

# Natural Products Chemistry

Part II:  
Tables

CRYPTOGAMS AND EARLY PHANEROGRAMS

	<u>Bryophytes</u>	<u>Sphagno</u>	<u>Psilo</u>	<u>Lyco</u>	<u>Filico</u>	<u>Equis</u>	<u>Gingko</u>	<u>Cycad</u>	<u>Pino</u>	<u>Taxa</u>	<u>Gnet</u>
Fiber	x	xx	?	xx	xx	@		x			
Woody					@	@	xx	xx	xxx	xxx	x
Medicinal				@	xxxx	xx	xx+	x+	xx	xx+	@
Edible parts	(?)				xx+	@?	?	?	@	@	x
Starch							x	x	@x	xxx	x+
Toxic			?	?	x	xx	@	xx+	?	xx	xx
Oil				xx			?	?		x+	
Oleoresin									xxx	xx	
Wax/Resin									xxx	xxxx	
Alkaloids			@	@	(x)	?	x	x	xxx		
Flavonoids						xx					
Halluc											x

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ECONOMIC UTILIZATION OF THE CLUB MOSSES AND ITS RELATIVES

Economic Virtues: Packaging material  
 Fiber?  
 Packaging agent (Lycopodium spores)  
 --unique fatty acid content  
 Folk Medicine

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- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<u>PSILOPHYTA</u>													
Psilotum													
Tmesipteris													
?													
<u>(CLUB MOSSES) LYCOPODIATAE;</u>													
<u>LYCOPODIALES;</u>													
<u>LYCOPODIACEAE</u>													
Lycopodium			#			oil				F*			*=fibers for matting & pillows; absorbant spores rich in FAs; used for medicine/diaphragm packaging, & firework fuel (explosive).
(Club Moss)													
Lycopodiella										F*			*=same.
<u>SELAGINELLES ;</u>													
<u>SELAGINELLACEAE</u>													
Selaginella										F*			*=a source of packing fiber (as above).
Selaginellites			F							F*			diuretic *=a source of packing fiber (as above).

THE FERN PHYLUM (FILICOPHYTA)

ECONOMIC UTILIZATION OF THE FERNS

Economic Virtues: Foods: fiddleheads, starchy rootstocks  
 Medicines: esp. vermifuges  
 Folk medicines  
 Fiber  
 "Pulu" starch sources  
 Artificial sweetener

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|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
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| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
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Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<u>WATER FERNS (HYDROPTERIDALES)</u>												
Hydropteris												
?												
-----												
<u>TRUE FERNS (POLYPODIALES)</u>												
<u>CYATHEACEAE</u>												
Alsophila		*	F							F		*starch sce.
Cibotium			F							*F		*"Pulu": used for pillows & building matl.
Dicksonia		*	F									*starch sce. "Scythian Lamb"
. . . . .												
<u>HYMENOPHYLLACEAE</u>												
Hymenophyllum			FS?									soporific?
. . . . .												
<u>SCHIZAEACEAE</u>												
Lygodium										F		
. . . . .												
<u>DENNSTAEDTIACEAE</u>												
Dennstaedtia												
Pteridium (Brake)		veg	*F	*G								fiddlehead *px=vermicide
. . . . .												
<u>POLYPODIACEAE</u>												
Platycterium												
Polypodium			*F								?	decorative *px as above. also: Osladin (sweetener). *vermifuge
Marattia			*F									
. . . . .												
<u>GLEICHENIACEAE</u>												
Dicranopteris											F	used for nets, cord, etc.
. . . . .												

THE FERN PHYLUM (FILICOPHYTA)

ECONOMIC UTILIZATION OF THE FERNS

Economic Virtues: Medicines: esp. vermifuges  
 Fiber  
 Foods: fiddleheads, starchy rootstocks

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- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<b>ADIANTACEAE</b>													
Adiantum (Maidenhair)			F										
Cryptogramma													
. . . . .													
<b>ASPLENIACEAE</b>													
Asplenium		*	F										*fiddleheads D.O.S.
Camptosoros (Walking Fern)"													
Onoclea													
. . . . .													
<b>OSMUNDACEAE</b>													
Osmunda		*											*fiddleheads
. . . . .													
<b>OPHIOGLOSSACEAE</b>													
Botrychium		*											*fiddleheads
Ophioglossus		*											*fiddleheads
. . . . .													
<b>DICKSONIACEAE? (See above)</b>													
Cystodium													
Dicksonia		*	F										*starch sce.

