Artefact v. 25+ Unique Artefacts: 10 Auxiliaries per Artefact **Requirements:** 1) The Site must have a Museum with an Exhibition built 2) The Exhibition may only be built in a Home City. **Restrictions:** 1) An Exhibition may only hold a single Artefact from each site. For example, "Artefact Blue Sky" and "Artefact Mesopotamian" would count as two separate Artefacts but if two "Artefact Blue Sky"s were held, it would only count as 1 Artefact. 2) An Exhibition must contain at least 5 unique Artefacts before any benefits are gained. **Notes:** • **Building for Others:** The Exhibition may not be built for other Clans. A Tribe must hold the research to operate an Exhibition. • **Record Keeping:** Players are responsible for keeping records of the Annual Display and informing the GM when the anniversary benefits should be applied.
Summary	*Collect Unique Artefacts, Yearly gain of Morale, Actives and Auxiliaries*

Name	**Exhibition Curators**
DL	5
Pre-Req	Museum Exhibition (Archaeology research) Literacy 8 (Group B skill)
Recipe	N/A
Leads To:	N/A
	On completion of the research, the Archaeology Tribe that operates the Exhibition and Museum may deploy additional resources to increase the popularity and effectiveness of their Exhibition.

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Benefits:

1) Annual Display: The Exhibition Curators provide additional bonuses during the Annual Display.
    a. Annual Population Gain:
        i. 5+ Unique Artefacts: +5 Actives per Artefact
    b. Annual Auxiliaries Gain:
        i. 5+ Unique Artefacts: +10 Auxiliaries per Artefact
    c. Admission Fees: The Auxiliaries that join the Clan from Exhibition and Exhibition Curators also provide a donation to the operation of the Museum and its Exhibition. The Player will gain Silver based on the number of Locals, or if the Player has Minting research completed, they may gain Coin instead.
        i. Silver Gain: Each of the Auxiliaries gained during the Annual Display provides 200 Silver.
        ii. Coin Gain (Alternate if Minting Research): Each of the Auxiliaries gained during the Annual Display provides 2 Coin.

Requirements:

1) **Curators:** The Tribe that operates the Exhibition/Museum must deploy 1 Active to act as Curator per unique Artefact held by the Exhibition (in the inventory of the Archaeology tribe) every month throughout the year.

Restrictions: N/A

Notes:

- **Example 1:** If the Tribe has 10 Unique Artefacts in the Exhibition, then it would normally gain 5 Actives / Unique Artefact * 10 Unique Artefacts = 50 Actives during the Annual Display and would gain 5 Auxiliaries / Unique Artefact * 10 Unique Artefacts = 50 Auxiliaries during the Annual Display. With Exhibition Curators, it would also an additional +5 Actives / Unique Artefact => +50 Actives, and +10 Auxiliaries / Unique Artefact => +100 Auxiliaries for a total of 100 Actives and 150 Auxilaries. To gain this, it is spending 10 AM / month for a total of 120 AM per year.
- **Example 2:** 25 Unique artefacts. Normally, 25 * 15 Actives gained = 375 Actives. With Exhibition Curators, this adds another 25 * 5 = 125 Actives for a total of 500 Actives gained. Additionally, 25 * 10 Auxiliaries gained = 250 Auxiliaries. With Exhibition Curators, this adds another 25 * 10 = 250 Auxiliaries for a total of 500 Auxilaries gained. To gain all this, the Tribe is utilizing 25 AM per month for a total of 300 AM per year as Exhibition Curators.

Summary	*Boosts Exhibition bonus*

Name	**Magnificent Exhibition**
DL	5

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Pre-Req	Museum Exhibition (Archaeology research) Exhibition Curators (Archaeology research) Art 8
Recipe	1 Magnificent Exhibition (Building): People 27, Eng 6, Log 50, Iron 10, Stone 5 1 Enhanced Magnificent Exhibition (Building): **Any 5 of the following:** Pearls 5, Kaolin 5, Brocade 2, Ivory 10, Relic 1, Holy Artefact 1, Camels 2, Falcons 2, Branded Alcohol 1 Barrel, Epic Tapestry 1
Leads To:	N/A
	On completion of the research an Archaeology tribe may build a Magnificent Exhibition adjoining the normal Exhibition. Once built and all materials are sent to usage, the Annual Display gains increased benefits. **Benefits:** 1) **Annual Display:** The Magnificent Exhibition provides additional bonuses during the Annual Display. a. Annual Population Gain: i. 5+ Unique Artefacts: +5 Actives per Artefact b. Annual Auxiliaries Gain: i. 5+ Unique Artefacts: +10 Auxiliaries per Artefact c. Admission Fees: The Auxiliaries that join the Clan during the Annual Display also provide a donation to the operation of the Museum and its Exhibition. The Player will gain Silver based on the number of Locals, or if the Player has Minting research completed, they may gain Coin instead. Additionally, the Player has the option to gain Gold instead. i. Silver Gain: Each of the Auxiliaries gained during the Annual Display provides 250 Silver (instead of the 200 from Exhibition Curators). ii. Coin Gain (Alternate if Minting Research): Each of the Auxiliaries gained during the Annual Display provides 3 Coin (instead of the 2 coin from Exhibition Curators) iii. Gold Gain (Alternate Choice): Each of the Auxiliaries gained during the Annual Display provides 0.5 Gold. 2) **Enhanced Magnificent Exhibition:** If the Tribe builds the additional Enhanced Magnificent Exhibition, the gains the following benefit. a. **Annual Morale Increase**: During the Annual Display, the Tribe that operates the museum gains a General Morale increase based upon the number of Unique Artefacts it holds at that time in inventory (or via Goods Tribe relationship). This replaces the General Morale increase from a standard Exhibition i. 5-9 Unique Artefacts: 0.015 General Morale increase ii. 10-14 Unique Artefacts: 0.020 General Morale increase iii. 15-19 Unique Artefacts: 0.025 General Morale increase iv. 20-24 Unique Artefacts: 0.030 General Morale increase v. 25+ Unique Artefacts: 0.035 General Morale increase b. **Holy Artefact:** The Holy Artefact is now part of the Enhanced Magnificent Ex-

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	hibition, but its abilities are still active. It still provides its 0.05 Morale to any one Tribe in the Clan. **Requirements:** N/A **Restrictions:** N/A **Notes:** N/A
Summary	*Boosts Exhibition Bonus, Gain Silver, Coin or Gold*

Name	**Relic**
DL	2
Pre-Req	Tomb Robbers (Archaeology research)
Recipe	N/A
Leads To:	Relic 2 (Archaeology research)
Description	**Bonus:** • Immediately upon completion of Research Topic: Gain 1 Relic in the unit excavating artefacts. • Yearly, on Month 1: Gain 1 Relic in the unit excavating artefacts. **Requirements:** • Works in "Artefact" site hex only. • Requires workers to be assigned to Excavation as normal to gain Artefacts. **Restrictions: N/A** **Notes:** • Player is responsible for transferring the Relic on the indicated month.
Summary	*Yearly gain of Relic*

Name	**Relic 2**
DL	3
Pre-Req	Relic (Archaeology research)
Recipe	N/A
Leads To:	Relic 3 (Archaeology research)
Description	**Bonus:** • Immediately upon completion of Research Topic: Gain a second Relic in the unit excavating artefacts. • Yearly, on Month 1: Gain a second Relic in the unit excavating artefacts.

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	Requirements: • Works in "Artefact" site hex only. • Requires workers to be assigned to Excavation as normal to gain Artefacts. **Restrictions: N/A** **Notes:** • Player is responsible for transferring the Relic on the indicated month.
Summary	*Year gain of second relic*

Name	**Relic 3**
DL	4
Pre-Req	Relic 2 (Archaeology research)
Recipe	N/A
Leads To:	N/A
Description	**Bonus:** • Immediately upon completion of Research Topic: Gain a third Relic in the unit excavating artefacts. • Yearly, on Month 1: Gain a third Relic in the unit excavating artefacts. **Requirements:** • Works in "Artefact" site hex only. • Requires workers to be assigned to Excavation as normal to gain Artefacts. **Restrictions: N/A** **Notes:** • Player is responsible for transferring the Relic on the indicated month. • Relic 3 is the maximum that can be researched for the main "Artefact" hex.
Summary	*Year gain of third relic*

Name	**Second Site**
DL	5
Pre-Req	Excavation 8 (Group A Skill)
Recipe	N/A
Leads To:	Second Site Relic (Archaeology research)
Description	**Bonus:** • Second Ruin Site: Immediately upon completion of Research Topic, the GM will provide the rough location of a second Ruin site within 30 hexes of the Tribe's

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	location. • Second Archeology Element: The Tribe may spawn a second Archeology Element independent of Administration levels. This new Archeology Element follows all the same rules as a normal Archeology Element. **Requirements: N/A** **Restrictions:** • Only 1 Archeology Element may excavate from a single Ruin site. To have two AEs excavating, they must be at different Sites. **Notes:** • Ruin Site Location: The new Ruin site may be located on Water (Ocean or Lake) in addition to other fairly inhospitable places like Mountains and Swamps.
Summary	*Gain second Ruin site and Archeology Element*

Name	**Second Site Relic 1, 2, 3**
DL	6, 6, 6
Pre-Req	Relic 3 (Archaeology research) Second Site (Archaeology research)
Recipe	N/A
Description	**Bonus:** • Immediately upon completion of Research Topic: Gain a Relic in the unit excavating artefacts. Additional Levels of Second Site Relic grant an additional Relic upon completion. • Yearly, on Month 1: Gain a Relic in the unit excavating artefacts. Additional Levels of Second Site Relic grant an additional Relic yearly (Second Site Relic 3 would give a total of 3 Relics, one for each level of the research). **Requirements:** • Works in ***second*** "Artefact" Ruin site hex only. • Requires workers to be assigned to Excavation as normal to gain Artefacts. **Restrictions: N/A** **Notes:** • Player is responsible for transferring the Relic on the indicated month. • Second Site Relic 3 is the maximum that can be researched for the second "Artefact" Ruin hex.
Summary	*Gain Relics from second Ruin site*

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Name	**Tomb Robbers**
DL	7
Pre-Req	N/A
Recipe	N/A
Leads To:	Relic (Archaeology research)
Description	Works in the "Artefact" hex and is done by those already assigned to Excavation. Chance of discerning location of important tombs or other buildings while searching/studying ruins – and unusual/rare or valuable items may be found inside. Gold, Diamonds, Frankincense would probably be the most obvious finds in small amounts. **Bonus:** • Immediately: Upon completing Tomb Robbers, the Archeology Unit excavating the site gains three different rare resources of an unknown quantity such as Gold, Diamonds or Frankincense out of six available resources. • Yearly: On Month 1 of each year, the Archeology Unit excavating the site gains three different rare resources of an unknown quantity. • Robbing: You may use Archeology Units to rob other Archeology sites belonging to other Clans. **Requirements:** • Works only in the original "Artefact" Ruin site hex. • Requires workers to be assigned to Excavation as normal to gain Artefacts. **Restrictions:** • A Ruin Site that has been Robbed within the 3 year period will not yield these spoils to a second robber within the time period. **Notes:** • Player is responsible for coordinating with the GM to receive these spoils. • Tomb Robber gives you incentive to go around robbing ruin sites across the world, Indiana Jones.
Summary	*Steal from the dead and gain Commodities*

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Architecture

Name	**Architecture 1**
DL	8
Pre-Req	Eng10, Art10, Scroll1
Recipe	TBD
Leads To:	TBD
Description	**Bonus:** • TBD, contact GM **Requirements:** • Upon Completion of the Research, the scroll is destroyed and is sent to Usage (1263) via Player Transfer. **Restrictions: N/A** **Notes:** N/A
Summary	*This does nothing currently, placeholder*

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Archery

Name	**Archery 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	**Bonus:** • **Skill Level Bonus:** ○ Archery +1 (example from Arc 10 to Arc 11) **Requirements: N/A** **Restrictions: N/A** **Notes:** • **Specialists:** There are no specialists allowed for Archery skill.
Summary	*Skill Level Increase – Alchemy*

Name	**Marksmen**
DL	3
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	**Bonus:** • Marksmen: Up to 10% of the **Tribe's** warriors may be assigned as Marksmen. • Skill Bonus: Marksmen gain +6 to Archery skill. **Requirements: N/A** **Restrictions:** • Applies to no more than 10% of the Tribe's warriors split out among the Tribe's units for combats each turn. • Marksmen count towards the 1/3rd Warrior Limit in combat. **Notes:** • Combat Entry Spreadsheet – Combat Module 1.0: Players are responsible for providing the prorated Archery skill value in the CES when turning in combat orders.

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	• Combat Entry Spreadsheet – Combat Module 2.0: Players are responsible for assigning a combat group with Troop Type: Marksmen and CombatAssignment:Ranged in the CES when turning in combat Orders. NOTE: CM 2.0 is not yet released, this is a place holder note only.
Summary	*Combat Boost - 10% of Tribe Warriors get Bonus to Archery skill*

Name	**Yoeman Archers**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	5% of a Tribe's Actives can be used in combat as Archers. **Bonus:** • Yoeman Archers: Up to 5% of the **Tribe's** Actives may be assigned as Yoeman Archers. Yoeman Archers function as normal archers in all ways. **Requirements: N/A** **Restrictions:** • Applies to no more than 5% of the Tribe's warriors split out among the Tribe's units for combats each turn. • Yoeman Archers do **not** count towards the 1/3rd Warrior Limit in combat. They are in addition to the Warriors assigned. • 1/3rd Requirement: Yoeman Archers assigned in a combat may not comprise more than 1/3rd the available Actives **Notes:** • Combat Entry Spreadsheet – Combat Module 1.0: Players are responsible for entering additional Warriors equal to the number of Actives utilized as as Yoeman Archers in the CES. • Combat Entry Spreadsheet – Combat Module 2.0: Players are responsible for assigning a combat group with Troop Type: Actives and CombatAssignment: Ranged in the CES when turning in combat Orders. NOTE: CM 2.0 is not yet released, this is a place holder note only.
Summary	*Combat Boost - Some Actives in Tribe may be used as Archers*

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Armour

Name	**Bascinet**
DL	5
Pre-Req	N/A
Recipe	**1 Bascinet:** 2 People, 4 Iron, 25 Coal
Leads To:	N/A
Description	Heavy Helm. **Bonus:** • Crafting: Allows crafting (Via Armour activity) of Bascinet. • ArmourValue: Provides enhanced Armour Value over Helms. ○ **Iron Bascinet** ▪ vsArrow: 7 ▪ vsBronze: 14 ▪ vsIron: 12 ▪ vsPellet: 12 ▪ vsQuarrel: 7 ▪ vsShaft: 7 ▪ vsSteel: 10 ▪ vsStone: 16 ○ **Steel Bascinet** ▪ vsArrow: 8 ▪ vsBronze: 18 ▪ vsIron: 16 ▪ vsPellet: 13 ▪ vsQuarrel: 8 ▪ vsShaft: 9 ▪ vsSteel: 14 ▪ vsStone: 20 ○ **Requirements: N/A** **Restrictions:** • Not compatible with Full Plate • Not compatible with Fluted Plate **Notes:** • Weight: 4lbs
Summary	*New Item - Bascinet - Better than Helmet*

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Name	**Chain Barding**
DL	5
Pre-Req	N/A
Recipe	3 People, 18 Iron, 30 Coal
Leads To:	N/A
Description	Medium metal horse armour **Bonus:** • Crafting: Allows crafting (Via Armour activity) of Chain Barding. • Horse Death Mitigation: Horse deaths in combat are reduced by 50%. **Requirements: N/A** **Restrictions:** • A single horse may only wear one type of Barding. • A unit with horses may include multiple types of Barding. **Notes:** • Weight: 35lbs
Summary	*New Item - Chain Barding - Saves your horses*

Name	**Full Plate**
DL	8
Pre-Req	N/A
Recipe	1 Full Plate: People 6, Arm 9, Iron 30, Coal 80
Leads To:	N/A

Description	Full Plate, enhanced full body protection for Cavalry
	
	Bonus:
	• **Crafting:** Allows crafting (Via Armour activity) of Full Plate
	• **Suppressors:** Suppressors may wear Full Plate.
	• **ArmourValue:** Provides enhanced Armour Value over Helms.
	  ○ **Iron Full Plate**
	  ▪ vsArrow: 45
	  ▪ vsBronze: 65
	  ▪ vsIron: 55
	  ▪ vsPellet: 60
	  ▪ vsQuarrel: 45
	  ▪ vsShaft: 40
	  ▪ vsSteel: 45

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	▪ vsStone: 75 ○ **Steel Full Plate** ▪ vsArrow:50 ▪ vsBronze: 75 ▪ vsIron: 65 ▪ vsPellet: 65 ▪ vsQuarrel: 50 ▪ vsShaft: 45 ▪ vsSteel: 55 ▪ vsStone: 85 **Requirements: N/A** **Restrictions:** • **Mounted: Full Plate** may only be worn by horse mounted Cavalry • Only compatible with Shields, no other Armour Type. Full Plate, replaces body armour (Head, torso, over torso, legs) but may use any form of shield. **Notes:** • Weight: 40lbs
Summary	*New Item - Full Plate, full body coverage, increased protection in combat for Cavalry*

Name	**Fluted Plate**
DL	9
Pre-Req	N/A
Recipe	1 Fluted Plate: People 6, Arm 9, Iron 30, Coal 80
Leads To:	N/A
Description	Fluted Plate, enhanced full body protection for Infantry **Bonus:** • **Crafting:** Allows crafting (Via Armour activity) of Fluted Plate • **ArmourValue:** Provides enhanced Armour Value over Helms. ○ **Iron Fluted Plate** ▪ vsArrow: 45 ▪ vsBronze: 65 ▪ vsIron: 55 ▪ vsPellet: 60 ▪ vsQuarrel: 45 ▪ vsShaft: 40 ▪ vsSteel: 45 ▪ vsStone: 75 ○ **Steel Fluted Plate**

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	▪ vsArrow:50 ▪ vsBronze: 75 ▪ vsIron: 65 ▪ vsPellet: 65 ▪ vsQuarrel: 50 ▪ vsShaft: 45 ▪ vsSteel: 55 ▪ vsStone: 85 **Requirements: N/A** **Restrictions:** • **Infantry: Fluted Plate** may only be worn by Infantry. Fluted plate may not be work by Cavalry, Ranged or Siege/Heavy Weapons troops. • Only compatible with Shields, no other Armour Type. Full Plate, replaces body armour (Head, torso, over torso, legs) but may use any form of shield. **Notes:** • Weight: 40lbs
Summary	*New Item - Fluted Plate, full body coverage, increased protection in combat for Infantry*

Name	**Greaves**
DL	4
Pre-Req	N/A
Recipe	1 Greaves: People 2, Iron 4, Coal 25
Leads To:	N/A
Description	Metal Leg Armour **Bonus:** • Crafting: Allows crafting (Via Armour activity) of Greaves. • ArmourValue: Provides enhanced Armour Value over Helms. ○ **Iron Greaves** ▪ vsArrow: 7 ▪ vsBronze: 14 ▪ vsIron: 12 ▪ vsPellet: 12 ▪ vsQuarrel: 7 ▪ vsShaft: 7 ▪ vsSteel: 10 ▪ vsStone: 16 ○ **Steel Greaves** ▪ vsArrow: 8

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	▪ vsBronze: 18 ▪ vsIron: 16 ▪ vsPellet: 13 ▪ vsQuarrel: 8 ▪ vsShaft: 9 ▪ vsSteel: 14 ▪ vsStone: 20 ○ **Requirements: N/A** **Restrictions:** • Not compatible with Full Plate • Not compatible with Fluted Plate **Notes:** • Weight: 10lbs
Summary	*New Item - Greaves, leg coverage, increased protection over Trews*

Name	**Plate Barding**
DL	7
Pre-Req	N/A
Recipe	1 Plate Barding: People 4, Arm 8 Iron 20, Coal 40
Leads To:	N/A
Description	Heavy metal horse armour **Bonus:** • Crafting: Allows crafting (Via Armour activity) of Chain Barding. • Horse Death Mitigation: Horse deaths in combat are reduced by 75%. **Requirements: N/A** **Restrictions:** • A single horse may only wear one type of Barding. • A unit with horses may include multiple types of Barding. **Notes:** • Weight: 35lbs
Summary	*New Item - Plate Barding, Save your horses, better than Chain*

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Astronomy

Name	**Astral Navigation 1, Astral Navigation 2, Astral Navigation 3**
DL	Astral Navigation 1 – 2 Astral Navigation 2 – 3 Astral Navigation 3 – 4
Pre-Req	Astral Navigation 1 – N/A Astral Navigation 2 – Astral Navigation 1 (Astronomy/Navigation research) Astral Navigation 3 – Astral Navigation 2 (Astronomy/Navigation research)
Recipe	N/A
Leads To:	Astral Navigation 1 – Astral Navigation 2 (Astronomy/Navigation research) Astral Navigation 2 – Astral Navigation 3 (Astronomy/Navigation research) Astral Navigation 3 – N/A

Description	**Bonus:**
	• Skill Level Boost:
	  ○ Astral Navigation 1: +2 to Navigation Skill
	  ○ Astral Navigation 2: +4 more to Navigation Skill (total of +6)
	  ○ Astral Navigation 3: +6 more to Navigation Skill (total of +12)
	
	Requirements: N/A
	
	Restrictions:
	• Specialists: This does not allow Specialists.
	
	Notes:
	• Astral Navigation 3 is the limit.

Summary	*Skill Level Increase - Navigation*

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Art

Name	**Great Work**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A

Description	The creation of a Great Work allows the Tribe to sacrifice Cultural Skill levels in return for immigrants or General Morale.
	
	Bonus:
	• **Great Work Creation:** Immediately upon completion of Great Work topic, and yearly on Month 1, the Tribe with this research may create a Great Work. This is done by sacrificing Cultural Skill point levels to gain the following benefits.
	  ○ **General Morale:** Every point of Cultural Skill level sacrificed gains the Tribe an increase of +0.01 to General Morale, up to a maximum of +0.04 General Morale.
	  ○ **Immigration:** Every point of Cultural Skill level sacrificed gains the Tribe Hirelings and / or Mercenaries. There is no limit to the number of points that may be applied to gaining Immigrants.
	  ▪ **Hirelings:** Every sacrificed cultural skill level point applied to Immigration for Hirelings gains the Tribe (not a unit) 30 Hirelings.
	  ▪ **Mercenaries:** Every sacrificed cultural skill level point applied to Immigration for Mercenaries gains the Tribe (not a unit) 15 Mercenaries.
	Requirements:
	• **Cultural Skill Point Sacrifice**: When creating a Great Work, the Tribe may sacrifice any number of skill levels from its Cultural Skills (up to the maximum points based on population and other restrictions below).
	
	Restrictions:
	• Great Works per Year: The Tribe with this research may only create a Great Works once per year, on month 1.
	• Maximum Great Work Topics: Only one Tribe within a Clan may possess the Great Work Research.
	• Cultural Skill Point Sacrifice:
	  ○ **Maximum Points:** The number of cultural skill points that this one Tribe may sacrifice for the completion of each Great Work is limited to 1 Skill Level for every 100 total population (WAI only).
	  ○ **Specific Skill:** The Cultural Skill which was used to research Great Work may not be sacrificed such that its final Skill Level is reduced to less than 10.

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	Notes: • Example: For example, tribe 0775 knows the Great Work research and has Cook=10, Dance=6 and Art=4. Tribe 0775 performs a Great Work on turn 6-810 and sacrifices 2 skill points from its Dance and Art skills, reducing its cultural skills to Cook=10, Dance=4 and Art=2. Tribe 0775 could thus gain 60 Hirelings, 30 Mercenaries and .04 in General morale and is prohibited from performing another Great Work until sometime in Year 811. The tribe performing the Great Work is free to reduce its cultural skills in whatever manner it deems best, other than retaining 10 in the cultural skill used to develop Great Work. For example, a tribe with Dance=8 could present a Great Work that reduces Dance to ZERO and leave all other cultural skills unchanged.
Summary	*Sacrifice Cultural skill levels for Morale*

Name	**Heraldry**
DL	6
Pre-Req	Art8, Scroll
Recipe	Coat of Arms: 20 People, Mtl 5, Brass 20, Gold 2, Silver 200, Log 2 Standard: 20 People, Mtl 2, Shaft 1,Cotton 100, Silver 100
Leads To:	Knights (Horsemanship research)

Description	Heraldry allows a properly outfitted Tribe, or its units, to ransom back lost people if the unit is present at the battle.
	
	Bonus:
	• Crafting:
	  ○ Standard: Allows the Tribe (and its units) to craft a Standard via Metalwork activity.
	  ○ Coat of Arms: Allows the Tribe (and its units) to craft a Coat of Arms via Metalwork activity.
	• Ransom:
	  ○ Ransom is available to the entire Clan, not just the Tribe with the research.
	  ○ When a Unit in this Clan loses a combat, the winning side **must** offer a ransom for the Slaves it has captured.
	  ○ Up to 30% of the slaves taken, rounded up to the nearest slave, must be offered up in exchange for a ransom using the following exchange rates:
	  ▪ 5 Slaves for 1 Gold
	  ▪ 1 Slave for 1 Jade
	  ▪ 1 Slave for 200 Silver
	  ○ Returned People: Slaves are returned to the Clan that lost them as 1/3rd of each class, starting with Warriors, then Actives, then Inactives if the total

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	number is not divisible by 3. If 5 slaves are returned, then 2 to Warriors, 2 to Actives, 1 to Inactive.
	  ○ **Payment:** Ransom may be paid by any unit in the Tribe, regardless of distance. It is removed from the Unit and provided to the enemy unit that is holding the Slaves. Ransom must be paid at the time of battle.
	• Combat: The Tribe, and its units, that holds Heraldry research, gains +2 to Leadership skill during Combat.
	
	Requirements:
	• A Unit of the Tribe with the research must be present at the site of the Battle to offer Ransom payment. The unit does not need to have participated in the battle itself.
	
	Restrictions:
	• Payment: Ransom must be paid at the time of battle.
	
	Notes:
	• **Completion:** Upon completion of the Research, the Scroll is destroyed/lost and is sent to Usage (1263) via transfer..
	• Weights:
	  ○ Coat of Arms: 5 lb
	  ○ Standard: 5 lb

Summary	*New Item - Standard, forces ransoms from enemies to get your people back*

Name	**Spring Arts Festival Art**
DL	6
Pre-Req	N/A
Recipe	Amplitheatre: Eng8, Stones 10k, Cloth 1k, Silver 5k
Leads To:	Inter Spring Arts Festival (Art research)
Description	Once a year during a Spring month, this Tribe hosts a Festival dedicated to Art, Dance or Music (depending on which skill the research was completed under) called a Spring Arts Festival Arts (SAFA), Spring Arts Festival Dance (SAFD) or Spring Arts Festival Music (SAFM) respectively. These artists spent the month plying their trade for the general well being of their Tribe. **Bonus:** • General Morale Boost: Once per year, the Tribe with this research gains +0.02 General Morale if it has adequate Artist Participation for the month (See Requirements below). • Trifecta Bonus: If a Tribe has Spring Arts Festival research completed for Art, Music and Dance, further research may become available. Contact the GM if you reach this point.

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	Requirements: • **Artist Participation:** At least 500 Warriors/Actives, any combination of the two, must spend a month participating in the Spring Arts Festival – Art while doing no other work in order to gain the bonus. • **Spring Time:** The Spring Arts Festival must be held during the Spring. **Restrictions:** • Books: Books may not be written for this topic. **Notes:** • Amphitheatre: Any Tribe, even those from another Clan, may build an Amphitheatre regardless of research. • At Adm10 you can research **Inter Spring Arts Festival, DL8** so that Tribes from other Clans (only) may participate. This will require an Amphitheatre. 10,000 Stones , 1000 Cloth, 5000 Silver, Eng8. Tribes from other Clans will require an audience of at least 1000 W/A and will not be permitted to Hunt in the hex.
Summary	*Yearly activity to boost morale*

Name	**Inter Spring Arts Festival Art**
DL	8
Pre-Req	Spring Arts Festival Art
Recipe	1 Amphitheatre: People 2k, Eng 8, Stone 10k, Cloth 1k, Silver 5k
Leads To:	N/A
Description	An upgrade to the Spring Arts Festival Art so that its available to more people. **Bonus:** • Visitors: Tribes from other Clans may participate in your Spring Arts Festival Art. **Requirements:** • **On Location:** To participate, the Tribes from other Clans must have a unit with WA (doesn't count Inactives) population in the hex with your Tribe and the Amphitheatre. **Restrictions:** • **No Hunting:** Units from other Clans participating in your Inter Spring Arts Festival Art may not hunt during the Fair turn. **Notes:** •
Summary	*New Building – Amphitheatre, expands Festival to other Clans.*

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Name	**Bronze Statue**
DL	6
Pre-Req	N/A
Recipe	20 People, Mtl 6, Art 6, Bronze 1k, Coal 200, Silver 200
Leads To:	N/A
Description	A new Trade good. **Bonus:** • Crafting: The units, and Tribe, of this Tribe may craft Bronze Statues as an Art or Metalwork activity. • Fair: Bronze Statues sell at Fair and possibly Trade Towns. **Requirements:** • **Metalwork:** Metalwork skill level in this Tribe must be 6 or higher. **Restrictions: N/A** **Notes:** • Weight: 1000 lb
Summary	*New Item - Bronze Statue, sell it at fair and select Trade Towns*

Name	**Marble Statue**
DL	3
Pre-Req	N/A
Recipe	12 People, Stn 6, Art 6, Marble 200
Leads To:	N/A
Description	A new Trade good and more. **Bonus:** • Crafting: The units, and Tribe, of this Tribe may craft Marble Statues as an Art or Stonework activity. • Fair: Marble Statues sell at Fair and possibly Trade Towns. **Requirements:** • **Stonework:** Stonework skill level in this Tribe must be 6 or higher. **Restrictions: N/A** **Notes:** • **Marble:** Upon completing this research, contact the GM. A Marble mine hex will

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	be placed near your Home Village / Home City / village of choice. • **Improvements:** Marble Statues will serve as improvements to Palaces, etc. Weight: 500 lb
Summary	*New Item - Marble Statue, useful for filling out Palaces, get new Mine*

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Baking

Name	**Cupcakes**
DL	2
Pre-Req	Bakery (Standard Building)
Recipe	60 Cupcakes: People 1, Baking 10, Flour 24, Sugar 2
Leads To:	N/A

Description	A new way to make friends with the controlled population of your new State.
	
	Bonus:
	• Crafting: The units, and Tribe, of this Tribe may craft Cupcakes as a Baking activity.
	• **Pacification:** Pacifiers equipped with Cupcakes have a greater pacification effect than normal. A Pacifier that is equipped with 12 Cupcakes that are sent to usage counts as an additional base Pacifier.
	  ○ **Pacifier:** With 12 Cupcakes, counts as 2 Pacifiers
	  ○ **Sheriff:** With 12 Cupcakes, counts as 4 Pacifiers
	  ○ **Marshall:** With 12 Cupcakes, counts as 10 Pacifiers.
	
	Requirements:
	• **Consumption:** Every Pacifier (or better) that uses the Cupcakes to gain their effect must send those Cupcakes to usage (1263) through the transfer spreadsheet/tab.
	
	Restrictions: N/A
	
	Notes:
	• **Weight**: 0 lbs (Yes, 0)

Summary	*New Item - Cupcakes, increases effectiveness of Pacifiers*

Name	**Fine Bread**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	A new way of making bread fit for the upper class. **Bonus:** • **Improved Bread Production:** Increases Bread production by 50% with the corresponding increase in the consumption of flour / grain. **Requirements:** • **Consumption:** Flour / Grain consumption increases proportionately with the

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	Bread Production increase. **Restrictions: N/A** **Notes:** • **Coded:** You should still monitor your figures when using Fine Bread as well as Yeast. • **Activity:** Fine Bread is a distinction in the AutoOrder spreadsheet.
Summary	*Increases Bread Production per Person*

Name	**Waybread**
DL	4
Pre-Req	N/A
Recipe	6 Waybread: People 1, Grain 20 15 Waybread: People 1, Flour 40
Leads To:	N/A
Description	The main advantage of Waybread over normal bread is that Waybread is more compact and thus can be transported easier. A unit of waybread, equivalent to 1 month of provs, weighs only 5 lbs vs the 10 lbs of normal provisions. Waybread is only eaten after milk, fish, bread and normal provisions are exhausted, though it is eaten before cheese. Weight: 5 lbs Is Coded. Waybread refers to a more nutrient dense bread that is much more complicated to bake, even if it doesn't take longer. Only master bakers obtain the knowledge to bake Waybread. **Bonus:** • **Crafting:** Waybread may be created through the Baking / Waybread activity and may be baked from either Grain or Flour. • **Food Value:** 1 Waybread is equivalent to 1 Prov. • **Condensed Nutrients:** The main advantage of Waybread is in its ability to transport more easily due to its reduced weight. Normal Provisions weight 10lbs while a provision worth of waybread only weighs 5lbs. **Requirements: N/A** **Restrictions: N/A** **Notes:** • **Coded:** Waybread is eaten automatically when needed. Waybread is eaten in the following order:

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	○ Milk ○ Fish ○ Bread ○ Provs ○ Waybread ○ Cheese • **Activity:** Waybread is available in the Baking activity in the AutoOrder spreadsheet. • **Weight:** 5 lbs.
Summary	*New Item - Waybread, Food that is lighter than Provs*

Name	**Yeast**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	A new way of making bread fit for the culinary minded. **Bonus:** • **Improved Bread Production:** Increases Bread production by 50% when using **flour** with the corresponding increase in the consumption of flour. **Requirements:** • **Consumption:** Flour consumption increases proportionately with the Bread Production increase. **Restrictions: N/A** **Notes:** • **Coded:** You should still monitor your figures when using Fine Bread as well as Yeast. • **Specialists:** Yeasts boost to output is calculated after Specialists. • **Activity:** Yeast is a distinction in the AutoOrder spreadsheet.
Summary	*Increases Bread Production per Person*

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Banking

Name	**Local Money Changer**
DL	2
Pre-Req	NPC Exchange (Banking research) NPC Exchange building
Recipe	N/A
Leads To:	N/A
Description	Each Fair, an enterprising Local Group visits your NPC Exchange. They offer you a private exchange deal on any commodity as well as Coin, Silver and Gold that you may have. **Bonus:** • **The Exchange:** A unit with this research and located at an NPC Exchange, may convert one type of commodity into another type of commodity with a slight loss of efficiency (See NPC Payout). • **The Gain:** The Unit selects a single Commodity per Exchange to gain. • **The Cost:** The Unit selects a single Commodity per Exchange to pay. • **The Conversion:** The Unit exchanges the cost commodity and gains an appropriate amount of Gain commodity based upon the conversion rate set by the Commodity sheet in relation to Hireling purchasing. A spreadsheet is available to make this easier. **Requirements:** • **Restrictions:** • **Maximum Exchanges per Fair:** You may make a number of Exchanges equal to your Clan's Fair multiplier. • **Maximum Amount per Exchange:** The maximum quantity of any single commodity gained is equal to the amount that the clan can pay for Hirelings at the fair in that commodity. • **NPC Payout:** The Local Group takes 10% of the exchange. This means the unit only receives 90% of the commodity for which the exchange is being made. • **Unique:** You may only make one exchange per Commodity in a single fair (you could not therefore gain Gold three times). **Notes:** • **Fair Slot:** These trades do not use up a Fair slot. • **Spreadsheet:** There is a Local Money Changer spreadsheet available on the TribeNet website to make the conversion easier. • **Example:** Clan 999 has a Fair Multiplier of 3 due to having a Trading Post and a Home City. They have gained Local Money Changer research topic and it is Fair

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	month. Clan 999 may make 3 transactions (due to the Fair multiplier of 3) during this fair in addition to their normal purchases/sales. It is currently year 815. For the first exchange, Clan 999 has a lot of Gold and desires Olives. Based on the year, the maximum number of Hirelings that may be gained in Fair with a multiplier of 3 is 510 hirelings. Every hireling costs 1 Olive (based upon a batch of 10 hirelings costing 10 Olives) so the maximum amount of Olives that may be exchanged for is 510. Clan 999 wants to spend Gold. It would require 51 Gold (1 Gold for 10 Hirelings) to gain 510 Hirelings thus the conversion ratio between Gold and Olives is 1 Gold : 10 Olives. Clan 999 sends 51 Gold to usage and gains Olives 510.
Summary	*Convert Commodities to other Commodities*

Name	**Minting / Coin**
DL	6
Pre-Req	N/A
Recipe	15 Nickel: 1 Person, Ref1, Nickel Ore 20, Coal 6, 15 Coins: 1 Person, Copper 25, Nickel 5, Coal 5
Leads To:	NPC Exchange (Banking research)
Description	Your clan begins to get more civilized and has now gained the ability to mint coins for payment instead of handing over bags of silver. **Bonus:** • **Crafting:** Your Tribe and its units gain the ability to craft Coins using a Minting activity. • **Crafting:** Nickel may always be crafted without this research topic. • **Coins:** Coins are utilized by many Special Hexes and may have other uses with further or past research. **Requirements: N/A** **Restrictions: N/A** **Notes:** • **Weight: ???**
Summary	*New Item - Coins, can be used at some special hexes and for some topics*

Name	**NPC Exchange**
DL	DL6
Pre-Req	Banking 10 (Skill) Home City in clan Minting/Coin (Banking research)

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	Administrative buildings
Recipe	1 NPC Exchange: People 820, Eng5, 4000 Stones, 200 Iron (Normal Install rates)

Description	The NPC Exchange represents an economic link between a Home City and an NPC International City such as Beijung, Tokyo, Babylonia, etc.
	
	Bonus:
	• **Per Fair:** During Fair months, but independent from the Fair, Trade Guilds and any other interaction or transaction between the NPC International City and the Clan, the NPC Exchange allows for automated trade between the NPC International City and the Home City.
	• **NPC Exchange Conversion:** When activated, the NPC Exchange allows the Home City to convert Coin into other Commodities using the appropriate exchange rate (See Below). Only Commodities associated with the NPC International City that the NPC Exchange building has been built in may be the target of this conversion (See Restrictions below). There is a maximum amount of each commodity that may be gained via an NPC Exchange building each Fair (See Restrictions below).
	• **The Currency:** The only currency that can be used over the link is Coin. For purposes of the NPC Exchange, 1 Coin is considered 1 Olive.
	• **Exchange Rate:** NPC Exchange uses the Desired Commodity table in the Mandate for converting between Coin and other Desired Commodities.
	
	Requirements:
	• **NPC Exchange (Building):** An NPC Exchange building must be built at location in the NPC International City. Without an NPC Exchange at the NPC International City, no NPC Exchanges may be made.
	• **Mint (Building):** A Mint must be built at the Home City. Without a Mint at the Home City, no NPC Exchanges may be made. The Mint in this case acts as a representation of the Clan's commitment to administering a stable financial infrastructure and to gain the confidence of traders the world over. This is in addition to, but separate from, its role in making coins.
	  ○ Only 1 Mint is required for NPC Exchange research topic regardless of the number of NPC Exchanges built in NPC International Cities.
	
	Restrictions:
	• **Exchangeable Commodities:** Only Commodities offered as a trade mission at NPC International Cities with NPC Exchange Buildings belonging to the Clan may be the target of the conversion.
	• **NPC Exchange Maximum Amount:** An NPC Exchange building in an NPC International City to gain a maximum amount of the appropriate commodities equal to the amount of commodities that NPC International City offers.
	  ○ **Example:** Beijung offers a trade mission from Beijung to Whulan in the amount of Tea 18,750 and Opium 375. Thus, the NPC Exchange built at Beijung allows up to Tea 18,750 and Opium 375 to be gained with Coin.
	• **NPC Exchange (Building) Limits:** A Clan needs only have a single NPC

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	Exchange building in an NPC International City. Any extra NPC Exchange Buildings the Clan builds in the same NPC International City provides no further bonus or abilities. **Notes:** • **Example:** Clan 001 Home City has a Mint. It builds an NPC Exchange building in Beijung. Beijung offers Trade Mission of Tea 18,750 and Opium 375. Clan 001 may use Coin to purchase up to 18,750 tea and 375 opium at the rate of 10 Coin per 1 Opium (thus a max of 3,750 coin for 375 Opium) and 10 Coin per 50 Tea (thus a max of 3,750 coin for 18,750 tea). • **Multiple NPC Exchanges:** Only a single research topic (NPC Exchange) is required and any number of NPC Exchanges may be built in different NPC International Cities. • **NPC International Cities:** An NPC International City may host any number of NPC Exchanges from different Clans.
Summary	*Convert Coins to Commodities*

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Brickmaking

Name	**Advanced Brickmaking**
DL	4
Pre-Req	Improved Brickmaking (Brickmaking research)
Recipe	Stone 60: 1 Person, Clay 1200, Fodder 600, Coal 240, Silver 60
Leads To:	Greater Brickmaking (Brickmaking research)
Description	A tribe with this research knowledge has a better understanding of firing bricks. **Bonus:** • **Brickmaking Production Bonus:** A Tribe and its elements with this research topic gains a 100% bonus towards the production of Brick. Each person assigned produces 240 Bricks using 20 Clay, 10 Fodder, 4 Coal and 1 Silver per 4 Bricks for a total of 240 Bricks (60 stone) made using 1200 Clay, 600 Fodder, 240 Coal and 60 Silver **Requirements: N/A** **Restrictions: N/A** **Notes:** • **Order Entry:** Orders are shown as Brickmaking / Stone / Advanced
Summary	*Increase Stone production per person via Brickmaking*

Name	**Brickmaking 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To:	Lighted Dome of Iron and Stone (Brickmaking research)
Description	**Bonus:** • **Skill Level Bonus:** ○ Brickmaking +1 (example from Brk 10 to Brk 11) • **Specialists:** This Tribe may begin to train Brickmaking based specialists **Requirements: N/A** **Restrictions: N/A** **Notes: N/A**
Summary	*Skill Level Increase - Brickmaking, allows specialists*

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Name	**Brickmolds**
DL	5
Pre-Req	Improved Brickmaking (Brickmaking research)
Recipe	1 Brickmold: People 1, Wd 4, Logs 1, Iron 1, Coal 5
Description	**Bonus:** • **Crafting:** Allows crafting of a Brickmold via Woodwork activity. • **Brickmaking Bonus:** A worker with a Brickmold counts as 2 Workers (+1 AM) when performing a Brickmaking activity. **Requirements: N/A** **Restrictions:** • **Limit per Worker:** Only 1 Brickmold can be used per worker. **Notes:** • **Other Clans/Tribes:** Other Clans / Tribes may use a Brickmold without research. • Weight: 60 lbs
Summary	*New Item - Brickmolds, +1 AM per person for Brickmaking*

Name	**Greater Brickmaking**
DL	4
Pre-Req	Advanced Brickmaking (Brickmaking research) Improved Brickmaking (Brickmaking research)
Recipe	Stone 75: 1 Person, Clay 20, Fodder 10, Coal 4, Silver 75 Bricks 300: 1 Person, Clay 20, Fodder 10, Coal 4, Silver 75
Leads To:	Lighted Dome of Iron and Stone (Brickmaking research)
Description	A tribe with this research knowledge has a greater understanding of firing bricks. **Bonus:** • **Brickmaking Production Bonus:** A Tribe and its elements with this research topic gains a 150% bonus towards the production of Brick. Each person assigned

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	produces 300 Bricks using 20 Clay, 10 Fodder, 4 Coal and 1 Silver per 4 Bricks for a total of 300 Bricks (60 stone) made using 1200 Clay, 600 Fodder, 240 Coal and 60 Silver **Requirements: N/A** **Restrictions: N/A** **Notes:** **Order Entry:** Orders are shown as Brickmaking / Stone / Greater
Summary	*Increase Stone production per person via Brickmaking, Greater*

Name	**Improved Brickmaking**
DL	4
Pre-Req	N/A
Recipe	Stone 45: 1 Person, Clay 20, Fodder 10, Coal 4
Description	A tribe with this research knowledge has an improved understanding of firing bricks. **Bonus:** • **Brickmaking Production Bonus:** A Tribe and its elements with this research topic gains a 50% bonus towards the production of Brick. Each person assigned produces 180 Bricks using 20 Clay, 10 Fodder and 4 Coal per 4 Bricks for a total of 240 Bricks (60 stone) made using 1200 Clay, 600 Fodder and 240 Coal. **Requirements: N/A** **Restrictions: N/A** **Notes:** **Order Entry:** Orders are shown as Brickmaking / Stone / Improved
Summary	*Increase Stone production per person via Brickmaking, minor*

Name	**The Lighted Dome of Iron and Stone**
DL	8
Pre-Req	Brickmaking 11 (Brickmaking research) Greater Brickmaking (Brickmaking research) Engineering 10 (Group C skill) Metalwork 10 (Group A skill)
Recipe	1 Lighted Dome of Iron and Stone (LDIS 1): People 150k, Eng 10, Mtl 10, Brick 10, Art 10, Stone 6, Bricks 1.6M, Stone 500k, Iron 100k, Coal 500k, Logs 20k, Gold 1k, Silver 100k, Relic 1, Scroll 4

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Description	Engineering Activity A Tribe with this research gains the ability to create a wondrous engineering marvel called the Lighted Dome of Iron and Stone. The LDIS is a massive tower and building construct that raises hundreds of feet in the air. It is made of a structure of stone and iron with brick and iron facades and is gilded in silver and gold. At the top is a light created by a furnace that burns throughout the day and night, its light viewable for miles though not of an intensity to be used as a good lighthouse. The complex that surrounds the LDIS acts as a refuge for those who need solitude throughout the year, broken only by the annual celebration. These intellectuals who are harbored inside the LDIS are trained by the Tribe in the history and construction of the LDIS and slowly learn about its secrets. **Upon Completion:** * **Clan Morale Bonus:** Once constructed, the LDIS provides each Tribe of the owning Clan that has a unit in the city a one time boost of +0.05 General Morale ~~(maximum 1.50 morale).~~ * **Other Clans:** Tribes from other Clans that have a Unit in the hex also benefit from the wondrous construction. At the cost of 100 Gold, the Tribe may send 100 actives to live and work in the complex (100 Actives are permanently removed). In return, they gain +1 Skill Level to one of the following skills (Maximum Level 8): Engineering, Brickmaking, Stonework, Metalwork, Art. * **Local Support:** The LDIS counts as 2 Hamlets that do not need Longhouse Support provided that the Clan already has control of 4 Hamlets. **Annual Bonus:** * **Clan Morale Bonus:** Additionally, each year that the LDIS is operating, on the anniversary of the founding of the City where the LDIS is built, each Tribe from the owning Clan that has a unit present in the City gains an additional 0.02 General Morale ~~(maximum 2.00 morale).~~ * **Clan Knowledge Bonus:** Each year that the LDIS is operating, on the anniversary of the founding of the City where the LDIS is built, each Tribe from the owning Clan that has a unit present in the City gains a +1 to one Skill (Maximum skill level 8) or a +1 to one Research topic Difficulty level (that is already at DL 0 or higher). To gain this bonus, each Unit must send 100 Actives to live and work at the LDIS complex. * **Other Clans:** Tribes from other Clans that have a Unit in the hex also benefit from the wondrous construction. At the cost of 100 Gold, the Tribe may send 100 actives to live and work in the complex. In return, they gain +1 Skill Level to one of the following skills (Maximum Level 8): Engineering, Brickmaking, Stonework, Metalwork, Art.

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	Restrictions and Requirements: * **Annual Upkeep:** 500 AM (on anniversary of founding of City), 30k Bricks, 10k silver, Logs 4k * **Location:** Must be built in a City of Government Level 2 or higher. * **Loss of Structure:** If the structure is no longer held by the Clan, each Tribe in the Clan loses 0.1 General Morale. If it regains control of the structure, it regains only 0.05 General Morale. If the structure is destroyed, it cannot be regained and a new structure must be built from scratch. A new LDIS may not be built while a conquered LDIS is still held by a conquering force. * **Looting of Structure:** If a Unit captures the City that contains the LDIS, it may loot the structure and gain Silver 50k, Relic 1 and Slaves 500. Otherwise, holding the Structure for a year gains the conquering clan the Annual Clan Knowledge Bonus without the need to lose 100 Actives. This can be gained each year. Books may not be written LDIS may not be built for other Clans. A Clan may only gain the benefit of one LDIS a year. If they gain a bonus from their own LDIS, they may not gain a bonus at another Clan's LDIS. **Notes:** • **Responsibilities:** It is the responsibility of the Clan Chief that builds this topic to gather the skill increases from visitors and to inform the GM of the required updates to minimize the interaction of the GM with multiple players.
Summary	*Mega-Project, communal bonuses for visitors*

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Captaincy

Name	**Naval Junior Officer**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Adds +1 to the Captaincy Modifier for determining potential casualties in Naval combat. Additionally, Adds +2 to Captaincy Skill for all other uses of Captaincy in Naval combat (example Routing)
Summary	*Combat Boost - Increases Captaincy Modifier to Damage calculators and reduces Rout*

Name	**Recruitment 1, Recruitment 2, Recruitment 3, ….**
DL	1, 2, 3, etc….
Pre-Req	Recruitment 1: N/A Recruitment 2: Recruitment 1 (Captaincy or Leadership research) Recruitment 3: Recruitment 2 (Captaincy or Leadership research) ….
Recipe	N/A
Leads To	N/A
Description	Allows an additional 500 Mercenaries per research attained to your Mercenary limits.
Summary	*Merc Limits increased by 500.*

Name	**Resilience I, Resilience II, Resilience III**
DL	5,7,9
Pre-Req	Resilience I: N/A Resilience II: Resilience I (Leadership or Captaincy research) Resilience III: Resilience II (Leadership or Captaincy research)
Recipe	N/A
Leads To	N/A
Description	A Unit with the Resilience research completed is capable of holding out against the enemy under even the worst outcome of combat. These Units are exceptionally hard to rout, but it comes with consequences: Benefits: During the beginning of a battle, a Unit may declare that it is utilizing Resilience by including it on their Combat Entry Sheet. This can be done either by an attacking or defending unit. During all Combat this turn, the Unit gains the following: 1) Temporary Military Morale Increase of 0.02 for purposes of combat this turn.

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	2) When determining if a Unit routes, the random die roll is made once normally. If it indicated a Rout, the dice are rerolled and checked against for each level of Resilience. If one of the die rolls comes up as a Does not Rout, the unit will not rout. The unit will only rout if all the results show a Rout. **a.** Example: A Unit has a 55% chance of not routing. It has Resilience I. A random number is generated between 1 and 100. The results are 89. Typically, the 89 would indicate a rout (It is greater than 55), however, the Unit declared Resilience I at the start of Combat. It rerolls the random number and gets a 47. Because the 47 is below the point of Routing, the unit will not Rout this combat. Restrictions and Penalties: 1) A Tribe may only utilize Resilience in a Unit once in a calendar year (Month 1-12) regardless of the number of Tribe elements. 2) If a unit would have Routed but a reroll from Resilience saves them, the Tribe loses 0.02 General Morale per level of Resilience research. 3) War Fatigue: Additionally, if the Unit would have Routed but a reroll from Resilience saves them, the Tribe may not initiate combat and may only declare defense in combat orders for that calendar year. 4) War Fatigue: Regardless of if Resilience was used, as long as Resilience was declared, the Tribe that the Unit belongs to must sacrifice 1 'Lot' of a desired Commodity on the next turn or suffer an additional 0.02 General Morale loss per level of Resilience.
Summary	*Combat Boost - If you rout, you have a chance not to rout but its pricey*

Name	**Rousing Speech**
DL	3
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	A combat force that has a unit with Rousing Speech has a -5% modifier to the chance of Routing.
Summary	*Combat Boost - 5% less chance to run away due to a bad combat.*

Name	**Trusted Maps**
DL	3
Pre-Req	Alliance MotC (Diplomacy research) Or Alliance MotC (Leadership research)
Recipe	N/A
Leads To:	N/A
Description	To Benefit from this research, a Clan must: 1) Have completed Alliance MotC Research.

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	2) Must have a declared alliance in which at least one member has the Sea Borne Trade Routes research. 3) Must have established Diplomatic Relations with the clan that completed Sea Borne Trade Routes research. Any fleet in the Tribe holding this research has their MV increased by 50% when using Sea Borne Trade Routes. If combined with other research, this bonus is additive, not cumulative. Note: A Fleet may only gain movement bonuses from three research topics simultaneously. Examples include, but are not limited to, Board of Trade, Fast Fleet, Trusted Maps, etc.
Summary	*Increases fleet movement speed when using Sea Borne Trade Routes*

Name	**Naval College**
DL	8
Pre-Req	Admiralty (Captaincy research) Gold (10 Gold / Year)
Recipe	N/A
Leads To:	N/A

Description	A Naval Academy represents a deliberate and systematic study of naval warfare and the training of a tribe's naval leadership in how best to conduct naval warfare. The prerequisite of Admiralty ensures that the tribe has possesses permanent naval leaders that can then benefit from the training provided by a "Naval Academy".
	
	A tribe with this research knowledge has an improved understanding of firing bricks.
	
	Bonus:
	• **Skill Enhancement:** For purposes of Naval Combat only, the following skill enhancements are used:
	  ○ **Captaincy:** Captaincy + Admiralty
	  ○ **Mariner:** Mariner + (Admiralty / 2)
	
	Requirements: N/A
	
	Restrictions:
	• Naval College may only service the Tribe with the research. Other Tribes will need their own research.
	