ALSO:

Achrostichum F  
 Aspidium

- THYRSOPTERIDACEAE
- THELYPTERIDACEAE
- DAVALLIACEAE



C H L A M Y D O S P E R M A E

ECONOMIC UTILIZATION OF THE CHLAMYDOSPERMS

Economic Virtues: Edible seeds  
 Seed oils  
 Starch?  
 Selective Toxin (Ephedrine)

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|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<u>GINGKOICAE; GINKGOALES</u>												
<u>GINGKOACEAE</u>												
Gingko (Ginkgo)		sd	FS	*		oil			*	W	Sa?	*nauseating aroma. Flavonoids?
- - - - -												
<u>GNETICAE; GNETALES</u>												
<u>GNETACEAE (&amp; Welwitschiaceae?)</u>												
Gnetum		yg pts								F		
Welwitschia		rtstk?								F?		
- - - - -												
<u>EPHEDRACEAE</u>												
Ephedra			FS									Ephedrine
- - - - -												
<u>CYCADICAE; CYCADALES</u>												
<u>CYCADACEAE</u>												
Cycad		rt										
- - - - -												
<u>(ZAMIACEAE?)</u>												
Bowenia		rt										root starch
Ceratozamia												
Dioon												
Macrozamia									F			lvs: "pulu" source
Zamia												
- - - - -												
<u>STANGERIACEAE?</u>												
Stangeria												



G Y M N O S P E R M A E

ECONOMIC UTILIZATION OF THE CONIFERS

Economic Virtues: Lumber  
 Terpenes: Turpentine/Resins  
 Copal/Dammar/Wax/Varnish  
 Some Cancer Drugs  
 Some edible seeds/flour  
 Maltol/Isomaltol

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|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

USES (See above key)

Genus	1	2	3	4	5	6	7	8	9	10	11	Notes
<b>PINACEAE</b>												
Abies	x		F		R	*			*	W		*oleoresin & balsam
Larix		#	F		R	*			*	W		*oleoresin #=maltols
Picea	x		F		R G	*			*	W		*oleoresin chew'g gum
Pinus	x	sd	F		R	*			*	W		*oleoresin "pinon nut" diterpene= sweetener. Terpenes.
Pseudotsuga			F		R	*			*	W		*oleoresin wax?, etc. cellulose tannin?
Tsuga	x		F		R	*			*	W		*oleoresin? shoe polish? tannins
-- -- -- -- -- -- -- -- -- -- -- --												
<b>PODOCARPACEAE</b>												
Dacrycarpus	x						*					
Dacrydium					R					W		
Podocarpus				G?						W		Ca <sup>-</sup> Podolide [diterpene lactone]
Prumnopitys			F		R-G					W		
-- -- -- -- -- -- -- -- -- -- -- --												
<b>ARAUCARIACEAE</b>												
Agathis						R				W		Copal/Dammar
Araucaria		sd	?			R				WF		R: copal sd: chile nut decor. "greenwood"
-- -- -- -- -- -- -- -- -- -- -- --												





THE DICOTYLEDONS

SUB-CLASSES

HAMAM.    MAGNOL.    DILLEN.    ROSA.    CARYOPH.    ASTER.