	Notes:

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	• **Combat Entry Sheet – Combat v1.0:** When filling out the Combat Entry Spreadsheet, ensure that you mark Naval College as a Research topic AND manually update your skills as appropriate. • **Combat Entry Sheet – Combat v2.0:** When filling out the Combat Entry Spreadsheet, ensure that you mark Naval College as a Research topic. The code will automatically calculate your modified skills. Do not update them manually. • This research is valueless unless ***the Tribe*** has already developed Admiralty.
Summary	*Combat Boost - Applies Admiralty to other skills in Naval Combat*

Name	**Admiralty**
DL	7
Pre-Req	N/A
Recipe	N/A
Leads To:	Naval College (Captaincy research)
Description	**Bonus:** • **New Skill - Admiralty:** The Tribe gains access to a new skill, Admiralty (Group B). • **Skill Enhancement – Captaincy:** Instead of Captaincy replacing Leadership, Captaincy + Admiralty + 2 replaces Leadership for all Naval Combat formulas. • **Alliance:** Warriors, of a different Tribe / Clan, carried aboard a Fleet commanded by an Admiral, are under the Admiral's command. They thus use the Admiral's captaincy/admiralty ratings rather than their own if they are involved in naval combat. **Requirements: N/A** **Restrictions:** • Naval College may only service the Tribe with the research. Other Tribes will need their own research. **Notes:** • **Combat Entry Sheet – Combat v1.0:** When filling out the Combat Entry Spreadsheet, ensure that you mark Admiralty as a Research topic AND manually update your skills as appropriate. • **Combat Entry Sheet – Combat v2.0:** When filling out the Combat Entry Spreadsheet, ensure that you mark Admiralty as a Research topic. The code will automatically calculate your modified skills. Do not update them manually.
Summary	*Combat Boost - Applies Admiralty (New Skill) to Captaincy for Naval Battles*

Combat

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Name	**Assault Troops**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	Specialized in Attacking fortifications – effectively add +2 to Combat Skill, and +2 AA (Assault Attack Terrain Prof).
Summary	*Combat Boost - Increases Combat Skill and Terrain Proficiency (Limited)*

Name	**Army**
DL	5
Pre-Req	Home Guard (Combat research)
Recipe	1 Barracks, 100 Person, Eng 4, Logs 200
Leads To:	Conscription (Combat research)
Description	A Tribe with Army research increases its combat effectiveness by a factor of 1.4. Any unit using Army in combat must be in MoTC with the Tribe with the research for it to apply to that unit. A Barracks (200 logs, Eng4 - Logs are installed at 2/person. Can only be built once Army research is completed) is required to house each 50 warriors in the Tribe with the research (and its Elements). If the Army in full is not supported by Barracks then the Army bonus does not apply in combat. See Army Factor (1.4) in Spreadsheet. Once Army is completed Home Guard becomes redundant.
Summary	*Combat Boost - Increases Army Factor to 1.4. (+40% Damage)*

Name	**Close Order Infantry**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	Close Order Infantry provides a bonus in attack and defense and against missiles. Adds +4 to Combat skill. Increases the effectiveness of Shields by 25% against Ranged attacks (8% goes to 10%, 18% goes to 22.5%)
Summary	*Combat Boost - Increases Combat Skill and effectiveness of Shields*

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Name	**Combat 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	Increases Combat skill to 11. Prerequisite for Combat 12. Combat Specialists do not exist.
Summary	*Skill Level Increase - Combat, does NOT allow specialists*

Name	**Combat 12**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	Increases Combat skill to 12. Combat Specialists do not exist.
Summary	*Skill Level Increase - Combat, does NOT allow specialists*

Name	**Conscription**
DL	5
Pre-Req	Army (Combat research) Diplomacy 4 (Skill)
Recipe	N/A
Description	10% of Actives from the Tribe(s) with the research may participate in combat as Warriors. Restrictions: 1. These Actives participating as Warriors may only be used during defensive combats, eg. When your unit has been attacked. They may not be part of a Locating War Party.
Summary	*Combat Boost - Allows limited Actives to fight as Warriors.*

Name	**Home Guard**
DL	3

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Pre-Req	N/A
Recipe	N/A
Leads To:	Army (Combat research) Training (Combat research)
Description	A unit using Army in combat must be in MoTC with the Tribe with the research. It is the starting research for those developing Army. Home Guard provides an Army Factor increase from 1.0 to 1.2.
Summary	*Combat Boost - Increases Army Factor to 1.20 (+20% Damage)*

Name	**Training**
DL	5
Pre-Req	Home Guard (Combat research) Sergeant / Captain (*)
Recipe	N/A
Leads To:	N/A
Description	2. 50% of the Home Guard (that is, 5% of the Tribe's warriors) may be sent in an Element for training in the Field for terrain proficiency (which flows on to the whole Tribe). They must be assigned to Defence only in the hex in which they gain the TP – though they may do other Activities on the way. They are able to fight if attacked but may not attack in the turn of training. This may be done twice (in total for the Clan) per Calendar Year. Training lasts for 3 months. Players should include, for example, "Training GH 1/3" in Orders. 3. Six months of Training will increase the base level of Militia from 0 (in Combat and Leadership) to 1 (in Combat and Leadership). The presence of a Sergeant allows increases up to Lvl5, a Captain is required to Lvl10, and a Colonel to Lvl15. (see also Militia Training)
Summary	*Combat Boost - Long term training for Terrain Proficiency increase*

Name	**Veterans Class I**
DL	5
Pre-Req	Army (Combat research)
Recipe	N/A
Leads To:	N/A
Description	The Veterans Class I topic allows 15% of a ~~Tribe's~~ Unit's (with the research) Inactives to fight using ONLY missile weapons and/or heavy weapons. To qualify as Veterans Class I, 15% of the Tribe's Inactives AND AN EQUAL NUMBER OF normal WARRIORS must

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	train (as an activity and do nothing else) three months every year and each training month must fall in a different season (for example, cannot do all the training in the winter). Players are responsible for keeping records of this Inactives include older warriors who are experienced, but too old to stand in the line of battle. However, they are still capable of wielding missile weapons or serving heavy weapons, especially if they keep "in training". They may be deployed only in a defensive mode – eg when your unit has been attacked. They may not be part of a Locating War Party. Proposed by Steve Simmons
Summary	*Combat Boost - Allows limited Inactives to fight as Archers*

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Cooking

Name	**Banquet**
DL	5
Pre-Req	N/A
Recipe	1 Banquet (Once per Year): Cattle 20, Barrel of Grog 20 per 1000 participants
Leads To:	N/A
Description	Once per year, the participating Tribe receives a General Morale increase of 0.02. This uses 20 Cattle and 20 Barrels of Grog per 1,000 participants (the whole Tribe is deemed to participate but this is outside of normal activities and defense). The Host Tribe may invite one guest Tribe from either inside or outside the Clan. The guest is subject to the Morale increase. Cattle and drink must be shown as a Transfer to usage.
Summary	*Yearly expenditure of animal and alcohol for Morale increase.*

Name	**Great Work**
DL	5
Pre-Req	See Art Research
Recipe	See Art Research
Leads To:	See Art Research
Description	See Art Research
Summary	*Sacrifice Cultural Skill Levels for Morale increase*

Name	**Stew**
DL	3
Pre-Req	N/A
Recipe	40 Stew (Provisions): 1 Cook, 5 Goats
Leads To:	N/A
Description	Cooking Activity 1 Person (Cooking) produces 40 Stew (provisions) using 5 Goats. Requires Cookhouse (requirements as per Meeting House). 1 Cookhouse services 10 cooks. Cannot have more than one Cook per 100 population in the ***Clan*** when cooking Stew. The player is obliged to note figures.

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Summary	*More efficient generation of food. Also see Baking...*

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Courier

Name	**Barterer**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To:	Negotiator (Courier research)
Description	Courier Units from this Tribe gain an extra 5% payout when making a Trade Mission Delivery (Importer/Exporter, International City, etc). *Example:* If a Trade Mission has a payout of 20%, the Courier Unit would get 25% payout instead.
Summary	*Increases reward for Import/Export and International City Trade Missions by 5%.*

Name	**Negotiator**
DL	4
Pre-Req	Barter (Courier research)
Recipe	N/A
Leads To:	N/A
Description	The bonus to Courier unit payouts for Trade Mission deliveries is increased from +5% payout to +10% payout. *Example:* If a Trade Mission has a payout of 20%, the Courier Unit would get 30% payout instead.
Summary	*Increases reward for Import/Export and International City Trade Missions by 5%.*

Name	**Large Orders**
DL	7
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	Courier Units from this Tribe gain the Clan's max Fair Multiplier when buying/selling at Trading Towns (such as Conrad's Crossing, Shanghai, Creecross). These are locations with a Buy/Sell spreadsheet. This Fair Multiplier includes sources such as Castle, Wholesale Trade and City modifiers but not Fair 3 (this is not an actual multiplier) or special hex modifiers.

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	This has no effect on Trade Missions, Traders (X for Y), etc. *Example:* A Courier Unit with Large Orders in a Clan that has a City with Trading Post has a Fair Modifier of x3. If the Trading Town they are at sells Brass with a QTY of 100, the Courier unit could purchase QTY 300 at normal prices.
Summary	*Applies Clan's Fair Multiplier when Buy/Selling at Trading Towns.*

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Dance

Name	**Circus Troupe**
DL	4
Pre-Req	Animal Training (Herding research) Dance 11 (Dance research)
Recipe	N/A
Leads To:	N/A
Description	Completion of the Circus Troupe research allows the formation of a specialized Trade Element called a Circus Troupe. This specialized Trade Element follows all standard Trade Element rules. **Benefits:** • **Per Clan:** For each Clan, once per year, the Circus Troupe may perform a Circus for that clan. • **Target Clan Benefit**: A Clan which receives a Circus gains +0.05 General Morale Bonus to a single Tribe that is present at the site of the Circus. • **Circus Troupe Benefit:** Performing a circus at a Player Clan requires the target clan to pay 500 silver to the Circus. • **NPC Cities:** Performing a circus at an NPC City requires that the target NPC City pay 100 Coin to the Circus. A Circus Troupe may only perform for each NPC City once per year. **Requirements:** • Performers: A Circus Troupe must be comprised of at least 3 Performance Elephants, 6 Performance Horses, 10 Performance Dogs and 12 Dance Specialists. **Note:** Dance Specialists follow standard specialist rules and require Dance 11 to train.
Summary	*Yearly event to gain Morale and Silver*

Name	**Dance 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To:	Circus Troupe (Dance research)
Description	Increases Dance skill by 1. Allows training of specialists.
Summary	*Skill Level Increase - Dancing, Allows specialists*

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Name	**Great Work**
DL	5
Pre-Req	See Art Research
Recipe	See Art Research
Leads To:	See Art Research
Description	See Art Research
Summary	*Sacrifice Cultural Skill Levels for Morale gain*

Name	**Spring Arts Festival**
DL	6
Pre-Req	See Art Research
Recipe	See Art Research
Leads To:	Inter Spring Arts Festival Dance (Dance research)
Description	See Art Research
Summary	*Yearly event to raise Morale*

Name	**Inter Spring Arts Festival Dance**
DL	8
Pre-Req	Spring Arts Festival Art
Recipe	1 Amphitheatre: People 2k, Eng 8, Stone 10k, Cloth 1k, Silver 5k
Leads To:	N/A
Description	An upgrade to the Spring Arts Festival Dance so that its available to more people. **Bonus:** • Visitors: Tribes from other Clans may participate in your Spring Arts Festival Dance. **Requirements:** • **On Location:** To participate, the Tribes from other Clans must have a unit with WA (doesn't count Inactives) population in the hex with your Tribe and the Amphitheatre. **Restrictions:** • **No Hunting:** Units from other Clans participating in your Inter Spring Arts Festival Dance may not hunt during the Fair turn. **Notes: N/A**
Summary	*New Building – Amphitheatre, expands Festival to other Clans.*

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Diplomacy

Name	**Alliance MOTC**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To:	Trusted Maps (Captaincy research) Trusted Maps (Economics research) Trusted Maps (Leadership research) Federal Community of Clans (Leadership research)
Description	Once completed, this research topic allows MOTC to be declared between Tribes within Allied Clans (Alliances must be established using Corps Diplomatique BEFORE Alliance MOTC can be used) as if they were all members of a single Clan. To enable an Alliance MOTC, **ALL** the involved tribes must know this research topic and then sacrifice the requisite commodities (as explained below) and state which other Allied tribe(s) they will be joining with in a MOTC. An Alliance MOTC between tribes within two clans requires that each tribe sacrifice 10 units of a desired commodity and an additional 10 units of another, different non-desired commodity. An Alliance MOTC between tribes from three different clans requires that each tribe sacrifice 10 units of a desired commodity and an additional 10 units each of two, different non-desired commodities; e.g. each tribe sacrifices 30 commodities (10 of a desired commodity, 10 of one non-desired commodity and 10 of another different non-desired commodity). Between four clans requires 10 units of a desired commodity and an additional 10 units each of three, different non-desired commodities and so forth. This sacrifice simply enables an Alliance MOTC (and this fact should be shown in each clan's turn results). Once enabled, an Alliance MOTC may be held unused indefinitely and then used when needed by simply declaring a normal MOTC except that this MOTC may involve tribes from different clans. All involved tribes must be in a common hex when the Alliance MOTC is declared. A sacrifice allows one and only one Alliance MOTC to be declared. Further Alliance MOTC declarations each require their own sacrifices. Alliance MOTC Limitations – When an Alliance MOTC is declared, one of the participating tribes must be specified (by all participants) as the leader. At no time can the warriors from the other Alliance MOTC participants exceed the number of *warriors* in the leader's clan. This is enforced in a three-way MOTC, by limiting each of the other two (non-leader) participants' warriors to half the number of *warriors* in the leader's clan. In a four-way MOTC, this limit is reduced to a third and so forth. *An Alliance MOTC operates as a normal MOTC. Battles skills are averaged (weighted averaging) across all warriors in the MOTC. The one exception is Generalship. If the Tribe leading the Alliance MOTC possesses the Gship skill, its benefits accrue to all as the General is in command of the entire MOTC.* Finally, all tribes (except the Leader) involved in an Alliance MOTC lose all of their Skill Attempts while the MOTC is active. Once ended, an Alliance MOTC can

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	be reactivated ONLY by further sacrifices of commodities as described above.
Summary	*Combat Boost - Allows Meeting of the Clan with Alliance Mates*

Name	**Corps Diplomatique**
DL	7
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	Once a Tribe has completely researched Corps Diplomatique, it gains the ability to send Diplomats to other Clans, thus establishing diplomatic relations between the clans. The research is Tribe specific and Diplomats must originate from the Tribe (not Element) with the research. Diplomats are shown in your status – but they are also Inactive so transfer of Diplomat(s) means you must also transfer Inactive(s). Diplomatic Relations entail a variety of benefits, obligations and penalties as described below. **Benefit:** Diplomatic Relations are established by a Tribe, that possesses Corps Diplomatique, sending a diplomat to the main Tribe of another clan (not Element), and that tribe/village simultaneously accepting the diplomat. The Diplomat must be sent via an Element of the Tribe. Accepting the diplomat and thus Diplomatic relations, is ordered by the other Clan in the turn following the arrival of the Diplomat at that Clan. If both the send and accept orders are given in the same month, Diplomatic Relations are established between the two clans. Diplomatic Relations allows Trade Routes (see also Board of Trade as a requirement, see also Trade Routes/Depots) to be established between a village of one clan and a village of the other clan, as if both villages were part of one clan ~~including Depots and Goods Tribe relationship.~~ • NOTE: Corps Diplomatique does not allow the creation of a Goods Tribe between Clans, only setting up a Trade Route. Declaring war on a clan with whom you have Diplomatic Relations is a two step process. On Turn X, the clan must withdraw/expel the ambassador. This causes all diplomatic benefits in trade to be lost. On Turn (X+1), war can be declared normally. In such cases, the tribe (only of the clan that declares war) that sent/accepted the diplomat suffers a General morale penalty of 0.05.
Summary	*Send Diplomats out to form relations to assist with Trade Route setup*

Name	**Expanded Horizons, Expanded Horizons II**
DL	5, 5
Pre-Req	Expanded Horizons: Both Diplomacy 10 and Economics 10 in Clan* Expanded Horizons II: Expanded Horizons (Diplomacy or Economics research)

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Recipe	N/A
Leads To:	N/A
Description	Expanded Horizons: Upon completion, the Clan gains an additional Desired Commodity that provides Slaves. The type of Desired Commodity is determined by the GM randomly. Expanded Horizons II: Upon completion, the Clan gains an additional Desired Commodity that provides Hirelings. The Type of Desired Commodity is determined by the GM randomly. *Expanded Horizons requires that the Clan have, in any combination of its Tribes, both Economics 10 and Diplomacy 10. A Tribe may research this topic provided it has either one of the skills at 10 and itself or another tribe have the other skill at 10.
Summary	*Gain another one/two Desired Commodities to buy Hirelings/Slaves*

Name	**Extra Tribe**
DL	4 / 5 / 6 / …..
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	Completion of this topic allows the Clan to spawn an extra Tribe. This Tribe must be immobile. Standard costs apply. Notes: 1. Upon completion of this research, contact the GM to create the extra tribe and to have the research removed so it can be researched additional times. 2. The maximum number of Tribes that a Clan may have is 10. Creation of extra tribes through this research counts against this limit. Be aware that this may restrict your options for International NPC Tribes.
Summary	*Gain an extra Tribe, though it must be immobile.*

Name	**Fair 3**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	Only one Tribe per Clan may use the Fair3 (must be able to Trade, that is, with TP or Eco). A third Fair may be held in the Year. The effect is that you may trade at double quantity limits in EITHER Fair 04 or Fair 10 (please nominate which). Slaves are at double limits

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	for this Fair. If other modifiers to trading limits at Fair have already taken you to the x10 limit then Fair3 enables you to trade up to 20 times the limits (rather than 20 different trades) at Fair time. The reason for this is that Fair3 is actually a third Fair that has been bundled for administrative purposes.
Summary	*Your Clan may have a 3rd fair each year.*

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Distilling

Name	**Absinthe**
DL	5
Pre-Req	N/A
Recipe	1 Barrel: People 5, Grain 100, Herbs 10, Silver 5
Leads To	N/A
Description	Can be sold at Fair. Opening price at Fair is 500 Silver. Starting quantity at Fair is 20 Barrels. Further Details Coming
Summary	*New Item - Absinthe, Sells at Fair*

Name	**Branded Ale (Wine, Brandy, etc)**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Putting your own brand on an alcoholic beverage will enable your Branded <Alcohol> to sell at Fair for 1.5 normal prices. In combination with Eco research and later developments will see market competition, monopolies, guilds etc come into play. Each alcohol requires its own research topic. Branded Alcohol may be traded and sold by other Clans.
Summary	*New Item - Alcohol of your naming, Sells at Fair for +50% base price*

Name	**Distillers' Guild**
DL	4
Pre-Req	N/A
Recipe	1 Distiller's Guildhall: People 2k, Eng 8, Stn 8, Stone 10k, Gold 10, Silver 10k
Leads To	N/A
Description	**Description** The effects of a Distiller's Guild is to ensure that all Guild Members make a large profit off their alcohol and to help regulate the alcohol trade throughout the land by ensuring that there is not a glut of one type of beverage and a dirth of another. **Formation and Governance**

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Anyone who completes the research may choose to become a Guild Master by starting a Guild (done by informing the GM by email). Guilds are always public: the formation of new ones will be published in TribeNews and currently active ones will be listed on public TN portals. Membership of any Guild is limited to 10 Clans in total, including the Guild Master. A Clan may be a member of only one Guild of each type (Traders Guild 20 and Traders Guild 25 are considered the same type, Bargemen's Guild is a different type). A Clan may only be a member of one Exclusive Guild, such as Exotic Weavers Guild.

Distillers' Guild is an Exclusive Guild.

Membership is by invitation from the Guild Master to anyone they choose, cc'd to the GM: a clear acceptance to the offer must be sent to the Guild Master, cc'd to the GM. Players may seek membership once the formal invitation is issued. The Guild Master is not obliged to accept any particular appliacton for membership. It is incumbent on the Guild Master to maintain the list of the membership in their Guild. Players may leave a Guild at any time by notifying the Guild Master by email, cc'd to the GM. Benefits to the departing player lapse effective from the date of the resignation email. Players may be voted out of the Guild via 60% of membership in favour (the Guild Master counts as two members with two votes).

Any Guild may choose to write a Constitution, which must agreed with the GM. Any such document is always public knowledge and must be made available on public TN portals. It is the Guild Master's responsibility to ensure that this happens.

Should a Guild Master lose the capacity to run a Guild, a deputy can be appointed by the GM from amongst remaining Guild members. This deputy may continue to run the Guild as previously run but must immediately undertake any skill development and research necessary to support it. If no-one is able to act as deputy the Guild is dissolved and all benefits are lost.

Operation and benefits

Members of a Distillers Guild are allocated one type of Alcohol. Only two Guild Members may be assigned to each of the Alcohol types. Entry into the Guild allows the construction of a Distillers' Guildhall (see recipe above). Once a Distillers' Guildhall is constructed, a Guild Member gains a bonus when selling alcohol of their appropriate type at Fair or through any other NPC avenue (such as Taverns, trade towns, etc). **This bonus is equal to an extra 50% of base sale price for their appropriate Alcohol,** Branded included. For instance, Ale normally sells for 272 Silver per barrel. If the Chief is selling Ale and is in the Ale slot in the Guild, then each barrel would instead sell for 408 Silver. If the Chief is selling Branded Ale, then normally it is 272 * 1.5 but with Distillers' Guild it is now 272 * 2.0 = 544 barrels may be sold.

Alcohol Types (Other types may become available):

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	Ale: Brandy: Mead: Rum: Wine: Absinthe: Gin: Port:
Summary	*Guild, Up to 10 people may join. Increases payout for specific alcohol*

Name	**Gin**
DL	4
Pre-Req	N/A
Recipe	1 Barrel: People 5, Juniper 50, Grain 25, Herbs 1
Leads To	N/A
Description	Can be sold at Fair. Opening price at Fair is 1,000 Silver. Starting quantity at Fair is 20 Barrels.
Summary	*New Item - Gin, Sells at Fair*

Name	**Port Wine**
DL	2
Pre-Req	N/A
Recipe	1 Barrel: People 5, Distilling 7, Grapes 100, Brandy 10
Leads To	N/A
Description	Fortified Wine. Can be sold at Fair. Effects unknown. Further Details Coming
Summary	*New Item - Port Wine, Sells at Fair*

Name	**Road House**
DL	3
Pre-Req	Tavern (Distilling research)
Recipe	Road House: People 500, Eng 5, Logs 1000, Silver 2000
Leads To	N/A

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Description	A Roadhouse is a small inn or tavern for the local population. Road House allows the Clan to sell alcohol each turn to the Local population (shown as an annual delivery and sale) for Silver. Initially Road Houses are restricted to the 6 hexes that surround the Village owning the research, so 6 road houses in total can be operated – possibly further research could extend this range. Beverages that may be sold are restricted to Ale, Mead and Wine. 2 Barrels of each type of beverage may be sold per month per RH (that is, up to 24 Barrels per year with six operational Road Houses). The Tribe with the research must be involved in the building of the Tavern (but you can use Joint Project rules). You must nominate one of the Fair months (04 or 10) to sell your produce (at current Fair prices) and the goods must be incorporated into the Fair Trading Orders for that month. Proposed by Lucas Riley
Summary	*New Building - Roadhouse - Allows selling of alcohol each turn*

Name	**Tavern**
DL	4
Pre-Req	N/A
Recipe	Tavern: People 250, Eng 4, Logs 500
Leads To	Road House (Distilling research)
Description	Requires 500 logs to build, at Eng4 installed @ 2 per. The Tavern allows the owner to sell 2 times the normal limits on alcohol at the Fair. You do not need a Trading Post to do this. The normal limit is x 6 with Pol 10 and TP). If the Tribe with Tavern research and the Tribe conducting the Fair are different they may work together as long as they share the one Village site. Tavern with Wholesale Trading will x8 limits at Fair (noting the overall limit for Fair trading is x10). Note, in the longer term there would be the possibility a tavern could be built elsewhere to generate monthly income from the sale of beverages. A site may have a maximum of 10 Taverns.
Summary	*New Building - Increases Fair Multiplier for Alcohol only.*

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Economics

Name	**Bargemen's Guild**
DL	3
Pre-Req	N/A
Recipe	1 Bargeyard: People 160, Eng 5, Logs 300, Iron 100, Coal 100
Leads To	N/A
Description	Similar to the Traders Guild, the Bargemen's Guild allows members the transportation of goods from one Bargeyard to another Bargeyard along a pre-approved path. The effect of a Bargemen's Guild is to allow a limited degree of barge based transfers between Guild Members' units along nominated Guild Routes, which represent well travelled river routes amongst a stable trading community. Such transfers are facilitated by locals, i.e. no player element needs to be assigned or moved. **Operation and benefits** A Guild Route runs between two Bargeyards belonging to member Clans of the Guild (both Bargeyards may be owned by the same Guild member). A Guild Route consists of a continuous route of up to 120 Hex Sides that may be traveled by barges. Each Guild Route must be individually approved by the GM. Any member creating a new Guild Route must provide the GM with a graphical map showing the location of the units with Bargeyard and the proposed path in hexes. *NB Guild Route details are between the individual members involved and the GM. The Guild Master and other members need not have knowledge of all Guild Routes.* During Trade Fair months each Guild Member may conduct a single Guild Trade along an approved Guild Route. Such a Guild Trade is in addition to the normal fair; it does not count toward trade fair limits in any way. A Guild member may receive goods from as many members as are in their Guild, but may send goods only from a single Bargeyard. For each member of the Guild, the Guild Master receives 5 Gold annually (from locals), received on Turn 1 of each game year. For computational purposes the total membership in the Guild is determined at the time the preceding turn 12 TribeNews is published. The Guild Master must show this remittance as a Transfer. **Initial limits** 1. A Guild member may possess at most 2 Bargeyards at any one time. 2. A Guild member may possess at most 2 approved Guild Routes at any one time. 3.A Guild member may nominate a new Guild Route only once per game year. If already at the limit for Guild Routes, such a new proposal must nominate which route it is replacing. 4. A single Guild Trade may have at most 8 distinct items (plus barrels/containers for

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	liquids). Only one of these may be a research item; otherwise items must be available on the public fair list or be an Exotic good such as Jade, Tea, Frankincense, etc. Books, Artefacts, Relics, Scrolls, people in any form (population, slaves, locals, hirelings, mercenaries, etc.) and boats or ships of any kind cannot be traded in this way. 5. The total quantity of goods transferred in a single Guild Trade is limited to the capacity of 20 Barges (it is up to the player to calculate this – if the GM discovers an error the player will be notified, a second error and the player is forever barred from any Guild membership). Barges capable of carrying the quantity of goods transferred must be held at the sending Bargeyards, but do not need to be moved. 6. Animals may be traded this way at normal ship capacity limits. 7. Bargeyards are buildings and must be built in a village. **Standard Guild Rules (From Traders Guild):** **<u>Formation and Governance</u>** Anyone who completes the research may choose to become a Guild Master by starting a Guild (done by informing the GM by email). Guilds are always public: the formation of new ones will be published in TribeNews and currently active ones will be listed on public TN portals. Membership of any Guild is limited to 10 Clans in total, including the Guild Master. A Clan may be a member of only one Guild of each type (Traders Guild 20 and Traders Guild 25 are considered the same type, Bargemen's Guild is a different type). A Clan may only be a member of one <u>Exclusive Guild</u>, such as Exotic Weavers Guild, though Bargemens Guild is not an exclusive Guild. Membership is by invitation from the Guild Master to anyone they choose, cc'd to the GM: a clear acceptance to the offer must be sent to the Guild Master, cc'd to the GM. Players may seek membership once the formal invitation is issued. The Guild Master is not obliged to accept any particular application for membership. It is incumbent on the Guild Master to maintain the list of the membership in their Guild. Players may leave a Guild at any time by notifying the Guild Master by email, cc'd to the GM. Benefits to the departing player lapse effective from the date of the resignation email. Players may be voted out of the Guild via 60% of membership in favour (the Guild Master counts as two members with two votes). Any Guild may choose to write a Constitution, which must agreed with the GM. Any such document is always public knowledge and must be made available on public TN portals. It is the Guild Master's responsibility to ensure that this happens. Should a Guild Master lose the capacity to run a Guild, a deputy can be appointed by the GM from amongst remaining Guild members. This deputy may continue to run the Guild as previously run but must immediately undertake any skill development and research necessary to support it. If no-one is able to act as deputy the Guild is dissolved and all benefits are lost.
Summary	*Guild, 10 people may join, allows long distance river travel once per Fair*

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Name	**Board of Trade**
DL	8
Pre-Req	N/A
Recipe	N/A
Leads To	Entrepot (Economics research) Trade Camps (Economics research)
Description	Once a Tribe has completely researched Board of Trade, it gains the ability to create Trade Routes (see Trade Route) without performing further research. Sea Borne Trade Routes may be created via Board of Trade but your Clan must have already researched Sea Borne Trade Routes topic to do so. Board of Trade provides three distinct benefits: 1) Create Trade Routes (1 Trade Route per Admin Skill Level not already used) 2) Improved Land Trade Routes (See Create Trade Routes Note 1 & 2). 3) Improved Sea Borne Trade Routes (See Create Trade Routes Note 3 & 4) **Create Trade Routes:** A Tribe with Board of Trade (BoT) may create **1** Trade Route for every point of Admin skill that the Tribe with BoT has that is not already used to create Elements/Fleets. It takes 2 points of Admin skill for each Element/Fleet. (*Example: The Tribe with BoT has Admin 6 and has 2 elements which uses 4 of its 6 points of Admin. It may create up to 2 Trade Routes)*. Trade Routes follow all the rules of Trade Routes created under the Trade Routes research topic. The follow exceptions and notes apply: 1) Land Trade Routes may be a maximum length of 240 MV (instead of 120 MV normally allowed). 2) Units that move along Land Trade Routes have their speed doubled to 80 MV per Turn. 3) Sea Borne Trade Routes may be a maximum length of Unlimited MV (instead of 360 MV normally allowed). See *Sea Borne Trade Restrictions* below. 4) Units move along Sea Borne Trade Routes have their speed doubled to 120 MV per Turn. 5) Movement is unaffected by Weather. 6) Movement is done through GOTO orders to Waystations / NPC Sites along the Trade Route per the Trade Route rules. 7) A Trade Route slot may be terminated and reused after a two year wait. **How to Create and Maintain a Trade Route:** 1) In Activities, make an activity called Create and Administer Trade Route 1) Include the Unit at the other end of the route 2) Include what Trade Route number it is (First is 1, Second is 2, etc) 3) 5 Actives must be assigned each turn 4) When your next Payment must be made (Silver and Commodities) 2) Transfer (to usage) 10 of one of your Desired Commodities upon creation and

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annually

3) Transfer (to usage) 1500 silver upon creation and annually

Example of 1 Trade Route:

Unit	Activity	Item	People	Notes
2101	Admin Trade Route	0101e2	5	Route: 1, Silver 1500 & Opium 10 due Turn 6/811

Example of 3 Trade Routes:

Unit	Activity	Item	People	Notes
2101	Admin Trade Route	0101e2	5	Route: 1, Silver 1500 & Opium 10 due Turn 6/811
2101	Admin Trade Route	2101e1	5	Route: 2, Silver 1500 & China 10 due Turn 7/811
2101	Admin Trade Route	0101e1	5	Route: 3, Silver 1500 & China 10 due Turn 5/812

How to Dissolve a Trade Route:

1) In Activities, make an activity called End Trade Route
   a. Include the Trade Route Number
   b. Include when it was terminated
2) Note: That Trade Route number is able to be used again two years after the date it was terminated.

Example:

Unit	Activity	Item	People	Notes
2101	End Trade Route			Route: 1, Terminated 8/811

General Notes:

1) One end of a Trade Route must be the village that holds Board of Trade research.
2) Only 1 Board of Trade is allowed per Clan.
3) BoT Research is Tribe specific but any units belonging to the Clan (and only units from that Clan) may use the Trade Routes.
4) Units may not be absorbed or created via Trade Routes.

Sea Borne Trade Route Restrictions: Sea Borne Trade Routes created under Board of Trade (Requires both Board of Trade and Sea Borne Trade research topics to be held by the Clan) have an additional restriction that comes with the unlimited length of the trade route.

1) **A Jetty must be available along the Trade Route every 40 hexes**. This can be a standard Jetty named hex created per Mandate section 12.1.1 or any village with a Jetty.

Countered By: Destroying the Village with Board of Trade eliminates Trade Routes that originate from that village.

Note: A Fleet may only gain movement bonuses from three research topics simultaneously.

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	Examples include, but are not limited to, Board of Trade, Fast Fleet, Trusted Maps, etc.
Summary	*Allows formation of many Trade Routes. Trade Routes allow rapid movement of goods/units*

Name	**Brothel**
DL	5
Pre-Req	N/A
Recipe	Brothel: People 1000, Eng 6, Logs 2000
Leads To	N/A
Description	Engineering Activity A Brothel houses 30 Courtesans @300 Silver (30 Actives) need to be assigned during the Fair. Enables the sale of sex as a Trade Fair item generating up to 9000 Silver and does not count against Fair limits. One brothel per Fair. Can lead to the research of higher class establishments such as the Bordello (in Shanghai or other NPC National Capitals) whereupon the research may be linked with Spying and/or the generation of more valuable commodities such as Gold, Silk etc. Note: Is coded
Summary	*New Building - Brothel, New Fair activity for silver*

Name	**Carnival**
DL	3
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	A Carnivale replaces a single Fair each year. A Tribe that has completed Carnival has its Fair Multiplier quadrupled (x4) for a single Fair (month 4 or month 10 but not both). The number of Fair Slots remain the sale (10 buy/sell slots) but the quantities for each slot are quadrupled (If you could normally buy 10 Hives, with Carnival you could by 40 Hives). In the event that multiple research topics or special hexes modify the Fair Multiplier, Carnival quadruples(x4) the Fair Multiplier to a maximum Fair Multiplier of x10. For instance, if you have a City with Trading Post, your Fair Multiplier is x3. With Carnival, it would be x12. If the City with Trading Post also has a Castle, it would have a fair multiplier of 1 x 3 (City w/ TP) x 2 (Castle) x 4 (Carnival) = x24 however the maximum Fair Multiplier is x10, so it would round down to x10.

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Summary	*Replaces one Fair with Carnival and larger Fair Multiplier*

Name	**Entrepot**
DL	5
Pre-Req	Board of Trade (Economics Research)
Recipe	1 Entrepot: People 250, Eng 3, Log 400, Iron 500, Gold 10, Silver 1000
Leads To	
Description	A Clan that has the Entrepot research topic may build Entrepots in villages. Entrepots may be built in villages for other Clans but they have no effect. **Entrepots effects only work in conjunction with Board of Trade routes.** 1. **Land Route:** Normally Board of Trade requires that all trade route slots to have one end at the village possessing Board of Trade. Villages with Entrepot connected back to the Board of Trade village through Trade Routes count as if they were the Board of Trade village themselves for purposes of creating new Trade Routes.This trade route still takes up one of the Board of Trade slots. *Clarification, the TR from the Board of Trade to the Village containing an Entrepot counts as one slot against the Board of Trade and the TR leading onward from the Village w/Entrepot counts as a second slot.* 2. **Sea Borne Route:** Increases the segment span for Sea Borne Board-of-Trade Trade Routes from 40 to 80 hexes between villages with jetties / jetties provided that the Sea Borne Trade Route starts and ends at two villages with Entrepots. It does not increase speed of movement, only the distance between the required villages/jetties. (See Board of Trade Miscellaneous Notes #5). A Sea Borne Route that uses any number of Entrepots takes up an additional Board of Trade Route slot (effectively taking up 2 slots total). Example – Land: Normal: (Board of Trade) ---TR-→ (Village) Example: (Board of Trade) ---TR-→ (Village w/ Ent) ---TR -→ (Village) Example: (Board of Trade) ---TR-→ (Village w/ Ent) ---TR -→ (Village w/ Ent) –TR-> *Entrepot, otherwise known as a transshipment port, is a port, city or trading post where merchandise is imported, stored and traded only be to exported again. It is a way point along the great trade routes. As trade routes grew, so did the existence of Entrepots. Historical Entrpots are Hong Kong, Amsterdam, Cape of Good Hope, New Orleans, etc.*
Summary	*Allows Trade Routes via Board of Trade to branch off or be placed in series*

Name	**Expanded Horizons, Expanded Horizons II**

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DL	5, 5
Pre-Req	Expanded Horizons: N/A Expanded Horizons II: Expanded Horizons (Diplomacy or Economics research)
Recipe	N/A
Leads To	N/A
Description	Expanded Horizons: Upon completion, the Clan gains an additional Desired Commodity that provides Slaves. The type of Desired Commodity is determined by the GM randomly. Expanded Horizons II: Upon completion, the Clan gains an additional Desired Commodity that provides Hirelings. The Type of Desired Commodity is determined by the GM randomly.
Summary	*Provides Clan with another one/two Desired Commodities to buy Hirelings/Slaves*

Name	**Goods Tribe Economic Zone**
DL	6
Pre-Req	Leadership 10 (Group B skill) Economics 10 (Group B skill)
Recipe	1 Administrative Building: People 600, Eng 8, Stone 3000
Leads To	N/A
Description	An advanced and economically literate society with a disciplined military collaborate to achieve a more efficient organization of goods and their transportation. A Unit with this research may be assigned as the Goods Tribe for units within Range 2 of the Unit versus the standard range 1 (Adjacent).
Summary	*Goods Tribes may be at distance 2 instead of 1.*

Name	**Hire Security**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Once per year a Tribe (ONE Tribe only per Clan may have this research) may hire up to 50 Security per Security level for a 12 month period @ 20 Silver each for the Year. Need to be equipped but not fed. Act at Tribe levels and are shown in addition to Warrior numbers.
Summary	*Tribe may hire extra security to protect against Spies/Assassins*

Name	**Market Place**

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DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	The number of items traded at the Fair may be increased from 10 to 15. You need the research to use, but do not need it to build.
Summary	*Fair - Increases the number of Fair Slots by +5*

Name	**Merchant Navy Guild**
DL	2
Pre-Req	Shipbuilding 10 (Skill)
Recipe	1 Merchant Navy Shipyard: People 150, Eng 6, Logs 300, Iron 50, Coal 100
Leads To	N/A
Description	Similar to the Traders Guild, the Merchant Navy Guild allows members the transportation of goods from one Merchant Navy Shipyard to another Merchant Navy Shipyard along a pre-approved path. The effect of a Merchant Navy Guild is to allow a limited degree of fleet based transfers between Guild Members' units along nominated Guild Routes, which represent well travelled ocean routes amongst a stable trading community. Such transfers are facilitated by locals, i.e. no player element needs to be assigned or moved. **Operation and benefits** A Guild Route runs between two Merchant Navy Shipyards belonging to member Clans of the Guild (both Merchant Navy Shipyards may be owned by the same Guild member). A Guild Route consists of a continuous route that may be traveled by ships. Each Guild Route must be individually approved by the GM. Any member creating a new Guild Route must provide the GM with a graphical map showing the location of the units with Merchant Navy Shipyard and the proposed path in hexes. Routes may be up to 60 contiguous water or coastal hexes in length. These routes are particularly well travelled and have been thoroughly researched by sailors. *NB Guild Route details are between the individual members involved and the GM. The Guild Master and other members need not have knowledge of all Guild Routes.* During Trade Fair months each Guild Member may conduct a single Guild Trade along an approved Guild Route. Such a Guild Trade is in addition to the normal fair; it does not count toward trade fair limits in any way. A Guild member may receive goods from as many members as are in their Guild, but may send goods only from a single Merchant Navy Shipyard. For each member of the Guild, the Guild Master receives 5 Gold annually (from locals), received on Turn 1 of each game year. For computational purposes the total membership in the Guild is determined at the time the preceding turn 12 TribeNews is published. The

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Guild Master must show this remittance as a Transfer.

Initial limits

8. A Guild member may possess at most 2 Merchant Navy Shipyards at any one time.

8. A Guild member may possess at most 2 approved Guild Routes at any one time.

8. A Jetty must be built every 20 hexes along the Guild Route.

8. A Guild member may nominate a new Guild Route only once per game year. If already at the limit for Guild Routes, such a new proposal must nominate which route it is replacing.

8. A single Guild Trade may have at most 8 distinct items (plus barrels/containers for liquids). One of these may be a research item and one may be a book, otherwise items must be available on the public fair list or be an Exotic good such as Jade, Tea, Frankincense, etc. Artefacts, Relics, Scrolls, people in any form (population, slaves, locals, hirelings, mercenaries, etc.) and boats or ships of any kind cannot be traded in this way.

6. The total quantity of goods transferred in a single Guild Trade is limited to the capacity of 5 Traders (it is up to the player to calculate this – if the GM discovers an error the player will be notified, a second error and the player is forever barred from any Guild membership). Ships capable of carrying the quantity of goods transferred must be held at the sending Merchant Navy Shipyards, but do not need to be moved.

7. Animals may be traded this way at normal ship capacity limits.

8. Merchant Navy Shipyards are buildings and must be built in a village.

Standard Guild Rules (From Traders Guild):

Formation and Governance

Anyone who completes the research may choose to become a Guild Master by starting a Guild (done by informing the GM by email). Guilds are always public: the formation of new ones will be published in TribeNews and currently active ones will be listed on public TN portals. Membership of any Guild is limited to 10 Clans in total, including the Guild Master. A Clan may be a member of only one Guild of each type (Traders Guild 20 and Traders Guild 25 are considered the same type, Merchant Navy Guild is a different type). A Clan may only be a member of one Exclusive Guild, such as Exotic Weavers Guild, though Merchant Navy Guild is not an exclusive Guild. ~~, Bargemen's Guild and Merchant Navy Guild.~~ Membership is by invitation from the Guild Master to anyone they choose, cc'd to the GM: a clear acceptance to the offer must be sent to the Guild Master, cc'd to the GM. Players may seek membership once the formal invitation is issued. The Guild Master is not obliged to accept any particular application for membership. It is incumbent on the Guild Master to maintain the list of the membership in their Guild.

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	Players may leave a Guild at any time by notifying the Guild Master by email, cc'd to the GM. Benefits to the departing player lapse effective from the date of the resignation email. Players may be voted out of the Guild via 60% of membership in favour (the Guild Master counts as two members with two votes). Any Guild may choose to write a Constitution, which must agreed with the GM. Any such document is always public knowledge and must be made available on public TN portals. It is the Guild Master's responsibility to ensure that this happens. Should a Guild Master lose the capacity to run a Guild, a deputy can be appointed by the GM from amongst remaining Guild members. This deputy may continue to run the Guild as previously run but must immediately undertake any skill development and research necessary to support it. If no-one is able to act as deputy the Guild is dissolved and all benefits are lost.
Summary	*Guild, 10 people may join, Once per fair allows long distance lake/ocean goods move.*

Name	**Sea Borne Trade**
DL	~~8~~ 6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Once a Tribe has researched Sea Borne Trade, it gains the ability to create a water borne trade route. This route must consist only of hexes and hexsides that are passable by a fleet, thus requiring both the starting and ending villages to be accessible by water. **Benefit:** Sea Borne Trade operates under all the rules and restriction of land-borne trade routes. Of course carrying capacity is determined by the vessels assigned to the trade fleet, rather than by land-based conveyances. Historically, Sea Borne Trade was more efficient than land-borne trade. Thus the movement of a trade fleet is 60 MV points. The maximum distance permitted for Sea Borne Trade is 360 MV points and must end at a village with a Jetty. Way stations along the route must be provided every 20 hexes. A Way Station is a hex with a Jetty (either village or jetty named hex as per Mandate 12.1.1). Ocean (or Lake) hexes cost 3 Movement Points for all trade route purposes. It needs to carry with enough provs to travel the distance. A maximum of 5 distinct items may be traded this way. **Counters:** Naval patrol in the hex of arrival. Note: GM requests that people with Sea Borne Trade Route review the Jetty requirements for SBT. Jetty requirement is modified by Board of Trade and other research topics.
Summary	*Trade Route formed across sea for rapid movement of units / goods.*

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Name	**Second Caravan**
DL	2
Pre-Req	Traders Guild 20 (Economics research)
Recipe	N/A
Leads To	N/A
Description	Upon completing this research, a Traders Guild (20 or 25) allows each of its members to utilize a second caravan every fair month. The second caravan follows all rules that the first caravan follows. If each of the caravans starts from different caravanserai then only 100 wagons are required at each starting point. If both caravans start from the same Caravanserai location then 100 wagons for each caravan is required at that starting location. *Example: If two caravans start from the same village, then you need 200 wagons at that village.* *Example: If a caravan starts from village A and a caravan starts from Village B, then Village A needs 100 wagons and Village B needs 100 wagons.*
Summary	*Guild Master upgrade to Traders Guild 20/25 to allow all members two transfers a fair*

Name	**Supply**
DL	8
Pre-Req	Generalship (Leadership)
Recipe	N/A
Leads To	N/A
Description	Mercenaries may be used offensively.
Summary	*Combat Boost - Mercenaries may attack.*

Name	**Trade Camps**
DL	2
Pre-Req	Trade Route (Economics research) OR Board of Trade (Economics research)
Recipe	N/A
Leads To	N/A
Description	Allows a Trade Route or a Board of Trade Trade Route to have one end of a Trade Route's link at a Garrison, Agent or immobile Courier that belongs to your Clan. This does not need to be a village (it does not need to have a Meeting House). Normal rules about paying for route or changing route apply.

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	Note: Garrisons are immobile, similar to villages. This is a way to set up a linked garrison near a friendly player without affecting their Politics / Local Support distance requirements.
Summary	*Allows Trade Routes to end in a hex that doesn't have a Meeting House.*

Name	**Trade Element – Increased Movement**
DL	2
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Adds 4 MV to the Clan's Trade Element.
Summary	*Increases Trade Element (e9) movement by +4*

Name	**Trade Routes**
DL	6
Pre-Req	N/A
Recipe	1 Depot: People 2250, Eng 7, Stone 10k, Log 500, Parchment 200 1 Warehouse: People 2250, Eng 7, Stone 10k, Log 500, Parchment 200 1 Waystation: People 50, Eng 2, Logs 100
Leads To	Trade Camps (Economics research)
Description	Each Trade Route needs to be researched separately *(but see Board of Trade)*. Trade Routes are dedicated paths from one player village to another player village that Units may utilize to move more rapidly provided that they meet the requirements for using a Trade Route. Trade Routes may also be used to form Goods Tribe relationships at a distance through the use of Depots. **Requirements to Create a Trade Route:** 1. The Trade Route must start at a Player Village owned by the Clan with the Research Topic. Village is defined as having a Meeting House. 2. The Trade Route must end at a Player Village owned by the Clan with the Research Topic. (Some research may modify this requirement). Village is defined as having a Meeting House. 3. The Trade Route may be a maximum of **120 MV** from a starting village to the end village. (Some research may modify this requirement) 4. The Trade Route may not cross water (Lakes, Rivers, Ocean) though it may cross Fords. 5. The Trade Route may not cross impassable terrain (High Snow Mountains, etc) though it may cross such terrain if it is through the use of Passes.

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How to Create a Trade Route:

1. Designate the Starting Village (Include map Coordinates, AA 0101 for example)
2. Designate the End Village (Include map Coordinates, ZZ 0101 for example)
3. Designate the location of Waystations along the Route. (Include map coordinates)
    - Waystations are explained below under the Waystation section.
    - There must be one Waystation or NPC Site every 40 MV approximately
        i. *See Partial MV Waystations under the Waystation section.
    - Waystations may not be built closer than 20 MV from another Waystation in the same Trade Route.
    - Waystations are not required to be built at NPC sites with the exception of International Cities which require a Warehouse.
    - *See Construction of Waystations under the Waystation section.
4. Create a map showing the exact route and showing the exact MV cost for that route. Include the location of the Waystations or NPC Sites along the Trade Route.
5. Provide the information above to the GM. The GM will record the information and add the Waystations to the TribeNet map Database.
6. Note: Trade Routes may not be changed normally. However, Trade Routes provided by Board of Trade may be changed as per the Board of Trade research topic.

Requirements to Use a Trade Route:

1. The Unit must belong to the Clan with the Research or have Diplomatic Relations via Corps Diplomatique with the Clan with the Research.
    a. You **can not** use a Trade Route belonging to another Clan if you are only Truced with that Clan.
2. A Unit must contain at least 20 Warriors to utilize the Trade Route. Each Warrior must have metal weapons and armour.
3. A Unit may move up to **40 MV** per turn along a Trade Route. (This can be modified with other research)

How to Use a Trade Route:

1. Include a Comment in the Orders stating which Unit will be utilizing a Trade Route, which Trade Route it is utilizing (Start and End Points) and if it will be arriving at the end of a trade route or at a waystation.
2. Utilize the GOTO <HexCoordinate> Movement order (if using Automatic Orders) or state to which Hex the unit is moving. The destination for the move order must be an appropriate Waystation, NPC Site or one of the Player Village end points.
    a. A Unit may move up to 40 MV along a Trade Route each turn and must end its movement at a Waystation, NPC Site or a Player Village at either end of the Trade Route. *See Partial MV Waystations under the Waystation section.
3. Movement along a Trade Route follows the pre-determined path from the creation of the Trade Route. A unit does not need to follow the path to the very ends and may enter or leave a Trade Route at either of the end points or at a Waystation or

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NPC Site.

Waystations:

- Waystations are movement end points along a Trade Route. When a Unit moves along a Trade Route, it will always end its turn at an NPC Site, a Waystation or at one of the two Player Villages at the ends of the Trade Route.
- Units on a Waystation are vulnerable (unless the Hex is otherwise combat free)
- Waystations are designated and constructed when the Trade Route is created and are added to the map as a named location. Because of this, other Clans may see the named Hex and know that Units utilizing a Trade Route may end their movement at this hex. When a Trade Route is created, the Workers needed to build the required Waystations must be kept unassigned (to simulate them working on the Waystations) and the Logs must be sent to Usage.
- Waystations may be Player Villages that belongs to the Clan that created the Trade Route.
- Waystations act as if they are Meeting Houses for purposes of controlling hexes. Ie other clans may not build structures or otherwise control the hex via Ford Bloackade.
- Waystations are named, for example, "0123 Waystation".
- ~~A single Hex may have Waystations belonging to multiple Clans. (A Hex could be named "0250 and 0900 Waystations" for example. If a single hex becomes overburdened with Waystations, it may be renamed and the information stored in the hex database differently).~~
- NPC Sites do not typically need to be designated with the Waystation name, as they already have the name of the Site. However, International Cities (such as Beijung, Tokyo, Trier) that are to be utilized as a Waystation, must have a Warehouse actually built in their hex.
    - A list of the Warehouses in an International City will be listed along with the special hex information. For instance, when arriving at Tokyo and requesting information about the special hex, the GM will provide the list of Clans with Warehouses in that International City as part of the Special Hex text.
- **Defense:** Waystations belong to a specific Clan and fortifications built at such a Waystation may only be utilized by that Clan. Unoccupied waystation buildings may be torn down normally. See "Keep" research for further defensive options.
- **Construction:**
    - 1 Waystation: People 50, Eng 2, Logs 100
        - People should be left unassigned and the Logs transferred to usage.
    - Warehouses in an International City must actually be built by Clans using them.
        - 1 Warehouse: People 2250, Eng 7, Stone 10k, Log 500, Parchment 200
    - After a Trade Route is created, new / replacement Waystations may be built by a Unit that is physically in the Hex location that will hold the Waystation.

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- **Partial MV Waystation:** Sometimes 40 MV will not be perfectly aligned with entrance into a Hex (For instance, 13 PR is 39 MV while 14 PR is 42 MV). As a Unit moves 40 MV, the Waystation will need to be designated on either of these hexes. It is allowable to be either of these hexes (in the example either on the 13th or 14th PR). For example, a Unit utilizing the Trade Route (120 MV in total / 40 PR hexes) with the first Waystation on the 14th PR hex would move 42 MV the first turn to end on that 14th PR Waystation, then would move 39 MV the second turn (to end on the 27th PR) and then finally 39 MV the third turn (to end on the 40th PR end point). Use of these 'rounding' issues cannot shorten a trip from 3 turns down to 2 turns, etc.
- **Destruction and Reconstruction:**
  - Waystations may be torn down through standard rules for destroying buildings through reverse engineering. To destroy a Waystation, any defenders in the hex must be defeated in Combat.
  - Upon destruction of a Waystation, the owning Clan is notified that their Waystation on the trade route at that specific location has been destroyed. When a Waystation is destroyed, the Trade Route may still be used provided there are enough stopping points along the route that a Unit may stop at the end of each turn along the Trade Route while moving no further than 40 MV (*See Partial MV Waystation), but the Waystation may not be stopped at since it was destroyed.
  - Waystations that have been destroyed may be recreated but it requires a Unit at the location, 50 effective workers and 100 Logs to be used. New Waystations may likewise be built following standard building and Waystation rules.

Depots:

- A Depot allows units from the Clan to form a Goods Tribe relationship from one end of the Trade Route to the other end of the Trade Route.
- Depots do not require additional research. If a Trade Route can be formed, the player may also utilize Depots on that Trade Route.
- Construction:
  - Depots may be constructed at either end of a Trade Route at a Player Village but not at a Waystation or NPC Site.
  - 1 Depot: People 2250, Eng 7, Stone 10k, Log 500, Parchment 200
- A Unit at the Player Village that holds the Depot may be set as a Goods Tribe by any Unit from the Clan at the other end of the Trade Route, even though they are not in the same / adjacent hexes.
- Arms and Armour must be held by each Unit using a Depot (that is, not held by the GT) – This may only be adjusted from the Depot once every six months and the player must clearly indicate when this happens via Comments in their Orders.
- Population may be transferred from one Unit to another via this Depot relationship but is limited to a total of 300 People per month and includes Slaves, Hirelings, Mercenaries in addition to the regular W/A/I population types.
- NOTE: Corps Diplomatique does not allow the creation of a Goods Tribe between

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	Clans, only setting up a Trade Route. **Miscellaneous Information:** • Economic research may be possible to allow the hijacking of a Unit utilizing a Trade Route or other subversive Activities that might be dreamed up by players. Example of Creation: *I am creating a Trade Route from my village (Parkerville) at BC 0204 to my village (Williansburghough) at BD 0204. This is a total of 90 MV. Waystations are at BC 0904 (21 MV from Parkerville) and BC 2304 (42 MV from Waystation BC 0904 – see Partial MV Waystation, and 30 MV from Williansburghough). An NPC site (Silk Exporter) is located at BC 3004. Here is the map (Map inserted in email).* **Converting old Trade Route to New Trade Route:** Over the next 6 turns, contact the GM to reform the Trade Route utilizing the new rules regarding Waystations. The Beginning and End villages should remain the same but the route may be changed to take into account the expanded use of the Trade Route rules.
Summary	*Allows long distance rapid transport of goods / units between two points.*

Name	**Traders Guild 20**
DL	1
Pre-Req	N/A
Recipe	N/A
Leads To	Second Caravan (Economics research) Traders Guild 25 (Economics research)
Description	**Description** The effect of a Traders Guild is to allow a limited degree of short- range transfers between Guild Members' units along nominated Guild Routes, which represent well travelled paths amongst a stable trading community. Such transfers are facilitated by locals, i.e. no player element needs to be assigned or moved. **Formation and Governance** Anyone who completes the research may choose to become a Guild Master by starting a Guild (done by informing the GM by email). Guilds are always public: the formation of new ones will be published in TribeNews and currently active ones will be listed on public TN portals. Membership of any Guild is limited to 10 Clans in total, including the Guild Master. A Clan may be a member of only one Guild of each type (Traders Guild 20 and Traders Guild 25 are considered the same type, Bargemen's Guild is a different type). A Clan may only be a member of one Exclusive Guild, such as Exotic Weavers Guild, though Traders Guild is not an exclusive Guild. Membership is by invitation from the

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Guild Master to anyone they choose, cc'd to the GM: a clear acceptance to the offer must be sent to the Guild Master, cc'd to the GM. Players may seek membership once the formal invitation is issued. The Guild Master is not obliged to accept any particular appliacton for membership. It is incumbent on the Guild Master to maintain the list of the membership in their Guild. Players may leave a Guild at any time by notifying the Guild Master by email, cc'd to the GM. Benefits to the departing player lapse effective from the date of the resignation email. Players may be voted out of the Guild via 60% of membership in favour (the Guild Master counts as two members with two votes).

Any Guild may choose to write a Constitution, which must agreed with the GM. Any such document is always public knowledge and must be made available on public TN portals. It is the Guild Master's responsibility to ensure that this happens.

Should a Guild Master lose the capacity to run a Guild, a deputy can be appointed by the GM from amongst remaining Guild members. This deputy may continue to run the Guild as previously run but must immediately undertake any skill development and research necessary to support it. If no-one is able to act as deputy the Guild is dissolved and all benefits are lost

Operation and benefits

A Guild Route runs between two Caravanserai (Eng 2, requires 200 logs installed at rate of 2/person) belonging to member Clans of the Guild (both Caravanserai may be owned by the same Guild member). A Guild Route consists of up to 20 contiguous land hexes (including the destination but not the start, so adjacent hexes represent a 1-hex Guild Route). Rivers, Hill and Low Mountain hexes may be freely crossed by a Guild Route . Lake, Ocean or High Mountain are impassable to a Guild Route. Each Guild Route must be individually approved by the GM. Any member creating a new Guild Route must provide the GM with a graphical map showing the location of the units with Caravanserai and the proposed path in hexes. *NB Guild Route details are between the individual members involved and the GM. The Guild Master and other members need not have knowledge of all Guild Routes.*

During Trade Fair months (Turns 04 and 10) each Guild Member may conduct a single Guild Trade along an approved Guild Route. Such a Guild Trade is in addition to the normal fair; it does not count toward trade fair limits in any way. A Guild member may receive goods from as many members as are in their Guild, but may send goods only from a single Caravanserai.

For each member of the Guild, the Guild Master receives 5 Gold annually (from locals), received on Turn 1 of each game year. For computational purposes the total membership in the Guild is determined at the time the preceding turn 12 TribeNews is published. The Guild Master must show this remittance as a Transfer.

Initial limits

1. A Guild member may possess at most 2 Caravanserai at any one time.

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	2. A Guild member may possess at most 2 approved Guild Routes at any one time. 3.A Guild member may nominate a new Guild Route only once per game year. If already at the limit for Guild Routes, such a new proposal must nominate which route it is replacing. 4. A single Guild Trade may have at most 8 distinct items (plus barrels/containers for liquids). Only one of these may be a research item; otherwise items must be available on the public fair list or be an Exotic good such as Jade, Tea, Frankincense, etc. Books, Artefacts, Relics, Scrolls, people in any form (population, slaves, locals, hirelings, mercenaries, etc.) and boats or ships of any kind cannot be traded in this way. 5. The total quantity of goods transferred in a single Guild Trade is limited to the capacity of 100 Wagons (it is up to the player to calculate this – if the GM discovers an error the player will be notified, a second error and the player is forever barred from any Guild membership). Wagons capable of carrying the quantity of goods transferred must be held at the sending Caravanserai, but do not need to be moved. 6. Animals may be traded this way at a rate of 2 wagons = 2 elephants, 5 horses/cattle/dogs (untrained only), 20 goats (NB the equivalent wagons still need to exist in the sending Caravanserai). 7. Caravanasarai are buildings and must be built in a village. ***Possible Future developments*** *Depending on the popularity of this topic and GM workload, there may be considerable scope for additional research topics to improve member benefits, e.g. by increasing the number of Caravanserai belonging to a Guild Member, or quantity of goods (not number of items) transferred in a Guild Trade, or possibly even the number of Guild Routes a single member may possess, preferential rates at Trade Fairs or indeed just about anything else you can think of! Once multiple Guilds exist there may be scope to form one or more Associations of Guild Masters with the power to set rules affecting all Guilds whose Masters join the Association, and which may be able of offer additional benefits. The details of any of these ideas (or any others you may have!) are yet to be negotiated with the GM, however all agreed research topics relating to developing Traders Guild benefits will always be on the public Research List.* Note: No books
Summary	*Guild, 10 members may join, allows one long distance transport of goods per fair*

Name	**Traders Guild 25**
DL	3
Pre-Req	Traders Guild 20 (Economics) Politics 10 (Skill)

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	Economics 10 (Skill)
Recipe	N/A
Leads To	N/A
Description	A clan with highly developed Pol skill influences locals out to a longer range than one without. Effect is the same as TG20 but with a 25-hex range. Any Guild Master completing this research automatically upgrades the trading range of any Guild member who also possess Pol 10. *25 hexes is the maximum possible range of a Guild Trade.*
Summary	*Increases distance of transport for Traders Guild 20.*

Name	**Trusted Maps**
DL	3
Pre-Req	Alliance MotC (Diplomacy research) Or Alliance MotC (Leadership research)
Recipe	N/A
Description	To Benefit from this research, a Clan must: 1) Have completed Alliance MotC Research. 2) Must have a declared alliance in which at least one member has the Sea Borne Trade Routes research. 3) Must have established Diplomatic Relations with the clan that completed Sea Borne Trade Routes research. Any fleet in the Tribe holding this research has their MV increased by 50% when using Sea Borne Trade Routes. If combined with other research, this bonus is additive, not cumulative. Note: A Fleet may only gain movement bonuses from three research topics simultaneously. Examples include, but are not limited to, Board of Trade, Fast Fleet, Trusted Maps, etc.
Summary	*Speeds up naval movement along Sea Borne Trade Routes*

Name	**Toll Gate**
DL	3
Pre-Req	N/A
Recipe	Toll Gate: People 700, Eng 6, Stone 2000, Logs 500, Iron 500
Leads To	N/A
Description	A City with a stone wall surrounding it may build toll gates (2 required). These toll gates enable the gathering of taxes from the locals.

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	Once a City has two (2) Toll Gates, it gains either Gold 100 or Coin 1000 immediately and every twelve months. Only Cities may have Toll Gates. Toll Gates may only be built for the Research Holder's City.
Summary	*New Building - Toll Gate, Build two toll gates and get Gold/Coin yearly*

Name	**Wholesale Trading**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	A Tribe that has completed Wholesale Trading has its Fair Multiplier doubled. The number of Fair Slots remain the sale (10 buy/sell slots) but the quantities for each slot are doubled (If you could normally buy 10 Hives, with Wholesale Trading you could by 20 Hives). In the event that multiple research topics or special hexes modify the Fair Multiplier, Wholesale Trading doubles the Fair Multiplier to a maximum Fair Multiplier of x10. For instance, if you have a City with Trading Post, your Fair Multiplier is x3. With Wholesale Trading, it would be x6. If the City with Trading Post also has a Castle, it would have a fair multiplier of 1 x 3 (City w/ TP) x 2 (Castle) x 2 (Wholesale Trading) = x12 however the maximum Fair Multiplier is x10, so it would round down to x10.
Summary	*Increases Fair Multiplier by x2*

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Engineering

Name	**Barbican**
DL	4
Pre-Req	Drawbridge (Engineering research) Gatehouse (Engineering research)
Recipe	Barbican: Eng 10, Stone 4000, Logs 500, Iron 500, Silver 10000
Leads To	N/A
Description	A Barbican commonly was made up of 4 Stone Towers with a seamless structure in-between the towers, which housed a garrison, the winch mechanisms for the drawbridge and portcullises, its own wells, etc. In effect a Keep that defended the gate. It takes 4 x damage to standard Stone Tower to destroy them. Adds + 4 to the effective Archery Skill for defenders in combat. (This incorporates the +2 from Drawbridge) Barbicans may be built for other Clans. Barbicans may be used by other Clans in their villages. Barbican solved the problem of defence by turning the Gatehouse into a Keep-like structure that had 2 sets of gates and portcullises (an steel-reinforced wooden latticed gate - the lattice "holes" were big enough to put a polearm through, but not a body part), a common tactic was to let the enemy in by the first, putting up a weak defence and letting them "break through" the outer gates. Then when their initial press of enemy infantry was in the entrance tunnel/passage, both portcullises would slam shut at the front and the back for the entrance tunnel trapping the enemy. Thus allowing the defenders to slaughter the enemy troops trapped in-between the front and back portcullises through the murder-holes in the roof of the passage-way and firing arrows in through the rear portcullis. The enemy army would also be powerless to stop the slaughter and (as was intended) would suffer a morale loss from having seen their best troops (who had led the charge) slaughtered in front of them. Proposed by Paul Malone
Summary	*Combat Boost - New Building - Barbican, Bonus to Archery when defending*

Name	**Canals**
DL	7
Pre-Req	N/A
Recipe	Canal (One Hex-Side): People 40000 in flat or swamp Canal (One Hex-Side): People 50000 in all other terrain. Remove Ford (One Hex-Side): People 1000 w/ Tools, Wagons 10, Cattle/Horses: 20

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Leads To	Superior Canal (Engineering research) Great Canal (Engineering research)
Description	Note: Cannot build a Canal adjacent to Mountains. A Canal is treated (and shown) as a River in all respects but must start from a body of water (River, Lake or Ocean). 40,000 AM's can turn a hexside (30,000-40,000 yards) into a Canal in flat terrain or swamp (a single Prairie hex next to the hexside is all that is needed to be regarded as flat), 50,000 in all other terrain. Where flat abuts other terrain the higher manpower cost applies. A shovel doubles output. Canals are 40' wide. Fords cannot be left in the newly created Canal as part of their construction. To convert a Ford into a Canal (that is, the Ford is removed) - 1000 Workers with tools (either Picks, Shovels, or Mattocks or combination), 10 Wagons, 20 Cattle/Horses can convert a Ford into a River/Canal. **Destruction:** Canals may be destroyed through standard reverse engineering practices. A unit in a Canal Hex may seek to destroy the canal in the hex through reverse engineering. As with any reverse engineering, the cost to remove a structure is one-half the cost to construct it and can utilize the same tools with the same benefits as building the road in the first place. Reverse engineering a canal requires Eng=3. When attempting reverse engineering of a canal, the chief must consult the Canal topic to determine the number AM's that were required to build the canal in the first place. The chief must then deploy AM's totaling one-half of this amount rounded up. The chief ordering the reverse engineering is responsible for performing these calculations and noting them as a comment to the GM. If there is an enemy unit in the hex destruction of a canal may require the defeat of this unit.
Summary	*Spend lots of work to create an artificial river hex side*

Name	**Colosseum**
DL	8
Pre-Req	Dungeon (Engineering)
Recipe	Colosseum: People 2000, Eng 8, Stones 10000
Description	Once per Year 500 Slaves may entertain a Tribe. 100-300 will die. General Morale will increase 0.05. This structure may be built in other Clans' villages and used by that Clan. A Clan may only gain the bonus once per year.
Summary	*Yearly slave fights to boost Morale*

Name	**Crenellations**

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DL	4
Pre-Req	N/A
Recipe	N/A
Description	Once a tribe has completely researched Crenellations, the Tribe may build crenellations on walls of 20 foot or higher. Crenellations are assumed to be part of any wall construction and any existing wall, but the Tribe occupying the site must have the research for it to be effective. Adds 5% to defensive factor.
Summary	*Combat Boost - +5% to Fortification value*

Name	**Demolitionists I, II, III**
DL	5,5,5
Pre-Req	Demolitionists I: Blasting Jars (Alchemy research) Demolitionists II: Demolitionists I (Alchemy research) Demolitionists III: Demolitionists II (Alchemy research)
Recipe	N/A
Description	Workers using this research may be equipped with multiple Blasting Jars (or better) each. Benefit: 1) Each level of Demolitionists allows the use of three additional Blasting Jars (or better). For example: 1 Worker without this research may use 1 Blasting Jar and count as 10 Effective Workers. 1 Worker with Demolitionists I may use 4 Blasting Jars and count as 40 effective workers. With Demolitionists II, the 1 Worker may use 7 Blasting Jars and count as 70 Effective Workers. With Demolitionists III, the 1 Worker may use 10 Blasting Jars and count as 100 Effective Workers. Additionally, each level of Demolitionists improves the base "Defenders Defensive Factor bonus reduction" of Siege Cannons by 1%.
Summary	*Allows Workers to use multiple Blasting Jars/Powder, also decreases Fortifications*

Name	**Destroy Roads**
DL	6
Pre-Req	N/A
Recipe	Skills: Trail Road (Eng 3), Dirt Road (Eng 6), Stone Road (Eng 9)
Description	As with any great advancement of civilization, there comes time when others want to destroy it. Roads are no exception.

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	Workers with Destroy Roards gain an extra +1 AM (1 worker counts as 2 workers) towards Reverse Engineering (Destroying) Roads. Joint Project: Workers in a Joint Project with a Unit that knows Destroys Roads gain +0.5 AM instead (1 worker counts as 1.5 workers).
Summary	*Assists Units in destroying and removing froads.*

Name	**Drawbridge**
DL	5
Pre-Req	N/A
Recipe	Drawbridge: People 55, Engineering 10, Logs 100, Iron/Brass/Bronze 50, Coal 400, Rope 10
Leads To	Barbican (Engineering research)
Description	Engineering Activity A wooden reinforced bridge that can be lowered to form a ramp over the Ditch or Moat, eliminating the need for a permanent crossing over the Ditch or Moat. Adds + 2 to the effective Archery Skill for defenders in combat. Drawbridge may be built for other Clans. Drawbridges in another Clan's village may be used by that Clan.
Summary	*Combat Boost - New Building - Drawbridge, Bonus to Archery when defending*

Name	**Dungeon**
DL	4
Pre-Req	N/A
Recipe	Dungeon: People 400, Eng 7, Stones 2000
Leads To	Colosseum (Engineering research) Treachery (Torture research)
Description	200 Slaves per Dungeon may be held requiring only 1 Overseer (but requires a Whip). Prerequisite for some Torture and other research topics. Can only be built in established Villages. This structure may be built in other Clans' villages and used by that Clan.
Summary	*New Building - Dungeon - Boost to Torture*

Name	**Fords**
DL	5
Pre-Req	N/A

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Recipe	Ford to River: Eng 3, People 500 w/ Tools, Wagons 20, Cattle/Horses 10 River to Ford: Eng 6, People 2000 w/ Tools, Wagons 20, Cattle/Horses 10
Description	Fords to Rivers (Eng3 if using Joint Project) 500 Workers with tools (either picks, shovels, or mattocks or combination), 20 Wagons, 10 Cattle/Horses can convert a Ford into a River. Rivers to Fords (Eng6 if using Joint Project) 2000 Workers with tools (either picks, shovels, or mattocks or combination), 20 Wagons, 10 Cattle/Horses can create a Ford in a River. Cannot be done adjacent to Mountains. Note: while both of these take effect at the end of the turn unless you are the builder you should not assume they will be present during your MV Orders. For example, if your MV is processed before a Ford is built (by another Clan) no Ford will be shown at the time of your MV and you will not be able to cross. In short you should not make your MV depend upon the completion of a Ford in the turn.
Summary	*Allows creation and removal of Fords across rivers / canals*

Name	**Fences**
DL	4
Pre-Req	N/A
Recipe	1 Fence: People 50, Eng 4, Logs 100
Leads To	Improved Fence Builders (Engineering research) Improved Fence Builders (Herding research)
Description	Engineering Activity Holds 50 Horse/Cattle/Camel, or 100 Goats. May be built for other Tribes/Clans. Fences are considered to be outside Village walls (and may be built independent of Village for example, in an adjacent hex). Fences is a research that increases Herder Efficiency. Maximum Bonus: +1 Herder Efficiency MaxFences: #Goats/100 + #Cattle/50 +#Horses/50 +#Camels/50 Bonus: # Fences / Max Fences Required Fences for Maximum Bonus: MaxFences If you have 1000 goats, 500 cattle and 500 horses, you normally require 50+50+50 = 150 maximum herders. Your maximum fences are 1000/100 + 500/50 + 500/50 = 30 Fences. If you have 30 fences, your bonus is 30 / 30 = +1.0 Herder efficiency. You normally require 90 herders, now it is 90 / 2 = 45 herders required. If you only had 15 fences, your bonus would be 15 / 30 = +0.50 Herder efficiency. You normally require 90 herders, now it is 90 / 1.5 = 60 herders required.
Summary	*Reduces number of herders required.*

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Name	**Fen Drainage**
DL	5
Pre-Req	Canals (Engineering)
Recipe	N/A
Leads To	N/A
Description	With the knowledge gained under **Fen Drainage**; and by means of a system of canals, ditches and drains; it is possible to drain a Swamp hex, turning it into a more useful piece of land. The target hex must be adjacent to at least one body of fresh water (River or Lake). 40,000 AM's will create the network of ditches required to drain away sufficient water that will convert the Swamp hex, into a Prairie hex. The process of draining requires a year after the ditches have been dug. A shovel doubles output. Fen Drainage cannot be used to drain a Swamp Hex that is adjacent to salt water.
Summary	*Turn Swamp hex into a Prairie hex*

Name	**Gate House**
DL	6
Pre-Req	N/A
Recipe	Gatehouse: People 1250, Stone 5000, Logs 500, Iron 100, Coal 400
Leads To	Barbican (Engineering research)
Description	The Gatehouse requires 5000 Stone, 500 Logs, 100 Iron and 400 Coal. Logs may be substituted for stone at normal rates for buildings and may only be installed in 20' Stone Walls or better. Adds + 2 to the effective Archery Skill for defenders in combat. This structure may be built in other Clans' villages and used by that Clan.
Summary	*Combat Boost - New Building - Gate House, Bonus to Archery when defending*

Name	**Great Canal**
DL	8
Pre-Req	Canal (Engineering research) Research 10 (Group C skill) Literacy 6 (Group B skill) Home City established University (Building) Library (Building)

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Recipe	Per Canal / Ford / Superior Canal
Leads To	N/A
Description	Note: Cannot build a Canal adjacent to Mountains. The Great Canal is a long term mega-project that can be performed in and around a Home City. The Grand Canal is a project that spans multiple hex sides ranging away from the Home City but can be completed with Units inside the Home City but at a reduced efficiency. The hex where the workers are to be considered to be digging **must be reachable by river** travel (Barge/Longship if going over fords, any boat if no fords) and the Unit **must have adequate ships on hand to carry the workers, animals and tools**. **Efficiency:** 110% - (Hex Side Traveled)*5% + Government Level*5%, maximum 100% ***Example 1****: if building a Canal in a hex that requires traveling 4 hex sides to reach the hex, and the Home City is at Government Level 0, the efficiency would be 110 – (4)*5 = 100% efficient. 100 workers would do the work of 100.* ***Example 2****: if building a Canal in a hex that requires traveling 8 hex sides (about 4 hexes away) to reach the hex, and the Home City is at Government Level 1, the efficiency would be 110 – (8)*5 + 1*5 = 75% efficient. 100 workers would do the work of 75.* ***Example 3:*** *If building a Canal in a hex that is 20 (about 10 hexes) distance away and the Home City is at Government Level 5, the efficiency would be 110 – 20*5 +5*5 = 35% efficient. 100 workers would do the work of 35. If the Home City were only GL 2, then it would be 110 – 20*5 + 2*5 = 20% efficient.*
Summary	*Allows creation of Canals at a distance from the workers.*

Name	**Improved Fence Builders**
DL	2
Pre-Req	Fences (Engineering research) Or Fences (Herding research)
Recipe	1 Fence: People 5, Eng 8, Logs 100
Description	Engineering Activity The Tribe and its elements are more efficient at building Fences. When building a fence, a Unit with Improved Fence Builder may use a new Recipe to build the Fence.
Summary	*Increases the efficiency of building fences...*

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Name	**Improved Stable Builders**
DL	2
Pre-Req	Stables (Herding research) Or Stables (Engineering research)
Recipe	1 Stables: People 5, Eng 8, Logs 100
Description	Engineering Activity The Tribe and its elements are more efficient at building Stables. When building a Stable, a Unit with Improved Stable Builders may use a new Recipe to build the Stable.
Summary	*Increases the efficiency of building Stables*

Name	**Island Fortress**
DL	9
Pre-Req	Government Level 2 (Politics research) Castle (Politics research) Engineering 10 (Skill) Stonework 10 (Skill)
Recipe	Island Fortress 10': • People 600k, Eng 10, Stn 10, Stone 3M, Relic 1, Watch Towers 18 Upgrade to Island Fortress 15': • People 900k, Eng 10, Stn 10, Stone 4.5M, Relic 1 Upgrade to Island Fortress 20': • People 1200k, Eng 10, Stn 10, Stone 6M, Relic 1 Upgrade to Island Fortress 25': • People 1500k, Eng 10, Stn 10, Stone 7.5M, Relic 1 Upgrade to Island Fortress 30': • People 1800k, Eng 10, Stn 10, Stone 9M, Relic 1 Additionally, the Island Fortress requires at least a single Gatehouse. *Calculations: 10' is 0.5M per hexside, 15' is a further 0.75M per hexside, 20' is a further 1M per hexside, 25' is a further 1.25M per hexside and 30' is a further 1.5M per hexside.
Description	An Island Fortress may only be constructed in a single Hex that is surrounded on all sides by water, including Ocean, Lake or River. Additionally, the Hex must contain a Home City and Castle. Additional defenses may be built per standard wall rules (higher walls, crenellations, towers, gate houses, etc) but these must be built separately from such defenses held by the City itself. In addition, to get the same effect, the defenses must be built six times (one per Hex Side). Upon completion, the Island Fortress is completed. A wall of the appropriate size loops

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around the entire island.

Benefits:

1. Free Range Herding: A single Tribe or Unit in the Island Fortress has its Locals (Auxiliaries) set to 75% of the number needed to herd the current Herd held by that Unit or its Goods Tribe on Turn 1 of each year. This Unit may have no other Locals (Auxiliaries). Locals provide 75% of the herding requirements as payment for the protection the Island Fortress offers.
2. Clan gains 60 Gold and 20 'Lots' of a Desired Commodity immediately and once per year from then on out. (A Lot is the number listed in the Commodities section of the Mandate).
3. Seeking: Effective Seeking Skill is +5 for units seeking inside the Island Fortress
4. Blockade: Units that are untruced with the Clan may not enter the territory inside the Island Fortress without assault or sieging the island itself as if it were a fortified village.
5. Combat:
    1. The Island Fortress' first line of defense is on the beach forcing the attacking force to make an amphibious landing within range of the defending archers. +4 to Terrain Proficiency when defending the site.
    2. Standard Fortification and Siege rules apply except that the City may perform all activities (such as farming, hunting, etc).
    3. Siege Equipment: Only ship mounted Siege Equipment may be brought against the Island Fortress unless the siege engine is brought onto land within range of archers. Personnel assigned to man siege equipment in such situations suffer triple potential casualties.
    4. Siege Resilience: Only research level Siege equipment may have an effect against the Island Fortress. Additionally, siege equipment has only half the effect against the Island Fortress walls.
    5. Local Militia: Any combat conducted in defense of the Island Fortress gains 20% additional Militia.
    6. Outer Wall: The Island Fortress' outer wall may be abandoned and defense setup in normal village/city walls.

Note: Multi-hex islands would require Island Fortress Expanded I research at DL2 and would allow an Island Fortress up to 7 hexes. Island Fortress Expanded II research at DL 2 (requires Expanded I) would allow an Island Fortress up to 19 hexes. Expanded III would allow up to 37 hexes. Expanded IV would allow up to 61 hexes. Finally, the largest Island Fortress would be Expanded V and would allow up to 91 hexes. Anything further falls under Great Wall research topic.

The Island Fortress may be built for other Clans but that Clan must have a Home City and a Castle in that hex.

Name	**Keep**
DL	7

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Pre-Req	N/A
Recipe	* See Description
Leads To	N/A
Description	A basic keep requires 4000 stones per 1000 square yards capacity for a Keep1 (1 layer). A Keep may have additional layers of stones added to provide thicker, harder to penetrate walls. Each additional layer of stones uses the same quantity of stones as the original (8000 per 1000 square for a Keep2 etc). If a keep with a thicker wall is expanded, all layers must be increased. In keeps <u>half normal village capacity restraints apply</u> and each 1000lbs of non animal/person requires 5 square yards. You may not house Elephants, Cattle or Goats in a Keep. Capacity calcs relate to the Keep OR to normal fortified defence, not both. Your Keep will be shown as capacity. For example, 4000Keep1 means it is a single thickness Keep capable of storing 4000 sq yards capacity. * you may choose to enter the Keep at the start of any combat turn – but if you do you give up all external buildings – so no Refining etc. And you may not return to use external defences on subsequent continuos combat turns. The Keep is perhaps more useful for supporting smaller units in positions away from the main Tribe/population base. Remember that the Keep is still subject to siege. **Benefits:** • Waystations: A Keep may be built at a Waystation. Keeps at Waystations may be used by the Clan that setup the Waystation or by any friendly Clan at the Waystation. See Utilization. Only one Clan may occupy a single Keep in a turn. A Waystation may have more than one Keep. Keeps at Waystations may be torn down following normal rules. • Utilization: A Keep that is part of a Waystation may only be used by another Clan that is part of a Trade Guild, Merchant Navy Guild, Bargemens Guild or via Corps Diplomatique of which the builder of the Keep is a member. Keeps may be built for other Clans.
Summary	*Combat Boost - New Building - Keep, allows protection at home or waystations*

Name	**Mining Ladder**
DL	5
Pre-Req	N/A
Recipe	People 15, Wd3, Mtl3, Log 4, Iron 25, Coal 150
Leads To	N/A
Description	(Also Under Mining, Metalwork and Woodwork) A Mining Ladder provides a Bonus to Mining output equal to +100% to ten (10) miners and a Bonus to Digging output (Clay, canals, sand, moats, etc) equal to +100% to ten (10) diggers. This is cumulative with other implements (Picks, Shovels, Ore Carts, Seam Wedges, etc). This bonus is additive, not compounded.

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	Example: 5 Miners with 1 Mining Ladder would count as 10 Miners 10 Miners with 1 Mining Ladder would count as 20 Miners 15 Miners with 2 Mining Ladders would count as 30 Miners 20 Miners with 2 Mining Ladders would count as 40 Miners 20 Miners with 2 Mining Ladders and 20 Picks would count as 60 Miners 20 Miners with 2 Mining Ladders, 2 Ore Carts and 20 Picks would count as 80 Miners These wood and metal ladders and ramps are used to for more advanced vertical mining and to facilitate the movement of personnel and ore up mine shafts when they occur due to following veins. These would not be standard wood ladders or ramps but would have iron reinforcement to handle the added weight of the ore and wagons. We have called it Mining Ladders research to shorten the name but it would really be both ladders and ramps. 1 Mining Ladder weighs 50 lbs.
Summary	*New Item - Mining Ladder, Boost to number of mining effective workers, serves 10*

Name	**Outpost**
DL	8
Pre-Req	N/A
Recipe	Outpost: People 500, Eng 9, Stn 8, Stones 8000, Logs 200
Leads To	N/A
Description	Fortified towers for lookouts to help in the protection against being surprised by invaders An Element containing at least 20 Warriors – cannot be overrun via Locate, and will report Locating scouts – but cannot Suppress enemy Scouts either – must be within 6 hexes of the main Village. Can be Assaulted as a 15 Stone Wall or Sieged as normal attack. However, the Outpost may build 20 etc Stone Walls (see also Keep) for better protection in combat. It cannot build towers of any sort. This structure may not be used by Clans without the research topic.
Summary	*New Building - Outpost, Outpost prevents overrun via Local and reports locating scouts*

Name	**Roads**
DL	6
Pre-Req	N/A
Recipe	1 Road Segment (Hex Side, both directions): Various Skills: Trail Road (Eng 3), Dirt Road (Eng 6, Stn 2), Stone Road (Eng 9, Stn 4)
Leads To	N/A

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Description	This research topic enables the Clan to build Roads between a Village and a set location (Village, City, Special Hex, Mine, immobile unit). There are three levels of Roads: 1) Trails: Small worn paths that are well traveled. Workers compact the earth to create relatively dry marching paths. 2) Dirt Roads: Raised roads made of dirt, sand, salt and some gravel. 3) Stone Roads: Paved roads of stone tiles. **Requirements::** 1) **Reach:** Roads may be built in the hex that the unit is in and any adjacent hexes. 2) **Pass / Ford / River:** Roads may not be built across a hex side that already has a River, a Ford or a Pass. 3) **Resources:** Resources must be available in the hex that the unit is located or in the hex that the road is being constructed. 4) **Coordinates:** The Player must know the coordinates of all the affected hexes (the hex the road is being constructed and the destination hex of the road). If the player does not know these coordinates, it is highly recommended that they do not take this research as it will create additional work on part of the GM. **Creating a Road:** 1) The Player creates a Comment in their Orders that states the Hex the road originates in (either the hex the unit is in or an adjacent hex), the direction of the road and the hex coordinate of the end of the road. 2) It is the responsibility of the Player to track the expenditure of ActiveMonths (AM) when building road(s). These are unassigned workers and the progress of the road construction is maintained in the Comments section. 3) It is the responsibility of the Player to send all material to Usage by the conclusion of that road construction. 4) Once the necessary AM is expended and the resources are sent to Usage, a Comment in the Comment section is used to notify the GM. At this time, the player reiterates the hexes and direction of the roads built this time. This should include the return direction road. 5) The GM adds the roads to the origination hex and destination hex. **Road Construction Costs:** 1) Each Turn, the unit may work on the Road by assigning workers, similar to Shipbuilding. 2) Each Hex the Road extends into has a cost. Costs are determined the most costly of the two hexes (Origination or Destination hex). For example, if building from PR to LJM or from LJM to PR, you would use the cost for the LJM. 3) All building is done from the originating Unit. More than one Hex of Road may be built a turn if it has enough AM and resources.. 4) Road Progress is maintained by the Player through their Activities. When a Road segment (Hex to Hex) is completed, it is the responsibility of the Player to inform the GM of this extension to the Road by showing on the map which segment was

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just completed.

5) **Upgrading Roads:** Roads may be upgraded by paying the difference between the new Road type and the existing Road type in AM with the exception that Stone must be used equal to the new road type.
6) **Destruction:** Roads may be destroyed through standard engineering practices. A unit in a Road Hex may seek to destroy the road in the hex through reverse engineering. As with any reverse engineering, the cost to remove a structure is one-half the cost to construct it and can utilize the same tools with the same benefits as building the road in the first place. Reverse engineering a road requires Eng=3. When attempting reverse engineering of a road, the chief must consult the Road topic to determine the number AM's that were required to build the road in the first place. The chief must then deploy AM's totaling one-half of this amount rounded up. The chief ordering the reverse engineering is responsible for performing these calculations and noting them as a comment to the GM. If there is an enemy unit in the hex destruction of a road may require the defeat of this unit.

Benefit Per Hex:

1) Trail: Hex Move Cost Modifier of: *5/6 (A 1/6th decrease)
2) Dirt Roads: Hex Move Cost Modifier of: *2/3 (A 1/3rd decrease)
3) Stone Roads: Hex Move Cost Modifier of: *1/3 (A 2/3rd decrease)

Example: Moving into a Prairie along a Road would normally cost 3 MV, but with a Dirt Road it only costs 2 MV. A Stone Road would allow that movement for only 1 MV.

Roads will lengthen the distance between end points of a Trade Route, and also enable Elements moving along a Trade Route to move further each turn (as 40 MV takes them further).

Cost per Hex Side:

Terrain	Trail	Dirt Road	Stone Road
Flat – No Trees	AM: 250 Coin: 3	AM: 600 Sand & Salt: 500 Stone: 500 Coin: 6	AM: 1.8k Sand & Salt: 1.5k Stone: 1.5k Coin: 18
Flat – Trees, Snow	AM: 375 Coin: 4	AM: 900 Sand & Salt: 750 Stone: 750 Coin: 9	AM: 2.7k Sand & Salt: 2.25k Stone: 2.25k Coin: 27
Hill – No Trees	AM: 375 Coin: 4	AM: 900 Sand & Salt: 750 Stone: 750 Coin: 9	AM: 2.7k Sand & Salt: 2.25k Stone: 2.25k Coin: 27
Hill – Trees, Snow	AM: 500 Coin: 5	AM: 1.2k Sand & Salt: 1k	AM: 3.6k Sand & Salt: 3k

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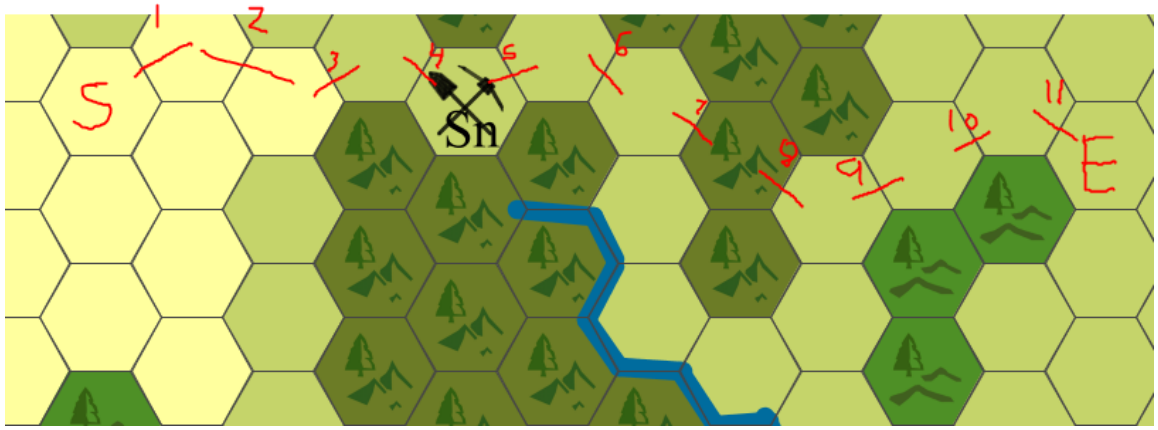
		Stone: 1k Coin: 12	Stone: 3k Coin: 36
Mountain – No Trees	AM: 500 Coin: 5	AM: 1.2k Sand & Salt: 1k Stone: 1k Coin: 12	AM: 3.6k Sand & Salt: 3k Stone: 3k Coin: 36
Mountain – Trees, Snow	AM: 625 Coin: 7	AM: 1.5k Sand & Salt: 1.25k Stone: 1.25k Coin: 15	AM: 4.5k Sand & Salt: 3.75k Stone: 3.75k Coin: 45
Swamp, Volcano	AM: 750 Coin: 8	AM: 1.8k Sand & Salt: 1.5k Stone: 1.5k Coin: 18	AM: 5.4k Sand & Salt: 4.5k Stone: 4.5k Coin: 54
Tool Use	**Shovel**: +100% AM for each Worker with a Shovel **Mattock**: +50% AM for each Worker with a Mattock (Does not stack with Shovel) **Mining Ladder:** Provides standard bonus for Mining Ladders as if it were a Digging output. **Pick:** +50% AM for each Worker with a Pick. Only applicable in Hills, Mountains or Volcano hexes. (Does stack with Shovel) **Wagon-Pulled**(1 Wagon provides bonus to 5 people): +50% AM for each Worker **Blasting Jars**: Up to 20% of the AM may come from Workers with Blasting Jar usage. Example, Out of 3150 AM, 630 AM can come from Blasting Jar (63 workers + 63 Blasting Jars).		



Example: To Build the Road in this image from the Village S to the Village E, Village S would need to spend the following resources for a Trail:
1: PR / PR: AM 250
2: PR / PR: AM 250
3: PR / GH: AM 375

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	4: GH / GH: AM 375 5: GH / GH: AM 375 6: GH / GH: AM 375 7: GH / LCM: AM 625 8: LCM / GH: AM 625 9: GH / GH: AM 375 10: GH / GH: AM 375 11: GH / GH: AM 375 Total: AM 4,375 This Trail would normally cost MV equal to 3+3+5+5+5+5+10+5+5+5+5= 56MV Now it costs to move: 3*5/6 + 3*5/6……+5*5/6 = 47MV If it were to be made into a Dirt Road, the cost to go from S to E would be 38MV. If it were to be made into a Stone Road, the cost to go from S to E would be 19MV (though the cost to build would be much higher).
Summary	*Build Roads to decrease MV cost when traveling*

Name	**Roman Crane**
DL	~~7~~ 6
Pre-Req	N/A
Recipe	1 Roman Crane: People 6, Eng8, Wdw10, Logs 20, Iron 40, Rope 10
Leads To	N/A
Description	(Also under Woodwork) Description: Wood crane comprised of a modest size boom, a base plate, and a large diameter barrel shaped "wheel" on its side built around and attached to a centre axle (like a hamster wheel). One or more people walk inside the wheel providing mechanical power to drive the winch and thereby raising or lowering loads. Benefit: Increase worker productivity by 50% on Engineering projects and Shipbuilding so 2 workers do the work of 3. Each crane enables up to 20 workers to gain benefit. The Crane applies to raw workers that is, before other items such as Wheelbarrows. Player must show equivalent workers in their orders. Cranes are inventory item and transportable once constructed and thus may be used by Clans without the research. Weight: 300 Proposed by Brian Whitesell
Summary	*New Item - Roman Crane, bonus to Engineering and Shipbuilding.*

Name	**Sappers / Sappers II**
DL	Sappers: DL 5 Sappers II: DL 7
Pre-Req	Sappers: N/A

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	Sappers II: Sappers (Engineering research)
Recipe	*See Description
Leads To	N/A
Description	Sappers reduce the effectiveness of defensive fortifications by 5% (10% instead if Sappers II completed). *Uses 500 Logs each time deployed.* Sappers come from troops not engaged in combat. Requires 1 Sapper per 20 yards wall.
Summary	*Combat Boost - Decreases enemy fortification value by 5% / 10%*

Name	**Scaffolding**
DL	5
Pre-Req	N/A
Recipe	1 Scaffold: People 2, Wdw 6, Logs 3
Leads To	N/A
Description	Woodwork Activity A worker with a scaffold does the work of 1.5 effective workers for Shipbuilding or Engineering work. Every worker requires their own scaffold. Examples: 1 Worker, 1 Scaffold = 1 Effective worker 2 Workers, 2 Scaffolds = 3 Effective workers 100 workers, 100 scaffolds = 150 Effective workers The Scaffolding, once made, is transportable. At this stage of coding players will need to show this. For example, if you are using 20 workers with Scaffolding you would show them as 30. Scaffolds are inventory item and transportable once constructed and thus may be used by Clans without the research. Weight: 50 lbs
Summary	*New Item - Scaffolding, Increases worker efficiency by +0.5 AM per worker, serves 20*

Name	**Scout Post**
DL	8
Pre-Req	N/A
Recipe	Scout Post: People 2k, Eng 6, Sct 6, Stn 6, Stone:10k, Cloth:100, Lamp:6 Upkeep: Yearly / 8 Oil + 8 Cotton
Leads To	N/A
Description	A Scout Post is a building that provides additional support to scouting groups and command chains that are part of a garrisoned unit. This research provides the Tribe that holds the research the ability to build Scout Posts in villages that have at least one garrison from the Clan. One garrisoned unit in that village gains the ability to operate additional

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	scouting groups that may not be changed each month. Benefit: One Garrison at the village with the Scout Post, from the same Clan, gains 8 additional scout groups which may Patrol or Locate. These Scout Groups do not count towards the standard limit of the Tribe. Requirements: A Scout Post must be built in a village that is occupied by a Garrison of the same Clan. A Scout Post requires a yearly upkeep of 8 Oil and 8 Cotton The 8 bonus Scout Groups provided by the Scout Post may only be changed once per in-game Calendar year (813, 814, etc). The Garrison operating the Scout Post needs to have at least Scout 6 skill level. The Garrison unit that gains the extra scout groups may only use those 8 scout groups and not any further from other sources. (It cannot send out 9 or more scout groups). Scout Posts may not be built or operated by other Clans, but may be operated by other Tribes.
Summary	*Units with a Scout Post get their own set of 8 Scout groups independent of the Tribe*

Name	**Sewers**
DL	8
Pre-Req	Sanitation 6 (Group C skill) Eng 10 (Group C skill) Home City established University (Building)
Recipe	Sewers: People 1250, Eng 9, San 6, Stn 8, Stones 5000, Logs 500
Leads To	N/A
Description	Engineering / Stonework activity **Sewer Requirements:** 1) **Water Access:** Note: Sewers may only be built at sites adjacent to water (River, Lake, Ocean) or Swamps. **Benefits:** Sewers serve all Tribes of one clan in the site. 1) **Siege Protection:** Sanitation skill is increased by 4 during Sieges. This does not allow Specialists (that would require Sanitation 11 research). 2) **Population Boost:** Improves Population growth (0.5%) similar to Hospital. Sewers may be built for other Clans but they require the Sewers research to utilize.

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Summary	*New Building - Sewers, Increases population gain.*

Name	**Siegecraft**
DL	6
Pre-Req	Engineering 10 (Skill) Leadership 10 (Skill) Tactics 10 (Skill)
Recipe	N/A
Leads To	N/A
Description	Siegecraft allows the Tribe to develop a new Group B Skill, Siegecraft. Each point of Siegecraft reduces the besieger's casualties by 2%. In cases where both the besieger and the village under siege have the Siegecraft Skill, the difference in their skills is multiplied times 2% and used to adjust the besieger's casualties. If the defender's skill exceeds the besieger's skill, the adjustment increases the besieger's casualties. This Siegecraft 2% adjustment occurs in any battle, skirmish, or other event in which casualties occur, between a besieger and a village under siege. It does not apply in cases where the besieger battles an outside force. In addition, completion of this Siegecraft research topic will be a pre-req for any further offensive and/or defensive siege research.
Summary	*New Skill, Siege Craft, reduces casualties when defending.*

Name	**Stables**
DL	4
Pre-Req	N/A
Recipe	Stable: People 50, Logs 50
Leads To	Improved Stable Builders (Engineering research) Improved Stable Builders (Herding research)
Description	Engineering Activity Holds 30 Horse or 30 Cattle, or 60 Goats. Halves herders required. If using an adjacent hex Goods Tribe relationship Stables are best with the Goods Tribe (that is, the Tribe that holds the buildings). Elephants are not able to be housed in a stable. As with some other Herding topics you will have to show equivalent numbers. This structure may be built in other Clans' villages and used by that Clan.
Summary	*New Building - Stables, Reduces number of herders required*

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Name	**Stone Wall 25'**
DL	7
Pre-Req	N/A
Recipe	*See Description
Leads To	Castle (Politics research) Stone Wall 30' (Engineering research)
Description	Engineering Activity Needs the prior three layers to exist. 75 stones per yard – 12 people to install 1 yard. 25' Walls 30 (18+12) people 210 stones per yard (if previous walls do not exist). 25' wall 8 Damage points Total 20 This structure may be built in other Clans' villages and used by that Clan.
Summary	*Build bigger walls against better bad guys. Increase fortification value.*

Name	**Stone Wall 30'**
DL	9
Pre-Req	Stone Wall 25' (Engineering)
Recipe	*See Description
Leads To	N/A
Description	Engineering Activity Needs the prior four layers to exist. 30' Walls 18 people 90 stones per yard (if 25' wall exists) 30' Walls 48 (30+18) people 300 stones per yard (if 25' wall does not already exist) 30' wall 10 Damage points Total 30 This structure may be built in other Clans' villages and used by that Clan.
Summary	*Upgrade to 25' Stone Wall*

Name	**Superior Canals**
DL	7
Pre-Req	Canals (Engineering research)
Recipe	*See Description
Leads To	N/A
Description	A Superior Canal; like a regular Canal; is treated (and shown) as a River in all respects but must start from a body of fresh water (River or Lake). 80,000 AM's can turn a hexside (30,000-40,000 yards) into a Superior Canal. Superior Canals are permitted adjacent to

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	Mountains, but may not travel through any Mountains. A shovel doubles output. Canals are 40' wide. Fords cannot be left in the newly created Canal as part of their construction. To convert a Ford into a Canal (that is, the Ford is removed) – 1000 Workers with tools (either picks, shovels, or mattocks or combination), 20 Wagons, 10 Cattle/Horses can convert a Ford into a River/Canal.
Summary	*Allows creation of Canals adjacent to Mountain.*

Name	**Trellis**
DL	2
Pre-Req	N/A
Recipe	1 Trellis (Acre): People 1, Eng 6, Wdw 2, Logs 1, Cotton 1
Leads To	N/A
Description	Woodwork Activity Requires Farm 6 to use Trellis to reduce AM for grape harvesting A structure to support vines and hold them in optimal position to encourage growth and enable easier harvesting of the grapes. The trellis can be installed on a vineyard (during or after planting) and then is permanently associated with that acreage. Trellis can be built for another clan if the unit is permitted into their village hex, but once built cannot be moved. The effect of a trellis is reducing the work required harvesting grapes to ¼ of normal. In other words, 1 person can harvest up to 4 acres of grapes which have trellis installed. Combines linearly with other research (so treat as +3 workers not x4, if in conjunction with other research). Players need to track the trellised acres and show effective workers adjusted for trellis in their orders, for instance show 100 workers harvesting 400 trellised acres as 400 effective workers. Weight: While the Trellis is stored as an item, it is meant to be a stationary installation. It has a heft weight and is not meant to be moved.
Summary	*New Building - Trellis, Increases effectiveness of workers for harvesting.*

Name	**Watchtower**
DL	4
Pre-Req	N/A
Recipe	Watchtower: People 300, Eng 6, Logs 600
Leads To	N/A

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Description	A Village with a Watchtower adds 2% per tower to the chances of Security and Suppressors detecting Spies, Scouts, Raiders and Locating groups. Watch Towers are 30' high. A Village may have a maximum of 6 Watchtowers. Requires 2 observers per WT. This structure may be built in other Clans' villages and used by that Clan.
Summary	*Increases Security and Suppressors effectiveness.*

Name	**Wire Fences**
DL	4
Pre-Req	N/A
Recipe	Wire Fence: People 4, Logs 4, Wire 10
Leads To	N/A
Description	Wire Fences = Fence. A Wire Fences can be constucted with 4 logs and 10 wire. Logs installed at 2 per person, wire at 5 per person. Holds 50 Horse/Cattle/Camel, or 100 Goats. May be built for other Tribes/Clans. Fences are considered to be outside Village walls (and may be built independent of Village for example, in an adjacent hex). Fences is a research that increases Herder Efficiency. Maximum Bonus: +1 Herder Efficiency MaxFences: #Goats/100 + #Cattle/50 +#Horses/50 +#Camels/50 Bonus: # Fences / Max Fences Required Fences for Maximum Bonus: MaxFences If you have 1000 goats, 500 cattle and 500 horses, you normally require 50+50+50 = 150 maximum herders. Your maximum fences are 1000/100 + 500/50 + 500/50 = 30 Fences. If you have 30 fences, your bonus is 30 / 30 = +1.0 Herder efficiency. You normally require 90 herders, now it is 90 / 2 = 45 herders required. If you only had 15 fences, your bonus would be 15 / 30 = +0.50 Herder efficiency. You normally require 90 herders, now it is 90 / 1.5 = 60 herders required.
Summary	*Reduces number of herders required.*

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Excavation

Name	**Expert Dig**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	Tomb Robbers (Excavation research)
Description	Two Artefacts may be dug per turn. Requires 20 people with implements. A unit with Expert Dig may carry unlimited Artefacts.
Summary	*Allows a second Artefact to be dug up from ruins each turn*

Name	**Holy Artefact**
DL	6
Pre-Req	Expert Dig (Excavation)
Recipe	N/A
Description	Once per year Clan may conduct a search for a Holy Artefact at its excavation site. A Holy Artefact when found will add 0.05 General Morale to one tribe in the clan. The Holy Artefact if lost in ANY WAY will remove this 0.05% bonus. A Holy Artefact may be used in the same way as normal artefacts but is worth 12 normal artefacts. Weight: 2 lbs Proposed D Thacker
Summary	*Yearly gain of a special artefact that majorly boosts morale.*

Name	**Tomb Robbers**
DL	7
Pre-Req	*See Archaeology
Recipe	*See Archaeology
Leads To	
Description	*See Archaeology
Summary	*Steal from the dead and gain commodities.*

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Farming

Name	**Agriculture 1, Agriculture 2, Agriculture 3**
DL	1, 2, 3
Pre-Req	Farming 11
Recipe	N/A
Leads To	N/A
Description	Agriculture may be attempted at Farm11. The effect of gaining an Agriculture topic is to add levels to your Farm Skill. Agr1 adds one level (for example, Farm11 to Farm12), Agr2 adds 3 levels (for example, Farm12 to Farm15), Agr3 adds 5 levels (for example, Farm15 to Farm20). Once Agriculture 1 Research Topic has been achieved, the Tribe may learn a new skill, Agriculture (Group C). Once Agriculture skill reaches 10, further Agriculture research topics (4, 5, 6…) may be researched. Each Agriculture research topic (4, 5, 6…) adds 5 Levels to Farming skill. Books may be written.
Summary	*Skill Level Increase - Farming*

Name	**Flax**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	Oilmill (Milling research)
Description	Farming Activity Best location is flat/temperate, each person plants 3 acres, harvests 2 (1 flax = 1 cotton). Harvesting returns should automatically convert Flax to Cotton. Weight: 1 lbs
Summary	*Improved method of farming Cotton*

Name	**Herb Plot**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A

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<table>
<tr><td>Description</td><td>Herb Plot Research introduces a new crop, Herbs. Herbs are permanent crops like Grapes. Upon successfully completing Herb Plot Research Topic, the Tribe gains access to a new skill – Herbing (Group C). Herbing only affects how many people may plant Herb plots in a single month.

Planting:
• Limited to: 10 Population / Level of Herbing Skill
• Must be planted in Spring Months
• May be planted in all Spring Months
• 1 Population with Hoe plants 5 Herb plots
• Hoes are required for Planting
• Every Herb plot planted requires the use of 1 Herb (Transfer to Usage)

Maintaining:
• Limited to: No limit to the number of Population able to Maintain.
• Must be maintained each Summer (except the year initially planted).
• 1 Population maintains 5 Herb plots
• 1 Population with Hoe maintains 10 Herb plots

Harvesting:
• Limited to: No limit to the number of Population able to Harvest.
• Must be harvested in Month 12.
• 1 Population harvests 5 Herb plots
• 1 Population with Hoe harvests 10 Herb plots
• Produces annual Yield of 2 Herbs per Acre.
• Weather does not affect Herbs.
• NOTE: Not Coded. Player must transfer the appropriate amount of Herbs from 0263 on Month 12.

<table>
<tr><td>Crop</td><td>Plant/Person</td><td>Harvest/Person</td><td>Tools</td></tr>
<tr><td>Herb</td><td>5</td><td>5</td><td>Hoe required for Planting.