	<u>HAMAM.</u>	<u>MAGNOL.</u>	<u>DILLEN.</u>	<u>ROSA.</u>	<u>CARYOPH.</u>	<u>ASTER.</u>
- - - - -						
W: Wood (Lignin)	****	***				
Tannins	****	(*)	(*)	**(*)		
Fiber	****		**	**		*(*)
(textiles/cordage)						
Halluc.	**(*)	***+		(*)	*(*)	*(*)
Oil	**(*)	*	**	**(*)		
Waxes	**					
- - - - -						
A: Fish Pxs	**+	****	*	*		****
- - - - -						
I: Drink			***	***		
Resin			***	***		
Mustard Oils			****+	*+	@@	
- - - - -						
O: Essential Oils	@	***+		***+	@	**+
Mucilage			*	****+		**
Cyanogenic Glyc				***		
Lectins				*		
- - - - -						
A: Food/Starch	*	(*)	***	***	*****+	**+
Anthraquinones				**	****+	
?: Dyes (not flav.)	**	**	*	****+	****+	****+
- - - - -						
?: Dyes (not flav.)	**	**	*	****+	****+	****+
AS: Medicinal	**	***	**	**	(*)	****
Steroids			**	*(*)		***(*)
Saponins			@?	*+	(*)	****
Ster-Alk.						(****)
Alkaloids	*	***	*	*+	(*)	****
Bitter-Tonic			*(+?)			****
- - - - -						
GEN Latex	***	*	***+	***		****
- - - - -						

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THE MAGNOLIA SUB-CLASS (MAGNOLIIDAE)

ECONOMIC UTILIZATION OF MAGNOLIA ORDER

Economic Virtues: Colorful Wood/Timber  
Aromatics--esp. for Perfumes  
Folk medicines

Chemotaxonomy: Neolignans

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- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevq      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>MAGNOLIACEAE</b>												
Drimys		ft	F(bk)									peppery ft red wood Oriental use
Kadsura			F									
Liriodendron (Tulip Tree)										W		
Magnolia			F							W		bitter
Michelia			F?			oil			*			*perfume/hair cardiotonic, anti-pyr, etc.
Talauma			FS						X			
-----												
<b>ANNONACEAE</b>												
Annona		ft	F	IP		oil			*			"ylang ylang"
Artabotrys	X					oil						
Asimina		ft										
Cananga												
Canangium									*			Perfumant: "ylang ylang"
Cymbopetalum		petals	F									chocolate subst. G.U. meds
Malmea			F									
Melodorum		ft										
Mkilua												
Monodora		sd:	F									flav/condimt
Unona		ft							X			
Uvaria			F									
Xylopia		ft								F		peppery ft cordage bark
-----												
<b>MYRISTICACEAE</b>												
Horsfieldia		sd				oil						
Myristica (Nutmeg)		sd	F						X			Perfume Halluc?
Ochocoa		sd				oil						
Pycnanthus						oil						
Staudtia		sd		I		*butter			X	W		Kombo oil sd: 50% FA parasiticide fishing bait Halluc?
Virola		sd	F			oil			X			
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THE MAGNOLIA SUB-CLASS (MAGNOLIIDAE)

--- --- --- --- --- --- --- --- --- --- --- --- ---  
CIRCAEASTERACEAE  
Circaeaster  
Kingdonia

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SARGENTODOXACEAE  
S.

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THE MAGNOLIA SUB-CLASS (MAGNOLIALES)

ECONOMIC UTILIZATION OF THE LAUREL ORDER (LAURALES)

Economic Virtues: Folk Medicines  
 Aromatics (medicines, perfumes, spices)  
 Decorative woods

Chemotaxonomy: Benylisoquinoline alkaloids noted  
 Also: Neolignans  
 Pyrones (as with Annona and Rue families)  
 Fixed oils: Lauric, Myristic and Palmitic acids

- =====
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| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>LAURACEAE</b>												
Actinodaphne						oil						
Aniba (Rosewood/True Coto bark)				G					*			Rosewood Oil Cotoin: med for diarrhea bradycardic
Cassytha			S									
Cinnamomum (Cinnamon)	(x)		F	?		oil			*			
Cryptocarya				*		oil				WF		*cryptocarpine
Dicypellium (clove bark)	s pice		F						*			
Laurus (Laurel)						oil			*			
Lindera (Spicebush)	X		F			*oil			*			*for illum.
Litsea		ft	F			oil			*	W		elastic wd oil for soap sassafras-like
Mespilodaphne												
Mezilaurus							X					
Nectandra (bebeeru bark)			F	IG						W		greenheart bitter
Ocotea			F						*	W		
Persea (avocado)		ft	F	*		oil			X			*livestock px
Ravensara (clove nutmeg)		ft										
Sassafras	X		FS	?				x	*			Safrole (H?)
Tinophora		sd								W*		*fragrant
Umbellularia (Wax Myrtle/Bayberry)						oil			*			