Hoe doubles Harvest acres.</td></tr>
</table>
<u>Alternate Description</u>
“somedays, herbers rouse themselves from slumber (face down in ashtray) and prosecute craft with poetic ambivalence.” Courtesy of E. Waugh. Can substitute “GM’s” for “herbers” with little change to meaning! Note: Not Coded</td></tr>
<tr><td>Summary</td><td>Teaches you how to farm and harvest Herbs</td></tr>
</table>

Name	**Inactive Workers**
DL	5

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Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Inactives can perform up to one-third of the farming activities labour. If not doing this they "work" for the public service. During planting and harvesting, everybody, in the tribe worked. During planting, young children could plant seeds into furrows and the elderly could push the soil back over the seeds. During harvest young and elderly people could bundle scythed gain stalks into sheaves and collect the actual grain kernels as the grained was threshed. Would require coding from Jeff. Until this is done Chief, please add Actives/Warriors and Inactives into a single figure in Activities (showing the Inactives in notes).
Summary	*Use worthless Inactives to do some farming*

Name	**Juniper**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Farming Activity May only be grown in Coniferous hexes. Best location is Hilly, Temperate. Juniper is a Maintained Crop. Rules and returns for planting, maintaining and harvesting Juniper are identical to Grapes. Note: Trellis may not be used to assist in harvesting Juniper. NOTE: Until further coding, players may plant Juniper as if they were Grapes. The one unit may not plant both Grapes and Juniper in one turn. In the comments section of the turn order, the Player shall inform the GM of the need to manually update the Grape planting to Juniper. Weight: 0.01 lbs
Summary	*Farm and Harvest Juniper tp make more alcohol*

Name	**Plantation**
DL	5
Pre-Req	N/A
Recipe	1 Plantation: People 200, Eng 6, Farm 6, Logs 400 (May be substituted with stone)

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Leads To	N/A
Description	Plantations provide a 50% increase in Effective Workers for purposes of all farming activities (Plowing, Planting and Harvesting). This requires extra tools and improvements for this increase in effective workers. (*Example: 100 Workers plowing would be 150 Effective Workers. They would require 150 Plows and Cattle. This represents swapping out tired animals and allowing used tools to be maintained).* Each Plantation affects 100 Workers. To gain the benefit of the Plantation, the Farming Clan must have a unit in the farming Hex that either has the skill Slavery 10 or Economics 10. Plantations may be built for other Tribes/Clans. Plantations are not considered inside defensive walls of a village / city. *Plantations are large-scale farms that consists of a main house, the symbol of the plantation, and is surrounded by a small walled set of land. Stone markers indicate plowing rows, planting distances and designated areas are setup for harvest drop off. Designated areas for tool maintenance and swapping animals are also included. "The latifundia of the Roman Empire were the earliest examples of plantations."* Examples: Plowing: 100 Workers with 1 Plantation would count as 150 Effective Workers and would require 150 Plows (and appropriate Cattle for those Plows). They would plow 150 * 8 = 1,200 Acres. Planting: 100 Workers with 1 Plantation would count as 150 Effective Workers and would plant 300 acres of Tobacco (150*2) or 450 acres of Sugar (150*3) Harvesting: 100 Workers with 1 Plantation would count as 150 Effective Workers and would Harvest 150 acres of Tobacco (150*1) or 300 acres of Sugar (150*2). If the Workers had 150 Scythes they would Harvest 600 Acres of Sugar (150*4) just as if 150 workers with Scythes were harvesting Sugar.
Summary	*New Building - Plantation, +0.5 AM per Farmer up to 100 Farmers, needs more tools*

Name	**Trellis**
DL	2
Pre-Req	N/A
Recipe	1 Trellis (Acre): People 1, Eng 6, Wdw 2, Logs 1, Cotton 1
Leads To	N/A
Description	Woodwork Activity Requires Farm 6 to use Trellis to reduce AM for grape harvesting A structure to support vines and hold them in optimal position to encourage growth and enable easier harvesting of the grapes. The trellis can be installed on a vineyard (during or after planting) and then is permanently associated with that acreage. Trellis can be built for another clan if the unit is

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	permitted into their village hex, but once built cannot be moved. The effect of a trellis is reducing the work required harvesting grapes to 1/4 of normal. In other words, 1 person can harvest up to 4 acres of grapes which have trellis installed. Combines lineally with other research (so treat as +3 workers not x4, if in conjunction with other research). Players need to track the trellised acres and show effective workers adjusted for trellis in their orders, for instance show 100 workers harvesting 400 trellised acres as 400 effective workers. Weight: While the Trellis is stored as an item, it is meant to be a stationary installation. It has a heft weight and is not meant to be moved.
Summary	*New Item - Trellis, Greatly (+3 AM) assists with harvesting Grapes.*

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Fire Control

Name	**Excubitoriums**
DL	5
Pre-Req	Fire Brigade (Fire Control research)
Recipe	1 Excubitorium: People 500, Eng 6, Fire 6, Stone 2.5k, Lamp 2, Oil 2, Barrel 1
Leads To	N/A
Description	Excubitoriums are night watch fire control scout posts. Upon completing the research, the Tribe gains the ability to build Excubitoriums. **Benefits:** • On month 1, the Tribe with the research and one other Tribe, from inside or outside the Clan, in the same location gains +0.01 General Morale. • On month 1, the Clan gains 25 Locals per Excubitorium provided that the Clan has at least 1 Longhouse. A maximum of 10 Excubitoriums will provide this bonus. **Requirements:** • To gain the yearly General Morale bonus and the Locals, the Tribe must have access to at least 1 Excubitorium in the same hex. • On month 1, the Tribe must expend 2 Oil per Excubitorium (send to usage) or no bonus is provided. **Notes:** • If multiple Tribes have this research topic, they will each require their own Excubitoriums.
Summary	*New Building – Excubitorium, slow increase of General Morale and gain Locals.*

Name	**Fire Brigade**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	Excubitorium (Fire Control research) Excubitorium (Garrison research) Inactive Fire Watchers (Fire Control research) Roman Fire Pump (Fire Control research)
Description	The Fire Brigade provides some organization and support to fire watchers to make them more effective.

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	Bonus: • On completion of the Fire Brigade research topic, workers assigned to Fire Control activities increases effectiveness by 100%, i.e. each worker controls 200 acres + 20 acres per skill level. **Requirements:** • To gain this bonus, each worker assigned to Fire Control must be issued with a Hood, Jerkin, Stave and a barrel ful of water. Players must check that the required items are available in the inventory and not used for any other purpose. The GM must be informed by a note how many workers are on fire control, that the required items are available and the percentage of the farmed acres that are covered. The ideal is to cover 100% of the farmed acres. *The Roman Emperor Nero created fire brigades in Rome in AD 60.*
Summary	*Increases the effectiveness of fire watchers over farming.*

Name	**Fire Control 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Specialized knowledge of fire prevention, control and extinguishing allows some people to rise to the top of their field. **Bonus:** • Skill Level Increase: Increases Fire Control Skill by +1. • Specialists: Allows Fire Control specialists.
Summary	*Skill Level Bonus – Fire Control, allows Specialists*

Name	**Inactive Fire Watchers**
DL	5
Pre-Req	Fire Brigade (Fire Control research)
Recipe	N/A
Leads To	N/A
Description	Inactives can comprise up to one half of the people in the Fire Brigade. Inactives perform a range of activities including looking out for fires, sounding the alarm, and generally acting as eyes and ears for the main fire-fighting force. Note that the equipment required by the Fire Brigade must still be available in numbers to cover the whole force (including

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	the Inactives).
Summary	*Allows using the normally useless Inactives to do productive tasks.*

Name	**Roman Fire Pump**
DL	5
Pre-Req	Fire Brigade (Fire Control research)
Recipe	1 Roman Fire Pump: People 5, Ltr 6, Iron 2, Leather 4, Coal 10
Leads To	N/A
Description	Leatherworking Activity **Bonus:** • A Roman Fire Pump provides a bonus of +1 AM (one worker counts as two workers) when performing Fire Control Activities. • One Roman Fire Pump may be used by each worker assigned to Fire Control. *These small pumps were typically used to rapidly fill buckets for use in fire fighting activities by the Aquarii. Unlike the larger fire pumps which were transported on the backs of wagons by the Siphonarii.*
Summary	*New Item – Roman Fire Pump, increases effectiveness of fire control workers (+1AM)*

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Fishing

Name	**Trawler**
DL	6
Pre-Req	N/A
Recipe	1 Trawler: People 160, ShB8, Wdw8, Mtl7, Logs 160, Brass 40, Coal, 200, Sheath 150, Silver 3000, Leather 30, Cloth 15, Rope 20, Oars
Leads To	N/A
Description	Trawlers increase the amount of Fish that are provided through the Fishing activity.

	ShB	Wood	Mtl	Logs	Brass	Coal	Sheath	Silver	Leather	Cloth	Rope	O/P	Weight
Trawler	8	8	7	160	40	200	150	3000	30	15	20	O	20000

	Sail Movement					Row Movement								
Vessel Type	**MP**	**Nav**	**Sea**	**Sail**	**Crew**	**MP**	**Nav**	**Sea**	**Row**	**Crew**	**MEF**	**Sail**	**Hull**	**Max People**
Trawler	20	2	2	4	10+7	15	.5	.5	2	20+7	12	16	16	60

Defense Points: 16
Cargo: 20,000
Weight: 20,000

Trawlers may be used by Tribes / Clans without the research.

Summary	*New Ship, Trawler. Greater output when fishing*

Name	**Trawling Net**
DL	4
Pre-Req	N/A
Recipe	1 Trawling Net: People 4, Wv7, Cotton 30, Silver 25
Leads To	N/A
Description	Counts as 0.75 units when Fishing. The number of Trawling Nets may not exceed the number of people fishing. Weight: 5lb
Summary	*New Item - Trawling Net, increases Fishing output*

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Forestry

Name	**5 Logs / Person**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	6 Logs / Person (Forestry research)
Description	A forester can cut down 5 logs.
Summary	*Get 5 Logs instead of 4 with Forestry*

Name	**6 Logs / Person**
DL	6
Pre-Req	5 Logs / Person (Forestry Research)
Recipe	N/A
Leads To	7 Logs / Person (Forestry research)
Description	A forester can cut down 6 logs.
Summary	*Get 6 Logs instead of 4 with Forestry*

Name	**7 Logs / Person**
DL	7
Pre-Req	6 Logs / Person (Forestry Research)
Recipe	N/A
Leads To	8 Logs / Person (Forestry research)
Description	A forester can cut down 7 logs.
Summary	*Get 7 Logs instead of 4 with Forestry*

Name	**8 Logs / Person**
DL	8
Pre-Req	7 Logs / Person (Forestry Research)
Recipe	N/A
Leads To	N/A
Description	A forester can cut down 8 logs.
Summary	*Get 8 Logs instead of 4 with Forestry*

Name	**Burner Improvements**

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DL	2
Pre-Req	Charcoal Specialists (Forestry Research)
Recipe	1 Burner Improvement: People 50, Eng 6, Stn 4, Mtl 4, Brk 4, Stones 150, Iron 50, Fodder 50, Clay 50
Leads To	N/A
Description	Burner Improvements are improvements made to existing burners. Burner Improvements double the effective workers assigned to the Charcoal Making activity (Section 12.6) only. Each Burner Improvement affects a single burner (10 people). They are themselves counted as buildings. You can never have more Burner Improvements than you have Burners. They may be built in other Villages and transferred but are not transportable. They must be built in place. The bonus from Burner Improvements follows the standard rules for TribeNet multiplication. With Charcoal Specialists (Special Research topic) giving a 50% increase and Burner Improvements giving a 100% improvement, the each worker would have an effective worker value of 2.5, not 3. *Charcoal Specialists felt that their knowledge of the process was such that they needed to find new and better ways to make charcoal. After much experimenting, they discovered a series of improvements that would assist in controlling oxygen to the process and also maximize the amount of charcoal produced in each burner, thus lessening the amount of work each person allowing them to watch additional burns.*
Summary	*New Building - Burner Improvement, Increases (+0.5) output when Charcoal Making*

Name	**Log Driving**
DL	2
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Logs cut on a river bank or moved to a river may be dumped into the current by a Unit and allowed to flow to a point where they are picked up by another unit. One worker for every 100 logs must be assigned as a **Log Driver** in activities (Forestry). The log drivers don't actually move with the logs but must come from a unit that is at one of the end points or is adjacent to the river along the path that the logs take. Regardless of who supplies the log drivers, there must be a sending and receiving unit at the end points.
Summary	*Transport Logs along rivers and canals*

Name	**Managed Plantations**
DL	5

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Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Normal Forestry activities can be performed in GH or PR but only after 1 full year after initial planting to allow young trees to take root. 50 people are required to setup the plantation but once setup, it looks after itself. 10 people may practice Forestry per Forestry Level (until level 10) and with normal returns (Only the Tribe with the research may use it). Multiple Managed Plantations may be setup for the Clan but the Automatic Transfer spreadsheet must be used if a Clan has more than one Managed Plantation. Managed Plantations may **not** be made or used for/by other Clans. Each month ~~Twice per year (in Fair months)~~ the player receives a shipment of Logs/Bark based on the current month's activity. Players are responsible for indicating the amount of Logs and Bark produced each turn~~, keeping a running tally~~ and showing this in Orders ~~in the Fair months when the shipment is due.~~ The player shall use the automated transfer system to collect the Logs/Bark for the current turn if they are utilizing the automated order spreadsheet. The correct transfer code is from unit 2263. Otherwise, the player is responsible for indicating in their orders that the transfer is needed. Note: This is Forestry research and will not produce weapons like Staves and Shafts.
Summary	*Plant Trees in a treeless Hex and get Logs/Bark each turn.*

Name	**Improved Charcoal Making**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	When performing the Forestry action / Charcoal Making, workers in a Unit with Improved Charcoal Making count as an extra 0.5 Workers each (+0.5 AM / worker). Two workers would do the work of 3 workers.
Summary	*Your workers count extra when making Charcoal (+0.5 AM)*

Name	**Saw**
DL	5
Pre-Req	N/A
Recipe	1 Saw: People 3, Mtl5, Iron 5, Coal 40
Leads To	N/A

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Description	Metalwork Activity Saws multiply logging rates x 4. Cannot be used with Adze. A Forester with no tools cuts 4 Logs A Forester with Adze cuts 8 Logs A Forester with Saw cuts 16 Logs
Summary	*New Item - Saw, Increase Log output by x4*

Name	**Sawmill**
DL	6
Pre-Req	Milling 10 (Group C skill) Forestry 4 (Group A skill)
Recipe	1 Sawmill: People 300, Eng 6, Wd 4, Stn 4, Logs 250, Stones 625, Iron 500, Coal 4000
Leads To	N/A
Description	A new method of milling logs, with the power coming from water so fewer people can cut may more logs. **Restrictions:** • **Max Sawmills:** A site is restricted to 100 Sawmills. • **Terrain:** The site must be on a hex that allows Forestry activities that provide logs (Forest, Jungle, etc) • **River:** The site must be on a hex that has at least one Hexside as a River or Canal. **Bonuses:** • **Max Users:** 100 People per Sawmill • **Production Boost:** Workers utilizing a Sawmill produce x8 the number of Logs they normally would. A worker may not utilize an Adze or Saw, though may utilize research topics that increase Logs per Person (5 Logs / Person, 6 Logs / Person, etc). **Other Clans:** • Sawmills may be built for other tribes, but that Tribe must have Milling 10 and Forestry 4 or better to gain the bonus.
Summary	*New Building - Sawmill, Increases output of Logs by x8*

Name	**Scraper**
DL	2
Pre-Req	N/A
Recipe	1 Scraper: Person 1, Mtl1, Iron 1, Coal 4

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Leads To	N/A
Description	Metalwork Activity Doubles rate for Bark Stripping Weight: 1 lb
Summary	*New Item - Scraper, Increases output of gaining Bark by x2*

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Furrier

Name	**Advanced Trap**
DL	4
Pre-Req	Improved Trap (Metalwork research) OR Improved Trap (Furrier research)
Recipe	1 Advanced Trap: People 2, Mtl 10, Iron 2, Coal 8
Leads To	N/A
Description	An Advanced trap is a continued evolutionary refinement of the Research topic Improved Trap and functions much as a standard trap. One Hunter/Furrier may use 1 Advanced Trap (with no standard Traps or Improved Traps) – this improves Hunting by 1.0 (i.e. one hunter counts as two).
Summary	*New Item, Advanced Trap, Hunter/Furrier can use for large boost (+1 AM)*

Name	**Furrier 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	**Bonus:** • **Skill Level Bonus:** ○ Furrier +1 (example from Fur 10 to Fur 11) • **Specialists:** This Tribe may begin to train Furrier based specialists **Requirements: N/A** **Restrictions: N/A** **Notes: N/A**
Summary	*Skill Level Increase - Furrier, Specialists*

Name	**Improved Trap**
DL	2
Pre-Req	N/A
Recipe	1 Improved Trap: People 1, Mtl 3, Iron 1, Coal 6
Leads To	Advanced Trap (Furrier research) Advanced Trap (Metalwork research)

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Description	An Improved Trap functions much as a standard trap, but allows a 15% bonus instead of 10% bonus. Standard limit of 5 traps per hunter apply. I Hunter/Furrier may use up to 5 Improved Traps (with no standard Traps) – this improves Hunting by 0.15 per IT or 0.75 per 5 Its.
Summary	*New Item, Improved Trap, Hunter/Furrier can use for multiple small boosts (Total +0.75)*

Name	**Winter Furs**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Furriers will be able to identify higher quality furs. They will sell for double the price of ordinary Furs at Fair. During Winter months (only) a Furrier with 5 Traps (or better) will furry 4 Winter Furs. This Activity is over and above ordinary Furrying and must be shown as a Transfer, for example, "400 Winter Furs to 0250" using 100 Actives with 500 Traps.
Summary	*Ability to gain Winter Fur during Winter to sell for silver*

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Garrison

Name	**Excubitoriums**
DL	5
Pre-Req	Fire Brigade (Fire Control research)
Recipe	1 Excubitorium: People 500, Eng 6, Fire 6, Stone 2.5k, Lamp 2, Oil 2, Barrel 1
Leads To	N/A
Description	Excubitoriums are night watch fire control scout posts. Upon completing the research, the Tribe gains the ability to build Excubitoriums. **Benefits:** • On month 1, the Tribe with the research and one other Tribe, from inside or outside the Clan, in the same location gains +0.01 General Morale. • On month 1, the Clan gains 25 Locals per Excubitorium provided that the Clan has at least 1 Longhouse. A maximum of 10 Excubitoriums will provide this bonus. **Requirements:** • To gain the yearly General Morale bonus and the Locals, the Tribe must have access to at least 1 Excubitorium in the same hex. • On month 1, the Tribe must expend 2 Oil per Excubitorium (send to usage) or no bonus is provided. **Notes:** • If multiple Tribes have this research topic, they will each require their own Excubitoriums.
Summary	*New Building – Excubitorium, slow increase of General Morale and gain Locals.*

Name	**Sentry Duty**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Units in the Tribe with Sentry Duty gain the ability to assign Warriors to Sentry Duty. If 10 Warriors are assigned for every 1,000 Population (or fraction thereof) in the Hex to Sentry Duty, Clan Units in that hex gain +2 Terrain Proficiency when defending. If a Garrison unit performs the Sentry Duty, Clan Units in that hex gain an additional +2 Terrain Proficiency.
Summary	*Assign Warriors to Sentry Duty and gain Terrain Proficiency during battles.*

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Glasswork

Name	
DL	
Pre-Req	
Recipe	
Description	

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Generalship

Name	**Circumvallation**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Once completed, this research topic allows a besieging force to construct a Ditch/Moat and wooden Palisade (with Wooden Towers) surrounding the village they are besieging. Note that circumvallation construction can be done only on turns when the siege order is given – an assault does NOT allow circumvallation construction. These defenses come into play whenever the besieged defenders attempt to break the siege (or to end DEVA) and/or when any outside forces try to attack the besiegers. In these cases, the casualties suffered by the besiegers are reduced the factors shown in the rules for Ditches, Moats, Palisades and Wooden Towers. For example a 40% reduction for a wooden Palisade with a Moat. To be effective, the circumvallation walls must cover FOUR times the circumference of the walls of the village being sieged. For example, 4,800 yards of circumvallation is required to fully circumvallate a besieged village with 1,200 yards of walls. Finally, circumvallation walls remain in existence for only as long as the besiegers remain in the hex. They instantly vanish if the besiegers ever leave the hex for any reason.
Summary	*Build fortifications around your enemy's fortifications and trap them inside*

Name	**Field Marshall**
DL	7
Pre-Req	Generalship 11 (Generalship research)
Recipe	N/A
Leads To	N/A
Description	This adds a **new skill** (Category B) called Field Marshall. A Tribe that has completed the Field Marshall research topic may develop this skill. A Tribe that possesses Field Marshall has its Generalship skill increased by the unit's Field Marshall skill's full value ~~one-half of its Field Marshall skill, rounded down~~, for all combat calculations. In addition, when two Clans are attacking the same target (or

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	defending against two attackers) the Clan with Field Marshall may determine the order of attacks (that is, which Clan attacks or is attacked, first). This also applies when multiple units of a single Clan are attacking or defending. The Clan with the highest Field Marshall level will prevail should there be more than one Clan with Field Marshall (it outranks Generalship).
Summary	*New Skill - Field Marshall, increases Leadership which increases Damage*

Name	**Generalship 11**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	Field Marshall (Generalship research)
Description	Increases Generalship skill level by +1 to 11. Specialists are not allowed
Summary	*Skill Level Increase - Generalship, No specialists*

Name	**Generalship 12**
DL	7
Pre-Req	Generalship 11 (Generalship research)
Recipe	N/A
Leads To	N/A
Description	Increases Generalship skill level by +1 to 11.
Summary	*Skill Level Increase - Generalship, No specialists*

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Healing

Name	**Barber Surgeons**
DL	4
Pre-Req	Battlefield Medicine (Healing research)
Recipe	N/A
Description	Barber Surgeons were skilled at saving the lives of Warriors thought totally lost, but those Warriors did not return whole. Missing limbs, eyes and chronic pain were the lingering effects of the Barber Surgeons ministrations. **Requirements:** 1. An additional 10 Actives, Warriors or Hirelings per 100 Warriors may be assigned to a battlefield support role as healers. If there are not enough additional Warriors assigned, the bonus to the Shift to Inactives is reduced pro-rata. **Benefit:** 1. At the end of all Combat for the turn, a Unit with Barber Surgeons gains Inactives equal to 5% (rounded up) of the "dead" Warriors for that Unit. 1. Example: 250 Warriors are listed as Casualties. At the end of the Combat for the turn, the Unit loses 250 Warriors but gains 250*0.05 = 13 Inactives *Warriors once considered beyond saving and regulated to the embrace of death are instead hastily operated on and go on to live productive lives cleaning latrines and wishing for their glory days while lamenting the loss of a limb, eye or other body part.*
Summary	*Assign people in Combat to shift "Dead" people into Inactives (minus some limbs)*

Name	**Battlefield Medicine**
DL	5
Pre-Req	War College (Research research)
Recipe	N/A
Leads To	Barber Surgeons (Healing research) Battlefield Medics (Healing research) Camp Medics (Healing research)
Description	Battlefield Medicine provides the ability to heal wounded combatants between the Ranged and Melee phase of combat. **Requirements:** Units in the Tribe with Battlefield Medicine may assign Warriors and Actives to a battle-

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	field support role as healers. 5 Healer (Warrior, Active or Hireling) must be assigned in the monthly Turn Orders for every 100 Warriors participating in combat that turn. Less Healers have a corresponding loss of efficiency in healing. Warriors assigned to battlefield support role as a healer do not count against the 1/3rd limit. **Benefits:** Once Battlefield Medicine is completed and healers assigned, Units in the Tribe that are involved in combat may attempt to heal Wounded warriors at the end of the Ranged combat phase. Wounded warriors that are healed are available to fight in the Melee phase though any wounded warriors that are not healed are beyond saving and are dead. Healing performed at the end of ranged phase follows standard healing rules with the exception that only 25% of the normal number of warriors are healed. It just is not as effective as a more stable form of healing CODE NOTE 1: Assigning of Healers is not yet supported by the AutoOrder spreadsheet. Until it is updated, leave them unassigned and provide the assignment in a Note under the Comments section. CODE NOTE 2: Battlefield Medicine is not currently coded and is part of Phase II of the Combat Module. Utility of this research will not be effective during combat until the code supports. Learning this research now would provide no benefit until the code is completed.
Summary	*Combat Boost - Gain the ability to perform Healing in between Ranged and Melee phase*

Name	**Battlefield Medics**
DL	4
Pre-Req	Battlefield Medicine (Healing research)
Recipe	N/A
Leads To	N/A
Description	**Requirements:** An additional 10 Warriors (not Actives or Hirelings) per 100 Warriors may be assigned to a battlefield support role as healers. If there are not enough additional Warriors assigned, the bonus to effectiveness is reduced pro-rata. **Benefits:** 1. These Battlefield medics allow the healing for Battlefield Medicine to be at 50% efficiency. 2. Additionally, prior to Healing, 2% (rounded up to the nearest integer) of the Warriors that were designated as Casualties in the Ranged Phase are converted to Wounded and may be healed normally.

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	CODE NOTE 1: Battlefield Medics is not currently coded and is part of Phase II of the Combat Module. Utility of this research will not be effective during combat until the code supports. Learning this research now would provide no benefit until the code is completed.
Summary	*Combat Boost - Increases pre-Melee healing and allows some 'dead' people to be healed.*

Name	**Camp Medics**
DL	8
Pre-Req	Battlefield Medicine (Healing research)
Recipe	N/A
Leads To	N/A
Description	A skilled set of Medics were able to lend their assistance to an entire army, but only if they were given the proper logistics and authority to act among a collection of different units. **Benefits:** Any Unit with Camp Medics research topic may serve to provide healing to any other friendly unit of the same Clan in the same Hex. This combat may be Siege, Assault or Assault by way of Locate. Standard healing rules apply with the exception that the Unit with Camp Medic skills and research topics are used in regards to Healing and not the combat unit's own skills. For all intents and purposes, the combat Unit's Healing (and related) skill(s) is equal to the skill of the unit with Camp Medics and the combat Unit may include the Healing related research topics on the list of known research topics for the combat. *Its Camp Sanitation but for a Healing Corp.*
Summary	*Combat Boost - Allows one Unit to heal all friendly units*

Name	**Hospital**
DL	8
Pre-Req	N/A
Recipe	Hospital: People 1250, Eng9, Stones 5000, Logs 500
Leads To	N/A
Description	Improves population growth (0.5%), and adds +4 to Healing Skill in combat conducted in the Village where the Hospital is present. A single Hospital serves all Tribes of the one

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	Clan in the site. Can be built for other Tribes but they require Healing research to use. Once built, all population benefits currently allowed will be automatically credited each turn (that is, the modifier is hard coded). Heal skill must be at least Lvl1 for this to happen.
Summary	*New Building - Hospital, Boosts population growth*

Name	**Medicine 1, Medicine 2**
DL	6, 6
Pre-Req	Medicine 1: N/A Medicine 2: Medicine 1 (Healing research)
Recipe	N/A
Leads To	Medicine 1: Medicine 2 (Healing research) Medicine 2: N/A
Description	Improves population growth (0.5%), and adds +4 to Healing Skill in combat conducted by units from the Tribe with this research. **Bonus:** • **Increased Population Growth:** A Tribe, and its units, with the Medicine 1 research topic gain an improved population growth equal to 0.5%, similar to Hospital and Sewers. ○ Medicine 2 provides an additional 0.5% improved population growth. • **Temporary Skill Boost:** A Tribe, and its units, count as having +4 to their Healing skill for Combat related healing. **Requirements: N/A** **Restrictions: N/A** **Notes:** Books may be written.
Summary	*New Building - Clinic, Boosts population growth, Promotes healing*

Name	**Salves**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	1 Herb and 2 Silver can be made into 1 Salve (Healing activity) 1 Salve is equal to 2 Herbs during Healing in combat. 1 person can make 10 Herbs into 10 Salves. Weight as

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	Herbs.
Summary	*New Item - Salves, Counts as 2 Salves*

Name	**Seek Herbs**
DL	3
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Increase Herb returns when Seeking - triple finds during Seeking using the same number of people. Note, you show me triple figures after Horses, Backpacks etc have been applied.
Summary	*Seeking Boost - Triples herbs found during seeking*

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Heavy Weapons

Name	**Breaching Walls**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	To be developed. The effect of creating breaches is to reduce defensive factor. ..\Combat\Breaches\BreachesSteveSimmonsSheetVII.xls One yard or breach repaired of wall requires the following:

ITEM	SKILL	TYPE	PEOPLE	LOGS/STONES
10'	Eng 4	Palisade	1 Person	3 Logs
10'	Eng 7	Stonewall	3 Person	30 Stones
15'	Eng 8	Stonewall	6 Person	45 Stones
20'	Eng 9	Stonewall	9 Person	60 Stones

Summary	*To be developed, it allows breaching of walls in sieges*

Name	**Slave Crews**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	Slave Crews II (Heavy Weapons research)
Description	Use of Slaves to fire siege weapons. 1 Warrior oversees 2 Slaves (so a Catapult needs 6 slaves, 3 warriors and a Trebuchet needs 10 slaves, 5 warriors). Operate at Skill and Morale level of Tribe. Only 1/3rd of the Slaves in a Unit are available for Combat Orders. Slaves are not available for any other activity during the turn (that is the slaves must be put on defense like the warriors). The player shows Slaves as ordinary Warriors in combat orders and must calculate weighted losses at the end of combat.
Summary	*Combat Boost - Slaves can be used to man heavy weapons, beyond 1/3rd warriors*

Name	**Slave Crews II**
DL	3
Pre-Req	Slave Crews (Heavy Weapons research)
Recipe	N/A

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Description	Use of Slaves to fire any/all weapons whose effectiveness uses either the Heavy Weapons or the Artillery skill during any combat that siege weapons are allowed. 1 Warrior oversees 2 Slaves (so a Catapult needs 6 slaves, 3 warriors and a Trebuchet needs 10 slaves, 5 warriors). Operate at Skill and Morale level of Tribe. Only 1/3rd of the Slaves in a Unit are available for Combat Orders. Slaves are not available for any other activity during the turn (that is the slaves must be put on defense like the warriors). The player shows Slaves as ordinary Warriors in combat orders and must calculate weighted losses at the end of combat.
Summary	*Combat Boost - Slaves can be used for heavy weapons or artillery*

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Herding

Name	**Angora Goats**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Angora Goats may be sheared for wool (cotton) twice a year on months 6 and 12. One person may shear 10 goats. Each goat produces 25 cotton (1 person with 10 goats can produce 250 cotton). All goats in the Clan are considered to be Angora Goats, though only the tribe with the research and its elements may perform the shearing. Note: Until Shearing is coded, twice a year the player shall be responsible for manually reporting the shearing. During months 6 and 12, any Population that shall perform the shearing action should **not** be assigned to other tasks. The player shall use the autotransfer system to transfer the Cotton FROM 1263 and TO the unit performing the shearing.
Summary	*Goats give wool which is really Cotton*

Name	**Animal Training**
DL	3
Pre-Req	N/A
Recipe	N/A
Leads To:	Circus Troupe (Dancing research)
Description	Animal Training allows units of the Tribe to train Performance Animals. **Benefits:** • **Fair:** Performance Animals may perform at the Fair. See updated Fair spreadsheet. • **Research Topics:** Other research topics, Circus Troupe for example, require Performance Animals. Training: • **Initial Training:** Performance Animals may be trained by spending 1 Active per Animal for 3 months. The type of Animal must be identified at the start of Animal Training and the animals must be present with the Unit throughout the duration of the training. Neither the Actives nor the Animals may perform other activities

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	during these months. Utilize Comments in the turn orders to track the training of the animals. • **Completion:** At the end of the Training, utilize the Comments section of the orders to request the conversion of the animals to Performance Animals. • **Periodic Training:** 1 Active per Performance Animal must be used each season to perform periodic training for each Performance Animal. If this is not performed, the Performance Animal will revert to a normal animal of that type. If this is caught by the GM vs the player, the animal may in fact escape its neglectful masters. **Restrictions:** • **Breeding**: Performance animals do not breed. • **Herding**: Performance animals require normal herding. • **Fodder/Water**: Performance animals require normal nourishment. • **Transfers**: Performance Animals may not be transferred to a unit without Animal Training research.
Summary	*Animals trained for Fair events*

Name	**Dairy Cattle**
DL	6
Pre-Req	N/A
Recipe	100 Milk: 1 Person, 10 Cattle (Reusable) 30 Cheese: 1 Person, 90 Milk
Leads To	N/A
Description	Dairy allows the use of the Milking and Cheesemaking activities. Milking (Group A): This new skill allows 10 Milkers per level (limited to 10,000 at Milk10) to perform the Milking activity. Milk must be used in the turn produced or it will be lost. Milk is not produced in desert or arid terrain. Milk may be used a provs or water. 10 Milk is consumed as 1 Prov. One person milks 10 cattle to produce 100 milk. Cheesemaking (Group C): This new skill allows 10 Cheesemakers per Cheesemaking level. Cheese is consumed as Provs. 1 Cheese is consumed as 1 Prov. 1 Person makes 30 Cheese using 90 milk. 1 person uses 90 Milk to make 30 Cheese.
Summary	*Allows access to Milking and Cheesemaking, new sources of Food*

Name	**Expert Breeding**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	Veterinarian Medicine (Herding research)

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Description	Add 3 to the Herding skill for purposes of Herd Growth. Players need to tell me when this research first comes in so I can manually adjust the Herd skill to 13. Note this does not mean you have achieved Herd11 for the purposes of Specialists etc. Herd11 needs to be attained separately but if it is your effective Herd level is 14.
Summary	*Skill Level Boost - Herding, instant +3 to Herd skill.*

Name	**Fences**
DL	4
Pre-Req	N/A
Recipe	1 Fence: People 50, Eng 4, Logs 100
Leads To	Improved Fence Builders (Engineering research) Improved Fence Builders (Herding research)
Description	Holds 50 Horse/Cattle/Camel, or 100 Goats. May be built for other Tribes/Clans. Fences are considered to be outside Village walls (and may be built independent of Village for example, in an adjacent hex). Fences is a research that increases Herder Efficiency. Maximum Bonus: +1 Herder Efficiency MaxFences: #Goats/100 + #Cattle/50 +#Horses/50 +#Camels/50 Bonus: # Fences / Max Fences Required Fences for Maximum Bonus: MaxFences If you have 1000 goats, 500 cattle and 500 horses, you normally require 50+50+50 = 150 maximum herders. Your maximum fences are 1000/100 + 500/50 + 500/50 = 30 Fences. If you have 30 fences, your bonus is 30 / 30 = +1.0 Herder efficiency. You normally require 90 herders, now it is 90 / 2 = 45 herders required. If you only had 15 fences, your bonus would be 15 / 30 = +0.50 Herder efficiency. You normally require 90 herders, now it is 90 / 1.5 = 60 herders required.
Summary	*New Building - Fences, reduces herders required.*

Name	**Guard / War Dogs**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Particularly useful in Security Conversion to Guard dogs from the Dog pack can occur at any time, but is non-reversible.
Summary	*Convert dogs into Guard / War dogs for combat.*

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Name	**Herding 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Herding 11 Allows Herding Specialists Herding Specialists increases Herder Efficiency. Maximum Bonus: +1 Herder Efficiency Bonus Gained: # of Specialists / # of people assigned Maximum number of Specialists: # of Maximum Herders / 2 For instance, if you require a total of 100 herders, the maximum number of Specialists that may be assigned is 100 / 2 = 50 Specialists. If you assign 50 Specialists and no other herders, you would gain 50 / 50 = +1.00. If you assign 25 Specialists and 50 herders, you would gain 25 / (25 +50) = 25 / 75 = +0.34 Herder efficiency. Without any other research, the herder efficiency would be 1 + 0.34 = 1.34. The total herders required would be 100 / 1.34 = 75 herders which is the total number of herders assigned. Prerequisite for Herding 12
Summary	*Skill Level Boost - Herding, allows specialists*

Name	**Herding 12**
DL	6
Pre-Req	Herding 11 (Herding research)
Recipe	N/A
Leads To	N/A
Description	Herding 12 Prerequisite for Herding 13
Summary	*Skill Level Boost - Herding*

Name	**Horse Herders**
DL	2
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Horse Herders is a research that increases Herder Efficiency.

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	Maximum Bonus: +1 Herder Efficiency Bonus: Total Horses / Total Animals Horses Needed for Maximum Bonus: Total Animals If you have 1000 horses, you would require a total of 100 herders. With Horse Herders, you would gain a bonus to Herder Efficiency equal to 1000 (# of Horses) / 1000 (Total Animals) = +1.00. Without any other research, the herder efficiency would be 1 + 1 = 2. The total herders required would be 100 / 2 = 50 herders. If you have 500 horses and 500 goats, you would require a total of 75 herders. With Horse Herders, you would gain a bonus to Herder Efficiency equal to 500 (# of Horses) / 1000 (Total Animals) = +0.50. Without any other research, the herder efficiency would be 1 + 0.5 = 1.5. The total herders required would be 100 / 1.5 = 67 herders.
Summary	*Reduces herders required for herding*

Name	**Hunting Dogs**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Hunter with a Dog counts as 3 Hunters (you will need to show this to me – for example if you have 50 Hunters with 10 Dogs show this as 70 Hunters). You may convert Dogs to Hunting Dogs (which may then not be transferred to other Clans).
Summary	*Increases output of hunting. Each dog counts as 2 hunters*

Name	**Herding Dogs**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Herding Dogs is a research that increases Herder Efficiency. Maximum Bonus: +1 Herder Efficiency Bonus: # of Herding Dogs / Maximum Herding Dogs Required Dogs for Maximum Bonus: # of Maximum Herders / 2 Maximum Herding Dogs: # of Maximum Herders / 2 If you require 100 herders to herd your herd, the maximum number of Herding dogs that you can utilize is 100/2 = 50 herding dogs. If you have 50 herding dogs, this would get you a bonus of # of 50 (Number of Herding Dogs) / 50 (maximum herding dogs) = +1.0.

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	Without any other research, the herder efficiency would be 1 + 1 = 2.0. The total herders required would be 100 / 2 = 50 herders. If you require 100 herders to herd your herd, the maximum number of Herding dogs that you can utilize is 100/2 = 50 herding dogs. If you have 25 herding dogs, this would get you a bonus of # of 25 (Number of Herding Dogs) / 50 (maximum herding dogs) = +0.50. Without any other research, the herder efficiency would be 1 + 0.5 = 1.5. The total herders required would be 100 / 1.50 = 67 herders. Conversion to Herd Dogs from the Dog pack can occur at any time, but is non-reversible (you Order "convert xx Dogs to Herd Dogs"). The dogs are non-transferrable (the research includes the ability to handle). Dog 3 provs, 1 skin, 1 gut eats 0.5 provs per turn Weighs 50 lb
Summary	*Reduces herders required*

Name	**Improved Fence Builders**
DL	2
Pre-Req	Fences (Engineering research) Or Fences (Herding research)
Recipe	1 Fence: People 5, Eng 8, Logs 100
Leads To	N/A
Description	Engineering Activity The Tribe and its elements are more efficient at building Fences. When building a fence, a Unit with Improved Fence Builder may use a new Recipe to build the Fence.
Summary	*Makes building fences a little bit less of a pain, but not enough of a reduction.*

Name	**Improved Stable Builders**
DL	2
Pre-Req	Stables (Herding research) Or Stables (Engineering research)
Recipe	1 Fence: People 5, Eng 8, Logs 100
Leads To	N/A
Description	Engineering Activity

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	The Tribe and its elements are more efficient at building Stables. When building a Stable, a Unit with Improved Stable Builders may use a new Recipe to build the Stable.
Summary	*Makes building stables a little bit less of a pain.*

Name	**Mounted Herders**
DL	8
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Doubles the number of animals herded. Mounted Herders require a Saddle and Rope. Mounted Herders affect all animals, regardless. Mounted Herders is a research that increases Herder Efficiency. Maximum Bonus: +1 Herder Efficiency Bonus: Minimum of (Total herders assigned, Total Horses, Saddles, Rope) / (#ofMaxHerders/2) Horses Needed for Maximum Bonus: # of Max Herders / 2 If you require 100 maximum herders, the maximum number of mounted herders required is 100 / 2 = 50. If you have 70 herders assigned, 25 saddles, 25 rope, 50 horses, your bonus is 25 / 50 = +0.50. Your herder efficiency would be 1+0.50=1.5 and you would need to assign 100/1.5 = 67 herders. You've assigned 70, so that's more than enough.
Summary	*Reduces herders required*

Name	**Smart Herding**
DL	2
Pre-Req	N/A
Recipe	4 Crooks: People 1, Wdw 2, Log 1
Description	Requires a Crook. Crooks may be made by anyone. Max Crooks = #Max Herders Required * 0.70 Crook Ratio = # of Crooks / Max Crooks Herder Reduction maximum: *0.70 Actual Herder Reduction Multiplier: 1 – 0.3*CrookRatio After all other bonuses are calculated for Herder Efficiency and the number of Herders is calculated (#MaxHerders / HerderEfficiency), this number is multiplied by the Actual Herder Reduction Multiplier. For example, you require 100 maximum herders. The

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	maximum number of crooks is 100 * 0.70 = 70 crooks maximum. You have 70 crooks. 70 / 70 = 1.00. Your actual herder reduction multiplier is 1-0.30*1 = 1-0.3 = 0.7. With no other research, you require 100 herders * 0.70 = 70 herders required. If you only had 35 Crooks, you CrookRatio would be 35 / 70 = 0.5. Your actual herder reduction multiplier would be 1 – 0.30*0.5 = 1 – 0.15 = 0.85. With no other research, you require 100 * 0.85 = 85 herders. Weight: 2lbs
Summary	*New Item - Crooks, Reduces herders required*

Name	**Stables**
DL	4
Pre-Req	N/A
Recipe	1 Stables: People 50, Logs 100
Leads To	Improved Stable Builders (Engineering Research) Improved Stable Builders (Herding research) Knights (Horsemanship research)
Description	Holds 30 Horse or 30 Cattle, or 60 Goats. Halves herders required. Prerequisite for some Cavalry related troops (for example, Knights). Stables is a research that increases Herder Efficiency. Maximum Bonus: +1 Herder Efficiency MaxStables: #Goats/60 + #Cattle/30 +#Horses/30 +#Camels/30 Bonus: # Stables / Max Stables Required Stables for Maximum Bonus: MaxStables If you have 600 goats, 300 cattle and 300 horses, you normally require 30+30+30 = 90 maximum herders. Your maximum stables is 600/60 + 300/30 + 300/30 = 30 stables. If you have 30 stables, your bonus is 30 / 30 = +1.0 Herder efficiency. You normally require 90 herders, now it is 90 / 2 = 45 herders required. If you only had 15 stables, your bonus would be 15 / 30 = +0.50 Herder efficiency. You normally require 90 herders, now it is 90 / 1.5 = 60 herders required.
Summary	*New Building - Stables, Reduces herders required*

Name	**Veterinarian Medicine**
DL	7
Pre-Req	Herding 11 (Herding research) Expert Breeding (Herding research) Scroll

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Recipe	N/A
Leads To	N/A
Description	This adds a new skill (Category B) called Veterinarian Medicine. A Tribe that has completed the Veterinarian Medicine research topic may develop this skill. A Tribe that possesses Veterinarian Medicine has its Herding skill increased by one-half of its Veterinarian Medicine skill, rounded down. In addition, its Horsemanship skill is increased by one-half of its Veterinarian Medicine skill, rounded down for the purposes of determining Horse casualties for a battle. Herding skill is changed on once per year. Note: it is up to the player to tell me when this happens. For example, on turn 8/946 tribe 2999 completes the Veterinarian Medicine research topic and can start developing the Veterinarian Medicine (VetM) skill. ONE YEAR later on 8/947, 2999's VetM has reached 5 (and its Herd skill still = 11). Thus on turn 8/947, you would set 2999's Herd skill = 13. On the following year, if VetM has reached 8, Herd would be set = 15. Books may be written but each Book requires a Scroll. Upon completion of the Research, the Scroll is destroyed/lost and is sent to Usage (1263) via transfer.
Summary	*New Skill - Veterinarian Medicine. Increases Herd and Horsemanship skill.*

Herding Process

1. Determine total number of each animal
2. Determine maximum herders required based upon no research.
3. Get # of Fences
4. Get # of Wire Fences
5. Get # of Stables
6. Get number of Crooks (If Smart Herding)
7. Check if Horse Herders research.
    a. If so, HorseModifier = Total Horses / Maximum Animals.
8. Mounted Herders? Yes or No.
    a. If yes, MaxMountedHerders = MaxHerdersReq/2
    b. MountedModifier= TotalHorses / MaxMountedHerders, max 1.00
9. Herding Dogs?
    a. If Dogs: Max Dogs = MaxHerdersReq/2
    b. Dog Modifier = #HerdingDogs / MaxDogs, max 1.00
10. Specialists assigned?
    a. If Yes, then SpecialistModifier = #Specialists/#PeopleAssigned.
11. If Fencing: MaxFences = (#Goats/100 + #HorsesandCattlendCamel/50).
    a. Fencing Modifier = #Fences / MaxFences, max 1.00
12. If Stables: MaxStables=(#Goats/60 + #HorsesandCattleandCamel/30)
    a. Stable Modifier = #stables / MaxStables , max 1.00
13. If SmartHerding, MaxCrooks = MaxHerdersReq (From #1 above) * 0.7
    a. CrookRatio= #Crooks / MaxCrooks

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b. CrookModifier = 1 – 0.3 * CrookRatio

14. Herder Effectiveness =
    1 + SpecialistMod + FenceMod + StableMod + DogMod + HorseMod + MountedMod
15. Herders Required = MaxHerdersRequired / HerderEffectiveness
16. Final Herders Required = Herders Required * CrookRatio

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Horsemanship

Name	**Close Formation (Close Order Cavalry)**
DL	4
Pre-Req	Horsemanship 10 (Skill) Tactics 5 (Skill)
Recipe	N/A
Leads To	Feudal Security (Politics research)
Description	+4 to Horsemanship, in addition to, not exclusive of, all other bonuses applicable.
Summary	*Skill Level Boost - Horsemanship*

Name	**Equestrianism**
DL	6
Pre-Req	Herding 10 (Skill)
Recipe	N/A
Leads To	N/A
Description	A Tribe holding this research may host an annual Equestrian event. **Requirements:** 1) 500 Warriors must attend at a cost of 100 silver each (total cost Silver 50,000), payable by the Tribe. 2) Benefit is gained once the Tribe hosts the event. **Benefits:** 1) The Tribe gains a bonus based upon the year. a. Year 1: +0.02 General Morale Boost b. Year 2: +1 to Horsemanship skill (may go past 10 but does not allow Specialists) c. Year 3: +0.02 General Morale Boost d. Year 4: +1 to Herding skill (may go past 10 but does not allow Specialists)
Summary	*New Event - Equestrian, gain Morale, Horsemanship skill and Herding skill*

Name	**Knights**
DL	8
Pre-Req	Heraldry in One Tribe in Clan (Art research) Stables (Herding research) OR Stables (Engineering research) Combat 10 (Skill) or Leadership 10 (Skill)
Recipe	N/A
Leads To	N/A

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Description	A Knight can only fight as a Cavalry unit. Attributes of Knights: • Ongoing maintenance of 1 Gold paid per year in month 12 per Knight sent via transfer. If funds are not available, the knighthood will lapse for those who are short. • Knights have a Combat Factor of x2.4 Cavalry, meaning they perform as if they were 2.4 cavalry. • Warriors are converted to Knights and once converted may do nothing else. • Knights may not comprise more than 25% of a Tribe's total Warriors. • For example, a Tribe with 1200 Warriors may have up to 300 Knights. If this Tribe was involved in combat it would be able to assign 400 troops to combat. However, up to 300 of these could be Knights. • Janissaries and Knights may not participate in the same combat (on the same side).
Summary	*New Population Type - Knights, each Knight is expensive but kills a lot of people.*

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Hunting

Name	**Hunting Dogs**
DL	6
Pre-Req	*See Herding
Recipe	*See Herding
Leads To	N/A
Description	*See Herding
Summary	*Allows converting dogs into hunting dogs to increase hunting output*

Name	**Mongol Hunt**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	Mongol Hunt 2 (Hunting research)
Description	Requires at least 1000 Hunters - increases Hunt by 1.2 (that is, 1000 Hunters will hunt as if they are 1200). 1.2 affects people not equipment (that is, if you are using 100 traps with 1000 people the MH has the effect of 100 traps with 1200 people~~). For the purposes of the Spreadsheet you multiply ordinary Hunters by 1.2, insert this figure into Hunters, then add implements.~~ The current code base automatically adds in the extra 20% extra base hunters. You no longer need to add 'virtual' workers.
Summary	*+20% output from Hunting*

Name	**Mongol Hunt 2**
DL	4
Pre-Req	Mongol Hunt (Hunting)
Recipe	N/A
Leads To	N/A
Description	Requires at least 1000 Hunters - increases Hunt by 1.4 (that is, 1000 Hunters will hunt as if they are 1400). 1.4 affects people not equipment (that is, if you are using 100 traps with 1000 people the MH2 has the effect of 100 traps with 1400 people). ~~For the purposes of the Spreadsheet you multiply ordinary Hunters by 1.4, insert this figure into Hunters, then add implements.~~ The current code base automatically adds in the extra 40% extra base hunters. You no longer need to add 'virtual' workers.
Summary	*+40% output from hunting*

Name	**Trappers**

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DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Hunters may use up to 10 traps/snares each. Can also use 10 Improved Traps and 2 Advanced Traps.
Summary	*Allows workers that are hunting to use more traps than normal.*

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Intelligence

Name	**Field Intelligence**
DL	2
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	A unit dispatching 4 scout parties with a minimum of 5 mounted scouts per party using a Field Intelligence order gains +2 Leadership and +2 Horsemanship for any combat that takes place in or immediately after the scouts are assigned. Using Field Intelligence Requires at least Leadership 6 and Scouting 6. Field Intelligence is the gathering of Intelligence in the battlefield and the application of it in combat. It allows a Clan to identify any weakness in their opponent's forces, terrain advantages and other opportunities that could be used to their advantage. Scouts used for Field Intelligence orders do not deliver a scouting report. They are not concerned with the general terrain, mines and other units. Their focus is on specific advantages for combat. This could be a specific hill or defensive hollow within a hex rather than information on the whole hex. Scouts using the Field Intelligence order would not need to list directions as the GM would not run a scouting report for them. The result is a decrease in workload for the GM.
Summary	*Combat Boost - Advanced scouting provides boosts to Ldr and Horsemanship*

Name	**Hire Mercenary Guard**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Hire Mercenary Guard sources and recruits Mercenaries from the local population. They cost 10 silver per turn (as per normal Mercenaries). Up to 200 Mercenaries may be recruited per year by means of this research. **Courier Elements** Each Courier Element/Element may deploy up to 100 Mercenary Guards (shown in status as Mercenaries).

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	Mercenary Guard attached to couriers fight at the Morale and Leadership and Healing skill of the unit they attached to and at Com 6, Hor 6, Arc 6. The can be assigned to Security or Suppression as many as are in the unit. When assigned to defense in a unit performing a courier contract they can be assigned as defenders on a 1 to 1 warrior to defender ratio and the total defenders can exceed the 1//3 ratio if attacked while performing a courirer mission. Eg a Courier Element with 60 Warriors present and 80 Guards may deploy to combat 20 Warriors (1/3) and 60 Guards (assuming these have been assigned to Defense). <u>Elements and other units (normal)</u> Act as normal Mercenaries
Summary	*Courier units may hire mercenaries as guards for silver*

Name	**Native Operative**
DL	2
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Upon completion of Native Operative the Tribe with this topic recruits a group of locals to gather information about various skills from Category A, B and C. The recruits are purely an intelligence gathering unit, drawing information about skills from the local network. These locals form a tribe that consists of 10 Inactives. The Native Operative tribe can attempt skills as per any normal tribe, including using a teacher at normal payment rates. **The Native Operative tribe incurs the monetary cost of a normal tribe.** • It can move only by using the Follow Order. • It may not accept transfers of population. • it can perform no activities • it can only be populated with inactives (10) • it cannot hold goods and must be assigned a GT • it cannot work on Intelligence skill • it cannot conduct research It may, on any turn, transfer any of its skills to another tribe in the clan as a BM transfer – provided the receiving tribe has a tribe (must be a tribe) in same the hex. This new skill level replaces the current skill level for that skill in the receiving Tribe. In return for the transfer of this knowledge, the Native Operatives are paid 50 rare

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	commodities (of any type other than coffee or tea). This amount is transferred to usage. There is a Limit of one Native Operative tribe per clan. Notes: 1. Upon completion of this research, contact the GM to create the extra tribe. 2. The maximum number of Tribes that a Clan may have is 10. Creation of extra tribes through this research counts against this limit. Be aware that this may restrict your options for International NPC Tribes.
Summary	*Gain a specialty tribe dedicated to learning skills and transferring them to other tribes*

Name	**Organized Intelligence Analysis (OIA)**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Allows any ONE Tribe of the Clan (this tribe must have INTELLIGENCE Skill = 10) to also ask ONE question per year about another player clan. The tribe with OIA need not be the same tribe as the tribe that asks the questions. Only questions with short simple answers are permitted. For example, what is the population of 0888? – Answer is "99,999". All the stated limitations of Intelligence apply to this extra question. For example, for a site which is 20 hexes away the answer given should be within 2 hexes of the actual location. The question will be vetted by the GM. Rationale – Gathering Intelligence (e.g. the Intelligence Skill) is valuable in and of itself. However, this value can be greatly enhanced by an organized effort (e.g. the Research Skill) to analyze the various clues and hints that are gathered with the Intelligence Skill. Developing this research topic represents training the researchers (that do the analysis) to work with the intelligence gathers and to develop their abilities to "put the puzzle pieces together" to gain useful data about others clans.
Summary	*Gain information about any other player clan.*

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Leadership

Name	**Alliance MOTC**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To:	Trusted Maps (Captaincy research) Trusted Maps (Economics research) Trusted Maps (Leadership research) Federal Community of Clans (Leadership research)
Description	Once completed, this research topic allows MOTC to be declared between Tribes within Allied Clans (Alliances must be established using Corps Diplomatique BEFORE Alliance MOTC can be used) as if they were all members of a single Clan. To enable an Alliance MOTC, **ALL** the involved tribes must know this research topic and then sacrifice the requisite commodities (as explained below) and state which other Allied tribe(s) they will be joining with in a MOTC. An Alliance MOTC between tribes within two clans requires that each tribe sacrifice 10 units of a desired commodity and an additional 10 units of another, different non-desired commodity. An Alliance MOTC between tribes from three different clans requires that each tribe sacrifice 10 units of a desired commodity and an additional 10 units each of two, different non-desired commodities; e.g. each tribe sacrifices 30 commodities (10 of a desired commodity, 10 of one non-desired commodity and 10 of another different non-desired commodity). Between four clans requires 10 units of a desired commodity and an additional 10 units each of three, different non-desired commodities and so forth. This sacrifice simply enables an Alliance MOTC (and this fact should be shown in each clan's turn results). Once enabled, an Alliance MOTC may be held unused indefinitely and then used when needed by simply declaring a normal MOTC except that this MOTC may involve tribes from different clans. All involved tribes must be in a common hex when the Alliance MOTC is declared. A sacrifice allows one and only one Alliance MOTC to be declared. Further Alliance MOTC declarations each require their own sacrifices. Alliance MOTC Limitations – When an Alliance MOTC is declared, one of the participating tribes must be specified (by all participants) as the leader. At no time can the warriors from the other Alliance MOTC participants exceed the number of *warriors* in the leader's clan. This is enforced in a three-way MOTC, by limiting each of the other two (non-leader) participants' warriors to half the number of *warriors* in the leader's clan. In a four-way MOTC, this limit is reduced to a third and so forth. *An Alliance MOTC operates as a normal MOTC. Battles skills are averaged (weighted averaging) across all warriors in the MOTC. The one exception is Generalship. If the Tribe leading the Alliance MOTC possesses the Gship skill, its benefits accrue to all as the General is in command of the entire MOTC.* Finally, all tribes (except the Leader) involved in an Alliance MOTC lose

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	all of their Skill Attempts while the MOTC is active. Once ended, an Alliance MOTC can be reactivated ONLY by further sacrifices of commodities as described above.
Summary	*Combat Boost - Alliance mates may form Meeting of The Clan together*

Name	**Battle Groups**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	When in Combat, a Clan that has completed researching Battlegroups may, if in a Meeting of the Clan, deploy Battlegroups consisting of Archery and/or Heavy Weapons troops from only a single Tribe (that is, your best Archers may be deployed in the Missile phase). For example, ordinarily two Tribes A and B in Meeting of the Clan would use Archers at a weighted average of A and B. Under Battle Groups the archers may be taken from the Tribe with the highest Archery (or Heavy Weapons) Skill. Note – that if you want to use more Archers than are available in one of the Tribes then a weighted average will come into play (players must calculate this).
Summary	*Combat Boost - Removes skill averaging when multiple units are in combat.*

Name	**Federal Community of Clans**
DL	4
Pre-Req	Alliance MotC (Leadership research) Or Alliance MotC (Diplomacy research)
Recipe	N/A
Leads To	N/A
Description	A Federal Community of Clans (Known below as the **FCC**) is a group of closely knit villages within a set geographic area that has enlisted the aid of the locals in exchange for assisting with their defense. Multiple clans band together for a common defense, but only in their designated territory. **FCC Creation:** • **Federal Capital:** Once completed, this research topic allows the Clan to designate a Federal Capital. The Federal Capital must be a village owned by the Clan. The Federal Capital may not be changed once designated without dissolving the existing FCC and researching FCC again. • **Membership List:** Once the Federal Capital is designated, the Clan with the research provides the Game Master with a list of all Clans that are to be part of the FCC. The Clan with the research becomes known as the Federal Leader. • **FCC Zone:** A zone of effect is created around the Federal Capital and reaches out

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	25 hexes. It includes land and water hexes. This is called the FCC Zone.
	• **FCC Notification:** The GM will publish an announcement of the creation of the FCC within the TribeNews that includes the hex coordinates of the Federal Capital within approximately 5 hexes of deviation. This provides the other players fair notice of the risks associated with combat inside the FCC Zone, though not its exact borders.
	
	FCC Membership Restrictions:
	• Maximum of 10 Members (which includes the Federal Leader)
	• Members must have a Village within 25 hexes of the Federal Capital
	• Members must not be members of any other Federal Community of Clans
	  ○ A Clan may only be a member of a single FCC
	• Members may be removed and added. Any changes must meet the normal Restrictions and should be communicated to the GM.
	
	FCC Membership Benefits:
	• **Attacker Penalty:** Any Unit that initiates aggression against a Unit or Structure (Local Support Settlement, NPC Special Hex construction, Village, etc) within the FCC Zone that belongs to a member of the FCC suffers a 20% penalty to Military Morale for the duration of Combat.
	  ○ Attackers are notified upon conclusion of the first combat that the combat was held within an FCC Zone.
	• **Defensive Bonus:** Any Unit or Structure within the FCC Zone that belongs to a member of the FCC gains a Terrain Proficiency Bonus of +4. (This represents knowledge of local defensive locations, permanent minor defensive structures and knowledge of how to harass the enemy on home terrain)
	• These two benefits affect any and all combat within a turn provided it occurs in the FCC Zone and it affects a Unit / Structure that belongs to an FCC member.
	• **Federal Leader:** The Tribe that holds this research receives 5 Gold per FCC member in turn 1 of every year, based on membership roles in month 12 of the preceding year. This is effectively a tithes from the Local population that benefits from permanent defensive presence. It is the responsibility of the Federal Leader to notify the GM when this is due and include it in the orders.
	
	FCC Miscellaneous:
	• It is the responsibility of the FCC member under attack to invoke these FCC penalties / bonuses by notifying the GM when he/she receives the request for combat orders. If the GM is not notified, these penalties/bonuses will not be in force.
	• If the Village at the center of the FCC is abandoned or destroyed, the FCC is discontinued and the research topic is lost, but may be attempted again.

Summary	*Combat Boost - Forms a territory that gives defensive bonuses*

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Name	**Generalship**
DL	7
Pre-Req	N/A
Recipe	N/A
Leads To	Supply (Economics research) Music In The Field (Music research)
Description	This adds a **new skill** (Category B) called Generalship. A Tribe that has completed the Generalship research topic may develop this skill. A Tribe that possesses Generalship has its Leadership skill increased by the unit's Generalship's full skill value ~~one-half of its Generalship skill, rounded down~~, for all combat calculations. In addition, when two Clans are attacking the same target (or defending against two attackers) the Clan with Generalship may determine the order of attacks (that is, which Clan attacks or is attacked, first). This also applies when multiple units of a single Clan are attacking or defending. The Clan with the highest Generalship will prevail should there be more than one Clan with Generalship. **Counters:** Generalship is the only counter for Generalship. If units on more than one than one side possesses Generalship, the order of combats etc are determined exactly as if no one had Generalship. However, the Generalship increase to Leadership, as well as common Leadership (e.g. one set of battle orders issued by the general and all use the general's Leadership rating) is still retained.
Summary	*Combat Boost - New Skill, Generalship, Increases effective Ldr skill*

Name	**Junior Officer**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Adds +1 to the Leadership Modifier for determining potential casualties in combat. Additionally, Adds +2 to Leadership Skill for all other uses of Leadership in combat (example Routing) Note: This is a slight increase in benefit based upon edge cases where a standard +2 to Leadership skill would not provide an actual numerical benefit to Potential Casualties based upon the Combat calculations and table lookups. By shifting from a standard +2 to Leadership skill to a +1 to Leadership modifier, it keeps the same effective bonus as before but eliminates those edge cases.
Summary	*Combat Boost - Increases Leadership Modifier to Damage calculators and reduces Rout*

Name	**Recruitment**

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DL	1, 2, 3, etc….
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Allows an additional 500 Mercenaries per research attained to your Mercenary limits.
Summary	*Merc Limits increased by 500.*

Name	**Resilience I, Resilience II, Resilience III**
DL	5,7,9
Pre-Req	Resilience I: N/A Resilience II: Resilience I (Leadership research) Resilience III: Resilience II (Leadership research)
Recipe	N/A
Leads To	N/A
Description	A Unit with the Resilience research completed is capable of holding out against the enemy under even the worst outcome of combat. These Units are exceptionally hard to rout, but it comes with consequences: Benefits: During the beginning of a battle, a Unit may declare that it is utilizing Resilience by including it on their Combat Entry Sheet. This can be done either by an attacking or defending unit. During all Combat this turn, the Unit gains the following: 1) Temporary Military Morale Increase of 0.02 for purposes of combat this turn. 2) When determining if a Unit routes, the random die roll is made once normally. If it indicated a Rout, the dice are rerolled and checked against for each level of Resilience. If one of the die rolls comes up as a Does not Rout, the unit will not rout. The unit will only rout if all the results show a Rout. **b.** Example: A Unit has a 55% chance of not routing. It has Resilience I. A random number is generated between 1 and 100. The results are 89. Typically, the 89 would indicate a rout (It is greater than 55), however, the Unit declared Resilience I at the start of Combat. It rerolls the random number and gets a 47. Because the 47 is below the point of Routing, the unit will not Rout this combat. Restrictions and Penalties: 1) A Tribe may only utilize Resilience in a Unit once in a calendar year (Month 1-12) regardless of the number of Tribe elements. 2) If a unit would have Routed but a reroll from Resilience saves them, the Tribe loses 0.02 General Morale per level of Resilience research. 3) War Fatigue: Additionally, if the Unit would have Routed but a reroll from Resilience saves them, the Tribe may not initiate combat and may only declare defense in combat orders for that calendar year. 4) War Fatigue: Regardless of if Resilience was used, as long as Resilience was declared,

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	the Tribe that the Unit belongs to must sacrifice 1 'Lot' of a desired Commodity on the next turn or suffer an additional 0.02 General Morale loss per level of Resilience.
Summary	*Combat Boost - If you rout, you have a chance not to rout but its pricey*

Name	**Rousing Speech**
DL	3
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	A combat force that has a unit with Rousing Speech has a -5% modifier to the chance of Routing.
Summary	*Combat Boost - 5% less chance to run away due to a bad combat.*

Name	**Siege Marshall**
DL	6
Pre-Req	Generalship 5 (Skill) Engineering 7 (Skill)
Recipe	N/A
Leads To	N/A
Description	Historically Siege Marshals (Vauban was the most famous) were generals with tremendous skill in conducting (or opposing sieges). The hallmark of a Siege Marshall is getting the maximum benefit out of each and every possible advantage. Benefits: • In and of itself, the Siege Marshal topic provides no benefit. • Siege Marshall increases two (2) other offensive siege benefits present within its tribe (or within its Clan when in MotC). Specific Benefits: • Assault Troops: No Effect • BioWar: No Effect • Catapults: 1 Catapult required per 40 yards (instead of per 20 yards) • Sappers: Bonus is increased to 7.5% and 15% • Siege Cannon: 1 Siege Cannon required per 40 yards (instead of per 20 yards) • Siegecraft: No Effect • Trebuchets: 1 Trebuchet required per 40 yards (instead of per 20 yards). Note: Except as noted in the Specific benefits above, no further benefits are offered by this research topic. Should similar items or research become available in the future, Siege Marshall may be modified to take them into account (for instance, a new type of siege engine, or battering rams, etc). In such a case, the GM should be contacted to discuss what effects Siege Marshall would have on the topic.

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Summary	*Combat Boost - Gain bonuses during Sieges*

Name	**Trusted Maps**
DL	3
Pre-Req	Alliance MotC (Diplomacy research) Or Alliance MotC (Leadership research)
Recipe	N/A
Leads To:	N/A
Description	To Benefit from this research, a Clan must: 4) Have completed Alliance MotC Research. 5) Must have a declared alliance in which at least one member has the Sea Borne Trade Routes research. 6) Must have established Diplomatic Relations with the clan that completed Sea Borne Trade Routes research. Any fleet in the Tribe holding this research has their MV increased by 50% when using Sea Borne Trade Routes. If combined with other research, this bonus is additive, not cumulative. Note: A Fleet may only gain movement bonuses from three research topics simultaneously. Examples include, but are not limited to, Board of Trade, Fast Fleet, Trusted Maps, etc.
Summary	*Increases fleet movement speed when using Sea Borne Trade Routes*

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Leatherwork

Name	**Harvest Bag**
DL	3
Pre-Req	N/A
Recipe	1 Harvest Bag: People 2, Ltr 4, Leather 3
Leads To	N/A
Description	A Harvest Bag is worn over the shoulder, used to assist in harvesting cotton, grain, flax, herbs, potatoes, sugar, and tobacco (not grapes because they would be crushed). Doubles the number of acres harvested (that is, increases the number of effective workers by 100%). May be combined with any other harvesting implement allowed for the type of crop being harvested (e.g. scythe, machete but not Basket); however the effect is linear, not cumulative. For example, a farmer with both a scythe and a harvest bag will harvest 9 acres of grain, not 12. Thus a farmer with Scythe and Harvest Bag is shown as 3 equivalent Farmers. A Tobacco Farmer with Harvest Bag and Machete would be shown as 5 equivalent workers (not 8). It is incumbent on the player to show equivalent workers in Orders. Weight: 1 lb Proposed by Patrick Travers
Summary	*New Item - Harvest Bag, increases efficiency of harvesting some crops by x2*

Name	**Leatherwork 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Leatherwork 11 Allows training of Leatherwork Specialists
Summary	*Skill Level Boost - Leatherwork, allows specialists*

Name	**Whip**
DL	3
Pre-Req	N/A
Recipe	1 Whip: People 1, Ltr 3, Leather 1
Leads To	N/A
Description	A Warrior with a whip controls 50% more Slaves.

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Summary	*Increases number of slaves an Overseer may control.*

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Literacy

(Books may not be written about these topics)

Name	**Ghost Writer**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Allows one Tribe to aid another tribe of the SAME CLAN in writing books (BUT NOT reading books) Allows a tribe with a HIGHER Literacy skill to aid another tribe of the SAME CLAN to write (but not read) books. Restrictions: 1) Both tribes must be in the same hex 2) Only the Tribe itself counts; Elements may not be used for this. For example, 4777 and 3777 must be together in the SAME hex for 3777 to use Ghost Writer to help 4777. 3) Max improvement is doubling the skill of the tribe being aided. For example, Tribe 4777 has Lit = 4, Ghost Writer can improve this to Lit =8. 4) Max improvement can go no higher than 10. For Example, Tribe has Lit = 6, Ghost Writer improves this to 10. 5) Books requiring Scrolls, Artifacts, Relics, etc. CANNOT benefit from Ghost Writer Proposed by S Simmons
Summary	*Allows other Tribes to increase their Literacy skill level for book writing.*

Name	**Haiku**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Completion of Haiju addds 0.05 to General Morale. Unlike other Literacy topics, Haiku may have books be written about the topic. Haiku may be taken multiple times in the same Tribe. Once Haiku is completed, contact the GM to have the Morale added and the topic removed.
Summary	*Gain Morale, lots of it.*

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Name	**Mercenary Training**
DL	6
Pre-Req	Sensai in Clan (Literacy research)
Recipe	N/A
Leads To	N/A
Description	A class of up to 300 mercenaries can be intensively trained to improve their combat skills. This training requires the presence (in the clan) of a Sensai. A Sensai can work with any tribe in the clan. This training lasts 3 months (3 consecutive turns). A group of untrained mercenaries (all skills = 0) will be raised to skills = 2 after three months of training. A second class can raise their skills to 4, a third to 6 and so forth, until skill = 10 is reached. Thereafter, the gain is limited to only +1 per three months of training. It is incumbent on players to keep track of the skill level of each class of mercenaries. If two different classes participate in the same combat, skills are averaged in the usual way. The skills that are trained are Combat, Leadership, Horsemanship, Archery, Heavy Weapons, Captaincy and Mariner. In situations where mercenaries are involved that require other skills (such as Scouting or Tactics, the mercenaries' skills are NOT considered, and the skills possessed by the unit containing the mercenaries is used in all such cases. Only one class of mercenaries can be trained at a time and as stated above, the maximum size of the class is 300 – exception, a Sensai Dan is allowed to simultaneously train two classes, each of 300. A class must consist of only one type of mercenary, for example a class may NOT contain both Ottoman and Japanese mercenaries. The gain in skills as described above is the only benefit. All other rules pertaining to the use of mercenaries still apply – see the Mandate section 3.11. The Sensai must be paid for each class trained. Payment is 10 loads of any commodity – not necessarily the desired commodity for the clan. A load is the amount of a commodity needed to buy Hirelings or Slaves as shown in the table under 14.1.2 Commodities in the Mandate. For example, a Sensai would accept 20 Jade, 100 Ivory or 500 Tea to train a single class for three months.
Summary	*Allows Mercenaries to be trained to raise skill levels.*

Name	**Sensai (Master)**
DL	6
Pre-Req	Scroll
Recipe	*See Below
Leads To	Sensai Dan 1 (Literacy research)
Description	There are five separate areas in which the Sensai may work. A single Sensai per Clan covers all Tribes and may work with more than one Tribe at a time. For example at Archery11 a Tribe using Sensai Master of Archery may immediately attempt to research Archery13 and is completed at DL4 (cf DL7 under normal progression). The fee is paid

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upon completion. The player must indicate to the GM when the required DL has been achieved.

Prerequisite
Lvl 11 in the Skill in question.

Master of Archery	13	DL4	50 Gold
Master of Security	13	DL4	30,000 Silver
Master of Combat	13	DL4	100 Frankincense
Master of HvyWeapons	13	DL4	100 Jade
Master of Horsemanship	13	DL4	100 Diamonds

Allows the skill to operate at level 13.

Prerequisite
Lvl13 in the Skill in question.

Master of Archery	15	DL5	75 Gold
Master of Security	15	DL5	45,000 Silver
Master of Combat	15	DL5	150 Frankincense
Master of HvyWeapons	15	DL5	150 Jade
Master of Horsemanship	15	DL5	150 Diamonds

Allows the skill to operate at level 15.

Sensai can work in combination with War College (WC bonuses apply after Sensai adjustments). Players should tell the GM what their Combat or Horsemanship skills are for the purposes of each battle, thus it's up to each player to provide the correct data to the GM. If the player doesn't he/she loses all benefit of this research topic.

Elite Troops
A Sensai Master may teach elite troops two skill levels per year. Troops of different nationality must be trained separately that is, not at the same time. However, a Master of Archery could teach Arc levels to one nationality of elite troop while Master of Combat might teach another.

Master of Archery	10 Gold per level
Master of Security	6,000 Silver per level
Master of Combat	20 Frankincense per level
Master of HvyWeapons	20 Jade per level
Master of Horsemanship	20 Diamonds per level

Mercenaries
A Sensai may also train Mercenaries (the Mercenary Training topic is approved by Peter

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	but not yet published). A Sensai, however, is limited to training a maximum of 300 Mercenaries at a time. A clan may recruit a second Sensai, thus increasing the number of Mercenaries that may be simultaneously trained. The second Sensai is recruited by simply repeating the Sensai topic a second time, including expending a second scroll. Recruitment of a third Sensai is not permitted. Multiple Sensais are possible, one for each of the five skills. Upon completion of the Research, the Scroll is destroyed/lost and is sent to Usage (1263) via transfer.
Summary	*Skill Level Boost - Allows easier raising of combat related skills but at a cost*

Name	**Sensai Dan 1**
DL	7
Pre-Req	Sensai (Literature research) Scroll
Recipe	N/A
Description	Allows the next two progressions (to Lvls 17 and 19) Upon completion of the Research, the Scroll is destroyed/lost and is sent to Usage (1263) via transfer.
Summary	*Skill Level Boost - Allows easier raising of combat related skills higher at a cost.*

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Maintain Boats

Name	**Amphibious Warfare I**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	Amphibious Warfare II (Maintain Boats research)
Description	Allows an increase of 25% to the total people (people space – which can be converted in order to transport animals) that can be carried. For example, a Longship could carry 125 people maximum (this also applies to units from other Clans being transported).
Summary	*25% more people may be carried on boats.*

Name	**Amphibious Warfare II**
DL	4
Pre-Req	Amphibious Warfare I (Maintain Boats research)
Recipe	N/A
Leads To	N/A
Description	Allows an increase of 50% to the total people that can be carried. For example, a Longship could carry 150 people maximum (this also applies to units from other Clans being transported).
Summary	*50% more people may be carried on boats*

Name	**Shipboard Animal Maintenance**
DL	3
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Tribes (and their fleets and elements) that know Animal Maintenance are allowed to pack twice as many animals into the same space when aboard vessels. **Benefit:** Aboard vessels, animals carrying capacities are: Goat = 0.5 person; cattle = 2.5; horse = 4, elephant = 6. A vessel may carry animals in both people space and in cargo space (Goat = 250; Cattle = 1,250; Horse = 2,000; Elephant = 3,000). Each vessel in the fleet requires twice as many people performing the Maintain Boats activity (unless you have MB10).
Summary	*100% more animals maybe carried on boats.*

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Mariner

Name	**Disciplined Marines**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	Disciplined Marines provides a bonus in attack and defense and against missiles during naval combat. Adds +4 to Mariner skill. Increases the effectiveness of Shields by 25% against Ranged attacks (8% goes to 10%, 18% goes to 22.5%) in Naval Combat
Summary	*Naval Combat Boost – Increases Naval Combat Skill and effectiveness of Shields*

Name	**Fighting Seamen**
DL	5
Pre-Req	Fleet (Mariner research) Diplomacy 4 (Skill)
Recipe	N/A
Description	10% of Actives in fleet elements from the Tribe(s) with the research may participate in naval combat as Warriors. Restrictions: 1. These Actives participating as Warriors may only be used during defensive combats, eg. When your fleet has been attacked. They may not be part of a Locating War Party.
Summary	*Naval Combat Boost - Allows limited Actives to fight as Warriors.*

Name	**Fleet**
DL	5
Pre-Req	Naval Coordination (Mariner research)
Recipe	1 Dockyard, 100 Person, Eng 4, Logs 200
Leads To:	Fighting Seamen (Mariner research) Naval Veterans Class I (Mariner research)
Description	A Tribe with Fleet research increases its naval combat effectiveness by a factor of 1.4. Any fleet element using Fleet in combat must be in the Tribe with the research (or in

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	MoTC with a fleet in that Tribe) for it to apply to that unit. A Dockyard (200 logs, Eng4 - Logs are installed at 2/person. Can only be built once Fleet research is completed) is required per 50 non-crew person capacity for ships in fleet elements in the Tribe with the research. If the Fleet in full is not supported by Dockyards then the Fleet bonus does not apply in combat. See Fleet Factor (1.4) in Naval Combat Spreadsheet. Once Fleet is completed Naval Coordination becomes redundant.
Summary	*Naval Combat Boost - Increases Fleet Factor to 1.4. (+40% Damage)*

Name	**Mariner 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	Increases Mariner skill to 11. Prerequisite for Mariner 12. Naval Combat Specialists do not exist.
Summary	*Skill Level Increase - Mariner, does NOT allow specialists*

Name	**Mariner 12**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To:	N/A
Description	Increases Mariner skill to 12. Mariner (Naval Combat) Specialists do not exist.
Summary	*Skill Level Increase - Mariner, does NOT allow specialists*

Name	**Naval Coordination**
DL	3
Pre-Req	N/A
Recipe	N/A
Leads To:	Fleet (Mariner research)
Description	A fleet element using Naval Coordination in naval combat must be in the Tribe with the

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	research (or in MoTC with a fleet element that is). It is the starting research for those developing Fleet. Naval Coordination provides an Fleet Factor increase from 1.0 to 1.2.
Summary	*Naval Combat Boost - Increases Fleet Factor to 1.20 (+20% Damage)*

Name	**Naval Veterans Class I**
DL	5
Pre-Req	Fleet (Mariner research)
Recipe	N/A
Leads To:	N/A
Description	The Veterans Class I topic allows 15% of a fleet element's Inactives (in a Tribe with the research) to fight in Naval Combat using ONLY ranged weapons (missile weapons and/or heavy weapons). To qualify as Veterans Class I, 15% of the Inactives in fleet elements AND AN EQUAL NUMBER OF normal WARRIORS must train (as an activity and do nothing else) three months every year and each training month must fall in a different season (for example, cannot do all the training in the winter). Players are responsible for keeping records of this Inactives include older warriors who are experienced, but too old to stand in the line of battle. However, they are still capable of wielding missile weapons or serving heavy weapons, especially if they keep "in training". They may be deployed only in a defensive mode – eg when your unit has been attacked. They may not be part of a Locating War Party.
Summary	*Naval Combat Boost - Allows limited Inactives to fight using ranged weapons*

Name	**Professional Sailor**
DL	4
Pre-Req	Expert Sailors (Sailing research) Navigation 10 (Skill) Captaincy 10 (Skill) Sailing 10 (Skill)
Recipe	N/A
Leads To	N/A
Description	Effect is 1 professional sailor = 1.5 for crewing purposes. That is, crew requirements are reduced by 33% Proposed by Darren Thacker

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Summary	*Reduces the crew size needed on boats*

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Metalwork

Name	**Advanced Trap**
DL	4
Pre-Req	Improved Trap (Metalwork research) OR Improved Trap (Furrier research)
Recipe	1 Advanced Trap: People 2, Mtl 10, Iron 2, Coal 8
Leads To	N/A
Description	An Advanced trap is a continued evolutionary refinement of the Research topic Improved Trap and functions much as a standard trap. One Hunter/Furrier may use 1 Advanced Trap (with no standard Traps or Improved Traps) – this improves Hunting by 1.0 (i.e. one hunter counts as two). Weight: 1 lb
Summary	*New Item - Advanced Trap, increases hunting output*

Name	**Anvil**
DL	6
Pre-Req	N/A
Recipe	1 Anvil: People 10, Mtl 10, Iron 100, Coal 500
Leads To	Tongs (Metalwork research)
Description	Metalworking Activity A Worker with an Anvil counts as 1.5 workers (+0.5 Effective Workers) when performing Armour making, Metalwork or Weapon making activities. Anvils may be used with other implements. NOTE: Until coding supports the use of the Anvil, players are responsible for calculating and monitoring the use of effective workers. Weight: 100 lb
Summary	*New Item - Anvil, increases metalwork, armour and weaponmaking output*

Name	**Blade Shears**
DL	2
Pre-Req	N/A
Recipe	1 Blade Shears: People 2, Mtl 4, Iron or Steel 2, Coal 10
Leads To	N/A

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Description	Metalworking activity One worker using Blade Shears counts as 2 workers (+1 AM) when shearing Sheep or Angora Goats. Weight: 3 lbs
Summary	*New Item - Blade Shears, increases shearing sheep/angora goats output*

Name	**Bronze Statue**
DL	6
Pre-Req	N/A
Recipe	20 People, Mtl 6, Art 6, Bronze 1k, Coal 200, Silver 200
Leads To	N/A
Description	Bronze Statue sells at Fair. Mtl6 and Art6 must be held by the Tribe with the research. Weight: 1000 lb
Summary	*New Item - Bronze Statue, Sell these at the Fair*

Name	**Chisel**
DL	2
Pre-Req	N/A
Recipe	1 Chisel: People 1, Mtl 3, Iron 1, Coal 4
Leads To	N/A
Description	A worker with a Chisel doubles his quarrying output (to 10 stones) and may also use a Mattock (the combination nets 15 stones per worker). A worker may also use a Chisel to double output with the skills Stonework and Art (stone items only). In the latter case players will need to show, for example, 1 worker with Chisel as 2 workers. Weight: 1 lb
Summary	*New Item - Chisel, increases Quarrying output*

Name	**Improved Trap**
DL	2
Pre-Req	N/A
Recipe	1 Improved Trap: People 1, Mtl 3, Iron 1, Coal 6
Leads To	Advanced Trap (Furrier research) Advanced Trap (Metalwork research)
Description	An Improved Trap functions much as a standard trap, but allows a 15% bonus instead of

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	10% bonus. Standard limit of 5 traps per hunter apply. I Hunter/Furrier may use up to 5 Improved Traps (with no standard Traps) – this improves Hunting by 0.15 per IT or 0.75 per 5 Its.
Summary	*New Item - Improved Trap, increases Hunting output*

Name	**Knife**
DL	2
Pre-Req	N/A
Recipe	1 Knife: People 1, Mtl 3, Iron 1, Coal 6
Leads To	N/A
Description	Metalwork Activity A person using a Knife doubles skinning, gutting and boning (that is, allows SGB twice during Activities). Farmers using knives can harvest double the number of acres (players need to show a farmer with a knife as equivalent to 2 farmers when submitting orders). Weight: 1 lb
Summary	*New Item - Knife, increases skinning, gutting, bonus and harvesting output*

Name	**Kegs**
DL	3
Pre-Req	N/A
Recipe	1 Keg: People 2, Mtl4, Log 1, Coal 8, Iron 5
Leads To	N/A
Description	Holds 400 lbs. Weighs 20lbs
Summary	*New Item - Kegs, like Barrels but holds more and is lighter.*

Name	**Machete**
DL	3
Pre-Req	N/A
Recipe	1 Machete: People 2, Mtl 4, Iron 3, Coal 15
Leads To	N/A
Description	Metalwork Activity Long, heavy, slightly curved knife mounted on a sturdy wooden handle wrapped with strips of leather, used to assist in harvesting tobacco. A farmer with a machete harvests four acres (instead of one). Please give equivalent workers if using Machetes. For

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	example, 100 workers with 100 Machete = 400 equiv workers.
Summary	*New Item - Machete, Increases efficiency of your tobacco harvesters.*

Name	**Mining Ladder**
DL	5
Pre-Req	N/A
Recipe	People 15, Wd3, Mtl3, Log 4, Iron 25, Coal 150
Leads To	N/A
Description	(Also Under Engineering, Mining and Woodwork) A Mining Ladder provides a Bonus to Mining output equal to +100% to ten (10) miners and a Bonus to Digging output (Clay, canals, sand, moats, etc) equal to +100% to ten (10) diggers. This is cumulative with other implements (Picks, Shovels, Ore Carts, Seam Wedges, etc). This bonus is additive, not compounded. Example: 5 Miners with 1 Mining Ladder would count as 10 Miners 10 Miners with 1 Mining Ladder would count as 20 Miners 15 Miners with 2 Mining Ladders would count as 30 Miners 20 Miners with 2 Mining Ladders would count as 40 Miners 20 Miners with 2 Mining Ladders and 20 Picks would count as 60 Miners 20 Miners with 2 Mining Ladders, 2 Ore Carts and 20 Picks would count as 80 Miners These wood and metal ladders and ramps are used to for more advanced vertical mining and to facilitate the movement of personnel and ore up mine shafts when they occur due to following veins. These would not be standard wood ladders or ramps but would have iron reinforcement to handle the added weight of the ore and wagons. We have called it Mining Ladders research to shorten the name but it would really be both ladders and ramps. 1 Mining Ladder weighs 50 lbs.
Summary	*New Item - Mining Ladder, increases output of up to 10 miners*

Name	**Saw**
DL	5
Pre-Req	N/A
Recipe	1 Saw: People 3, Mtl5, Iron 5, Coal 40
Leads To	N/A
Description	Metalwork Activity Saws multiply logging rates x 4. Cannot be used with Adze. A Forester with no tools cuts 4 Logs

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	a Forester with Adze cuts 8 Logs a Forester with Saw cuts 16 Logs
Summary	*New Item - Saw, Increases output of forestry action for Logs, x4*

Name	**Seam Wedges**
DL	4
Pre-Req	N/A
Recipe	1 Seam Wedge: People 1, Mtl 2, Iron 5, Coal 15
Leads To	N/A
Description	Metalwork Activity 1 Person adds 50% to mining with Pick or Shovel. Weight: 1 lb
Summary	*New Item - Seam Wedges, Increases output of a miner.*

Name	**Scraper (Metal)**
DL	1
Pre-Req	N/A
Recipe	1 Scraper: People 1, Mtl1, Iron1, Coal 4
Leads To	N/A
Description	Metawork Activity Doubles rate for bark stripping
Summary	*New Item - Scraper, Increases output of forestry action for Bark, x2*

Name	**Tongs**
DL	4
Pre-Req	Anvil (Metalworking research)
Recipe	1 Tong: People 1, Steel 1, Coke 5
Leads To	N/A
Description	Metalworking Activity A Worker with a Tong counts as 1.5 workers (+0.5 Effective Workers) when performing Armour making, Metalwork or Weapon making activities. This benefit is only available if the worker is also using an Anvil. Thus, a worker with Anvil and Tongs counts as 2 effective workers. A worker with only Tongs and no Anvil counts as 1.0 effective workers.

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	Tongs may be used with other implements. NOTE: Until coding supports the use of the Anvil, players are responsible for calculating and monitoring the use of effective workers. Weight: 2 lb
Summary	*New Item - Tongs, increases metalwork, armour and weaponmaking output*

Name	**Water Tank**
DL	3
Pre-Req	N/A
Recipe	1 Water Tank: People 4, Mtl 6, 40 Metal (Bronze, Brass, Tin, Copper), 80 Coal
Leads To	N/A
Description	A Water Tank increases the capacity of a village to withstand a siege. Sanitation skill is important to avoid disease when water from a Water Tank is needed. The capacity of a Water Tank is 1,000 lbs supply capacity (1,000 lbs = 10 barrels). Water tanks are portable and may be transported by Barges, medium and large ships. Weight: 50lbs
Summary	*New Item - Water Tank, like a barrel but holds a lot more and is lighter comparitively*

Name	**Wire Mill**
DL	6
Pre-Req	N/A
Recipe	1 Wire Mill: Logs 500, Steel or Iron 500 120 Wire: People 10, Mtl 5, Stel 120
Leads To	N/A
Description	A Wire Mill requires 500 logs, and 500 steel or Iron to construct. Used by up to 100 people. 10 people using a Wire Mill can produce can turn 120 steel into 120 Wire at Mtl5.
Summary	*New Item - Wire, used for other purposes*

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Milking

Name	**Milking 11, 12…**
DL	5,5…
Pre-Req	Milking 11: N/A Milking 12: Milking 11 (Milking research) Milking 13…
Recipe	N/A
Leads To	N/A
Description	Increases Milking skill by 1. Milking skill at 11 or higher allows Specialists to be trained.
Summary	*Skill Level Increase - Milking, allows Specialists*

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Milling

Name	**Oilmill**
DL	3
Pre-Req	Windmill (Milling research) Flax (Farming research)
Recipe	1 Oilmill: People 500, Eng 10, Wd 4, Stn 4, Logs 500, Stones 1000, Iron 500, Coal 1000, Millstones 2
Leads To	N/A
Description	A method of Milling that bruises and crushes oil bearing seeds, olives, etc then presses them to extract oil. Working in an Oilmill grinds Flaxseed and presses it into Oil. The remaining, pulpy flesh is used as animal feed. 1 miller extracts 1 Oil + 10 Fodder each month from 10 Cotton (5 Flax) using 1 Jar. An Oilmill requires 20 Millers to keep it supplied with Flax and to remove the Oil and Fodder. Oilmills may only be operated the same month as Flax is harvested. This simulates farmers harvesting the whole plant instead of the fibres (when harvesting flax, 1 flax converts to 2 Cotton) and the fibre being lost during the production of (Lineseed) oil. Oilmills are restricted to 10 per site. The total number of Windmills plus Oilmills are restricted to 100 per site. (Windmills + Oilmills must be less than or equal to QTY:100 total) May be built under Joint Project rules. May be built for and used by other clans. A Unit from another Clan must have Milling 10 to operate the Oilmill.
Summary	*New Building - Oilmill, Allows extraction of Oil from Cotton/Flax*

Name	**Sawmill**
DL	6
Pre-Req	Milling 10 (Group C skill) Forestry 4 (Group A skill)
Recipe	1 Sawmill: People 300, Eng 6, Wd 4, Stn 4, Logs 250, Stones 625, Iron 500, Coal 4000
Leads To	N/A
Description	A new method of milling logs, with the power coming from water so fewer people can cut may more logs. **Restrictions:**

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	• **Max Sawmills:** A site is restricted to 100 Sawmills. • **Terrain:** The site must be on a hex that allows Forestry activities that provide logs (Forest, Jungle, etc) • **River:** The site must be on a hex that has at least one Hexside as a River or Canal. **Bonuses:** • **Max Users:** 100 People per Sawmill • **Production Boost:** Workers utilizing a Sawmill produce x8 the number of Logs they normally would. A worker may not utilize an Adze or Saw, though may utilize research topics that increase Logs per Person (5 Logs / Person, 6 Logs / Person, etc). **Other Clans:** • Sawmills may be built for other tribes, but that Tribe must have Milling 10 and Forestry 4 or better to gain the bonus.
Summary	*New Building - Sawmill, increases output of forestry action to gain logs, x8*

Name	**Windmill**
DL	3
Pre-Req	N/A
Recipe	1 Windmill: People 500, Eng 10, Wd 4, Stn 4, Logs 500, Stones 1000, Iron 500, Coal 1000, Millstones 2, Materials installed at normal rates
Leads To	Oilmill (Milling research)
Description	A new method of Milling. Although initial construction costs are significant with the power coming from wind not animals fewer people can mill much more grain. Each Windmill grinds 8000 grain into 12000 flour each month and requires 40 millers keep it supplied with grain and remove the flour. The total number of Windmills plus Oilmills are restricted to 100 per site. (Windmills + Oilmills must be less than or equal to QTY:100 total) Milling using Windmills and using Grain Hoppers require separate Orders showing these items are being used - else normal Milling will be assumed. May be built under Joint Project rules.
Summary	*New Building - Windmill, Turn grain into flour at an enhanced rate.*

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Mining

Name	**Appropriate Mining Tool**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	A miner may use both a Pick and a Shovel in the same turn. Note: Coded
Summary	*Allows the use of both a pick and a shovel when mining.*

Name	**Geology**
DL	1, 2, 3
Pre-Req	Mining 11 (Mining)
Recipe	N/A
Leads To	N/A
Description	Geology may be attempted at Mining 11. The effect of gaining an Geology topic is to add levels to your Mining Skill. Geology 1 adds one level (for example, Mining11 to Mining12), Geology 2 adds 3 levels (for example, Mining12 to Mining15), Geology 3 adds 5 levels (for example, Mining15 to Mining20). Once Geology 1 Research Topic has been achieved, the Tribe may learn a new skill, Geology (Group C). Once Geology skill reaches 10, further Geology research topics (4, 5, 6...) may be researched. Each Geology research topic (4, 5, 6...) adds 5 Levels to Mining skill. Books may be written.
Summary	*Skill Level Increase - Mining, New Skill - Geology*

Name	**Hammer Mill**
DL	5
Pre-Req	N/A
Recipe	1 Hammer Mill: People 11, Wd 5, Eng 6, Logs 20, Iron 5, Coal 10, Leather 2
Leads To	N/A
Description	The Hammer Mill (or Stamp Mill) is a hydraulic or manually operated series of weighted "pistons" which pulverize various ores into finer pieces, and sift out more unusable rock,

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	for more efficient refining, and portage of raw materials. Each Hammer Mill can service 20 AMs assigned to Mining OR Refining, allowing 2 Ams to do the work of 3 (identical to the effect of Scaffolds for Engineering and Shipbuilding, so it is, essentially, a "Scaffold" for Mining and Refining). Hammer Mills may be used by other Clans. For Mining purposes, the additional Ams would be shown as "Effective Workers" in orders. For Refining purposes, the additional Ams would be shown as "Effective Workers" in orders, and would require additional Smelters to cover the increased Ams. If operated on a river hexside, cattle or horses need not be available, as the mill would be hydraulically powered via river current. If operated on a hex with no river hexsides, 2 Horses or Cattle are required to operate. Hammer Mills are items and not buildings. They can be traded. Weight: 2000 lbs Proposed by Chris S.
Summary	*New Item - Hammer Mill, increases output of 20 miners.*

Name	**Mining 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	Geology (Mining research)
Description	Mining Skill to 11. Allows training of mining specialists.
Summary	*Skill Level Increase - Mining by +1, allows specialists*

Name	**Mining Ladder**
DL	5
Pre-Req	N/A
Recipe	People 15, Wd3, Mtl3, Log 4, Iron 25, Coal 150
Leads To	N/A
Description	(Also Under Engineering, Mining and Woodwork) A Mining Ladder provides a Bonus to Mining output equal to +100% to ten (10) miners

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	and a Bonus to Digging output (Clay, canals, sand, moats, etc) equal to +100% to ten (10) diggers. This is cumulative with other implements (Picks, Shovels, Ore Carts, Seam Wedges, etc). This bonus is additive, not compounded. Example: 5 Miners with 1 Mining Ladder would count as 10 Miners 10 Miners with 1 Mining Ladder would count as 20 Miners 15 Miners with 2 Mining Ladders would count as 30 Miners 20 Miners with 2 Mining Ladders would count as 40 Miners 20 Miners with 2 Mining Ladders and 20 Picks would count as 60 Miners 20 Miners with 2 Mining Ladders, 2 Ore Carts and 20 Picks would count as 80 Miners These wood and metal ladders and ramps are used to for more advanced vertical mining and to facilitate the movement of personnel and ore up mine shafts when they occur due to following veins. These would not be standard wood ladders or ramps but would have iron reinforcement to handle the added weight of the ore and wagons. We have called it Mining Ladders research to shorten the name but it would really be both ladders and ramps. 1 Mining Ladder weighs 50 lbs.
Summary	*New Item - Mining Ladder, increases output of 10 miners.*

Name	**Ore Cart**
DL	5
Pre-Req	N/A
Recipe	1 Ore Cart: People 12, Wdw 3, Log 10, Iron 15, Coal 100
Leads To	N/A
Description	An Ore Cart provides a bonus to Mining output equal to +100% to ten (10) miners. This is cumulative with other implements (Picks, Shovels, Mining Ladders, Seam Wedges, etc). Each Ore Cart requires it be pulled by 2 Cattle or 1 Elephant when used in Mining. Example: 5 Miners with 1 Ore Cart would count as 10 Miners 10 Miners with 1 Ore Cart would count as 20 Miners 15 Miners with 2 Ore Carts would cost as 30 Miners 15 Miners with 2 Ore Carts and 15 Picks would count as 45 Miners Ore Carts may also be used in place of Wagons with the same capacity and rules. Note: Ore Carts are not coded for Movement – if you are relying on Ore Carts to move you need to show this in a note in MV Orders. Weight: 300lb
Summary	*New Item - Ore Cart, increases output of 10 miners.*

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Name	**Salt Panning (See Salting)**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Completion of this research creates a Salt Mine in any one Prairie Hex that the Clan chooses.
Summary	*Turns a Prairie Hex into a Prairie Hex with a salt mine.*

Name	**Seam Wedges**
DL	4
Pre-Req	N/A
Recipe	1 Seam Wedge: People 1, Mtl2, Iron 5, Coal 15
Leads To	N/A
Description	Metalwork Activity 1 Person adds 50% to mining with Pick or Shovel. Weight: 1 lb
Summary	*New Item - Seam Wedges, increases output of a miner*

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Mobilisation

Name	**Local Guard I, II, III, IV, V**
DL	2,3,4,5,6
Pre-Req	All: Local Support Settlement of Town or City Local Guard II: Local Guard I (Mobilisation research) Local Guard III: Local Guard II Local Guard IV: Local Guard III Local Guard V: Local Guard IV
Recipe	1 Guard Barracks (GBarr): People 100, Eng 3, Stone 500
Leads To	Local Guard Training I (Mobilisation research)
Description	Once a Local Support network has been established, then the Defenders that patrol the territory begin to get familiar with the surrounding lands. Every level of Local Guard increases their Terrain Proficiency. At Level I, they gain Terrain Proficiency 1 in their settlement's hex. At level II, their Terrain Proficiency is increased to 3. At Level III, their Terrain Proficiency is increased to 5. This Terrain Proficiency is only in their settlements hex. Further research increases this by +2 TP per level of research, to a maximum of TP of 9 at Local Guard V. To utilize this bonus in combat, the Settlement must have enough Guard Barracks available. Guard Barracks are built in the local support settlements that host the Defenders. 1 Guard Barracks is good for 100 Defenders. If there are not enough Guard Barracks, the bonus to the Defenders from that Settlement is proportional to the number of Guard Barracks. If there are 300 total defenders and only enough barracks for 200, then the Bonus is reduced to 2/3rds, rounded up, of the full bonus.
Summary	*Allows increasing of Local Support Guards Terrain Proficiency*

Name	**Local Guard Training I, II, III**
DL	6, 7, 8
Pre-Req	All: Local Guard I (Mobilisation research)
Recipe	1 Guard Training yard (GTYard): People 100, Eng 3, Stone 500
Leads To	N/A
Description	A Local Support network with Guard Training allows its Defenders to gain in combat skill over the years. Initially, the Defenders starts off with all skills at 0. Upon completion of Guard Training I topic, Militia controlled by the Clan's Local Support settlements have their Combat and Archery set to

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	Skill Level 3. Guard Training II sets it to Skill Level 6 and Guard Training III sets it to Skill Level 9. To utilize this bonus in combat, the Settlement must have enough Guard Training Yards available. Guard Training Yards are built in Local Support settlements. 1 Guard Training Yard is good for 100 Defenders. If there are not enough Guard training yards, the bonus is reduced proportionately, rounded up. If there are 3000 total Defenders and Home Guard Training I is complete giving a +3 to skills, and 1500 worth of Militia training yard, then the +3 skill bonus is reduced to +1.5, rounded up to 2.
Summary	*Allows increasing of Local Support Guards Combat and Archery skills*

Name	**Mobilisation 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Raises Mobilisation Skill to 11
Summary	*Skill Level Increase - Mobilisation, does not allow specialists*

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Music

Name	**Bagpipes**
DL	4
Pre-Req	Military Band (Music research)
Recipe	1 Bagpipes: People 1, Sew5, Bladders 2, Flute 1
Description	Enhances the performance of the Military Band. Military Morale is raised an additional 0.02 (to 0.06) if the players are each equipped with Bagpipes. Make under Sewing. Weight: 6lbs
Summary	*Combat Boost, New Item - Bagpipes, increases Combat Morale*

Name	**Great Work**
DL	5
Pre-Req	*See Art
Recipe	*See Art
Description	*See Art
Summary	*Convert Cultural skill points into morale.*

Name	**Military Band**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	Bagpipes (Music research)
Description	20-30 Actives all equipped with standard instruments and assigned to Defense will raise the Military Morale of any units in their Clan by 0.04 during battle.
Summary	*Combat Boost, Increases Combat Morale*

Name	**Music in the Field**
DL	7
Pre-Req	Military Band (Music research) Generalship (Leadership research)
Recipe	N/A
Leads To	N/A
Description	Music in the Field is a further development of the Military Band which allows instantaneous enactment of pre-defined commands such as *Left Wing will Charge, Recall*

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	skirmishers, etc. **Benefits:** 1. For Land Combat, All units (via Battle Groups or Meeting of the Clan) gain the following for the duration of Combat in which they meet the requirements: a. +1 to effective Leadership skill b. +2 to effective Tactical skill c. A further +0.04 Military Morale for combat purposes 2. For Naval Combat, All units (via Battle Groups or Meeting of the Clan) gain the following for the duration of Combat in which they meet the requirements: a. +1 to effective Captaincy skill b. +2 to effective Tactical skill c. A further +0.04 Military Morale for combat purposes **Requirements:** 1. In order to gain Music in the Field Benefits, a Unit must have 5 Warriors allocated to utilizing Music in the Field for every 100 Warriors participating in the battle. These extra warriors do not count against the 1/3rd limit. *See example. 2. Each Warrior allocated to gain Music in the Field must be equipped with a Drum. **Example:** 1. A unit with 900 Warriors may assign up to 300 Warriors to a single Combat. This is the max that can participate in a single battle (900 * 1/3 = 300). To utilize MitF, the Unit should assign an additional 15 Warriors to the Combat but they will not fight, they merely beat the drum. **Notes:** 1. Increasing Leadership skill levels has a decreasing effectiveness in regards to increasing Leadership Modifier as the Leadership skill increases. 2. Leadership Modifier increases always affect Potential Casualties.
Summary	*Combat Boost - Increases Ldr, Tact and Combat Morale*

Name	**Spring Arts Festival Music**
DL	*See Art
Pre-Req	*See Art
Recipe	*See Art
Leads To	Inter Spring Arts Festival Music (Music research)
Description	*See Art
Summary	*Host a Festival event during fair to raise Morale*

Name	**Inter Spring Arts Festival Music**
DL	8

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Pre-Req	Spring Arts Festival Music (Music research)
Recipe	1 Amphitheatre: People 2k, Eng 8, Stone 10k, Cloth 1k, Silver 5k
Leads To:	N/A
Description	An upgrade to the Spring Arts Festival Music so that its available to more people. **Bonus:** • Visitors: Tribes from other Clans may participate in your Spring Arts Festival Music. **Requirements:** • **On Location:** To participate, the Tribes from other Clans must have a unit with WA (doesn't count Inactives) population in the hex with your Tribe and the Amphitheatre. **Restrictions:** • **No Hunting:** Units from other Clans participating in your Inter Spring Arts Festival Music may not hunt during the Fair turn. **Notes: N/A**
Summary	*New Building – Amphitheatre, expands Festival to other Clans.*

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Navigation

Name	**Astral Navigation 1, Astral Navigation 2, Astral Navigation 3**
DL	Astral Navigation 1 – 2 Astral Navigation 2 – 3 Astral Navigation 3 – 4
Pre-Req	Astral Navigation 1 – N/A Astral Navigation 2 – Astral Navigation 1 (Astronomy/Navigation research) Astral Navigation 3 – Astral Navigation 2 (Astronomy/Navigation research)
Recipe	N/A
Leads To	N/A
Description	Once Nav Skill is at 10, Astral Navigation adds +2 to Nav Skill (making the 10 an effective 12). Astral Navigation2 (DL3) would add +4 (making the 10 an effective 16). Astral Navigation3 (DL4) would add +6 (making the 10 an effective 22) etc. AN3 is limit.
Summary	*Skill Level Increase - Navigation*

Name	**Heart of Oak**
DL	5
Pre-Req	Navigation 11 (Navigation research) OR Sailing 11 (Sailing research) OR Seamanship 11 (Seamanship research)
Recipe	N/A
Description	A Fleet with Heart of Oak gains a 1% advantage (Damage done to its opponent is increased) per point of difference when the sum of its Nautical Skills (Nav/Sail/Sea) exceeds the sum of the Nautical Skills of an opposing fleet. For example, a fleet with Nav/Sail/Sea of 10/11/12 versus a fleet with 6/6/6 increases the damage it does to the 6/6/6 fleet by 15% (10+11+12 = 33 vs 6+6+6 = 18). Nautical Skills (Nav/Seail/Sea) now affect Naval Combat, not just Naval Movement. The Royal Navy proved on many occasions, superior Nautical Skills provided decisive advantages in fleet vs fleet combat.
Summary	*Combat Boost - Naval, Increases damage done*

Name	**Navigation 11**
DL	5
Pre-Req	N/A
Recipe	N/A

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Leads To	Heart of Oak (Navigation research) Heart of Oak (Sailing research) Heart of Oak (Seamanship research)
Description	Increases Navigation skill level by +1 to 11. Specialists are not allowed
Summary	*Skill Level Boost - Navigation, does not allow specialists*

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Politics

(Books may not be written on these topics)

Name	**Banqueting Hall**
DL	4
Pre-Req	Pol 10 (Skill) Government level 1 or Higher (Politics research)
Recipe	1 Banqueting Hall: Stone 5000, Logs 500, Gold 20, Silver 10000, Copper 500, Cloth 200, Pewter 1000
Leads To	N/A
Description	A Banqueting Hall is built by the occupying tribe as a means of encouraging the locals to join their Tribe and also as a means of raising Morale providing a feast for the people of the Tribe as well as Locals. The Banqueting Hall is impressively built and decorated in fine wrought materials and decor so as to impress the Locals. A feast is normally held in the last long month of winter (12) to enliven the long nights and to bring joy when it is coldest. It allows the hosting Tribe a General Morale boost (+0.01) plus to recruit a number of Actives according to the amount of food laid on (max 10,000 provs, @ 1 Active per 100 provs will join your Tribe as of 12/800). Note – if a Banquet (see Banquet) is also held by any Tribe in the Clan using the Banquet Hall , the effect of Banquet and Banqueting Hall is cancelled and replaced by. The host Tribe may invite one guest Tribe from either inside or outside the Clan." The guest is subject to Morale increase.
Summary	*New Building - Banqueting Hall, yearly increase of Morale and gaining of people.*

Name	**Boat People**
DL	4
Pre-Req	Government Level 1 (Politics research)
Recipe	N/A
Leads To	N/A
Description	Boat People allows you to take in Immigrants (Recruits) as if any Ocean or Lake hex under your control is a land hex.
Summary	*Yearly allows recruits from controlled water hexes*

Name	**Capital**
DL	8

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Pre-Req	Government Level 2 (Politics research) Daimyo (Politics research)
Recipe	N/A
Leads To	Militia Training (Politics training)
Description	Once a tribe, with a Politics 10 Village, has completely researched Capital, the tribe may declare its Politics 10 Village as its Capital, once the following prerequisites are met: 1. The Politics 10 Village must contain a Courthouse as defined in the rules. Courthouse (Eng7, Wood3, Stn4, 12,000 stones, 500 logs, installed at normal rates). 2. The Politics 10 Village must have at least San8. 3. The Politics 10 Village must have sufficient water sources (Wells, Jetty, Cistern, taking into account its Sanitation level) to maintain its population during a siege. These conditions must be maintained to obtain the benefits of a Capital. **Benefit:** The political benefits for States with a Capital are increased to the levels shown below: 1. A Military Morale bonus of 20% vs. invaders (+ 10% standard for States) 2. Taxation yields twice much as for a standard State (number of collectors per hex is the same) for the 12 hexes around the inner six (and any beyond). 3. The number of population (which includes Actives, Hirelings, Locals and Mercenaries) that joins the Politics 10 Village, once per year, is tripled. 4. All Trade is tripled. 5. The number of Militia available to the Home City is doubled. The political benefits for Nations with a Capital are increased to the levels shown below: 1. A Military Morale bonus of 30% vs. invaders (+ 20% standard for states) 2. Taxation yields twice much as for a standard Nation (number of collectors per hex is the same) 3. The number of actives that joins the Capital Politics 10 Village, once per year, is tripled 4. All Trade is quadrupled. 5. The number of Militia available to the Home City is doubled. The benefits of the Capital do combine with the benefits of a Castle. A doubling for the Castle becomes a tripling (not quadrupling) when a Capital contains a Castle. For example, Castle increases tithes by 100% Capital increased tithes by 100%. Assume silver tithes are 2,000 per month. Castle makes them 4,000. Capital makes them 6,000. When multiple States join together in Nationhood, the treaty of Nationhood must specify which State's Politics 10 Village will become the Nation's Capital (a Nation may have only one Capital). Other State Capitals become cities that retain the same benefits as being a capital of a state. **Counters:** Destruction of the Capital by an enemy clan causes all Capital benefits to be

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	lost. The state/nation then reverts to the standard benefits for a state or for a nation. Players are responsible for keeping precise figures. If you cannot do this do not bother with this research. Castles may not be built for other Clans. A Clan may only have one Castle.
Summary	*Designate a Capital, Increases the bonus of States and Nations*

Name	**Castle (Details may be modified)**
DL	~~8~~ 6
Pre-Req	25' Stone Wall (Engineering research) in same Tribe as the Tribe attempting Castle
Recipe	1 Castle: Pol10, Eng10, Stones 120000, Logs 2000, Bronze/Iron 500, Lead 500, Gold 50. Normal installation rates of materials apply.
Leads To	Fortress (Politics research) Great Wall (Politics research) Island Fortress (Engineering research) Island Fortress (Stonework research) Mission (Politics research) Palace (Politics research)
Description	A Castle is essentially a fortified or strengthened building (acts as a 30' Stone Wall for the purposes of Siege and Assault) and capable of housing up to 6000 people and all Goods held by the Clan occupying the site (apart from Animals). If you have more than 6000 people in the site you can opt to house them behind lesser fortifications but doing so will mean likely lowering your Defensive Factor. Stables (via research) may be incorporated into the Castle to house Horses and Dogs. The effect of a Castle is to double/increase any advantages that Statehood/Nationhood confer. The Castle is impervious to Catapults and Trebuchets (Siege Cannon will do damage as per vs 30' Wall). Researched Siege Equipment does normal damage. At the end of any turn the Defender may opt to use the Castle rather than the external walls as their fortified defense (effectively sacrificing x-6000 people to the attacker). In this sense the first Castle maybe symbolic but it is a prerequisite for many useful research options). Since the attacker is deemed to be inside the outer walls no Village type Activities like Milling, Refining etc may be done (Baking is an exception), nor are external Activities, such as Hunting, Mining etc possible (Armour and Weapons may be made – common sense dictates what is possible). All herd is lost unless incorporated stables are present. See also "Locals and Cultural Support" in the Mandate. This research counts as 2 Hamlets for supporting additional Towns once a second Town has already been formed. These virtual Hamlets do not require Longhouses to support them. 20 Administrators are

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	required to support each Hamlet. Only one Castle may be built in a hex. A Castle increases the number of Special Hexes that a Clan may build in. Players should give their Castle a name – this will become the name of the hex.
Summary	*New Building - Castle, Increases Local Support, Trade Multiplier and Defense*

Name	**Daimyo**
DL	8
Pre-Req	Government Level 2 (Politics research) Palace (Politics research)
Recipe	N/A
Leads To	Capital (Politics research) Palace Renovation Gardens (Politics research) Terracotta Army (Pottery research)
Description	A Clan may have only one Daimyo. The celebration of the Daimyo costs 20,000 silver. **Benefit:** The Home City gains the following benefits from a Daimyo: A Military Morale bonus of 15% (of existing Morale) vs invaders – that is, combat within a Home City controlled hex. (This combines with the Morale bonus for State or Nation status). Once per year a number of Inactives drawn from the local population will join the Home City. 10 Inactives per controlled hex – in addition to previous immigrants bonuses. This occurs on the same turn that the population increases for Governing Levels via immigrants. If the Home City is involved in Siege/Assault the Leadership value of each Tribe involved is increased by +4 for the duration of the combat. Any Tribes or Elements of a Clan containing a Daimyo gain the Morale and Leadership bonus of the Daimyo if combat occurs within a Home City controlled hex. Militia may also be assigned to the combat @ the rate of 20% of available Militia. That is, 20% of available Militia may fight beyond the HC hex.
Summary	*Combat Boost - Morale bonus, Ldr bonus, Yearly gain of Inactvies, Militia at range*

Name	**Doomsday Book**
DL	2
Pre-Req	Government Level 2 (Politics research)

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Recipe	1 Doomsday Book: Lit4, Gold 1, Leather 1, Parchment 10
Leads To	N/A
Description	The Doomsday Book allows the City to become more efficient at tax collection. A Doomsday Book must be created for each hex that will be taxed. These books must be kept in the Home City. **Benefit:** With the Doomsday Book you will be entitled to 400 Silver per controlled hex (beyond GL2) per month, due to be paid in month 12. Players will need to indicate the total amount of Silver to be paid at this time – and should not claim for hexes under the control of another City. A Castle will increase the amount of Silver collected per Tax Collector by 50%. The Doomsday Book was the first official census of Norman England. Among other uses, it was used for Tax Collection. Proposed by David Steinheilper Weight: 10
Summary	*New Item - Doomsday Book, increases silver tithes from controlled hexes*

Name	**Emigration**
DL	N/A
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	In the initial stages Emigration is not a research project as such. Players need to alert the GM when their population hits 400,000 and then monitor as it approaches 500,000. If ands when the overall population in a Clan reaches 500,000 all population growth for the Clan reverts back to 1% regardless of research or religious benefits. At this point Emigration becomes possible (that is, optional) whereupon you may send up to 100,000 people as migrants (via Element or sub-Tribe) to a distant place (this is done automatically for the initial migration). The emigrants will establish (a second) Political center (or a first if they do not already have one). Should the settlement established by the emigrants reach 500,000 a third/second Political centre may be established, but research into "Emigration" is required to proceed to this part of the process. However, all population growth will be capped at 1% so in practice it is likely that you will need the physically transport people to do this. If your "mother" population suffers losses due to combat such that the population falls below 500,000 all applicable growth modifiers are restored until the 500,000 is reached again. This will only be applicable if attack is initiated against you (and not if you initiate an attack). Pol10 will be granted automatically in any sub-Tribe involved in the

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	emigration and research for GL levels will need to be conducted through this sub-Tribe or its Element in the ordinary way. GM see ..\Rules\Miscellaneous\Emigration.doc
Summary	*Holdover from previous game, doesn't do anything yet*

Name	**Feudal Security**
DL	8
Pre-Req	Government Level 1 (Politics research) Close Order Cavalry (Horsemanship research) Courthouse (Building) Scroll (Item) Relic (Item)
Recipe	N/A
Leads To	N/A
Description	300 Local Feudal Horsemen act as remote Security forces. They are considered to occupy each politically controlled hex (extra research can increase this number). They are housed in a stone fort (500 yard 10' wall and moat with barred gate, and Barracks) which must be built by the owning player. The Feudal Security is considered to have permanent Security orders. They will attempt to stop any hostile forces "raiding" the Kingdom by encountering raiders in any hex "raided through". The effect is to diminish raiding forces by 300 enemy raiders per hex raided through. For example, if a Raiding party of 2000 passes through 2 controlled hexes on its way to Raiding the central State hex then the effective Raiding numbers are reduced to 1400. A hostile force occupying a controlled hex will have its numbers reduce by twice this (and includes the hex occupied). For example, a raiding party originating from a hex adjacent to the central hex will have its effective Raiders diminished by 600. Note, the Feudal Security is effective against any and all Clan Raiding regardless of the numbers of Clans involved (counter research aside). The locals will provide the provs for the Feudal Security. Note Feudal Security are independent of Militia and do not come to the defence of the State nor do they act as Suppressors. They are useful against Raids only. Upon completion players need to remind me to name the surrounding hexes 0250FS1 etc, these names will override names previously assigned to the hex. Upon completion of the Research, the Scroll is destroyed/lost and is sent to Usage (1263) via transfer.
Summary	*Reduces enemy raider efficiency*

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Name	**Fortress**
DL	8
Pre-Req	Castle (Politics research) Scroll (Item) Relic (Item)
Recipe	*See Castle, Gold 60 / Year
Leads To	N/A
Description	The Fortress requires the same materials as a Castle (that is, you can build one anywhere) and capable of housing up to 6000 people and all Goods (apart from Animals, Stables (via research) – but it does not control surrounding hexes. That is, it acts purely as a fortification. It cannot recruit Militia as a Pol10 hex does but you may deploy up to 20% of your Pol10 Militia to this hex (as a defensive force only) – leaving 80% behind. Must be built 6 hexes from your Castle. A second Fortress may be built 6 hexes from the first (a third and fourth Fortress require further research). Cannot be built in any hex under Pol control of another Clan unless a Nation is in play. Upon completion of the Research, the Scroll is destroyed/lost and is sent to Usage (1263) via transfer.
Summary	*Allows castles to be built anywhere*

Name	**Government Level 1 (to 5 and beyond)**
DL	1, 2, 3, 4, 5
Pre-Req	Previous Government Level (Politics research)
Recipe	N/A
Leads To	Government Level 1: Banqueting Hall (Politics research) Boat People (Politics research) Feudal Security (Politics research) Import Mission (Politics research) Local Trade Routes (Politics research) Treaty (Politics research) Government Level 2: Capital (Politics research) Daimyo (Politics research) Doomsday Book (Politics research) Island Fortress (Engineering research) Island Fortress (Stonework research) Sheriffs (Politics research) Government Level 3: Great Wall (Politics research) Marshals (Politics research)

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Description	The start of the Empire (See Politics Rules)
Summary	*Increases the number of Controlled Hexes of a Clan's State/Nation*

Name	**Great Wall**
DL	9
Pre-Req	Government Level 3 (Politics research) Castle (Politics research) Engineering 10 (Skill) Stonework 10 (Skill)
Recipe	1 Gatehouse, 3 Watchtowers per hex side and 1 Relic to consecrate each hexside. 100,000 stones plus 3 Watchtowers per hex side for a 10' wall. 150,000 stones for 15' wall – that is, 250,000 stones total per hex side for 15' wall. Etc for higher walls. No differentiation for terrain. Not possible/required in hex sides bordered by impassable mountains.
Leads To	N/A
Description	The Player must specify, before beginning the Great Wall, the wall's start- and end-points which form a "closed loop". Must be a minimum of 6 hexes distant from the main builders Pol10 centre at all points (if more than one Clan is participating in construction the main builder must be specified). For practical purposes the Great Wall will not considered to be operative until the loop is completed/closed (once completed it may be expanded but new portions will not count til the next loop is completed etc) – a loop may include river, oceans, lakes and impassable terrain. Indeed, a completely new loop may be started beyond the existing loop. The GW effectively takes up a whole hex which once built becomes impassable terrain. Should the hexes externally adjacent already be named, or contain Locals etc these will need to be either renamed, destroyed or relocated. A relocation requires a 100 Gold tribute. Such hexes will be dealt with on a case by case basis. A GW can be built on the same hex side (that is, alongside) a river but if built "across" a river then river Travel "through" the wall is possible. A unit may build on one hex side only in the turn. Benefits Completion of the GW allows free range Herding – all Herders operating from a Home City within the loop are reduced to 10% of normal requirements as long as each of the herders are mounted (it is up to the player to note this – including other Clans affected which must also show this on their Orders).

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	The HC Clan gains 10 gold and 200 Silk per hex side of Great Wall per year as tribute. Where two or more Clans combine to enclose an area the Gold tribute is divided equally among those Clans.. * a state of Alliance, Statehood or Nationhood must prevail. Effective Seeking Skill is increased +5 for units seeking inside their GW. Any combat conducted by the owner of the GW inside its loop gains 20% of assigned troops as additional locals. For example, 500 troops assigned to combat will be bolstered by an additional 100 (loses are in ratio) for the duration of the combat. Research may be proposed that demolishes a section of the wall (effectively a hex side) which will allow passage through this hex side – but the research will need to be commensurate with the research required to build the GW.
Summary	*Mega-Project, Seeking / Herding / Defense boost, gain Gold and Silk*

Name	**Ho Chi Minh Trail**
DL	8
Pre-Req	Control of at least two "Locals" hexes Hone City cannot be in Prairie or Tundra hexes
Recipe	Ho Chi Minh Trail: People 2000, Eng7, Silver 20000, Gold 200, Relic 1
Leads To	N/A
Description	If your Pol10 centre (Home City) is placed under Siege or otherwise attacked you may move people or goods to any other of your units within 12 hexes of the Pol10 centre. This can be activated in the turn of the attack. The attacker may immediately take ownership of any Village works/site left behind. The Trail includes a system of underground passages at the Pol10 centre. With the assistance of Locals you are able to move people unobserved by the enemy. * 1500 in 0939, 1800 in 0940, 2100 in 0941 etc.
Summary	*An emergency escape tunnel system to flea a siege that's going south.*

Name	**Import Mission**
DL	4, 5, 6….
Pre-Req	Government Level 1 (Politics research)
Recipe	N/A
Leads To	N/A
Description	Upon successful completion of Import Mission, the Clan's Home City gains an Import Mission similar to International Cities. *1)* The Home City becomes the Importing City.

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	2) The Home City must also be a Board of Trade Site (Home City hex must contain Tribe that has active Board of Trade) 3) A City, International or PC, is selected as the Exporting City. This City gains a Trade Mission text similar to that which exists for other International Cities. The mission may be accepted and transfers occur as with any normal International City trade mission. If the City is PC controlled, they may reject it and the researching clan must pick another city. 4) A Primary and Secondary Commodity are selected by the researching Clan. The amount of each is Base Commodity Quantity (from Mandate) * 4 * Hex distance from the Export City to the Import City, with a minimum of 10 Hexes. Distance is calculated based upon number of hexes from the Exporting City to the Importing City in a direct line regardless of terrain. *Example: 85 hexes for Gold (Qty 1) would be 85*4*1 =340 Gold to Transport. 109 hexes would be 109*4*1=436 Gold.* 5) The payout for a successful Trade Mission (from Export to Import Mission) is 20% of the Commodity quantity for both Primary and Secondary commodities, Rounded Up. Example: If transporting 340 Gold, the payout to the unit delivering the goods would be 340 * 0.2 = 68 Gold. 6) Additionally, the Importing Clan (the one with the research) gains 10% of the Commodity quantity for both Primary and Secondary commodities, Rounded Up. 7) A maximum of 5 Clans may be on the Import Mission at a time. A single Clan may run a single specific mission multiple times but must wait one turn between turn in and accepting the next mission. 8) The clan with the Research may not run their own mission, only other clans. 9) Failure to deliver the goods in a timely manner will result in a forfeiture of the mission. The Tribe with GL 1 and the Import Mission research loses 0.10 Morale while the Tribe that accepted the mission and forfeited will lose 0.15 Morale. A Clan that forfeits a mission may not accept future Trade Missions from this specific research. The time for the mission to be considered Forfeit is 4 months per 10 hexes (rounded up) of the Trade Mission distance. This forfeiture frees up the mission for future Clans. This research may be taken multiple times, up to three, with different commodities for each Import Mission and different Export Cities. *Beijung, Whulan, Tokyo, Osake, Lugdunum, Trier; These are all well known international cities with major trade routes. Today, we take the next step forward into becoming a power in this work. Merchants will bring their wares to our gates and our tolls will increase. Our soldiers will patrol the streets and the trade routes beyond. We will see prosperity.*
Summary	*Setup a trade mission from a PC City to your PC City*

Name	**Local Trade Routes**

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DL	4
Pre-Req	Politics 10 (Skill) Government Level 1 (Politics research)
Recipe	Establish: Silver 10000
Leads To	N/A

Description	This research allows city-states to make use of the local merchant and trade routes that are present in its vicinity to transfer goods across limited distances.
	
	Benefits:
	• **Transfers:** The Clan may make up to 4 total transfers between a City and any Unit(s) within range of the Local Trade Route research. A transfer is considered any number/quantity of different goods between two Units.
	
	Restrictions:
	• **Range:** Local Transfer allows trades up to a number of hexes equal to the Government Level (GL) of the City plus 2. Range = GL + 2. Range is not affected by terrain, water hexes, rivers, impassable terrain or weather.
	  ○ *For example: A City with a GL of 1 would have a Range of 3.*
	  ○ *For example: A City with a GL of 2 would have a Range of 4.*
	  ○ *For example: A City with a GL of 5 would have a Range of 7.*
	• **Other Clans:** Units from other Clans may be traded to/from but only if that Clan also has a City that is Government Level (GL) 1 or higher.
	• **War:** Local Trade Routes cannot be used if the sender or receiver is under Siege or DEVA.
	
	Performing the Local Trade Route transfers:
	• **One off Trades / Trades between mobile units:** For Trades between mobile unit(s), a comment to the GM that includes the Transfering Unit, the Target Unit, the Goods and Quantity to be traded and the reason the trade can happen (*Local Trade Route*) should be used.
	• **Fixed location Trades:** For Trades between two fixed locations within range of the Local Trade Routes, it is recommended that the player fill out and turn in the Special Trade Route spreadsheet (specific hexes) so that trades can be used using the Automated Order transfer tab and would not require GM involvement once established.

Summary	*Allows the creation of short range special transfer routes.*

Name	**Logistics 1**
DL	3

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Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Logistics1 is a Group B Skill. It allows 1% per Logistics level of Militia available to the Home City to defend any hex under the control of the Home City that falls under attack within the "A" zone (generally 10 hexes away). Costs 5 Silver per Militiaman deployed. It is incumbent upon the player to show that the attack in question occurs within a controlled hex. Logistics2 and beyond will enable joint Militia to defend with respect to attacks vs zones further from the Home City. Costs 10, 15 Silver per Militiaman deployed etc.
Summary	*New Skill - Logistics, allows Militia to defend in other controlled hexes*

Name	**Marshals**
DL	3
Pre-Req	Government Level 3 (Politics research) Sheriffs (Politics research)
Recipe	N/A
Leads To	N/A
Description	Marshals work like Pacifiers and Sheriffs, except more efficiently. One Marshal will replace three Sheriffs. Marshals must be equipped with Shields, Full Plate, Swords, Spears and Horsebows. If better armor or weapons are obtained they may be used. (For example, Lance may replace Spear.) Marshals must be mounted on Horses with Saddles. Marshals are housed in a Hall of Justice, 100 Marshals to each Hall. Marshals are considered to always be on defense and will automatically contribute to the number of defenders assigned. If the Politics 10 city is under siege, the Sheriffs may be dismounted and assigned to any of the defensive positions. Fluted Plate may be substituted for Full Plate during combat. **Counters:** Loss of Governing Level 3
Summary	*Reduces number of Pacifiers needed for State*

Name	**Militia Training**
DL	5
Pre-Req	Capital (Politics research)
Recipe	Yearly: Silver 1 per Militia each Year (12 months after completion)
Leads To	N/A
Description	(see also Training) Once a tribe researches Militia Training, its Home City may initiate the

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	training of Militia. One year after the MT the military skills of Militia increases to (Arc3, Hor3). A year after this Archery and Horse are increased to 6. Etc to a maximum of 12. Players are responsible for prompting the GM, for showing costs etc.
Summary	*Combat Boost - Increases Militia's combat skills*

Name	**Mission**
DL	4 (First) 5 (Second) etc.
Pre-Req	Castle (Politics research)
Recipe	1 Mission: People 3260, Eng 7, Wd 3, Mtl 3, Stn 4, Stones 15k, Logs 500, Brass 100
Leads To	N/A
Description	Mission raises General Morale by 0.02. A mission must be at least 12 hexes from the Castle and cannot be built where a Village already exists. Once per year (at least 12 months after the Mission is built) the Castle owner may contribute up to 8,000 Silver to the local community in return for 80 Inactives joining any unit present at the Mission site. Note that a Mission may be offered to some Clans without the research but in this case there is no control over where it may be built and it is unlikely that the number of Missions offered will be more than one.
Summary	*New Building - Mission, Build away from City to gain people yearly*

Name	**Palace (may be modified)**
DL	6
Pre-Req	Castle (Politics research)
Recipe	1 Palace: Eng10, Stone 50k, Logs 5k, Silver 10k, Carpet 50, Tapestries 50, Statues 5, Sculptures 20, Gold 150, Diamonds 50
Leads To	Daimyo (Politics research) Palace Renovation Gardens (Politics research)
Description	The home of the Daimyo. One per State. See also “Locals and Cultural Support” in the Mandate. This research counts as 4 Hamlets for supporting additional Towns once a second Town has already been formed. These virtual Hamlets do not require Longhouses to support them. 20 Administrators are required to support each Hamlet. It also attracts a one-off contingent of Elite Troops.
Summary	*New Building - Palace, allows Daimyo research and counts as Local Support settlements*

Name	**Palace Renovation Gardens**

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DL	8
Pre-Req	Palace (Politics research) Daimyo (Politics research)
Recipe	PRG: Eng10, Stone 80k, Logs 8k, Silver 50k, Iron 1k, Gold 50, Tigers 2, Sculptures 10, Relics 2
Leads To	N/A
Description	The Palace Gardens are, among other things, a place for the Daimyo to rest, relax and entertain guests or even do a bit of recreational hunting. Built within the safety of the Palace walls and taking up an area of 1000 000 square yards the Palace Gardens provide the Daimyo with a variety of entertainment options. The Palace Gardens contain many smaller building such as stages for Prerequisites performances, enclosures for the Tigers and quarters suitable for guests such as visiting a Daimyo his entourage (up to 600 people). To accrue the benefits the garden must be maintained in pristine condition and staffed, there must be artisans available to perform at any time and the number of Tigers must be maintained at 10 or more. Basic garden Prerequisites 200 actives per month Herding of Tigers 1 herder per animal Artisans At least 20 performers (from a Tribe with a completed research topic in a cultural skill per month) Security as per pacifying a controlled hex (if sheriffs or marshals are used they do not require horses) <u>Benefits:</u> 1. A further Military Morale bonus of 10% (of existing Morale) vs invaders – that is, combat within a controlled hex (see Politics). This combines with the Morale bonus for State or Nation or Daimyo status. 2. Once per year a number of Inactives drawn from the local population will join the Home City. 10 Inactives per controlled hex – <u>in addition</u> to previous/other immigrants bonuses. This occurs on the same turn that the population increases for Governing Levels via immigrants. 3. Having Palace Gardens provides an alternative method of obtaining a treaty. Rather than having to research a treaty the Daimyo of another state can be invited to visit. Together, in the tranquil environment of the Palace Gardens the two Daimyo's are able to work out the details of a treaty there and then. Daimyo is a prerequisite. 4. Once the Gardens are established (with Tigers) locals will be attracted to surrounding areas. The result will be the immediate offer to build two Local structures (see Locals). 5. A one off of 1000 Hirelings will be attracted to the Home City. Proposed by Mark Ryan
Summary	*Increases State and Nation bonuses*

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Name	**Posse**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	For each 5 warriors assigned to Security a Local may be added if and when required.
Summary	*Gain additional free people for Security assignment*

Name	**Sheriffs**
DL	4
Pre-Req	Government Level 2 (Politics research)
Recipe	N/A
Leads To	Marshals (Politics research)
Description	Sheriffs work like Pacifiers, except more efficiently. One Sheriff will replace three Pacifiers. Sheriffs must be equipped with Shields, Helms, Chain, Breastplate and Trews or better. No Bronze, Ring or Scale armor is allowed. Minimum weapons must be both Swords and Spears. Any type of bows may be used. If better armor or weapons are obtained they may be used. (For example, Lance may replace Spear and Full Plate may replace component pieces.) Sheriffs must be mounted on Horses with Saddles. Sheriffs are housed in a Hall of Justice (10,000 Stones, Eng9 and may be built with the attainment of Sheriff). 100 Sheriffs to each Hall. If the Politics 10 city is under siege, the Sheriffs may be dismounted and assigned to any of the defensive positions. **Counters:** Loss of Governing Level 2
Summary	*Reduces the number of Pacifiers required in State*

Name	**Treaty**
DL	3
Pre-Req	Government Level 1 (Politics research)
Recipe	N/A
Leads To	N/A
Description	Treaties formally define control of disputed Political territories (that is, the point at which two or more States become overlapping States). Each new treaty must be researched separately. Either party can develop treaties and must be announced by each party to the treaty in the same turn (like Truces). The terms must be 237erquisit within 2 turns of development. The treaty will become operational following the turn in which both parties accept the terms of the treaty (expending 6 parchment each). If any party formally rejects the treaty at any stage after the terms are 237erquisit, it is destroyed. A Treaty need not address all hexes in dispute, but if it does, this aim needs to be specified at the time of

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	researching, and the hexes specified. The terms of a treaty may not be extended to encompass territories either not in dispute or omitted at the time the research was successful. <u>Breaking Treaties:</u> Terms may be renounced in several ways. One party can research a new Treaty and, if agreed between the parties, this can replace the old one. One party could leave the area (or the game) abandoning their State. Otherwise, Research could be performed to declare an existing Treaty invalid with respect to one or more Territories, which would then return them to disputed status.
Summary	*Creates a Treaty when Controlled Hexes overlap allowing formation of a Nation*

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Pottery

Name	**Advanced Pottery**
DL	5
Pre-Req	N/A
Recipe	2 Ewers: People 1, Silver 5 each 2 Jars: People 2, Silver 10 each 2 Urns: People 4, Silver 10 each
Leads To	N/A
Description	Clay and Coal consumption remain the same.
Summary	*Allows more efficient but expensive creation of pottery*

Name	**China**
DL	6
Pre-Req	N/A
Recipe	1 China: People 2, Kaolin 4, Coal 20, Silver 10, Requires Kiln
Leads To	N/A
Description	Commodity
Summary	*Allows the creation of China, a Desired Commodity.*

Name	**Terracotta Army**
DL	~~9~~ 8
Pre-Req	Daimyo (Politics research)
Recipe	1000 Terracotta Warriors: Eng8, Rel 10, Stones 10k, Logs 1k
Leads To	N/A
Description	A leader such as a Damiyo desires security in the afterlife befitting his stature. The stones and logs are for the housing for the terracotta army and are installed at 5 stones and 2 logs per person. Benefits: 1. The terracotta army is a clear physical symbol of the leaders belief in religion and the afterlife and naturally this effects the entire population. Completion of the terracotta army by a clan allows a combat bonus of +6 Combat when in combat if the Terracotta warriors are present. Proposed by Mark Ryan Weight: 100 lbs each

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Summary	*Combat Boost - New Item - Terracotta Warriors, increases Combat skill in combat*

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Quarrying

Name	**6 Stones / Person**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	7 Stones / Person (Quarrying research)
Description	Each quarrier can quarry 6 stones. Please note, the module will automatically upgrade Tribe quarrying figures. However, this may not happen with Elements and will need to be done manually – you need to refer to this ONLY when the first attempt at Qry with new figures is done. Mattocks and other implements use 6 Stones as the base number instead of 5. A Craftsmen with 6 Stones / Person and a Mattock would quarry 12 stones.
Summary	*Quarrying provides 6 stones per person*

Name	**7 Stones / Person**
DL	6
Pre-Req	6 Stones / Person (Quarrying research)
Recipe	N/A
Leads To	8 Stones / Person (Quarrying research)
Description	Each quarrier can quarry 7 stones. Mattocks and other implements use 7 Stones as the base number instead of 5. A Craftsmen with 7 Stones / Person and a Mattock would quarry 14 stones.
Summary	*Quarrying provides 7 stones per person*

Name	**8 Stones / Person**
DL	7
Pre-Req	7 Stones / Person (Quarrying research)
Recipe	N/A
Leads To	9 Stones / Person (Quarrying research)
Description	Each quarrier can quarry 8 stones. Mattocks and other implements use 8 Stones as the base number instead of 5. A Craftsmen with 8 Stones / Person and a Mattock would quarry 16 stones.
Summary	*Quarrying provides 8 stones per person*

Name	**9 Stones / Person**
DL	8

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Pre-Req	8 Stones / Person (Quarrying research)
Recipe	N/A
Leads To	N/A
Description	Each Quarrier can quarry 9 stones. Mattocks and other implements use 9 Stones as the base number instead of 5. A Craftsmen with 9 Stones / Person and a Mattock would quarry 18stones.
Summary	*Quarrying provides 9 stones per person*

Name	**Extra Quarrying Tools**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	A person sent Quarrying produces 5 Stones, and if equipped with a Mattock they produce +5 Stones (10 in total; in effect working as two people). A Tribe that knows Extra Quarrying Tools understands that by providing extra tools; and training; they can get better returns on quarrying. If equipped with a Shovel in addition to a Mattock; they will produce an extra +5 Stones (15 in total; in effect working as three people). The bonus is only effective when a person is equipped with both tools. You must show Quarriers as equivalent workers, for example, 100 workers using 100 Mattocks, 100 Shovels and 100 Wheelbarrows are shown as 400 Quarriers (the Wheelbarrows adding an equivalent 100 to the 300).
Summary	*Allows Quarriers to use a shovel in addition to a Mattock*

Name	**Greater Masons**
DL	4
Pre-Req	Master Masons (Quarrying research)
Recipe	N/A
Leads To	N/A
Description	A Tribe with this research knowledge has a better understanding of the nature and preparation of quarried stone; as a result they gain a 50% bonus towards production of Stones (this replaces the bonus gained under Master Masons). Effectively 1000 people will do the work of 1500 people.
Summary	*Increases quarrying yields by a total of 50%*

Name	**Inactive Quarriers**
DL	5
Pre-Req	N/A
Recipe	N/A

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Leads To	N/A
Description	Inactives can perform up to one-third of the Quarrying activities labour. If not doing this they "work" for the public service. Inactives in major quarrying operations perform menial tasks such as leading carts and oxen, cleaning paths, fetching water and sharpening tools. Would require coding from Jeff. Until this is done Chief, please add Actives/Warriors and Inactives into a single figure in Activities (showing the Inactives in notes).
Summary	*Allows normally useless Inactives to work as Quarriers*

Name	**Masons**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	Master Masons (Quarrying research) Quarry Blocks (Quarrying research)
Description	A Tribe with this research knowledge has a better understanding of the nature and preparation of quarried stone; as a result they gain a 10% bonus towards production of Stones. Effectively 1000 people will do the work of 1100 people. Needs to be shown as an equivalent number of workers. For example, 1000 workers with 1000 Mattocks = 2200 equivalent workers.
Summary	*Increases quarrying output by 10%*

Name	**Master Masons**
DL	4
Pre-Req	Masons (Quarrying research)
Recipe	N/A
Leads To	Greater Masons (Quarrying research)
Description	A Tribe with this research knowledge has a better understanding of the nature and preparation of quarried stone; as a result they gain a 25% bonus towards production of Stones (this replaces the bonus gained under Masons). Effectively 1000 people will do the work of 1250 people.
Summary	*Increases quarrying out by a total of 25%*

Name	**Quarry Blocks**
DL	5
Pre-Req	Masons (Quarrying research)
Recipe	N/A
Leads To	N/A

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Description	Quarrying Activity Units with access to this research have the knowledge to cut larger blocks of stone from mountains and cliff faces. These quarry blocks measure 2' x 2' x 5' instead of the standard 1 cubic foot dimensions of normal stone blocks. 1 Worker produces 1 Quarry Block. Implements that affect Quarrying affect Quarry Block output. Research affects Quarry Blocks as well with the exception of the # Stones / Person research (such as 6 stones / person, 7 stones / person, etc). 1 Worker with a Mattock and Chisel would produce 3 Quarry Blocks. 1 Quarry Block replaces 20 stone for any project that requires at least 2,000 stone, including Walls, Towers and larger buildings. If using Quarry Blocks in a building, the building must be completely built out of Quarry Blocks. Prior to starting an engineering project that will use Quarry Blocks, notify the GM so that the updated recipe may be added to the database. Weight: 2,000 lbs
Summary	*Create Quarry Blocks instead of Stone.*

Name	**Quarry Ladder**
DL	5
Pre-Req	N/A
Recipe	1 Quarry Ladder: People 15, Wd3, Log 4, Iron 25, Coal 150
Leads To	N/A
Description	Each Quarry ladder (implement) doubles the base output of 10 people performing Quarrying and Digging (Clay, canals, sand, moats, etc.. Does not stack with Mining Ladders) activities before implements. Quarry Ladders can be used in conjunction with other tools, but increases are additive and are not compounded. For example, 1 Quarrier with both a Mattock and a Quarry Ladder produces his base output x 3 (not x 4). These wood and metal ladders and ramps are used to for more advanced vertical quarrying and to facilitate the movement of personnel and stone up the quarry pit. These would not be standard wood ladders or ramps but would have iron reinforcement to handle the added weight of the stone and wagons. We have called it Quarry Ladders research to shorten the name but it would really be both ladders and ramps. 1 Quarry Ladder weighs 50 lbs.
Summary	*New Item - Quarry Ladder, increases stone output for 10 quarriers*

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Refining

Name	**Coke**
DL	8
Pre-Req	N/A
Recipe	15 Coke: People 1, Coal 20
Leads To	Steel (Refining research)
Description	Refining Activity Coded Makes more efficient use of coal for Refining and Armour and Weapons production (1 Coke = 2 Coal). Also required for Steel to be made. These are the items that can be made using Coke instead of Coal (all will require Silver). Conventional Items: Breast Plate, Helm, Shield, Chain, Sword, Research: Full Plate, Greaves, Bascinet Refining: Copper, Iron, Steel (necessary)
Summary	*New Item - Coke, Allows creation of coke, more efficient Coal, allows Steel research*

Name	**Hammer Mill**
DL	5
Pre-Req	N/A
Recipe	1 Hammer Mill: People 11, Wd 5, Eng 6, Logs 20, Iron 5, Coal 10, Leather 2
Leads To	N/A
Description	The Hammer Mill (or Stamp Mill) is a hydraulic or manually operated series of weighted "pistons" which pulverize various ores into finer pieces, and sift out more unusable rock, for more efficient refining, and portage of raw materials. Each Hammer Mill can service 20 Ams assigned to Mining OR Refining, allowing 2 Ams to do the work of 3 (identical to the effect of Scaffolds for Engineering and Shipbuilding, so it is, essentially, a "Scaffold" for Mining and Refining). Hammer Mills may be used by other Clans. For Mining purposes, the additional Ams would be shown as "Effective Workers" in orders.

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	For Refining purposes, the additional Ams would be shown as “Effective Workers” in orders, and would require additional Smelters to cover the increased Ams. If operated on a river hexside, cattle or horses need not be available, as the mill would be hydraulically powered via river current. If operated on a hex with no river hexsides, 2 Horses or Cattle are required to operate. Hammer Mills are items and not buildings. They can be traded. Weight: 2000 lbs *Proposed by Chris S.*
Summary	*New Item - Hammer Mill, increases output of 20 miners or refiners*

Name	**Increased Output**
DL	Increased Output 10%: 4 Increased Output 50%: 6
Pre-Req	Increased Output 10%: None Increased Output 50%: Increased Output 10%
Recipe	N/A
Leads To	N/A
Description	Increased Refining Output by 10%/50%. Assign extra (paper) people to the refining process. For example, if you deploy 100 refiners they would do the work of 110. You would show this as 110 equivalent Refiners (with the 100 mentioned in notes).
Summary	*Increases efficiency of refiners.*

Name	**Saltpetre Refining**
DL	2
Pre-Req	N/A
Recipe	Saltpetre Refinery: 70 AM, Eng5, Stn5, Logs 100, Stone 100, Standard Installation Rates
Leads To	N/A
Description	A Saltpetre Refinery can service up to 100 cattle. Uses Refining Skill for limits. 1 person can gather 10 Saltpetre from 2 cattle per turn, that is, 50 people can refine Saltpetre per standard refinery.
Summary	*New Building - Saltpetre Refinery, turn Cattle poop into Saltpetre*

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Name	**Steel**
DL	8
Pre-Req	Coke (Refining) in same Tribe
Recipe	Steel 15: People 1, Iron 20, Silver 15, Coke 10
Leads To	N/A

Description	Coded
	
	Better Armour and Weapons – Steel to Iron is like Iron is to Bronze. Working with Steel requires 1 skill level higher than working with Iron (and some Gold and Silver to pay for expertise and materials).
	
	At this stage some steel items are:
	• Armour:
	  ○ Chain (Silver 30),
	  ○ Breastplate (Gold 1, Silver 40),
	  ○ Helm (Silver 15),
	  ○ Shield (Silver 15),
	  ○ Full Plate (Gold 2, Silver 50),
	  ○ Fluted Plate (Gold 2, Silver 40),
	  ○ Bascinet (Silver 20)
	  ○ Greaves (Silver 20)
	• Weapon:
	  ○ Sword (~~Gold 2~~, Silver 20),
	  ○ Sword – Scimitar (Gold 2, Silver 20)
	  ○ Spear (Silver N/A)
	
	Arrows currently not coded, but coming
	
	The Romans could make Steel around 900 AD.

Summary	*Allows creation of steel weapons(cuts through armour) and armour (stops weapons)*

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Research

Name	**Colleges**
DL	6
Pre-Req	University (building)
Recipe	1 College: People 1,200, Res 10, Eng 8, Stn 4, Stone 5k, Log 400, Silver 100k, Scroll 1, Parchment 200, Candles 50, Tobacco 200 Per College Annually: Silver 100k, Scroll 1, Parchment 200, Candles 50, Tobacco 200
Leads To	N/A

Description	Allows a Tribe to construct College buildings as an addition to an existing University building that already exists in the village.
	
	Bonus:
	• **New Building: College**
	  ○ The Tribe gains the ability to build Colleges in a Hex that has a University.
	  ○ When a College is constructed, the Player must select which type of College is completed. One College building is required for each College.
	• **Skill Level 10 Auto-Success:**
	  ○ A Tribe gains Skill Level 10 in a skill after 6 consecutive unsuccessful Primary skill checks instead of 12.
	  ○ This applies to all Tribes that belong to the Clan in the Village that the University and College building reside.
	  ○ This applies to all skills that belong in the appropriate College. See List below.
	• **Research DL 0 Auto-Success:**
	  ○ A Tribe gains Difficulty Level 0 in a research topic after 6 consecutive research attempts instead of 12.
	  ○ This applies to all Tribes that belong to the Clan in the Village that the University and College building reside.
	  ○ This applies to all research topics in skills that belong in the appropriate College. See list below.
	• **Research DL 0 Increased Chance:**
	  ○ Once all 7 Colleges have been built at a University, Tribes attempting to gain DL 0 in a research topic gain +10% to their chance of success.
	  ○ This applies to all Tribes that belong to the Clan in the Village that the University and all 7 College buildings reside.
	• **War College:** A War College building may be built whenever the College research topic OR the War College research topic has been completed. To build a War College, Colleges research is not required to be completed if the Clan already has War College research topic completed.
	
	Requirements:

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- **Specific College:** Each Specific College requires its own building to be built to function.
- **Annual Upkeep:** Every year, Annually on month 1, each college requires a unit at the College to consume the following:
  - Silver: 100k
  - Scroll: 1
  - Parchment: 200
  - Candles: 50
  - Tobacco: 200
- **Failure to Pay:** If the Annual Upkeep is not consumed, the College will lie fallow for the year. It may be restarted the next year with the Annual Upkeep being paid.

Restrictions:

- Colleges may be built for other Clans.
- Other Clans may not utilize Colleges without the Research being completed in their Clan.

Notes:

- The College research topic needs to be completed only once to build all 7 colleges.
- See Below for a list of colleges and their skills:

College of Fine Arts	College of Industrial Arts	College of Agriculture & Mining	College of Liberal Arts
Excavation	Armour	Agriculture	Diplomacy
Jewelry	Bonework	Boning	Horsemanship
Pottery	Fletching	Bushlore	Intelligence
Weaving	Furrier	Curing	Politics
Woodwork	Leatherwork	Dressing	Rowing
Triball	Metalwork	Fishing	Sailing
Archaeology	Salting	Forestry	Seamanship
Art	Sewing	Gutting	Understanding
Cooking	Shipwright	Herding	Research
Dance	Slavery	Hunting	
Glasswork	Baking	Mining	
Literacy	Brickmaking	Quarrying	
Music	Firecontrol	Skilling	
Stonework	Refining	Tanning	
	Shipbuilding	Apiarism	
		Distilling	
		Farming	
		Milling	
		Seeking	

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	College of Business	**College of Science and Engineering**	**War College**	
	Administration	Apiology	Archery	
	Banking	Architecture	Captaincy	
	Courier	Siege Equipment	Combat	
	Economics	Apothecary	Generalship	
	Garrison	Geology	Field Marshall	
	Mobilization	Healing	Leadership	
	Logistics	Heaving Weapons	Mariner	
	Maintain Boat	Navigation	Scouting	
	Sanitation	Torture	Security	
	Supervision	Alchemy	Siegecraft	
		Astronomy	Spying	
		Engineering	Tactics	
		Veterinary Medicine		
Summary	*Boost to reading/writing books*			

Name	**Golden Age**
DL	2
Pre-Req	University (Building) Library (Building) – In same space as University Scroll (Item)
Recipe	N/A
Leads To	N/A
Description	Your tribe begins a Golden Age in art, history, science and culture resulting in a large expenditure of money but through the Golden Age, it will gain much knowledge. Requirements: • Settled: May only be attempted by a tribe in a village (not a nomadic tribe) • Silver Cost: For the duration of **all** DL attempts, the Tribe must manually send Silver 300 to usage (1263) each turn. • Gold Cost: Once DL0 is reached, the Tribe must manually send Gold 10 to usage(1263) each turn Benefit: • **Category A Skill:** Upon completion of Golden Age research, the Tribe may increase a single Category A skill by 1 Skill Level to a maximum of skill level 8. • **Category B Skill:** Upon completion of Golden Age research, the Tribe may increase a single Category B skill by 1 Skill Level to a maximum of skill level 8. • **Category C Skill:** Upon completion of Golden Age research, the Tribe may

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	increase a single Category C skill by 1 Skill Level to a maximum of skill level 8. • Research Topic Boost: Upon completion of Golden Age research, the Tribe may increase **two** other research topics that are already at or above DL0 by 1 Difficulty Level (DL) but may not complete those Research Topics via Golden Age. Thus, a Golden Age allows a substantial one-off benefit, but no permanent benefits. Only one Tribe per Clan may research Golden Age at a time – but once completed may be researched again. Many ancient and medieval societies enjoyed Golden Ages that were marked by a flowering of the arts & sciences from Athens under Pericles to the Franks under Charlemange. Historically, almost every Golden Age was supported by large expenditures to encourage the arts & sciences, hence the 300 silver per turn requirement. No Books Upon completion of the Research, the Scroll is destroyed/lost and is sent to Usage (1263) via transfer.
Summary	*Complete to get a one time boost to 3 skills and 2 research topics, expensive*

Name	**Head Librarian**
DL	2
Pre-Req	Librarian (Research)
Recipe	N/A
Leads To	N/A
Description	With Head Librarian, a further increase of 10% is added to the Librarian topic (ie effectively a 20% chance becomes a 40% chance). The Head Librarian must be in the same hex as the Library and the unit attempting to read/write a book. Head Librarian represents the limit of the Librarian topic.
Summary	*Boost to reading/writing books*

Name	**Librarian**
DL	1
Pre-Req	Researcher (Research research) Library (Building)
Recipe	N/A
Leads To	Head Librarian (Research research)

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Description	The Scholar is now also considered a Librarian and acts as the administrator of the Library to make it run more efficiently. As a result, the bonus of a Library is increased. With Librarian, 10% is added to the chances of reading/writing a book (ie a 20% chance becomes a 30% chance) by any Tribe from the same Clan and in the same hex as the Library and Librarian. The Librarian must be in the same hex as the Library and the unit attempting to read/write a book.
Summary	*Boosts to reading / writing books*

Name	**Research Team**
DL	6
Pre-Req	University (Building) Library (Building) – In same space as University Scroll (Item)
Recipe	N/A
Description	Once a Tribe has completed Research Team, it gains the ability to initiate a subsequent research project once its 252erquisite topic has reached DL1. For example, the research topic "Steel" has "Coke" as its prerequisite. Normally Coke must be completely researched before any attempt to research Steel can be started. Research Team allows Steel to be attempted once Coke has reached DL1. One topic at a time may be dealt with in this way. Rationale: Research is often done in teams. A "scientist" team focuses upon making new discoveries. An"engineer" team focuses on turning the new scientific discoveries into something that can be used. Once a discovery is made, the "scientists" go on to attempt a new set of discoveries while the "engineers" turn the existing discovery into something practical. In game turns, once DL1 is reached, the scientists go on to the next research topic while the engineers complete the research topic. For example, a Tribe that knows Research Team that also has two (or more) partial topics (For example, Steel DL7/8 and Home Guard DL1/3) could start only ONE new topic early, (e.g. Steel allows Superior Weapons to be started early OR Home Guard allows Army to be started early). Upon completion of the Research, the Scroll is destroyed/lost and is sent to Usage (1263) via transfer.
Summary	*Allows commencing advanced research topics before required topics completed*

Name	**Researcher**
DL	5
Pre-Req	Scholar (Research)
Recipe	N/A

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Leads To	Librarian (Research research)
Description	Can only be researched by Scholar Tribe. On completion of Researcher, the Scholar Tribe can transfer research under the same physical conditions as Scholar. Each transfer, though, requires a scroll to be transferred to usage. Upon completion of the Research, the Scroll is destroyed/lost and is sent to Usage (1263) via transfer.
Summary	*Allows a scholar to research other skill topics and transfer those topics to another tribe*

Name	**Scholar**
DL	3, 3, 3, …
Pre-Req	N/A
Recipe	N/A
Leads To	Researcher (Research research)
Description	Upon completion of Scholar, a new Tribe is formed. This Tribe represents the new Scholar and consists of 1 Active and Research 10 (the Parent Tribe keeps its Res 10 as well). This Tribe may do no activity except Meditation. The Scholar Tribe can move only by using the Follow order (ie it must always be attached to another unit). It may not accept Transfers of Population (without additional research). The Scholar Tribe attempts skills in the same way as any other Tribe. It may, at the end of a turn, transfer any of its skills to another Tribe of the same Clan – not an Element – provided the receiving Tribe has a unit in the same hex as the Scholar. This new skill level replaces the current skill level for that skill in the receiving Tribe. The transfer requires the Scholar to be at a Library or to be in possession of a Scroll. Skills cannot be transferred to the Scholar Tribe. The Scholar can attempt research topics in any skill that it has a level 10 for, but cannot transfer the research. It cannot itself research Scholar. It can only use its Research 10 for topics that have Scholar as its prerequisite. It cannot, for example, use Research 10 to build a university or to research Research Teams. The Scholar may not transfer Research 10 skill to another tribe. The Scholar research topic may be repeated in the same tribe. Notes: 1. Upon completion of this research, contact the GM to create the extra tribe and to have the research removed so it can be researched additional times. 2. The maximum number of Tribes that a Clan may have is 10. Creation of extra tribes through this research counts against this limit. Be aware that this may restrict your options for International NPC Tribes.
Summary	*Gain a specialty Tribe of 1 person that can learn skills and transfer them to other tribes*

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Name	**War College**
DL	7
Pre-Req	University (Building) Library (Building) – In same space as University
Recipe	Maintenance: Gold 10 / Year
Leads To	Battlefield Medicine (Healing research)
Description	This research topic is valueless unless the Tribe (WC developed in one Tribe cannot service the whole Clan) has already developed Generalship ~~or Military Orders~~. A War College represents a deliberate and systematic study of warfare and the training of a tribe's military leadership in how best to conduct warfare. The prerequisite of Generalship insures that the tribe has possesses permanent military leaders that can then benefit from the training provided by a "War College". **Benefits:** Generalship – For land battle calculation purposes only: Leadership = Leadership + Generalship Combat = Combat + (Generalship/2) Horsemanship = Horsemanship + (Generalship/2) Tactics = Tactics + (Generalship/2) All other Generalship benefits and restrictions are unchanged
Summary	*Combat Boost - Apply Generalship to most other combat skills.*

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Rowing

Name	**Two Hex Ferry**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Once completed, this research topic allows a ferry to operate across two hexes of Ocean and/or Lake. All ferrying rules apply as written, except that it cost 16 MP's per ferry trip (crossing two hexes) rather than 8 MP's per trip (crossing only one hex).
Summary	*Ferries may operate over 2 hexes of water instead of just 1.*

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Sailing

Name	**Expert Sailors**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	Professional Sailors (Mariner research)
Description	+3 Seamanship and +3 Navigation skills. Expert sailors does not become active unless you are already at skill 10 of Navigation and 10 of Seamanship. Players need to let me know when they achieve this if they do not have 10's in both at the time the research is completed.
Summary	*Skill Level Boost - Seamanship and Navigation*

Name	**Fast Fleets**
DL	3
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Fast Fleets allows any Fleet (that knows this topic) whose normal sailing MP = 100 MPs or more per turn to move along a TR (Trade Route) at twice the normal TR speed; e.g. at 160 MPs per turn instead of 80. Fleets with high scores in SAIL, SEA and NAV can sail more than 100 MPs per turn. For example, a fleet with Longships (base sailing rate = 40 MP) and skills of 10 in each of SAIL, SEA and NAV, will sail 130 MPs per turn. This means that in many cases it will be faster for such Fast Fleets to sail normally, rather than using a TR. Fast Fleets increases fleet movement along TR (Trade Routes) only, as described below. It does not affect any other sort of movement. Note: A Fleet may only gain movement bonuses from three research topics simultaneously along a Sea Borne Trade Route. Examples include, but are not limited to, Board of Trade, Fast Fleet, Trusted Maps, etc.
Summary	*Increases Fleet movement along Sea Borne Trade Routes*

Name	**Heart of Oak**
DL	5
Pre-Req	Navigation 11 (Navigation research) OR

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	Sailing 11 (Sailing research) OR Seamanship 11 (Seamanship research)
Recipe	N/A
Leads To	N/A
Description	A Fleet with Heart of Oak gains a 1% advantage (Damage done to its opponent is increased) per point of difference when the sum of its Nautical Skills (Nav/Sail/Sea) exceeds the sum of the Nautical Skills of an opposing fleet. For example, a fleet with Nav/Sail/Sea of 10/11/12 versus a fleet with 6/6/6 increases the damage it does to the 6/6/6 fleet by 15% (10+11+12 = 33 vs 6+6+6 = 18). Nautical Skills (Nav/Sail/Sea) now affect Naval Combat, not just Naval Movement. The Royal Navy proved on many occasions, superior Nautical Skills provided decisive advantages in fleet vs fleet combat.
Summary	*Combat Boost - Naval combat damage is increased*

Name	**Sailing 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	Heart of Oak (Navigation research) Heart of Oak (Sailing research) Heart of Oak (Seamanship research)
Description	Allows Specialists. Specialists double production in the chosen field. 1 Specialist Sailor performs the work of 2 when assigned as crew members of a fleet. Players must show assigned Specialists as effective workers. On completion, the tribe gains an additional +3 to Sailing (Sailing 10 becomes Sailing 14 instead of Sailing 11).
Summary	*Skill Level Increase - Sailing, allows specialists*

Name	**Two Hex Ferry**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Once completed, this research topic allows a ferry to operate across two hexes of Ocean and/or Lake. All ferrying rules apply as written, except that it cost 16 MP's per ferry trip (crossing two hexes) rather than 8 MP's per trip (crossing only one hex).

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Summary	*Ferries may cross two hexes of lake or ocean instead of 1*

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Salting

Name	**Salt Panning**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	The effect is to create a Salt mine in any one Prairie hex that the Clan chooses. This cannot be an existing Village site nor can Villages be built in this site.
Summary	*Clan may turn a nearby Prairie hex into a Prairie hex with a salt mine*

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Sanitation

Name	**Camp Sanitation**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Any active or warrior or slave within the tribe (or any of its element) may serve as sanitation workers for other tribes/elements of the Clan in the same hex. Assuming that 3999 knows Camp Sanitation, this is ordered: **Activity** **Commodity** **Quantity** **People** **Note** Sanitation Sanitation Worker - xxx 0999, 1999e1 and 2999 Notes identifies the other tribes/elements being supported. Xxx identifies the number of sanitation workers which must equal 0.5% of the total population of the tribes/elements/fleets being supported. Note that neither the supporting tribe (element) or the tribes/villages/elements/garrisons being supported are allowed to move and that all involved must be in the same hex. All involved must belong to the same clan. **Benefit:** The supported tribes/elements, for all intents and purposes, have the same Sanitation skill as the Tribe supplying the sanitation workers (useful when under Siege). Supported tribes also benefit from sanitation research topics known by the supporting Tribe. This does not effect population growth. Players need to indicate if changes occur as a result of completing the research.
Summary	*All units of the Clan share the same Sanitation as this Tribe*

Name	**BioWar**
DL	8
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	BioWar allows a force that's besieging an enemy village to hurl diseased carcasses, rotten offal and the like into the village under siege. A high Sanitation skill is needed by the besieger in order to handle such diseased material safely without infecting itself. Each turn that a village is under siege by a force that knows BioWar, there is a chance that the Village's SAN rating is reduced. Village Information | Chance | Effect Palisade | 66% | Village's SAN rating reduced

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	10’ or 15’ Stone Walls		by 1.
	20’ or 25’ Stone Walls	50%	Village’s SAN rating reduced by 1.
	30’ or higher Stone Walls	33%	Village’s SAN Rating reduced by 1

When a Village under Siege has its SAN rating reduced to BELOW zero (-1 or lower), it loses the ability to produce new potable water within its walls. This means that all wells are considered polluted and thus cease to produce potable water.

However, a jetty into a source of fresh water (Lake or River) is NOT affected by BioWar.
Existing water supplies (cisterns, containers, etc) are not affected.
The existing supplies (and Fresh water Jetties) allow resistance to continue.
However, if and when they are exhausted, the Village under siege surrenders.

If and when a siege is broken, the Village’s SAN rating immediately returns to full normal value (e.g. equivalent to its full, unreduced SAN skill).

Summary	*Slowly reduce target siege victim's Sanitation rating forcing a surrender*

Name	**Sewers**
DL	8
Pre-Req	Sanitation 6 (Group C skill) Eng 10 (Group C skill) Home City established University (Building)
Recipe	Sewers: People 1250, Eng 9, San 6, Stn 8, Stones 5000, Logs 500
Leads To	N/A
Description	Engineering / Stonework activity **Sewer Requirements:** 2) **Water Access:** Note: Sewers may only be built at sites adjacent to water (River, Lake, Ocean) or Swamps. **Benefits:** Sewers serve all Tribes of one clan in the site. 3) **Siege Protection:** Sanitation skill is increased by 4 during Sieges. This does not allow Specialists (that would require Sanitation 11 research). 4) **Population Boost:** Improves Population growth (0.5%) similar to Hospital. Sewers may be built for other Clans but they require the Sewers research to utilize.
Summary	*New Building - Sewers, Tribe with this research and building gains Population growth*

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Name	**Siege Sanitation**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Siege Sanitation counters BioWar by modifying the Effect Table as shown below:

Village Information	Chance	Effect
Palisade 10’ or 15’ Stone Walls	17%	Village’s SAN rating reduced by 1.
20’ or 25’ Stone Walls	8%	Village’s SAN rating reduced by 1.
30’ or higher Stone Walls	0%	Village is immune to BioWar

Summary	*Counters BioWar*

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Scouting

Name	**Expanded Scouting**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Allows a Tribe to employ 16 Scouting Parties if and only if 12 of these parties use the same scouting orders as last turn and these orders are marked in red as required. The four scouting parties that can be changed from turn to turn must all come from one single unit of the Tribe. The remaining 12 scouting parties that must remain the same must come from two other different units of the tribe. Note there will need to be ONE month a year when the player sets up (or resets) his scouting parties for the rest of the year. On this ONE month, new orders can be issued to all scouting parties.
Summary	*Allows 16 Scouting parties in tribe instead of 8.*

Name	**Extra Movement 1**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	Extra Movement 2 (Scouting research)
Description	Scouts may move an extra 2 MV points. May not be used for Locating (that is, units with this research may NOT Locate). Can be used for Raiding. Note: when Elements are created this modifier needs to be added manually – so you will need to let me know.
Summary	*Allows scouts to move farther*

Name	**Extra Movement 2**
DL	4
Pre-Req	Extra Movement 1 (Scouting)
Recipe	N/A
Description	Scouts may move an extra 2 MV points (that is, 4 all up). May not be used for Locating (that is, units with this research may NOT Locate). Can be used for Raiding.
Summary	*Allows scouts to move even farther*

Name	**Site Survey I**

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DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	Site Survey II (Scouting research)
Description	A detachment of scouts can identify the best part of the hex in which to build your civilization (the Scouts act on behalf of the Clan*). This allows them to get a very accurate 'feel' for the hex they plan to build fortifications on. Once they have finished researching, they may begin to survey the hex. This would entail measuring the height of hills, digging to find underground rock ledges, etc. Notes: 1-this research retrospectively "updates" a fortification already built. 2-the bonuses only apply to the Clan with SS research (that is, you cannot build the Fortification for another Clan). It applies to all units in the Clan. 3-This bonus applies to villages, Home City and Local Support Settlements that belong to the Clan with the research topic. The net effect is to increase the defensive bonus of the site by 10%.
Summary	*Combat Boost - Fortification Bonus increased by 10% for all Clan villages.*

Name	**Site Survey II**
DL	5
Pre-Req	Site Survey I (Scouting research) Tactics 4 (Group B skill)
Recipe	N/A
Leads To	N/A
Description	Having used Site Survey I to identify the best part of the hex in which to build your main Village and thoroughly surveyed the hex in question – measuring the height of hills and depths of valleys, digging to find underground rock veins and ledges, etc, - your clan may not study how to use the terrain to defend the hex and others like it. Notes: These bonuses only apply to the Clan with Site Survey research (that is, you cannot build the Fortification for another Clan to gain the benefits). Benefits: • Military Morale: When defending the hex with the Home Village/City, all units within the Clan gain +0.03 Military Morale for the duration of that battle. • Terrain Proficiency: The Clan gains +2 Terrain Proficiency for the Terrain Type that the Home Village/City is located.
Summary	*Combat Boost - Morale boost / Terrain Prof when defending Home City*

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Name	**Scout Post**
DL	8
Pre-Req	N/A
Recipe	Scout Post: People 2k, Eng 6, Sct 6, Stn 6, Stone:10k, Cloth:100, Lamp:6 Upkeep: Yearly / 8 Oil + 8 Cotton
Leads To	N/A
Description	A Scout Post is a building that provides additional support to scouting groups and command chains that are part of a garrisoned unit. This research provides the Tribe that holds the research the ability to build Scout Posts in villages that have at least one garrison from the Clan. One garrisoned unit in that village gains the ability to operate additional scouting groups that may not be changed each month. Benefit: One Garrison at the village with the Scout Post, from the same Clan, gains 8 additional scout groups which may Patrol or Locate. These Scout Groups do not count towards the standard limit of the Tribe. Requirements: A Scout Post must be built in a village that is occupied by a Garrison of the same Clan. A Scout Post requires a yearly upkeep of 8 Oil and 8 Cotton The 8 bonus Scout Groups provided by the Scout Post may only be changed once per in-game Calendar year (813, 814, etc). The Garrison operating the Scout Post needs to have at least Scout 6 skill level. The Garrison unit that gains the extra scout groups may only use those 8 scout groups and not any further from other sources. (It cannot send out 9 or more scout groups). Scout Posts may not be built or operated by other Clans, but may be operated by other Tribes.
Summary	*New Building - Scout Post, Allows Units at a Scout Post to have their own 8 Scout Groups*

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Seamanship

Name	**Heart of Oak**
DL	5
Pre-Req	Navigation 11 (Navigation research) OR Sailing 11 (Sailing research) OR Seamanship 11 (Seamanship research)
Recipe	N/A
Description	A Fleet with Heart of Oak gains a 1% advantage (Damage done to its opponent is increased) per point of difference when the sum of its Nautical Skills (Nav/Sail/Sea) exceeds the sum of the Nautical Skills of an opposing fleet. For example, a fleet with Nav/Sail/Sea of 10/11/12 versus a fleet with 6/6/6 increases the damage it does to the 6/6/6 fleet by 15% (10+11+12 = 33 vs 6+6+6 = 18). Nautical Skills (Nav/Seail/Sea) now affect Naval Combat, not just Naval Movement. The Royal Navy proved on many occasions, superior Nautical Skills provided decisive advantages in fleet vs fleet combat.
Summary	*Combat Boost - Increases Naval Combat damage*

Name	**Seamanship 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	Heart of Oak (Navigation research) Heart of Oak (Sailing research) Heart of Oak (Seamanship research)
Description	Raises Seamanship skill to 11.
Summary	*Skill Level Boost - Seamanship, does not allow specialists*

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Seeking

Name	**Bush Lore**
DL	1, 2, 3, etc.
Pre-Req	Bush Lore 1: None Bush Lore 2: Bush Lore 1 ….
Recipe	N/A
Leads To	N/A
Description	Bush Lore adds levels to your Seeking Skill. Bush Lore 1 adds one level (for example, Seeking 10 to Seeking 11), Bush Lore 2 adds 3 levels (for example, Seeking11 to Seeking 14), Bush Lore 3 adds 5 levels (for example, Seeking 14 to Seeking 19). Once Bush Lore 1 Research Topic has been achieved, the Tribe may learn a new skill, Bush Lore (Group C). Once Bush Lore skill reaches 10, further Bush Lore research topics (4,5,6....) may be researched. Each Bush Lore research topic (4, 5, 6....) adds 6 Levels to the Seeking skill. Books may be written.
Summary	*Skill Level Boost - Seeking, New Skill - Bush Lore*

Name	**Elephants**
DL	3
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	This research allows Seeking of Elephants during Spring 01. Players with this research should utilize the Seeking spreadsheet "Rich Seeking A" section for determining Elephants gained through this research topic. Elephants: equal 60 provs, 6 skins, 12 gut, 12 bones. Requires 2 people to skin, 1 to gut, 1 to bone. They require 50lbs water, 12 fodder when these are required, for example, in siege, desert, snow etc. Elephants: carry 1000 unridden (800 ridden by 1 person – or 3 people may ride with no gear) Uses 10 yards space during siege. 1 herder herds 5. Elephants may carry (one) Ballistae/Wagons. However, a single elephant may carry only one of these items. **Note:** Elephants may not carry Wagons/Ballistae into terrain not normally accessible to these items.

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	If you run out of provs you will eat any animals in the following order: Goats, Cattle, Horses and Elephants.
Summary	*Yearly allows seeking of Elephants*

Name	**Exotic Seekers**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Seekers can be allocated to seek out exotic and unusual goods according to normal Seeking rules. Seekers of the exotic will find some unknown amount of a random exotic good. Players may choose 4 exotic items in addition to normal Seeking. Players need to indicate in their Transfer summary from the Seeking table.
Summary	*Seeking Boost - Gain some quantity of 4 exotic items. Work with GM to determine.*

Name	**Exotic Seekers II, III**
DL	Exotic Seekers II: 2 Exotic Seekers III: 6
Pre-Req	Exotic Seekers II: Exotic Seekers (Seeking research), Experienced Seekers (Seeking research) Exotic Seekers III: Exotic Seekers II
Recipe	N/A
Leads To	N/A
Description	Seekers can be allocated to seek out exotic and unusual goods according to normal Seeking rules. Increases the number of exotic items that the Clan may find through Seeking. Exotic Seekers II adds +2 (for a total of 6 exotic items) and Exotic Seekers III adds a further +2 (for a total of 8 exotic items). Players need to indicate Exotic Seeker finders in their Transfer summary from the Seeking table.
Summary	*Seeking Boost - Gain more exotic items.*

Name	**Experienced Seekers**
DL	2
Pre-Req	N/A

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Recipe	N/A
Leads To	N/A
Description	Knowing the likely places to look increases Seeking efficiency. Any tribe that is Seeking the same items in the same hex as the previous year and has completed experience Seekers research will get double the seeking return they would normally get. Works before any other Modifiers. Works with Rich Seeking special hexes.
Summary	*Seeking Boost - Gain twice what you received last year, this year, if you seek same place*

Name	**Seek Herbs**
DL	*See Healing
Pre-Req	*See Healing
Recipe	*See Healing
Leads To	*See Healing
Description	*See Healing
Summary	*Seeking Boost - Allows seeking of more herbs*

Name	**Seek Population**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	*See Healing
Description	When performing Seeking of Actives, a Tribe with Seek Population gains a number of Inactives equal to the number of Actives gathered through Seeking.
Summary	*When you seek and gain Actives, you also gain some Inactives.... At least they breed.*

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Security

Name	**Bodyguards**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Bodyguards must number at least 12 Warriors (they are deemed to be dispersed amongst Leaders, Guild Leaders etc). Any sort of an assassination attempt against the Tribe (or any of the Tribe's Elements) receives a 20% penalty. Bodyguards can make use of up to 5 Guard Dogs. Each Guard Dog provides a further 10% reduction. Thus bodyguards with 5 Guard Dogs would reduce a 50% chance of a successful assassination to 20%. One Tribe in the Clan may deploy Bodyguards to other Tribes in the Clan.
Summary	*Protects against Assassination.*

Name	**Fast Response Security I**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	Fast Response Security II (Security research)
Description	10% of assigned Defenders can act as Security.
Summary	*Get an automatic Security detail when declaring defense*

Name	**Fast Response Security II**
DL	4
Pre-Req	Fast Response Security I (Security research)
Recipe	N/A
Description	A further 10% of assigned Defenders can act as Security in Battle.
Summary	*Get more security detail when declaring defense*

Name	**Fast Response Suppressors**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	50% of Suppressors may participate in combat, offensive or defensive.

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Summary	*Some of your Suppressors can assist in combat.*

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Sewing

Name	**Brocade**
DL	5
Pre-Req	Sewing 10 (Skill)
Recipe	10 Brocade: People 2, Wv 4, Sew 10, Silk 10, Cotton 100
Leads To	N/A
Description	Brocade may be sold for Gold (and other valuable commodities) at NPC towns (not at Fair). 2 people using 10 Silk and 100 Cotton produce 10 Brocade (which will sell for around 5 Gold). Only 2 people per Tribe with Sew10 may produce Brocade each month. The development of the Loom will improve efficiency markedly. **Weight: 10lbs**
Summary	*New Item - Brocade, Sell it at fair...for gold.*

Name	**Medicine Tent**
DL	6
Pre-Req	N/A
Recipe	1 Medicine Tent: People 3, Sew 7, Cloth 5, Log 2, Iron 1, Coal 5
Leads To	N/A
Description	Medical Tents are part of the Battlefield Support roles' equipment. They are large tents where trained and untrained healers may work despite the chaos outside or inclimate weather. **Requirements:** One Medic Tent is required per 100 Warriors participating in a battle. If there are not enough tents, then no bonus is provided. **Benefits:** 1. **Healing Skill:** Adequate Medic Tents provides a +2 to the averaged Healing skill value for this combat. 2. **Battlefield Medicine:** Additionally, if the Tribe using the Medical Tent has Battlefield Medicine, then a further +2 to the averaged Healing skill value is provided for this combat. 3. **Barber Surgeons:** Increases the Inactives gained by 5%. **Notes:**

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	Medical Tents may be used without the Medical Tent research topic but it only provides the +2 to the averaged healing skill. Weight: 100 lbs
Summary	*Combat Boost - New Item - Medical Tent, Bonus to Healing and Barber Surgeons*

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Shipbuilding

Name	**Barge Poles**
DL	2
Pre-Req	N/A
Recipe	1 Barge Pole: People 4, Wd 6, Mtl 4, Logs 1, Iron 10, Bones 10
Leads To	N/A
Description	Barge Poles are highly decorative but functional poles used by barge-hands (Barges) to move through swamp as if it were water. A Barge with one Barge Pole per Crewmember may treat a Swamp hex as Lake and Swamp hex sides as River for the purposes of barge movement (ferrying) and Special Barge Movement. Each hex of Swamp counts as 2 lake hexes for movement costs and each Swamp hexside counts as 2 river hexsides. Barge Poles have no effect on non-barge ship movement. Weight: 20 lbs each *The bone decorated poles help to ward off the evil spirits that congregate around the swamps while the barges traverse the fetid waters.*
Summary	*New Item - Barge Poles, Allows special barge movement through swamp hexsides*

Name	**Felucca Class I, Felucca Class II**
DL	6, 2
Pre-Req	Felucca Class I: N/A Felucca Class II: Felucca Class I (Shipbuilding Research)
Recipe	1 Felucca I: People 215, ShB8, Wdw8, Mtl6, Logs 250, Brass 75, Coal 300, Sheath 200, Leather 50, Rope 15, Cloth 40, Oars
Leads To	N/A
Description	A faster version of the Longship - 58MV (Sail), 54MV (Row). Weight 18000, No ram. Crew 10 (8+2), Maximum people 40 (or 6000 lbs of cargo on deck with NO livestock) + 1500 cargo below deck. MEF 6 Damage points: Hull 30, Sails 25 Defense points: 32 Cannot carry Catapults, but may carry Ballistae Movement bonus only applicable for fleets composed entirely of Felucca.

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	Once Felucca Class I is researched, Felucca Class II may be researched. Felucca Class II increases Felucca speed to Base 66MV (Sail) and 62 MV (Row)
Summary	*New Ship - Felucca, they're like Longships but faster and sleeker*

Name	**Trawler**
DL	See Fishing
Pre-Req	See Fishing
Recipe	See Fishing
Leads To	See Fishing
Description	See Fishing
Summary	*New Ship - Trawler, trawlers increase the effective fishers.*

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Shipwright

Name	**Drydock**
DL	4
Pre-Req	N/A
Recipe	1 Drydock: People 130, Eng 6, Wdw 10, Logs 250, Iron 50, Coal 200, Rope 100
Leads To	N/A
Description	**Description:** An extension of the Shipyard, a Drydock allows more pulleys and lifts for the workers to utilize making them more effective shipbuilders. **Creation:** Building a Drydock is an Engineering activity. **Benefit:** Each worker utilizing a Drydock does the work of 1.5 effective workers (+0.5 EW) for Shipbuilding work. A Drydock may be utilized by up to 100 Workers simultaneously. Examples: 1 Worker, 1 Drydock = 1.5 Effective worker 2 Workers, 1 Drydock = 3 Effective workers 100 Workers, 1 Drydock = 150 Effective workers 200 Workers, 1 Drydock = 250 Effective workers
Summary	*New Building - Drydock, allows more efficient shipbuilders*

Name	**Increased Productivity I**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	Increased Productivity II (Shipwright research)
Description	3 workers assigned to Shipwright do the work of 4. Note: this research appears as **ShipW 25** (pls show as this in your Orders)
Summary	*33% increase in shipbuilding effectiveness*

Name	**Increased Productivity II**
DL	6
Pre-Req	Increased Productivity I (Shipwright)
Recipe	N/A
Leads To	Increased Productivity III (Shipwright research)
Description	2 workers assigned to Shipwright do the work of 4. **ShipW 50**
Summary	*100% increase in shipbuilding effectiveness*

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Name	**Increased Productivity III**
DL	8
Pre-Req	Increased Productivity II (Shipwright research)
Recipe	N/A
Leads To	N/A
Description	1 worker assigned to Shipwright do the work of 4. **ShipW 75**
Summary	*300% increase in shipbuilding effectiveness*

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Siegecraft

Name	**Fill Moat-Ditch**
DL	3
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	**Bonus:** • Fill in Ditch: A Force that is besieging a Village (is successfully enforcing DEVA) may attempt to fill in a Village's ditch and remove its defensive benefits. 5 AM of labor fills in two (2) yards of ditch. • Fill in Moat: A Force that is besieging a Village (is successfully enforcing DEVA) may attempt to fill in a Village's moat and remove its defensive benefits. 5 AM of labor fills in one (1) yard of moat. • Implements: This activity counts as a digging activity and implements / bonuses that affect digging will be effective. Shovels provide +1 AM to output, Wheelbarrows provide +0.5 AM and so forth for other tools that increase the effectiveness of labour doing engineering. **Requirements:** • Work Force: Any available labor may be used (Warriors, Actives, Hirelings, Slaves, Locals, Auxilaries, etc) however 25% of the AMs must be provided by Warriors (or Mercs). In essence, 1 Warrior is used to prevent three other laborers from running away. • Vulnerable: The labor ordered to fill-in the moat / ditch are vulnerable to one full phase of Ranged combat. Run combat as normal but only the ranged phase occurs. ○ All other factors involved in combat are allowed (Drawbridge, Gatehouse, Barbican, Siegecraft, Soldiers, etc). **Notes: N/A**
Summary	*Pre-Combat Activity – Fill in moats/ditches in exchange for taking ranged damage*

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Name	**Sweep the Walls**
DL	3
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	**Bonus:** • Limited Assault: A force that is besieging a Village (is successful enforcing DEVA) may order an Assault that consists of **only** the Ranged phase of combat in an attempt to sweep the walls of defending troops. This is conducted as a normal assault but ends immediately after the ranged phase is completed. No melee combat occurs. • Follow-up Assault: Immediately after the Limited Assault a second Ranged phase occurs in which both sides fire ranged/heavy weapons again. **Requirements:** **Restrictions:** • **Defensive Fortifications / Abilities:** Defender forces receive the full benefits of his/her defenses, except that the benefits of Moat/Ditch are not factored in as they provide no protection against ranged weapons. All other siege and/or assault factors apply such as AA and AD terrain preferences, Siegecraft, Gatehouse, etc. • **Counter Assault:** Prior to Sweep the Wall going into effect, the Defender may choose to emerge from behind his/her defenses with some of his forces and fight a Field Battle. **Notes:** • If the attacker has completed and is utilizing both Fill Moat-Ditch and Sweep the Walls, the Fill Moat-Ditch may be undertaken during the Follow Up assault (2nd Ranged Phase) to take into account the reduced defenders.
Summary	*Pre-Combat Activity – Ranged Combat phase only.*

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Siege Equipment

Name	**Catapult**
DL	5
Pre-Req	N/A
Recipe	1 Catapult: People 15, Seq6, Log 10, Coal 30, Iron 2, Rope 4
Leads To	N/A
Description	6 people to operate. Weigh 1000 lbs. Treated as Wagon in terms of MV restrictions The attacking force can only assign 1 Catapult per 20 yards of fortifications*. Each Catapult uses 5 stones during the combat. The effect is to reduce the defenders defensive factor bonus by 10% at HvyW0 and 20% at HvyW10. (see under Trebuchet for more details) • only one piece of Siege Equipment may be assigned per 20 yards of wall. Weight: 1000 lbs
Summary	*New Item - Catapult, high power siege equipment*

Name	**Trebuchet**
DL	~~7~~ 5
Pre-Req	N/A
Recipe	1 Trebuchet: People 30, Seq 7, Logs 15, Rope 4, Iron 2, Coal 30, Stones 100, Silver 500
Leads To	N/A
Description	10 Warriors to operate. Cannot be moved from hex in which it is built; weigh 3000 lbs. They are a powerful indirect firing siege weapon that do damage to Walls. Each Trebuchet uses 5 stones during the combat. The effect is to reduce the defenders defensive factor bonus by 15% x (1 + HW skill/10) (or part thereof). For example, a 120 yard fortification can have a maximum of 6 Trebuchets assigned and will reduce defensive factor by 20% at HeavyWeapons 10. However, if only 3 Trebuchets are assigned the defensive factor will be reduced by 10%. Only applicable vs walls. Cannot be moved out of hex.
Summary	*New Item, Trebuchet, high power siege equipment*

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Name	**Siege Cannon**
DL	8
Pre-Req	Blasting Jar(Alchemy) Metalworking 8 (Skill)
Recipe	1 Siege Cannon: People 35, Seq10, Mtl8, Bronze 1250, Coal 7500, Logs 10, Gold 20
Leads To	N/A
Description	(*Blasting Powder is a research prequisite for Siege Cannon, that is, the knowledge to do Siege Cannon requires knowledge of how to make Blasting Power and so Blasting Power research is required by the maker of Siege Cannons.) The attacking force must assign at least 1 Siege Cannon per 20 yards of fortifications for full effect. Each Cannon uses 5 Cannon Balls during the combat. The effect is to reduce the defenders defensive factor bonus by 20% x (1 + Artillery skill/10) (or part thereof). For example, a 120 yard fortification can have a maximum of 6 Siege Cannon assigned and will reduce defensive factor by 40% at Artillery 10. However, if only 3 Siege Cannon are assigned the defensive factor will be reduced by 20%. Only applicable vs walls. Cannot be moved out of hex. **Ammo:** 1) Blasting Jar (Qty 5): Base defensive factor bonus reduction is 20% 2) Cannon Balls (Qty 5) Operation Skill: With completion comes a new skill "Artillery" (which replaces HvyW as the relevant skill). Artillery (Group B), which can be taken by any Tribe in the Clan. That is, if a Tribe in the Clan has completed Siege Cannon then any Tribe in the Clan can take the Artillery Skill. If the weapon is transferred to another Clan (without Artillery Skill) then HvyW10 is required to fire. HWpns10 = Artil0 To Fire: 1 Blasting Jar (or better), Cannon Ball (30 lead). Crew: 10 https://en.wikipedia.org/wiki/Cannon Weight: 2000 lbs
Summary	*New Item - Siege Cannon, highly advanced siege equipment*

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Skinning

Name	**Slaughter House**
DL	3
Pre-Req	N/A
Recipe	Slaughter House: People 104, Logs 200, Iron 20, Coal 100
Leads To	N/A
Description	Can be researched under Skinning, Gutting or Boning. A Slaughter House includes fencing, building and tools to increase the number of animals that can be processed by people doing skin/gut/bone. One Slaughter house requires 200 Logs, 20 Iron, 100 Coal. One Slaughter House is required per 100 people using it. People using a Slaughter House can process four times as many animals as usual. You would assign four times as many people (that is, use equivalent people) as are allowed by your levels (though they only count as quarter against your people usage). If all are equipped with Knives then the equivalent workers are eight fold. Skin10, Gut10 and Bon10 are all required to use the SH.
Summary	*New Building - Slaughter House, Every Skin/Bone/Gut person counts as 4 people.*

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Slavery

Name	**Janissaries**
DL	8
Pre-Req	Combat 10 (Skill) Leadership 10 (Skill)
Recipe	N/A
Leads To	N/A
Description	A Janissary can only fight as an Infantry unit. Attributes of Janissaries: • Ongoing maintenance of 1 Jade paid per year in month 12 per Janissary sent via transfer. If funds are not available, the Janissary will leave. • Janissaries have a Combat Factor of x2.4 Infantry, meaning they perform as if they were 2.4 Infantry. • Slaves are converted to Janissary and once converted may do nothing else. • Janissary may not comprise of more than 25% of a Tribe's total Warriors. • For example, a Tribe with 1200 Warriors may have up to 300 Janissaries. If this Tribe were involved in combat, it would be able to assign 400 troops to combat. However, up to 300 of these could be Janissaries. • Janissaries and Knights may not participate in the same combat (on the same side).
Summary	*Combat Boost - Janissaries are ex-slaves who become exceptional fighters, expensive*

Name	**Overwork**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Slaves can be overworked, they need a overseer with a Whip per 10 slaves (see Leatherwork). Slaves will be 20% more productive. You need to show the equivalent figure in Orders, and the number of Whips. For example, 120 Slaves (for 100 plus 10 Whips). No deaths result.
Summary	*Extra work out of the captives provided you have a whip*

Name	**Press Gang**
DL	6
Pre-Req	N/A

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Recipe	N/A
Leads To	N/A
Description	Once per year you send out Scouts with “enslave” orders (1 group per Clan), and they attempt to enslave any locals they run into. A Scout may take one Slave (two with Shackles) up to a maximum of 300 Slaves.
Summary	*Your scouts go out looking for voluntolds who become your forced labor crews.*

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Spying

Name	**Avoid Security**
DL	5
Pre-Req	Scouting 10 (Skill) Spying 10 (Skill)
Recipe	N/A
Leads To	N/A
Description	Once this research is completed, scouts sent out by this Tribe (or its Elements/Fleets) gain an advantage in avoiding detection by any/all security/suppression orders given by other Clans. The Scouting & Security skill of the other clans is REDUCED by half (rounded up) of the Spy skill of the scouts' Tribe. For example, Tribe 9933 (with Sct=10 and Spy=10) knows Avoid Security and sends out scouts that enter a hex being suppressed by security forces from Tribe 8222. Tribe 8222 has Sct8 and Sec9. However, Avoid Security means that 8222's SCT=8 is reduced to 4 and its SEC=9 is reduced to 5, when 8222's Suppressors attempts to detect 9933's scouts. Rationale A Tribe that has mastered both SCT and SPY skills should be able to use its spying capabilities to enhance its scouting. Spies know how to act like local yokels, wandering minstrels, or other "innocents". This research is the training of the Tribe's warrior scouts with the spy's ability to act like an "innocent". Proposed by Steve Simmons
Summary	*Helps your spies avoid the target's security forces.*

Name	**Cross Training**
DL	5
Pre-Req	Security 10 (Skill), Spy 10 (Skill)
Recipe	N/A
Leads To	N/A
Description	A Tribe must possess both Sec=10 and Spy=10 skills before it is allowed to attempt this research. Once this research is completed, the tribe's Sec skill is raised by one-third of its current Spy skill and its Spy skill is also raised by one-third of its Sec skill (rounded normally). This research has no other effect beyond this ONE OFF boost of a tribe's Sec and Spy skills. For example, Tribe 5583 (with Sec=10 and Spy=10) completes Cross Training. Its Sec skill is set to 13 and its Spy skill is also set to 13.

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	Rationale – Spies that have also mastered SECURITY are better spies as they fully understand security and thus how to avoid the security forces of other tribes. Similarly, Security forces that have mastered SPYING know the tricks spies use and can counter them. *Proposed by Steve Simmons*
Summary	*Skill Level Boost - Your Spies and Security force both get increased based on the other*

Name	**Identify Home City**
DL	2
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Should your attempt be successful your Scouts (that is, Spies) will tell you whether the target has a Home City in the hex in question.
Summary	*You can figure out if the village in the hex is a Home City*

Name	**Identify Militia**
DL	4
Pre-Req	Identify Home City (Spying)
Recipe	N/A
Leads To	N/A
Description	Identify Militia allows you to roughly determine the number of Militia available to a particular Home City. This is achieved by means of a Scouting party entering the HC hex with orders to "Identify Militia". The Scouting party gathers no other information and is not subject to any Suppression operating in the hex.
Summary	*You can figure out how large the Home City's militia is without a spying action.*

Name	**Infiltration**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Allows an Assaulting (attacking) force to recruit locals "get behind enemy lines" thus reducing the effectiveness of defensive fortifications by 5%. It costs 10 Gold each time it is deployed.

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Summary	*Reduce enemy's fortification value by paying off a guard.*

Name	**Spy 11**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Allows Spying Specialists to be trained in three months (same as any other specialist). They are restricted to performing scouting missions only. No other sort of activities may be performed. They cannot be transferred outside of the tribe (or its units) that developed SPY 11. A Scouting Party consisting solely of Spying Specialists gets a 25% bonus in evading detection by any/all opposing Suppression/Security/Bodyguard/etc. forces whenever they are performing a scouting mission of any/all types (Patrol, Spy, Locate, Assassinate, etc.)
Summary	*Skill Level Increase - Spying, allows specialists*

Name	**Spy Data I**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	Spy Data II (Spying research)
Description	In addition to the data normally gathered by spying (numbers of warriors assigned to defense, security, suppression) two additional pieces of data may be gathered (to within 10% accuracy where this is relevant). The player must specify each of these three additional pieces when the spying is ordered and he/she will receive this additional if and only if the spying mission succeeds (e.g. is not spotted by any suppression or security forces). These two additional pieces of data can be anything that can be easily answered by the GM. For example: What fortifications does Unit 1789 possess? What is the population of Unit 1789? What is the Eng Skill of Unit 1789? And the answers could be: Ditch 1,500; Wooden Palisade 1,500; Wooden Towers 4 2,173 8 Please note that additional data gathered through Spy Data I applies to one and only one target and this target UNIT (not entire Clan nor an entire Tribe) is the only UNIT for

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	which the additional data is report. Specifying a Target = 1789, means the additional data is provided for UNIT 1789, but Unit 1789e1 (even if in the same hex), would NOT be reported on. My intent is not to force you to add up the population of every unit with an entire tribe or clan, but rather to focus solely upon ONE, SINGLE UNIT.
Summary	*Spies get more data*

Name	**Spy Data II**
DL	6
Pre-Req	Spy Data I (Spying research)
Recipe	N/A
Leads To	N/A
Description	Works exactly like Spy Data described above but allows TWO Units to be targeted and (if successful) provide TWO reports, one for each targeted Unit if and only if both targeted Units are in the same hex. The same two pieces of data are reported for each targeted Unit. For example: What fortifications do Units 1789 and 2789 possess? What is the population of Units 1789 and 2789? What is the Eng Skill of Units 1789 and 2789? And the answers could be: 1789: Ditch 1,500; Wooden Palisade 1,500; Wooden Towers 4. 2789: None. 1789: 2,173. 2789: 432. 1789: 8. 2789: 4.
Summary	*Spies get even more data*

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Stonework

Name	**Chisel**
DL	*See Metalwork
Pre-Req	*See Metalwork
Recipe	*See Metalwork
Leads To	*See Metalwork
Description	*See Metalwork
Summary	*New Item - Chisel, increases output of quarrying and stonework*

Name	**Island Fortress**
DL	9
Pre-Req	Government Level 2 (Politics research) Castle (Politics research) Engineering 10 (Skill) Stonework 10 (Skill)
Recipe	Island Fortress 10': • People 600k, Eng 10, Stn 10, Stone 3M, Relic 1, Watch Towers 18 Upgrade to Island Fortress 15': • People 900k, Eng 10, Stn 10, Stone 4.5M, Relic 1 Upgrade to Island Fortress 20': • People 1200k, Eng 10, Stn 10, Stone 6M, Relic 1 Upgrade to Island Fortress 25': • People 1500k, Eng 10, Stn 10, Stone 7.5M, Relic 1 Upgrade to Island Fortress 30': • People 1800k, Eng 10, Stn 10, Stone 9M, Relic 1 Additionally, the Island Fortress requires at least a single Gatehouse. *Calculations: 10' is 0.5M per hexside, 15' is a further 0.75M per hexside, 20' is a further 1M per hexside, 25' is a further 1.25M per hexside and 30' is a further 1.5M per hexside.
Description	An Island Fortress may only be constructed in a single Hex that is surrounded on all sides by water, including Ocean, Lake or River. Additionally, the Hex must contain a Home City and Castle. Additional defenses may be built per standard wall rules (higher walls, crenellations, towers, gate houses, etc) but these must be built separately from such defenses held by the City itself. In addition, to get the same effect, the defenses must be built six times (one per Hex Side). Upon completion, the Island Fortress is completed. A wall of the appropriate size loops around the entire island.

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	Benefits: 6. Free Range Herding: A single Tribe or Unit in the Island Fortress has its Locals (Auxiliaries) set to 75% of the number needed to herd the current Herd held by that Unit or its Goods Tribe on Turn 1 of each year. This Unit may have no other Locals (Auxiliaries). Locals provide 75% of the herding requirements as payment for the protection the Island Fortress offers. 7. Clan gains 60 Gold and 20 'Lots' of a Desired Commodity immediately and once per year from then on out. (A Lot is the number listed in the Commodities section of the Mandate). 8. Seeking: Effective Seeking Skill is +5 for units seeking inside the Island Fortress 9. Blockade: Units that are untruced with the Clan may not enter the territory inside the Island Fortress without assault or sieging the island itself as if it were a fortified village. 10. Combat: 7. The Island Fortress' first line of defense is on the beach forcing the attacking force to make an amphibious landing within range of the defending archers. +4 to Terrain Proficiency when defending the site. 8. Standard Fortification and Siege rules apply except that the City may perform all activities (such as farming, hunting, etc). 9. Siege Equipment: Only ship mounted Siege Equipment may be brought against the Island Fortress unless the siege engine is brought onto land within range of archers. Personnel assigned to man siege equipment in such situations suffer triple potential casualties. 10. Siege Resilience: Only research level Siege equipment may have an effect against the Island Fortress. Additionally, siege equipment has only half the effect against the Island Fortress walls. 11. Local Militia: Any combat conducted in defense of the Island Fortress gains 20% additional Militia. 12. Outer Wall: The Island Fortress' outer wall may be abandoned and defense setup in normal village/city walls. Note: Multi-hex islands would require Island Fortress Expanded I research at DL2 and would allow an Island Fortress up to 7 hexes. Island Fortress Expanded II research at DL 2 (requires Expanded I) would allow an Island Fortress up to 19 hexes. Expanded III would allow up to 37 hexes. Expanded IV would allow up to 61 hexes. Finally, the largest Island Fortress would be Expanded V and would allow up to 91 hexes. Anything further falls under Great Wall research topic. The Island Fortress may be built for other Clans but that Clan must have a Home City and a Castle in that hex.

Name	**Marble Statue**
DL	3
Pre-Req	N/A
Recipe	12 People, Stn 6, Art 6, Marble 200

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Leads To	N/A
Description	Marble Statues will serve as improvements to Palace etc. Stn6 and Art6 must be held by the Tribe with the research. Bonus: Upon completing this topic, contact the GM. A Marble mine hex will be placed near your Home Village / Home City / village of choice. Weight: 500 lbs
Summary	*New Item - Marble Statue, decorates Palaces and stuff*

Name	**Scraper (Stone)**
DL	4
Pre-Req	N/A
Recipe	1 Scraper: People 1, Stn2, Stone 1
Leads To	N/A
Description	Coded Doubles rate for bark stripping.
Summary	*New Item - Scraper, increases output of generating bark*

Name	**Sewers**
DL	8
Pre-Req	Sanitation 6 (Group C skill) Eng 10 (Group C skill) Home City established University (Building)
Recipe	Sewers: People 1250, Eng 9, San 6, Stn 8, Stones 5000, Logs 500
Leads To	N/A
Description	Engineering / Stonework activity **Sewer Requirements:** 3) **Water Access:** Note: Sewers may only be built at sites adjacent to water (River, Lake, Ocean) or Swamps. **Benefits:** Sewers serve all Tribes of one clan in the site. 5) **Siege Protection:** Sanitation skill is increased by 4 during Sieges. This does not allow Specialists (that would require Sanitation 11 research). 6) **Population Boost:** Improves Population growth (0.5%) similar to Hospital.

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	Sewers may be built for other Clans but they require the Sewers research to utilize.
Summary	*New Building - Sewers, Tribe with Sewers and building gets population growth bonus*

Name	**Stone Fords**
DL	5
Pre-Req	N/A
Recipe	Ford to River: Eng 3, Stn 4, People 500, Stone 2500 River to Ford: Eng 6, Stn 8, People 2000, Stone 10000
Leads To	N/A
Description	Engineering / Stonework activity Fords to Rivers (Eng 3, Stn 4 if using Joint Project) [Removing ford and shoring up bank] 500 AM with Stone 2500 can convert a Ford into a River Rivers to Fords (Eng 6, Stn 8 if using Joint Project) [Building up the ground across river] 2000 AM, Stone 10000 can convert a River into a Ford Note: while both of these take effect at the end of the turn unless you are the builder, you should not assume they will be present during your MV Orders. For example, if your MV is processed before a Ford is built (by another Clan) no ford will be shown at the time of your MV and you will not be able to cross. In short, you should not make your MV depend upon the completion of a Ford in the turn.
Summary	*Use stone to build or remove Fords*

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Tactics

Name	**Ambush**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A

Description	Once completed, Ambush allows a unit that has access to Ambush to attempt to ambush any enemy unit(s) it has combat with.
	
	Benefits:
	• **Casualties:** A successful Ambush allows the Ambusher one free missile round. Only the unit that has the successful Ambush gets to fire missiles.
	• **Enemy Tactics Skill Reduced (Limited):** For determining a successful Ambush, the enemy Unit's Tactics skill is reduced by 2 if the enemy does not also know the Ambush research. This only applies for the determination of an Ambush, not for the duration of the combat.
	
	Restrictions:
	• **Ambush Success Check:** Determining the success of an Ambush is based on the total Tactics skill of each Unit. The Unit with the higher Tactics skill has a chance to successfully perform the Ambush equal to: (Difference between Tactics Skills) * 10%. See below for Tactics skill value if in MotC.
	  ○ *For example, Unit A has Ambush and Tactics 10. Unit B does not have Ambush and has Tactics 10. Unit B's Tactics is reduced by 2 to 8. The chance of Unit A successfully Ambushing Unit B is (10-8) * 10 = 20% chance.*
	  ○ *For example, Unit A has Ambush and Tactics 10 and is attacking Unit B. Unit B has Ambush and Tactics 15. Unit B has the higher Tactics and would have a (15-10) * 10% = 50% chance of Ambushing Unit A.*
	  ○ *For example, Unit A and Unit B both have Ambush and Tactics 10. The chance of a successful Ambush is (10-10) * 10% = 0% chance. No Ambush will occur or can occur.*
	• **Meeting of the Clan Skill Value:** Any Unit that is in MotC uses the averaged value for Tactics as per standard MotC skill value calculations.
	• **Maximum Warriors:** This Ambush round is limited to a maximum of 20% of warriors in Ambushing force firing missiles except in wide open terrain such as Prairie, Arid, Desert, etc. when the maximum drops to 10% of the Warriors in the Ambushing force.
	• **Types of Combat:** Ambushes cannot be attempted in Naval Combat nor can it be used in combat involving any fortifications. Raiders, Security, Suppression and Locate may not use Ambush.

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	How to conduct an Ambush: 1. Determine Unit A and Unit B's modified Tactics skill and presence of Ambush research. 2. If either Unit does not have Ambush, that Unit's Tactics skill is reduced by 2. **(Enemy Tactics Skill Reduced).** 3. Determine the Unit that will be Ambushing and the Chance of Success **(Ambush Success Check)** 4. Determine if the Ambush is successful: Roll 1d100 and compare against chance of success. If roll is <= Chance of success, the Unit has a successful Ambush. 5. Determine the number of Warriors and the weapons / ammo being used **(Maximum Warriors)** 6. Run the Ambush missile phase per normal missile phase rules. 7. Apply casualties and remove from Combat 8. Run combat as normal starting with the standard Missile Phase.
Summary	*Combat Boost - Introduces new Phase in combat as a Ranged attack pre-Ranged*

Name	**Tactical Systems**
DL	5
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Once a tribe has completely researched Tactical Systems, it or one of its units, gains an advantage in battle whenever its tactics skill is higher than that of its opponent. The difference, if positive, between the tactics skill of the possessor of Tactical Systems is added to the possessor's Leadership Skill when determining the results of a battle. **Counters:** Tactical Systems cannot be used against an opponent who also possesses this research topic.
Summary	*Skill Level Boost - Tactics vs Tactics, the winner gets a boost to Ldr skill.*

Name	**Wagon Laager**
DL	6
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	A circle or wall of wagons used by Defenders (only) in the Field . Eastern Europeans and Turks started out with ordinary upturned wagons tied or chained together. In subsequent wars they turned this into an art form and had specific wagons made for the purpose with firing steps, slits etc. Their very badly trained infantry and

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	peasant levies held firm behind these "walls" until way into the 18th Century, when enough mobile artillery made them obsolete. Historically the army would seem to line up in the traditional manner, cover would then be taken up in a matter of minutes. In the context of the game, on a first encounter the opposition will be unaware and submit normal combat orders. Later on …they will have to guess! Not in mountains, Forests or Jungle. 1 wagon must be available per 10 Warriors. The effect is to increase TP by +4 when the unit has an order to "defend".
Summary	*Circle the wagons and get a Terrain Proficiency bonus when defending.*

Name	**War Games**
DL	7
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	180 (or more) Warriors may engage in War Games 3 times per year, that is, once every 4 months (requires 1 turn). Each Warrior must carry a weapon, a missile weapon and at least 2 pieces of metal armour. Losses of warriors = 20 minus Com Skill (the player should list the losses). They may do this from the Tribe or via an Element. Successful completion of the War Games results in a Terrain Proficiency for the hex in question.
Summary	*Send your Warriors out to die in the wilderness and gain Terrain Proficiency. Do it again*

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Torture

Name	**Dungeon**
DL	*See Engineering
Pre-Req	*See Engineering
Recipe	*See Engineering
Leads To	*See Engineering
Description	*See Engineering
Summary	*New Building - Dungeon, Its a place you put people to get a skill level boost to Torture*

Name	**Thumb Screws**
DL	3
Pre-Req	N/A
Recipe	1 Thumb Screws: People 1, Mtl4, Iron 1, Coal 2
Leads To	N/A
Description	Increases the memory capacity of a Torturer's clients.
Summary	*Get more information out of your forced guests.*

Name	**Treachery 1, 2, 3,…**
DL	1,2,3…
Pre-Req	Dungeons (Engineering)
Recipe	N/A
Leads To	The Rack (Torture research)
Description	Under more sustained and sophisticated torture a client will prefer to name "sympathisers" in the local area rather then pain and death. Treachery 1 DL1. You may convert up to 5 Warriors into Torturers (once per year). An Element of Torturers (1) plus at least 50 Warriors mounted with Whips and 100 Shackles) capture a likely suspect from the local population, interrogate him/her allowing the detention of 100 identified suspects indefinitely (that is, as Slaves). Allowable once per year. The Element must operate (move to) at least 12 hexes from its Home City/Meeting House and cannot operate in any "Special" hex belonging to the Clan or in any politically controlled hexes belonging to allies (including Truced players). A special Element beyond Adm requirements may be created for the purpose. **Progression (under development)**

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	Treachery 2 DL2. Same only 2 torturers, 200 warriors and 200 detainees. Prerequisite Dungeon and Treachery 1. Allowable once per year. Treachery 3 DL3. Same only 3 torturers, 300 warriors and 300 detainees. Prerequisite Dungeon and Treachery 1 & 2. Allowable once per year. *Treachery 4 DL4. Same only 4 torturers etc and requires companion research of the Rack.* *Treachery 5 DL5. Same only 5 torturers etc and requires companion research of Thumb Screws.* *Treachery 6 DL6. Same only 6 torturers etc and requires companion research of Water Torture.* *The Inquisition (DL8 maybe) - a group of torturers can... Probably requiring Treachery 3, Rel10 maybe?*
Summary	*New Element that goes out and finds some Voluntold labor to come back with them.*

Name	**The Rack**
DL	5
Pre-Req	Treachery 3 (Torture research)
Recipe	1 The Rack: People 6, Wdw 5, Iron 20, Logs 10, Silver 200
Leads To	N/A
Description	Assists in developing treacherous attitudes amongst the Locals. Weight: 200 lb
Summary	*New Item - The Rack, increases Torture output*

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Triball

Name	**Inactive Players**
DL	5
Pre-Req	Member in a Triball Guild
Recipe	N/A
Leads To	N/A
Description	Inactives may perform up to one-half of the Triball activities for a Triball Guild or normal Triball silver generation during Fair. Older players are still crowd favorites and their knowledge and skills are invaluable. Just because they may no longer charge across a battlefield against barbarians does not mean they can't beat people with sticks from horseback.
Summary	*You don't need your best Warriors playing a ball game, use the useless people*

Name	**Large Teams**
DL	5
Pre-Req	Triball Guild <Triball research> Guild Master of Triball Guild
Recipe	N/A
Leads To	N/A
Description	Large Teams allows all members of a Triball Guild to assign twice as many Warriors, Horses and Clubs as normal (1,600 Warriors, Horses and Clubs) to determine Gold Generation.
Summary	*When running a Triball Guild event during fair, your guild mates can all use more players*

Name	**Off Season**
DL	3
Pre-Req	Triball Guild <Triball research> Guild Master of Triball Guild
Recipe	N/A
Leads To	N/A
Description	Triball Guild – Off Season allows members of a Triball Guild to be assign Warriors to Triball during specific non-Fair months. This works similar to the Triball Guild rules above. The specific Months that the Triball Guild may be utilized outside of Fair Months are Months 1 and 7. The cost per Gold is increased from 250 to 1,000 for the Triball Guild in these Off Season months.
Summary	*Allows Triball Guild to operate four times a year instead of two.*

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Name	**Triball Arena**
DL	5
Pre-Req	N/A
Recipe	Triball Arena: People 3k, Eng8 and Triball 10, Stone 15k Triball Arena: People 3k, Eng 10 and Triball 8, Stone 15k
Leads To	N/A
Description	During each fair the owner of a Triball arena gets a 50% bonus to the silver that they get from Triball. Think of the bonus as sales from concessions, etc. A Triball arena can be built for another Clan.
Summary	*New Building - Triball Arena, increases the payment for Triball events.*

Name	**Triball Club**
DL	3
Pre-Req	N/A
Recipe	1 Triball Club: People 1, Wd 4, Log 1, Brass 1
Leads To	N/A
Description	If members of a Triball activity are armed with Triball Clubs, then the amount of silver they generate (for Silver during fair, or for determining Gold generation) is doubled. If only part of the assigned Warriors are armed with Triball Clubs, then apply a ratioed bonus. *For Example: At Triball 10, 800 Warriors, Horses and armed with 800 Clubs, would normally generate 19,000 Silver / 250 = 76 Gold. If they were all armed with Triball Clubs, they would generate (19,000 * 2) = 38,000 / 250 = 152 gold.* *For Example: At Triball 10, 800 Warriors, Horses and only 400 Clubs and 400 Triball Clubs, they would generate (19000 * 1.5) = 28,500 / 250 = 114 Gold.* Weight: 5lbs
Summary	*New Item - Triball Club, doubles the silver/gold generation for Triball events.*

Name	**Triball Coaches**
DL	2
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	Triball Coaches research allows a Tribe that is performing a Triball activity to increase the amount of Silver / Gold generated by 20%. This increase is cumulative, but not

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	multiplicative, the bonus is added to other bonuses. *For example, with Triball Clubs and Triball Coaches, 800 Warriors with Horses and Triball Staffs would generate 19,000 * 2.2 = 41,800 Silver / 250 = 167 Gold.*
Summary	*Increases the amount of silver / gold gained during Triball events*

Name	**Triball Guild**
DL	2
Pre-Req	N/A
Recipe	1 Minor League Arena: People 1.5k, Eng 6, Tri 6, Stone 7.5k
Leads To	Large Teams (Triball research)
Description	Description: The effect of a Triball Guild, also known as a Minor League, is to allow Triball to generate to Gold instead of Silver and is structured identical to a Guild. Formation and Governance: Anyone who completes the research may choose to become a Guild Master by starting a Guild (done by informing the GM by email). Guilds are always public: the formation of new ones will be published in TribeNews and currently active ones will be listed on public TN portals. Membership of any Guild is limited to 10 Clans in total, including the Guild Master. A Clan may be a member of only one Guild of each Type (Traders Guild 20, Bargemens Guild, etc). A Clan may only be a member of one Exclusive Guild, such as Exotic Weavers Guild, though Triball Guild is not an exclusive Guild. Membership is by invitation from the Guild Master to anyone they choose, cc'd to the GM: a clear acceptance to the offer must be sent to the Guild Master, cc'd to the GM. Players may seek membership once the formal invitation is issued. The Guild Master is not obliged to accept any particular appliacton for membership. It is incumbent on the Guild Master to maintain the list of the membership in their Guild. Players may leave a Guild at any time by notifying the Guild Master by email, cc'd to the GM. Benefits to the departing player lapse effective from the date of the resignation email. Players may be voted out of the Guild via 60% of membership in favour (the Guild Master counts as two members with two votes). Any Guild may choose to write a Constitution, which must agreed with the GM. Any such document is always public knowledge and must be made available on public TN portals. It is the Guild Master's responsibility to ensure that this happens. Should a Guild Master lose the capacity to run a Guild, a deputy can be appointed by the GM from amongst remaining Guild members. This deputy may continue to run the Guild as previously run but must immediately undertake any skill development and research necessary to support it. If no-one is able to act as deputy the Guild is dissolved and all benefits are lost

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	Operation and Benefits: A Triball Guild allows Guild Members to gain the ability to assign Warriors to the Triball activity during Fair to generate Gold. This is independent of the normal Triball Activity. To participate in this activity, the Tribe must have access to a Minor League Arena. This Minor League fair activity may be performed during every Fair. A Clan may assign a maximum of 800 Warriors, 800 Horses and 800 Clubs to this special Triball Minor League. Use the standard Fair calculator for Silver generation for Triball activities. The amount of Gold that is generated by participating in this Triball Guild during Fair is the amount of Silver divided by 250, rounded down. *For Example: At Triball 10, with 800 Warriors, 800 Horses and 800 Clubs, the calculator shows it would normally generate 19,000 silver. Instead it generates 19,000 / 250 = 76 Gold.* Guild Master: For each member of the Guild, the Guild Master receives 5 Gold annually (from locals), received on turn 1 of each game year. For computational purposes, the total membership in the Guild is determined at the time the proceeding turn 12 TribeNews is published.
Summary	*New Guild - Triball, use Warriors to gain Gold during fair*

Name	**Triball Specialists**
DL	4
Pre-Req	N/A
Recipe	N/A
Leads To	N/A
Description	A Triball specialist is a warrior that has trained extensively to play triball. During fair months they cannot do anything else. They must play triball. During the other months they may guard or do warrior only acts or they may herd triball ponies. They are counted as 2 warriors for purposes of figuring silver gained at the fair. You can have a maximum of 800 Triball specialists participate in the fair.
Summary	*Allows training of Triball Specialists, double the output of silver/gold.*

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Waxworks

Name	**Fake Royal Seal**
DL	6
Pre-Req	N/A
Recipe	1 Fake Royal Seal: People 10, Waxwork 10, Gold 10, Silver 1000, Wax 5, Parchment 5
Leads To	N/A
Description	A unit attacking or defending with a Fake Royal Seal may attempt to divert 10% of the combatants (of all types) in the first enemy force it fights. If this enemy force is a MOTC, 10% of the MOTC's combatants may be diverted. The diverted combatants are not lost. They remain part of the enemy force – they simply do not fight in this one battle. For example, if the enemy force contains Combatants=1,000, 330 of these can fight (33% rule). The Fake Royal Seal diverts 10% of these 330, leaving only Combatants=297 to fight in the actual battle. The number of combatants diverted rounds up. This diversion attempt is successful if and only if a successful spying attempt is made against the enemy force. When the enemy force is a MOTC the spying attempt is made vs. the unit leading the enemy MOTC. When the attacker is trying to use a Fake Royal Seal, it is the attacker's responsibility to order the spying mission simultaneously with his(her) attack. A defender will be given a chance (when they submit combat orders) to perform the required spying mission. Peter will adjudicate this defensive spying mission immediately prior to the combat. If successful, the attacker's force will be reduced by 10%. These spying missions are adjudicated using the same rules and skills as any other spying mission. There's nothing different about them other than the effect – a diversion of 10% of the combatants when and if the spying mission succeeds. Please note that the target of a Fake Royal Seal does not know about the diversion (successful or not) when he(she) submits combat orders. If successful, the victim is told that 10% of his(her) forces were diverted by a Fake Royal Seal and thus were not present during the battle. If unsuccessful, the target captures the spies who were attempting to use the Fake Royal Seal. The seal itself is lost, but the target is told that a Fake Royal Seal diversion was attempted. Note that a unit may fight two separate battles in a single turn (Mandate 10.3). In such cases, a Fake Royal Seal affects only one enemy force fought. The clan employing the Fake Royal Seal may specify which enemy force is targeted, first or second. Even if a clan possesses more than one Fake Royal Seal, only one seal may be employed during a single turn. Also note that a force may never under any circumstances have more than 10% of its combatants diverted from a battle. **Proper use of Fake Royal Seal is <u>completely</u> in the hands of the player using it. If attacking, a simultaneous SPYing attempt against the target of the attack MUST BE ordered by the attacking player and this SPYing attempt must explicitly state that it is using a Fake Royal Seal. If Defending, the defending player orders the SPYing**

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	attempt at the same time as he/she submits his/her combat orders. Again, this SPYing attempt must explicitly state that it is using a Fake Royal Seal. The onus is on the player to employ a Fake Royal Seal in the exact manner described above. Failure to do so means no diversion will occur. Weight: 0.05 lbs
Summary	*Bluff your enemies with some wax and gold to reduce the size of their force*

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Weapons

Name	**Crossbow**
DL	6
Pre-Req	N/A
Recipe	1 Crossbow: People 4, Wpn8, Iron 5, Coal 40, String 1, Silver 30 1 Crossbow: People 4, Wpn8, Bronze 5, Coal 30, String 1, Silver 30
Leads To	N/A
Description	Crossbows are heavy arbalests; they may not be made in desert or arid terrain. Weighs 6 lbs with normal missile range. Weight: 6 lbs
Summary	*New Item - Crossbow, armour penetrating ranged weapon.*

Name	**Katana**
DL	8
Pre-Req	N/A
Recipe	1 Katana: People 3, Iron 5, Coal 40
Leads To	N/A
Description	The folding process makes the Katana sharper than normal sword. Katana is equivalent to a Steel Sword (and may be shown as this in your Report). Weight: 5 lbs https://www.quora.com/What-was-the-superior-sword-the-European-longsword-or-Katana
Summary	*New Item - Katana, its a steel sword made of iron. It penetrates armour better.*

Name	**Repeating Arbalest**
DL	5
Pre-Req	N/A
Recipe	1 R. Arbalest: People 4, Wpn9, Iron 2, Coal 25, String 1
Leads To	N/A
Description	An upgraded version of the Arbalest, the Repeating Arbalest provides additional firepower at the cost of additional quarrel use. The R. Arbalest uses up 20 quarrels in a combat but in exchange it produces about one third more casualties than a normal Arbalest. Weighs: 2lbs
Summary	*New Item - R. Arbalest, it does more damage than an Arnbalest but eats ammo.*

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Name	**Scimitar**
DL	8
Pre-Req	N/A
Recipe	1 Scimitar: People 3, Steel 5, Coke 20, Gold 2, Silver 20, Ivory 1
Leads To	N/A
Description	Curved Sword with a nice Ivory hilt used by Cavalry. A maximum of 30 people in the Clan per turn may be assigned to the making.
Summary	*New Item - Scimitar, Upgraded Sword for Cavalry.*

Name	**Ulfbehrt Sword**
DL	9
Pre-Req	N/a
Recipe	1 Ulfbehrt Sword: People 4, Steel 5, Coke 30, Gold 2, Silver 40
Leads To	N/A
Description	Top of the shelf sword used only by Infantry. A maximum of 40 people in the Clan per turn may be assigned to the making. **http://weaponsman.com/?p=11630**
Summary	*New Item - Ulfbehrt, Upgraded Sword for Infantry*

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Weaving

Name	**Basket**
DL	3
Pre-Req	N/A
Recipe	1 Basket: People 1, Wv4, Bark 5, Gut 5
Leads To	N/A
Description	A basket can double the productivity of farmers harvesting any/all crops. That is, increases the number of effective workers by 100%. May be combined with any other harvesting implement allowed for the type of crop being harvested (e.g. scythe, machete but not Harvest Bag); however the effect is linear, not cumulative (e.g. a farmer with both a scythe and a Basket will harvest 9 acres of grain, not 12). Thus a farmer with Scythe and Basket is shown as 3 equivalent Farmers. A Tobacco Farmer with Basket and Machete would be shown as 5 equivalent workers (not 8). It is incumbent on the player to show equivalent workers in Orders.
Summary	*New Item - Basket, doubles productivity of farmers when harvesting.*

Name	**Cheesecloth**
DL	3
Pre-Req	N/A
Recipe	1 Cheesecloth: People 1, Wv 10, Cotton 5
Leads To	N/A
Description	Weaving Activity (only) Coded Cheesecloth is a loosely woven, carded cotton cloth that enables infusion and filtering. In Distilling, Cheesecloth provides easier handing of the Mash and makes filtering easier. This cheesecloth is grade #40 (40 threads per inch). Research using higher grade Cheesecloth (more threads per inch) to assist with other types of activity may be proposed if this Cheesecloth research topic is a pre-requisite. 2 People using 1 Cheesecloth **each** do the work of 3 (+0.5 AM each) when performing Distilling activities. Weight: 5 lbs
Summary	*New Item – Cheesecloth, increases productivity of Distilling activities.*

Name	**Epic Tapestry**
DL	6

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Pre-Req	N/A
Recipe	1 Epic Tapestry: People 20, Cotton 5k, Silver 500, Gold 50, Diamonds 5
Leads To	N/A
Description	0.04 General Morale to owning Clan, -0.05 Morale if lost/destroyed. Bonus 0.06 Military Morale if in combat. Weight: 25 lbs Proposed by Max Nieuwenhuizen
Summary	*New Item - Epic Tapestry, increases morale unless lost then decreases morale.*

Name	**Exotic Weaving**
DL	4
Pre-Req	Art 6
Recipe	N/A
Leads To	N/A
Description	Exotic Weaving is a Village Activity (only one Tribe per Clan). Exotic Weavers may create Carpets, Rugs and Tapestries, incorporating techniques and legends unique to the region, for example, Cyberian Carpet. Each Clan can select one unique item. When sold at Fair, the items are nothing special and sell for the same price as normal Rugs, Carpets, and Tapestries (with the same limits as per a Fair). Fair Trade Multipliers do not apply. However, if sold at an Exotic Trading Post (found at some trading Towns and NPC International cities – there will usually be 3 or 4 of these and the player needs to ask the GM for their location), these Rugs, Carpets, and Tapestries bring twice the normal price (in Silver) or may be sold for Diamonds. If sold for Diamonds, the twice normal price in Silver is divided by 300, rounding down, to get the amount of Diamonds. If using Silk instead of Cotton these prices are tripled. There are Exotic Trading Posts that buy Exotic Woven items on other Continents. ITEM / SKILL / PEOPLE / COTTON/ SILK / SILVER Carpet / 6 / 12 / 50 / 10/20 Rug / 4 / 6 / 20 / 20/40 Tapestry / 8 / 25 / 100 / 25/50 Once three Tribes have completed Exotic Weaving they will be considered to be members of the Exotic Weavers Guild (an exclusive Guild). At this point the Guild must elect a Guild leader who must place a paper Element in Shanghai (without a Guild leader the Guild will collapse but may be re-established any time a leader comes forward). This

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	Element may trade as a Shanghai Element but may only deal in exotically woven goods. Should further Tribes develop the research membership in the Guild will be determined by Auction (Gold) once per year for the year. A Clan may not belong to more than one exclusive Guild.
Summary	*Access to new weaving recipes and possible formation of an Exclusive guild.*

Name	**Loom**
DL	6
Pre-Req	N/A
Recipe	1 Loom: People 5, Logs 10, Ropes 10, Parchment 100, Silver 1000, Iron 50 1 Loom: People 5, Logs 10, Ropes 10, Parchment 100, Silver 1000, Bronze 50 1 Loom: People 5, Logs 10, Ropes 10, Parchment 100, Silver 1000, Brass 50
Leads To	N/A
Description	Workers using a Loom can produce Brocade which may be sold for Gold (and other valuable commodities) at NPC towns (not at Fair). 2 people using a Loom can turn 100 Silk and 1000 Cotton into 100 Brocade (which will sell for around 50 Gold). It is unlikely that any one town will have such demand but the buying of 20-40 Brocade will be usual. Only 2 people per Tribe with Sew10 may produce Brocade each month. **Weight: 50 lbs**
Summary	*New Item - Loom, increases output of Brocade making*

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Whaling

Name	**Whaler**
DL	6
Pre-Req	N/A
Recipe	1 Whaler: People 160, ShB9, Wdw8, Mtl7, Logs 160, Brass 40, Coal, 200, Sheath 150, Silver 3000, Leather 30, Cloth 15, Rope 20, Oars
Leads To	N/A
Description	Increases size of catch (but not the chances).

ShipB	Wd	Mtl	Logs	Brass	Coal	Sheath	Silver	Leather	Cloth	Rope	O/P
9	8	7	160	40	200	150	3000	30	15	20	O

	Sail Movement					Row Movement								
Vessel Type	**MP**	**Nav**	**Sea**	**Sail**	**Crew**	**MP**	**Nav**	**Sea**	**Row**	**Crew**	**MEF**	**Sail**	**Hull**	**Max People**
Whaler	20	2	2	4	10+7	15	.5	.5	2	20+7	4	16	16	60

Defense Points: 16
Cargo: 20,000
Weight: 20,000

Summary	*New Ship - Whaler, hold over from the last game. Who knows what it does.*

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Woodwork

Name	**Barge Poles**
DL	2
Pre-Req	N/A
Recipe	1 Barge Pole: People 4, Wd 6, Mtl 4, Logs 1, Iron 10, Bones 10,
Leads To	N/A
Description	Barge Poles are highly decorative but functional poles used by barge-hands (Barges) to move through swamp as if it were water. A Barge with one Barge Pole per Crewmember may treat a Swamp hex as Lake and Swamp hex sides as River for the purposes of barge movement (ferrying) and Special Barge Movement. Each hex of Swamp counts as 2 lake hexes for movement costs and each Swamp hexside counts as 2 river hexsides. Barge Poles have no effect on non-barge ship movement. Weight: 20 lbs each *The bone decorated poles help to ward off the evil spirits that congregate around the swamps while the barges traverse the fetid waters.*
Summary	*New Item - Barge Poles, allows special barge travel along swamp hexsides.*

Name	**Hand Plane**
DL	4
Pre-Req	N/A
Recipe	1 Hand Plane: People 2, Wd 3, Iron 3, Coal 15
Leads To	N/A
Description	Woodwork Activity (only) Coded A wood and metal hand plane used for shaping wood. A worker with a Hand Plane increases Shipbuilding and Woodwork output by 50%. (1 Worker counts as 1.5 Workers) Weight: 50 lbs
Summary	*New Item - Hand Plane, increases productivity of Shipbuilding and Woodwork*

Name	**Mash Paddle**
DL	3

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Pre-Req	N/A
Recipe	1 Mash Paddle: People 1, Wd 10, Log 2
Leads To	N/A
Description	Woodwork Activity (only) Coded A Mash Paddle is a long handled paddle used to stir the contents of deep stills, making Distilling less Labour intensive. 2 People using 1 Mash Paddle **each** do the work of 3 (+0.5 AM each) when performing Distilling activities. Weight: 5 lbs
Summary	*New Item – Mash Paddle, increases productivity of Distilling activities.*

Name	**Mining Ladder**
DL	5
Pre-Req	N/A
Recipe	People 15, Wd3, Mtl3, Log 4, Iron 25, Coal 150
Leads To	N/A
Description	(Also Under Mining, Metalwork and Mining) A Mining Ladder provides a Bonus to Mining output equal to +100% to ten (10) miners and a Bonus to Digging output (Clay, canals, sand, moats, etc) equal to +100% to ten (10) diggers. This is cumulative with other implements (Picks, Shovels, Ore Carts, Seam Wedges, etc). This bonus is additive, not compounded. Example: 5 Miners with 1 Mining Ladder would count as 10 Miners 10 Miners with 1 Mining Ladder would count as 20 Miners 15 Miners with 2 Mining Ladders would count as 30 Miners 20 Miners with 2 Mining Ladders would count as 40 Miners 20 Miners with 2 Mining Ladders and 20 Picks would count as 60 Miners 20 Miners with 2 Mining Ladders, 2 Ore Carts and 20 Picks would count as 80 Miners These wood and metal ladders and ramps are used to for more advanced vertical mining and to facilitate the movement of personnel and ore up mine shafts when they occur due to following veins. These would not be standard wood ladders or ramps but would have iron reinforcement to handle the added weight of the ore and wagons. We have called it Mining Ladders research to shorten the name but it would really be both ladders and ramps. 1 Mining Ladder weighs 50 lbs.
Summary	*New Item - Mining Ladder, increases productivity of Mining for 10 miners*

Name	**Roman Crane (Also under Engineering)**

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DL	6
Pre-Req	N/A
Recipe	1 Roman Crane: People 6, Eng8, Wdw10, Logs 20, Iron 40, Rope 10
Leads To	N/A
Description	Description: Wood crane comprised of a modest size boom, a base plate, and a large diameter barrel shaped "wheel" on its side built around and attached to a centre axle (like a hamster wheel). One or more people walk inside the wheel providing mechanical power to drive the winch and thereby raising or lowering loads. Benefit: Increase worker productivity by 50% on Engineering projects and Shipbuilding so 2 workers do the work of 3. Each crane enables up to 20 workers to gain benefit. The Crane applies to raw workers that is, before other items such as Wheelbarrows. Player must show equivalent workers in their orders. Cranes are inventory item and transportable once constructed and thus may be used by Clans without the research. Weight: 300 Proposed by Brian Whitesell
Summary	*New Item - Roman Crane, Increases productivity of Engineering and Shipbuilding.*

Name	**Scaffolding**
DL	5
Pre-Req	N/A
Recipe	1 Scaffold: People 2, Wdw 6, Logs 3
Leads To	N/A
Description	Woodwork Activity A worker with a scaffold does the work of 1.5 effective workers for Shipbuilding or Engineering work. Every worker requires their own scaffold. Examples: 1 Worker, 1 Scaffold = 1 Effective worker 2 Workers, 2 Scaffolds = 3 Effective workers 100 workers, 100 scaffolds = 150 Effective workers The Scaffolding, once made, is transportable. At this stage of coding players will need to show this. For example, if you are using 20 workers with Scaffolding you would show them as 30. Scaffolds are inventory item and transportable once constructed and thus may be used by Clans without the research. Weight: 50 lbs
Summary	*New Item - Scaffolding, increases productivity of Engineering and Shipbuilding.*

Name	**Trellis**
DL	2

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Pre-Req	N/A
Recipe	1 Trellis (Acre): People 1, Eng 6, Wdw 2, Logs 1, Cotton 1
Leads To	N/A
Description	Woodwork Activity Requires Farm 6 to use Trellis to reduce AM for grape harvesting A structure to support vines and hold them in optimal position to encourage growth and enable easier harvesting of the grapes. The trellis can be installed on a vineyard (during or after planting) and then is permanently associated with that acreage. Trellis can be built for another clan if the unit is permitted into their village hex, but once built cannot be moved. The effect of a trellis is reducing the work required harvesting grapes to ¼ of normal. In other words, 1 person can harvest up to 4 acres of grapes which have trellis installed. Combines linearly with other research (so treat as +3 workers not x4, if in conjunction with other research). Players need to track the trellised acres and show effective workers adjusted for trellis in their orders, for instance show 100 workers harvesting 400 trellised acres as 400 effective workers. Weight: While the Trellis is stored as an item, it is meant to be a stationary installation. It has a heft weight and is not meant to be moved.
Summary	*New Item - Trellis, increases productivity of harvesting grapes, x4*

Name	**Wain**
DL	4
Pre-Req	N/A
Recipe	1 Wain: People 15, Wdw4, Logs 15
Leads To	N/A
Description	Woodwork Activity Holds 5000 lbs (2500 when scouting). Has same restrictions as Wagons. 4 Animals to Pull. Weight: 600 lbs
Summary	*New Item - Wain, It is a bigger wagon that requires more animals to pull.*

Name	**Wheelbarrow**
DL	4
Pre-Req	N/A

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Recipe	1 Wheelbarrow: People 2, Wdw5, Logs 2
Leads To	N/A
Description	Woodwork Activity (only) Coded A worker with a wheelbarrow increases Mining, Engineering output by 50%. Doubles Quarrying output. Weight: 50 lbs
Summary	*New Item - Wheelbarrow, Increases productivity of Mining,Engineering,Quarrying*

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Notes

Topics with multiple DL's (and others that relate DL level to the recipient) cannot be changed once commenced. For example, if you have commenced a Topic and picked the 'Affects Tribe Version' and are DL3 of 7 for the Tribe, you cannot then decide to change this to DL3 of 9 Clan wide version of that topic. Clan wide must be commenced as a separate project. However, Tribe wide is not a prerequisite for Clan wide so you can begin your research by going straight for Clan wide or Religion wide.

Capped Topics

See Tribe News

Scrolls/Relics

These will be required for some topics. A Scroll is more likely to be required for items that use materials, a Relic for items that do not. Scrolls and Relics are found around the hexes, but they are rare.

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Seaborne Trade Math

Attribute	Trade Route	SBT	BoT	Entrepot	Fast Fleets	Trusted Maps	Type of Math
Jetty Distance (Hexes)	N/A	20	x2	x2	=	=	Multiplicative
Speed (MV)	40	60	x2	=	x2 (SBT Only)	x1.5 (SBT Only)	Additive
Max Distance (MV)	120	360	Unlimited (SBT Only) 240 - (TR Only)	=	=	=	Set

Compounding Seaborne Trade Route Math

Attr	SBT	SBT+ BOT	SBT+ BOT+ ENT	SBT+ FF	SBT+ TM	SBT+ BOT+ FF	SBT+ BOT+ ENT+ FF	SBT+ BOT+ TM	SBT+ BOT+ ENT+ TM	SBT+ FF+ TM	SBT+ BOT+ FF+ TM	SBT+ BOT+ ENT+ FF+TM
Jetty	20	40	80	40	40	40	80	40	80	20	40	80
Spd	60	120	60	120	90	180	180	150	150	150	210	210
Max	360	Unlim	Unlim	360	360	Unlim	Unlim	Unlim	Unlim	360	Unlim	Unlim

Legend:
ATTR: Attribute
Jetty: How many hexes until a Jetty must be part of the route.
Spd: How fast a fleet moves along the SBT
Max: Maximum distance of the SBT.
SBT: Sea Borne Trade Route
BOT: Board of Trade
ENT: Entrepot
FF: Fast Fleets
TM: Trusted Maps or TM: Trusted Maps (Ldr)

Restricted Topics

When introduced these will be available only to Clans that have started the game more recently and/or be specific to Continents.

Orders for Research Attempts

Showing Research Topics that are yet to be started in Red is a big help to me. Your Orders might look something like this (the serious researcher will eliminate text in grey altogether):

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Tribe	Primary	Secondary	Research (with University)
0500			Politics: Government Level 3 (DL2 to DL3) Engineering: Stone Wall 25' (DL1 to DL2) Leadership: Leadership 11 (DL3 to DL4) Research: Attempting: Research Team Mining: Attempting: Mining Ladder Politics: Attempting: GL3
1500			Apiarism: Breed New Queens (DL4 to DL5) Refining: Attempting: Coke Forestry: Attempting: 6 Logs per Dancing: Attempting: Springs Arts Festival
2500			Quarrying: 7 stones per person (DL2 to DL3)
3500			Economics: Market Place (DL3 to DL4) Herding: Herding 11 (DL0 to DL1) Hunting: Attempting: Hunting 11 Music: Attempting: Springs Arts Festival

Research Topic Summary Section: This is a quick summary of each topic for quick review. The summaries are accurate only in so far as they tell the story of the research topic itself. Actual game information can be found in the research topic entry itself. The entry Description is the deciding factor as to the effect of the topic.

Administration

Administration 11

Skill Level Increase - Administration, Specialists 28

Agent

New unit type for Trade Town interaction 29

Bureaucracy 1, 2, 3….

Skill Level Increase - Administration 29

Extra Element

Extra Element but immobile 30

Extra Movement 4

Bonus Movement to Tribe and Elements 31

Extra Movement 6

Bonus Movement to Tribe and Elements 31

Alchemy

Alchemy 11

Skill Level Increase - Alchemy, Specialists 32

Blasting Jar

New Item - Boost to Digging / Canal Building and Siege Cannon effectiveness 33

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Apiarism

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Apiaries with Reusable Frames
Seeking Boost - Double Hives 35
Apiarism 11
Skill Level Increase - Apiarism, Specialists 35
Apiology I, Apiology II, Apiology III…
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Breed New Queens
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Apothecary
Hashish
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Archaeology
Exhibition
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Boosts Exhibition bonus 42
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Boosts Exhibition Bonus, Gain Silver, Coin or Gold 44
Relic
Yearly gain of Relic 44
Relic 2
Year gain of second relic 45
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Architecture
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Archery 11
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Marksmen
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Yoeman Archers
Combat Boost - Some Actives in Tribe may be used as Archers 50
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Chain Barding
New Item - Chain Barding - Saves your horses 52
Full Plate
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Fluted Plate
New Item - Fluted Plate, full body coverage, increased protection in combat for Infantry 54
Greaves
New Item - Greaves, leg coverage, increased protection over Trews 55
Plate Barding
New Item - Plate Barding, Save your horses, better than Chain 55
Astronomy
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Art
Great Work
Sacrifice Cultural skill levels for Morale 58
Heraldry
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Spring Arts Festival Art
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Inter Spring Arts Festival Art
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Bronze Statue
New Item - Bronze Statue, sell it at fair and select Trade Towns 61
Marble Statue
New Item - Marble Statue, useful for filling out Palaces, get new Mine 62
Baking
Cupcakes
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Waybread

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Yeast
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Local Money Changer
Convert Commodities to other Commodities 67
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Brickmaking 11
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Increase Stone production per person via Brickmaking, Greater 72
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Captaincy
Naval Junior Officer
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Resilience I, Resilience II, Resilience III
Combat Boost - If you rout, you have a chance not to rout but its pricey 76
Rousing Speech
Combat Boost - 5% less chance to run away due to a bad combat. 76
Trusted Maps
Increases fleet movement speed when using Sea Borne Trade Routes 77
Naval College
Combat Boost - Applies Admiralty to other skills in Naval Combat 78
Admiralty
Combat Boost - Applies Admiralty (New Skill) to Captaincy for Naval Battles 78
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Combat Boost - Increases Army Factor to 1.4. (+40% Damage) 79
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Combat 12
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Combat Boost - Increases Army Factor to 1.20 (+20% Damage) 81
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Combat Boost - Long term training for Terrain Proficiency increase 81
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Banquet
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Great Work
Sacrifice Cultural Skill Levels for Morale increase 83
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Barterer
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Increases reward for Import/Export and International City Trade Missions by 5%. 85
Large Orders
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Dance
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Dance 11
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Corps Diplomatique
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Gain another one/two Desired Commodities to buy Hirelings/Slaves 92
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Fair 3
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Distilling
Absinthe
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Branded Ale (Wine, Brandy, etc)
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Distillers' Guild
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Gin
New Item - Gin, Sells at Fair 96
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New Item - Port Wine, Sells at Fair 96
Road House
New Building - Roadhouse - Allows selling of alcohol each turn 97
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Economics
Bargemen's Guild
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Sea Borne Trade
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Supply
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Traders Guild 20
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Barbican
Combat Boost - New Building - Barbican, Bonus to Archery when defending 118
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Combat Boost - New Building - Gate House, Bonus to Archery when defending 123
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Combat Boost - New Building - Keep, allows protection at home or waystations 127
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New Building - Plantation, +0.5 AM per Farmer up to 100 Farmers, needs more tools

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Roman Fire Pump
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Get 5 Logs instead of 4 with Forestry 149
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Sawmill
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Scraper
New Item - Scraper, Increases output of gaining Bark by x2 153
Furrier
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Skill Level Increase - Furrier, Specialists 154
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New Item, Improved Trap, Hunter/Furrier can use for multiple small boosts (Total +0.75) 155
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Garrison
Excubitoriums
New Building - Excubitorium, slow increase of General Morale and gain Locals. 156
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Generalship
Circumvallation
Build fortifications around your enemy's fortifications and trap them inside 159
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New Skill - Field Marshall, increases Leadership which increases Damage 160
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Skill Level Increase - Generalship, No specialists 160
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Barber Surgeons
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Combat Boost - Gain the ability to perform Healing in between Ranged and Melee phase 162
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Breaching Walls
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Goats give wool which is really Cotton 168
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Allows access to Milking and Cheesemaking, new sources of Food 169
Expert Breeding
Skill Level Boost - Herding, instant +3 to Herd skill. 170
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Herding 11
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Herding Dogs
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Horsemanship
Close Formation (Close Order Cavalry)
Skill Level Boost - Horsemanship 178
Equestrianism
New Event - Equestrian, gain Morale, Horsemanship skill and Herding skill 178
Knights
New Population Type - Knights, each Knight is expensive but kills a lot of people. 179
Hunting
Hunting Dogs
Allows converting dogs into hunting dogs to increase hunting output 180
Mongol Hunt
+20% output from Hunting 180
Mongol Hunt 2
+40% output from hunting 180
Trappers
Allows workers that are hunting to use more traps than normal. 181
Intelligence
Field Intelligence
Combat Boost - Advanced scouting provides boosts to Ldr and Horsemanship 182
Hire Mercenary Guard
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Native Operative
Gain a specialty tribe dedicated to learning skills and transferring them to other tribes 184
Organized Intelligence Analysis (OIA)
Gain information about any other player clan. 184
Leadership
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Combat Boost - Alliance mates may form Meeting of The Clan together 186
Battle Groups
Combat Boost - Removes skill averaging when multiple units are in combat. 186
Federal Community of Clans

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Combat Boost - Forms a territory that gives defensive bonuses 187
Generalship
Combat Boost - New Skill, Generalship, Increases effective Ldr skill 188
Junior Officer
Combat Boost - Increases Leadership Modifier to Damage calculators and reduces Rout 188
Recruitment
Merc Limits increased by 500. 189
Resilience I, Resilience II, Resilience III
Combat Boost - If you rout, you have a chance not to rout but its pricey 190
Rousing Speech
Combat Boost - 5% less chance to run away due to a bad combat. 190
Siege Marshall
Combat Boost - Gain bonuses during Sieges 191
Trusted Maps
Increases fleet movement speed when using Sea Borne Trade Routes 191
Leatherwork
Harvest Bag
New Item - Harvest Bag, increases efficiency of harvesting some crops by x2 192
Leatherwork 11
Skill Level Boost - Leatherwork, allows specialists 192
Whip
Increases number of slaves an Overseer may control. 193
Literacy
Ghost Writer
Allows other Tribes to increase their Literacy skill level for book writing. 194
Haiku
Gain Morale, lots of it. 194
Mercenary Training
Allows Mercenaries to be trained to raise skill levels. 195
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Skill Level Boost - Allows easier raising of combat related skills higher at a cost. 197
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25% more people may be carried on boats. 198
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50% more people may be carried on boats 198

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Shipboard Animal Maintenance
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Disciplined Marines
Naval Combat Boost - Increases Naval Combat Skill and effectiveness of Shields199
Fighting Seamen
Naval Combat Boost - Allows limited Actives to fight as Warriors. 199
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Naval Combat Boost - Increases Fleet Factor to 1.4. (+40% Damage) 200
Mariner 11
Skill Level Increase - Mariner, does NOT allow specialists 200
Mariner 12
Skill Level Increase - Mariner, does NOT allow specialists 200
Naval Coordination
Naval Combat Boost - Increases Fleet Factor to 1.20 (+20% Damage) 201
Naval Veterans Class I
Naval Combat Boost - Allows limited Inactives to fight using ranged weapons 201
Professional Sailor
Reduces the crew size needed on boats 202
Metalwork
Advanced Trap
New Item - Advanced Trap, increases hunting output 203
Anvil
New Item - Anvil, increases metalwork, armour and weaponmaking output 203
Blade Shears
New Item - Blade Shears, increases shearing sheep/angora goats output 204
Bronze Statue
New Item - Bronze Statue, Sell these at the Fair 204
Chisel
New Item - Chisel, increases Quarrying output 204
Improved Trap
New Item - Improved Trap, increases Hunting output 205
Knife
New Item - Knife, increases skinning, gutting, bonus and harvesting output 205
Kegs
New Item - Kegs, like Barrels but holds more and is lighter. 205
Machete
New Item - Machete, Increases efficiency of your tobacco harvesters. 206
Mining Ladder
New Item - Mining Ladder, increases output of up to 10 miners 206
Saw

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New Item - Saw, Increases output of forestry action for Logs, x4 207
Seam Wedges
New Item - Seam Wedges, Increases output of a miner. 207
Scraper (Metal)
New Item - Scraper, Increases output of forestry action for Bark, x2 207
Tongs
New Item - Tongs, increases metalwork, armour and weaponmaking output 208
Water Tank
New Item - Water Tank, like a barrel but holds a lot more and is lighter comparitively 208
Wire Mill
New Item - Wire, used for other purposes 208
Milking
Skill Level Increase - Milking, allows Specialists 209
Milling
Oilmill
New Building - Oilmill, Allows extraction of Oil from Cotton/Flax 210
Sawmill
New Building - Sawmill, increases output of forestry action to gain logs, x8 211
Windmill
New Building - Windmill, Turn grain into flour at an enhanced rate. 211
Mining
Appropriate Mining Tool
Allows the use of both a pick and a shovel when mining. 212
Geology
Skill Level Increase - Mining, New Skill - Geology 212
Hammer Mill
New Item - Hammer Mill, increases output of 20 miners. 213
Mining 11
Skill Level Increase - Mining by +1, allows specialists 213
Mining Ladder
New Item - Mining Ladder, increases output of 10 miners. 214
Ore Cart
New Item - Ore Cart, increases output of 10 miners. 214
Salt Panning (See Salting)
Turns a Prairie Hex into a Prairie Hex with a salt mine. 215
Seam Wedges
New Item - Seam Wedges, increases output of a miner 215
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Allows increasing of Local Support Guards Terrain Proficiency 216

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Local Guard Training I, II, III
Allows increasing of Local Support Guards Combat and Archery skills 217
Mobilisation 11
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Combat Boost, New Item - Bagpipes, increases Combat Morale 218
Great Work
Convert Cultural skill points into morale. 218
Military Band
Combat Boost, Increases Combat Morale 218
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Combat Boost - Increases Ldr, Tact and Combat Morale 219
Spring Arts Festival Music
Host a Festival event during fair to raise Morale 219
Inter Spring Arts Festival Music
New Building - Amphitheatre, expands Festival to other Clans. 220
Navigation
Astral Navigation 1, Astral Navigation 2, Astral Navigation 3
Skill Level Increase - Navigation 221
Heart of Oak
Combat Boost - Naval, Increases damage done 221
Navigation 11
Skill Level Boost - Navigation, does not allow specialists 222
Politics
Banqueting Hall
New Building - Banqueting Hall, yearly increase of Morale and gaining of people. 223
Boat People
Yearly allows recruits from controlled water hexes 223
Capital
Designate a Capital, Increases the bonus of States and Nations 225
Castle (Details may be modified)
New Building - Castle, Increases Local Support, Trade Multiplier and Defense 226
Daimyo
Combat Boost - Morale bonus, Ldr bonus, Yearly gain of Inactvies, Militia at range 226
Doomsday Book
New Item - Doomsday Book, increases silver tithes from controlled hexes 227
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Increases the number of Controlled Hexes of a Clan's State/Nation 230
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Local Trade Routes
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Militia Training
Combat Boost - Increases Militia's combat skills 235
Mission
New Building - Mission, Build away from City to gain people yearly 235
Palace (may be modified)
New Building - Palace, allows Daimyo research and counts as Local Support settlements 235
Palace Renovation Gardens
Increases State and Nation bonuses 236
Posse
Gain additional free people for Security assignment 237
Sheriffs
Reduces the number of Pacifiers required in State 237
Treaty
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Advanced Pottery
Allows more efficient but expensive creation of pottery 239
China
Allows the creation of China, a Desired Commodity. 239
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7 Stones / Person
Quarrying provides 7 stones per person 241
8 Stones / Person
Quarrying provides 8 stones per person 241
9 Stones / Person
Quarrying provides 9 stones per person 242
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Increases quarrying yields by a total of 50% 242
Allows normally useless Inactives to work as Quarriers 243
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Increases quarrying output by 10% 243
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Create Quarry Blocks instead of Stone. 244
New Item - Quarry Ladder, increases stone output for 10 quarriers 244
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Coke
New Item - Coke, Allows creation of coke, more efficient Coal, allows Steel research 245
Hammer Mill
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Boost to reading/writing books 251
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Change History:

7/17/20	Alchemy 11: Added to Alchemy Cheesecloth: Added to weaving Excubitoriums: Added to Fire Control Excubitoriums: Added to Garrison Fire Brigade: Added to Fire Control Fire Control 11: Added to Fire Control Improved Stable Builders: Added to Herding Inactive Fire Watchers: Added to Fire Control Mash Padded: Added to Woodwork Roman Fire Pump: Added to Fire Control	**Breeding New Queens: Revised quantity** **Brickmaking 11: Rewrote for clarity, NGE** **Canals: Added destruction rules** **Carnival: Rewrote for clarity, NGE** **Conscription: Added offensive restrictions** **Cupcakes: Added stacking clarification, NGE** **Fences: Updated Bonus application** **Fluted Plate: Revised recipe format, NGE** **Full Plate: Revised recipe format, NGE** **Generalship 11: Revised description, NGE** **Generalship 12: Revised description, NGE** **Golden Age: Updated format, NGE** **Greaves: Revised recipe format, NGE** **Haiku: Added repeatability.** **Hand Plane: Added recipe** **Herding 11: Updated Bonus application** **Herding Dogs: Updated Bonus application** **Horse Herders: Updated Bonus application** **Improved Charcoal Making: Updated description for clarity, NGE** **Improved Stable Builders: Removed Pre-Req** **Marble Statue: Added note about new Mine** **Mining 11: Added note about specialists** **Mission: Added Recipe** **Mongol Hunts: Code auto-calculates now** **Mongol Hunts2: Code auto-calculates now** **Mounted Herders: Updated Bonus application** **Plate Barding: Revised recipe format, NGE** **Roads: Added more info on destruction** **Siege Cannon: Corrected Pre-Req to Jar** **Site Survey: Revised settlement bonus** **Smart Herding: Updated Bonus application** **Stables: Updated Bonus application** **Wholesale Trading: Rewrote for clarity, NGE** **Wire Fences: Updated Bonus application** **Change History: Back revision of Change history to 2 column format. NGE** **Leads To: Added a new Leads To entry. This shows what research topics require this research topic. NGE** **New Research Topics: Added section about new research topics created by players.** **No Game Effect: Commenced using NGE in Rev history.** **PreReq Entry: Commenced adding hyperlinks**

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		for Prerequisites, NGE **Research Topic Historical Changes: Shifted past changes to the end.** **Sea Borne Trade Math: Added the math table at end of document.** **Summary Index: Added a summary for each research topic entry. This all populates a new index at the end of the document for quick review.**
06/17/20	**Destroy Roads:** Added to Engineering. **Hand Plane:** Added to Woodworking **Mercenary Training:** Added to Literacy **Roads:** Added to Engineering	**Bagpipes:** Added weight **Basket:** Added weight **Blade Shears:** Added weight **Brickmold:** Added weight **Brocade:** Added weight, updated Pre-Reqs **Cupcake:** Added weight **Epic Tapestry:** Added weight **Fake Royal Seal:** Added weight **Flax:** Added weight **Holy Artefact:** Added weight **Juniper:** Added weight **Katana:** Added weight **Loom:** Added weight **Machete:** Added weight **Marble Statue:** Added weight **Medicine Tent:** Added weight **Pastry:** Updated bonus application **Saw:** Added weight **Scimitar:** Added weight **Sensai:** Updated notes regarding Mercenaries **Sewers:** Removed Sewers from Economics and put into Engineering where it belongs **Steel:** Added weight **Stew:** Added weight **Tongs:** Added weight **Trade Route:** Updated information about Waystations. **Triball Club:** Added weight **Ulfberht:** Added weight
5/10/2020	**Animal Training:** Added to Herding **Anvil:** Added to Metalworking **Apiology I, Apiology II, Apiology III:** Added to Apiarism **Athanor:** Added to Alchemy **Blasting Powder:** Added to Alchemy **Circus Troupe:** Added to Dance	**Blasting Jar:** Updated information about Siege Cannons, Added weight **Carnivale:** Clarified Fair replacement **Hammer Mill:** Added note about Item vs Building **Improved Stable Builders:** Corrected research name **Seam Wedges:** Added weight, updated Mining

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	Demolitionists I, II, III: Added to Engineering **Distillers' Guild:** Added to Distilling **Equestrianism:** Added to Horsemanship **Exhibition:** Added to Archaeology **Exhibition Curators:** Added to Archaeology **Gin:** Added Gin to Distilling **Great Canal:** Added to Engineering **Greater Masons:** Added to Quarrying. **Inactive Quarriers:** Added to Quarrying **Juniper:** Added Juniper to Farming **Local Money Changer:** Added to Banking **Magnificent Exhibition:** Added to Archaeology **Milking 11:** Added to Milking **Quarry Ladder:** Added to Quarrying **Relic 3:** Added to Archaeology **Resilience I, II, III:** Added to Leadership **Rousing Speech:** Added to Leadership **Sailing 11:** Added to Sailing **Second Site:** Added to Archaeology **Second Site Relic 1,2,3:** Added to Archaeology **Sentry Duty:** Added to Garrisons **Sewers:** Added to Engineering, Stonework and Sanitation **Site Survey II:** Added to Scouting **Stone Fords:** Added to stone work **Tongs:** Added to Metalworking	entry to mirror Metalwork entry **Siege Cannon:** Updated ammo requirements
February 9th, 2020	**Goods Tribe Economic Zone:** Added to Economics **Improved Stable Builders:** Added to Engineering **Oilmill:** Added to Milling **Quarry Blocks:** Added to Quarrying	**Astral Navigation:** Updated display of DL and Pre-Reqs for Astronomy/Navigation **Windmill:** Updated restriction for quantity per hex
January 9th, 2020	**Angora Goats:** Added to Herding **Blade Shears:** Added to Metalworking **Brickmolds:** Added to Brickmaking **Exotic Seekers II:** Added to Seeking **Exotic Seekers III:** Added to Seeking **Greater Brickmaking:** Added to Brickmaking **Improved Fence Builders:** Added to Engineering	**Bargemen's Guild:** Changed wagon requirement to barge requirement **Librarian:** Added clarification text. **Merchant Navy Guild:** Revised text about exclusive guilds. **Veterans Class I:** Added note about limitations **Water Tank:** Updated description

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	Local Guard I, II, III: Added to Mobilization **Local Guard Training I, II, III:** Added to Mobilization **Saw Mill:** Added to Milling and Forestry **The Lighted Dome of Iron and Stone:** Added to Brickmaking	
December 2nd, 2019	**Ambush:** Added Ambush to Tactics **Barber Surgeons:** Added Barber Surgeons to Healing **Battlefield Medicine:** Added Battlefield Medicine to Healing **Battlefield Medics:** Added Battlefield Medics to Healing **Camp Medics:** Added Camp Medics to Healing **Drydock:** Added Drydock to Shipwright **Medical Tent:** Added Medical Tent to Sewing **Music in the Field**: Added Music in the Field to Music **Slave Crews II:** Added Slave Crews II to Heavy Weapons	**Architecture:** Verbiage has been added that the Scroll required is lost. **Army:** Added updated pre-req. statement **Assault Troops:** Corrected spelling of specialized **Blasting Jar:** Updated text to mention Blasting Jars vs BP **Board of Trade:** Changed way to track movement along Trade Routes. **Canal:** Modified requirement for Wagons and Animals. **Castle:** Clarified requirement to start castle research **Drawbridge:** Revised recipe to add number of people required **Elephants:** Added text about calculating output from Seeking. **Extra Tribe:** Added Note about informing GM once completed **Feudal Security:** Verbiage has been added that the Scroll required is lost. **Fortress:** Verbiage has been added that the Scroll required is lost. **Golden Age:** Verbiage has been added that the Scroll required is lost. **Heraldry:** Verbiage has been added that the Scroll required is lost. **Keep:** Updated Keep to cover additional utility. **Local Trade Routes:** Removed silver cost for transfers and rewrote for clarity. **Managed Plantations:** Updated transfers from yearly to monthly **Native Operator:** Added Note about informing GM once completed **Naval College:** Corrected spelling of ensures **Pastry:** Added Skill Requirement and Notes. Removed excess comma **Propolis:** Corrected typo **Research:** Verbiage has been added that the Scroll

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		required is lost. **Research Team:** Verbiage has been added that the Scroll required is lost. **Sappers:** Updated Sappers with the missing information regarding values **Scholar:** Added Note about informing GM once completed **Scimitar:** Updated recipe to match database / steel entry **Sea Borne Trade Route:** Reinforcement Note from GM to Sea Borne Trade Route. **Sensei:** Verbiage has been added that the Scroll required is lost. **Sensei Don:** Verbiage has been added that the Scroll required is lost. **Slave Crews:** Clarified limit to slaves available in combat **Steel:** Modified description to list out items and clarified Sword cost. **Toll Gate:** Added the calculated people requirements to build a Toll Gate. **Trade Camps:** Revised to clarify additional unit types that may be utilized. **Trade Routes:** **Trade Routes have been majorly revamped in creation and utilization** **Training:** Corrected spelling of description text **Trellis:** Added a weight section. They are not meant to be mobile. **Veterinarian Medicine:** Verbiage has been added that the Scroll required is lost. **All Pre-Reqs:** Added a clarification word to most topics that require completed research to indicate that the requirement was a research topic that the tribe must have prior to commencing the new research.
July 8th, 2019	**Expanded Horizons:** Added to Diplomacy and Economics. **Expanded Horizons II:** Added to Diplomacy and Economics **Federal Community of Clans:** Added FCC to Leadership **Relic 2:** Added Relic 2 to Archaeology. **Scout Posts:** Added Scout Posts under Engineering and Scouting **Siege Marshall**: Added Siege Marshall to Leadership	**Castle:** Updated description text to allow Miming while utilizing Castle. Villages may no longer mine during a siege either. **Fast Fleets:** Updated description to correct doubling example. **Junior Officer:** Updated benefit to remove fringe cases where Junior Officer had no actual effect on combat. **Professional Sailor:** Removed requirement of Expert Sailors **Trawler:** Updated text about effect of Trawler.

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	Trusted Maps: Added Trusted Maps under Leadership	**Trellis:** Updated weight of Trellis. **War College:** Removed reference to Military Orders and notifying GM (code autocalculates)
May 6th, 2019	**Agent:** Added Agent to Administration. **BioWar:** Added BioWar to Sanitation **Bureaucracy:** Added Bureaucracy to Administration **Inactive Players:** Added Inactive Players to Triball **Large Teams:** Added Large Teams to Triball **Machete:** Added weight **Merchant Navy Guild:** Added Merchant Navy Guild to Economics **Off Season:** Added Off Season to Triball **Second Caravan:** Added Second Caravan to Economics **Seek Population:** Added Seek Population to Seeking **Siege Sanitation:** Added Siege Sanitation to Sanitation **Triball Club:** Added Triball Club to Triball **Triball Guild:** Added Triball Guild to Triball. **Trusted Maps:** Added Trusted Maps to Economics.	**Basket:** Added weight **Barterer:** Fixed name from Barter to Barterer in entry. **Charring Specialists:** Changed name to Improved Charcoal Making under Forestry to avoid misunderstandings between specialists via Skill Level 11 and this topic effect. **Entrepot:** Cleaned up verbiage and added example **Fast Fleet:** Added restriction to cumulative bonuses **Horsebows:** Removed topic due to change in rules allowing use if they are in inventory. **Roman Crane:** Changed DL for Roman Crane from DL 7 to DL 6 for Woodwork topic. Updated entries to add Weight. **Sea Borne Trade Route:** Added Note from GM to Sea Borne Trade Route. **Zealots:** Removed from Politics. Note: The January 13th, 2019 revision does not appear to have been sent out by the GM. Review the January 13th, 2019 revision list below for the rest of the changes.
January 13th, 2019	**Barterer:** Added Barterer to Courier **Cupcakes:** Added Cupcakes to Baking **Trade Camps:** Added Trade Camps to Economics **Felucca Class I:** Added Upgrade topic Felucca Class II to Shipbuilding **Heart of Oak:** Added Heart of Oak topic to Navigation, Sailing and Seamanship **Large Orders:** Added Large Orders to Couriers **Negotiator:** Added Negotiator to Courier **NPC Exchange:** Added NPC Exchange to Banking **Way Bread:** Waybread added to baking	**Castle:** Added bonus specified in Mandate section 3.13 **Field Marshall:** Updated bonus to Generalship. **Generalship:** Updated bonus to Leadership. **Holy Artefact:** Removed Religion 10 Requirement **Minting:** Fixed Typo in Description **Palace:** Added bonus specified in Mandate section 3.13 **Religion:** Removed entire Religion section **Revision Change History:** Corrected Import Mission entry in August 12th, 2018 entry **Saltpetre Refining:** Revised Recipe display **Smart Herding:** Revised Smart Herding Horse benefit due to code consolidation **Yeast:** Added note that it is only effective when

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		using Flour.
August 12th, 2018	**Bargemen's Guild:** Added Bargemen's Guild to Economics **Circumvallation:** Added Circumvallation to Generalship **Expanded Scouting:** Added Expanded Scouting to Scouting **Field Intelligence:** Added Field Intelligence to Intelligence. **Head Librarian:** Added Head Librarian to Research. **Hire Mercenary Guard:** Added Hire Mercenary Guard to Intelligence **Import Mission:** Added Import Mission to Politics **Librarian:** Added Librarian to Research **Log Driving:** Added Log Driving to Forestry **Native Operative:** Added Native Operative to Intelligence **Siegecraft:** Added Siegecraft to Engineering **Two Hex Ferry:** Added Two-Hex Ferry to Rowing and Sailing	**Blasting Jar:** Updated requirements, fixed recipe format, added information as to where Saltpetre comes from. **Board of Trade:** Rewrote to be clearer about bonuses, requirements and costs **Castle:** Added text about not being able to build for another Clan and adding limit of one castle per Clan. **Fords:** Added a missing letter **Scholar:** Added text about repeatability of Scholar research. **Sea Borne Trade:** Updated based upon Game Master request **Trade Route:** Added information about map assistance. Clarified use of Trade route by Trade Element to not be viewed as offering another Element beyond the e9. **Traders Guild:** Revised note regarding Guild membership.
May 4th, 2018	**Alliance MOTC:** Added Alliance MOTC research topic to Diplomacy and Leadership **Barge Poles:** Added Barge Poles research topic to Shipbuilding and Woodwork **Burner Improvement:** Added Burner Improvement research topic to Forestry **Hammer Mill:** Added Hammer Mill research topic to Mining and Refining **Janissary:** Added Janissary research topic to Slavery **Knights:** Added Knights research topic to Horsemanship **Plantation:** Added Plantation research topic to Farming **Repeating Arbalest:** Added Repeating Arbalest research topic to Weapons **Spy 11**: Added Spy 11 research topic to Spy	**5 Logs/Person:** Confirmed Pre-Requisites are previous levels, not on original document**.** Added Text from Master Coder **6 Logs/Person:** Confirmed Pre-Requisites are previous levels, not on original document**.** Added Text from Master Coder **7 Logs/Person:** Confirmed Pre-Requisites are previous levels, not on original document**.** Added Text from Master Coder **8 Logs/Person:** Confirmed Pre-Requisites are previous levels, not on original document**.** Added Text from Master Coder **6 Stones/Person:** Added Text from Master Coder **7 Stones/Person:** Confirmed Pre-Requisites are previous levels, not on original document. Added Text from Master Coder **8 Stones/Person:** Confirmed Pre-Requisites are previous levels, not on original document**.** Added Text from Master Coder **9 Stones/Person:** Confirmed Pre-Requisites are previous levels, not on original document**.** Added Text from Master Coder

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		Absinthe: Added Text from Master Coder **Apiaries with Reusable Frames:** Added Text from Master Coder **Appropriate Mining Tool:** Added Text from Master Coder. Followup clarification needed **Astral Navigation 1:** Added Text from Master Coder **Barbican:** Added note that Barbicans built for other Clans may be used by other clans. **Bascinet:** Added Text from Master Coder **Basket:** Added Text from Master Coder **Board of Trade:** Fixed the numerical example to reflect actual BoT rules **Branded Alcohol:** Added clarification that each alcohol is a separate research topic **Branded Alcohol**: Added clarification that branded alcohol may be traded **Breed New Queens:** Updated benefit. Added Text from Master Coder. **Bronze Statue:** Added Text from Master Coder **Brothel:** Added Text from Master Coder **Bush Lore:** Fixed Bush Lore 3 bonus **Capital:** Modified ability 3 **Catapult:** Added Text from Master Coder **Chain Barding:** Added Text from Master Coder **Colosseum:** Added text that it may be built for and used by other Tribes / Clans. **Crossbow:** Added Text from Master Coder **Dairy Cattle:** Added Dairy Cattle research topic **Drawbridge:** Added note about use of Drawbridges by other Clans. Master Coder. **Dungeon:** Added text that it may be built for and used by other Tribes / Clans. **Extra Movement 4:** Added Text from Master Coder **Extra Movement 6:** Added Text from Master Coder **Fences:** Added Text from Master Coder **Flax:** Added Text from Master Coder **Full Plate:** Added Text from Master Coder **Gate House:** Added text that it may be built for and used by other Tribes / Clans. **Greaves:** Added Text from Master Coder **Hashish:** Added Text from Master Coder

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		Herb Plots: Added Text from Master Coder **Herding Dogs:** Added Text from Master Coder **Hospital:** Added Text from Master Coder **Horse Herders:** Added Text from Master Coder **Katana:** Added Text from Master Coder **Keep:** Added Text from Master Coder **Managed Plantations:** Added notes about multiple plantations and clarified restriction **Marble Statue:** Added Text from Master Coder **Market Place:** Added Text from Master Coder **Minting/Coin:** Added Text from Master Coder **Mongol Hunt:** Added Text from Master Coder **Mongol Hunt 2:** Added Text from Master Coder **Mounted Herders:** Added Text from Master Coder **Ore Cart:** Added Text from Master Coder **Outpost:** Added text that it may be built for and used by other Tribes only. **Pastries:** Added Text from Master Coder **Plate Barding:** Added Text from Master Coder **Port Wine:** Added text that it may be sold at fair (already on fair sheet), Master Coder **Propolis:** Added Text from Master Coder **Salves:** Added Recipe. Added Text from Master Coder **Scaffolding:** Updated the verbiage to be clearer. Added Text from Master Coder **Scimitar:** Added Text from Master Coder **Seam Wedges:** Added Text from Master Coder **Smart Herding:** Added Text from Master Coder **Stables**: Added Elephant restriction**.** Added Text from Master Coder **Stew:** Removed references to Chef and Master Chef (not currently in game) **Stonewall 25':** Added text that it may be built for and used by other Tribes / Clans. Added Text from Master Coder **Stonewall 30':** Added text that it may be built for and used by other Tribes / Clans. **Trappers:** Added Text from Master Coder. Followup revision for next edition. **Trawler:** Fixed a discrepancy between Recipe

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		and description, fixed a name. Added Text from Master Coder **Trawling Net:** Added second Recipe. Added Text from Master Coder **Ulfbehrt Sword:** Updated Recipe to add Skill, Added Text from Master Coder **Watchtower:** Added text that it may be built for and used by other Tribes / Clans. **Whaler:** Fixed a discrepancy between Recipe and description. Added Text from Master Coder **Wire Fences:** Added Text from Master Coder **Wire Mill:** Fixed Metalwork abbreviation **Notes:** Added note from Master Coder about Topics in Database. **Bottom Notes:** Removed reference to Fanatic Warriors and updated verbiage. **Orders for Research Attempts:** Replaced Religion skill based examples
April 8th, 2018	**Fake Royal Seal:** Added Fake Royal Seal under Waxworks **Mining Ladder:** Added Mining Ladder research topic under Mining, Woodwork **Pastry:** Added Pastry research topic to Apiary **Researcher:** Added Researcher research topic under Research **Scholar:** Added Scholar research topic under Research **Trawler:** Added Trawler research topic under Fishing and Shipbuilding **Trellis:** Added Trellis research topic under Engineering, Farming and Woodworking	**Absinthe:** Added text about details coming. **Agriculture:** Clarified text for description and bonuses **Army:** Added text related recipe for Barracks **Barbican:** Updated Recipe, added note about bonus and added text that it may be built and used by other Tribes / Clans **Blasting Jar:** Clarified text related to bonus, usage, Sulphur **Bronze Statue:** Updated text related to recipe skill levels **Bush Lore:** Clarified text for description and bonuses **Canal:** Added text about eligible bodies of water to start a canal from **Close Order Infantry:** Added text related to actual bonus from research topic **Combat 11:** Added text about Combat Specialists **Cooking:** Updated Cook limitations. **Corps Diplomatique:** Added text related to Trade Routes/Depots and Goods Tribes **Drawbridge:** Added text that it may be built for, used by other Tribes / Clans and Recipe **Exotic Seekers:** Added text about applicability of Rich Seeking hexes

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		Fast Fleets: Added Fast Fleets research topic under Sailing **Geology:** Clarified text for description and bonuses **Harvest Bag:** Added weight **Herb Plot:** Clarified text about use and description of research topic. **Marble Statue:** Updated text related to recipe skill levels **Overwork:** Updated example numbers **Port Wine:** Added text about further details coming **Religion:** Removed all research topics from Religion skill. Religion removed from game **Scaffolding:** Clarified that scaffolds are inventory items and can be traded/used by Clans **Stone Wall 30':** Added pre-req of Stone Wall 25' **Toll Gate:** Updated Recipe, benefit from building and restriction for building.

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