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THE MAGNOLIA SUB-CLASS (MAGNOLIALES)

ECONOMIC UTILIZATION OF THE LAUREL ORDER (LAURALES)

Economic Virtues: Folk Medicines  
 Aromatics (medicines, perfumes, spices)  
 Decorative woods

Chemotaxonomy: Benylisoquinoline alkaloids noted  
 Also: Neolignans  
 Pyrones (as with Annona and Rue families)  
 Fixed oils: Lauric, Myristic and Palmitic acids

- =====
- |              |                    |                   |             |
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Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>HERNANDIACEAE</b>												
Gyrocarpus										W		light-weight wd
Hernandia (false camphor)						oil			*			
-----												
<b>MONIMIACEAE (aromatic timber)</b>												
Hedycarya										W		
Laurelin (peruvian nutmeg)		sd							*			
Monimia												
Peumus								X(bk)		W		Dig. tea





THE MAGNOLIA SUB-CLASS (MAGNOLIIDAE)

ECONOMIC UTILIZATION OF RANUNCULALES

Economic Virtues: Selective toxicity--medicines  
 Some cancer drugs  
 Numerous folk medicines.  
 Poisonous/acridity.

Chemotaxonomy: Fixed Oils (Class #4)  
 Alkaloids:  
 Diterpene pseudo-alkaloids  
 Some benzylisoquinolines.

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
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| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>RANUNCULACEAE</b>												
Aconitum (Aconite)			FS	G		oil						Aconite
Actaea (Baneberry)				G								
Adonis			S									Dig glyc.
Anemone				G								acid
Anemonella		rt										starchy rt
Aquilegia		fl.	FS	G		oil						card.effect?
Caltha (Marsh Marigold)		buds/rt		G								emetic
Cimicifuga (Blue Cohosh)			FS*	G								*caper-like
Clematis												*Uter. stim.
Coptis (Golden Thread)			FS					X				BIQ alks
Delphinium (Larkspur)			FS	G I		oil						Ca <sup>++</sup> binder
Helleborus			FS	G							Sa	Dig glyc.
Hepatis (Liverleaf)			F									CNS/mens. med
Hydrastis (Goldenseal)			FS									D.O.S.
Knowltonia			F	G								BIQ alks
Nigella (Black Caraway)		sd				oil			?			vesicant
Ranunculus (Buttercup)		rts		G								pungent sd
Thalictrum						oil						emetic
Trollius				*G		oil						furocoumarin
Xanthorrhiza			F					X				Ca-thalictrine & thalicarpine *acid oral med.

THE MAGNOLIA SUB-CLASS (MAGNOLIIDAE)

ECONOMIC UTILIZATION OF RANUNCULALES

Economic Virtues: Benzyl Isoquinoline Alkaloids--Folk Medicine.  
 Food Colorant, and Bitter agents.  
 Selectively toxic agents

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- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
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| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
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Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>BERBERIDACEAE</b>												
Berberis (Barberry)			FS					X				asstd BIQs
Epimedium			FS					X				icaritin
Leontice			FS					X				BIQ's
Mahonia (Oregon Grape)			FS					X				ditto.
Nandina			FS			oil		X				do.
. . . . .												
<b>PODOPHYLLACEAE (PODOPHYLLOIDEAE) (No BIQ alkaloids)</b>												
Achlys (Vanilla Leaf)												coumarin
Caulophyllum (Black Cohosh)			FS	G								uterotx.
Jeffersonia (Twin Leaf)												
Podophyllum (Mayapple)		ft	FS	G								lignan (Ca <sup>-</sup> )
Vancouveria (Duckfoot)												
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M A G N O L I I F L O R A E

ECONOMIC UTILIZATION OF PAPAVERALES

Economic Virtues: Selectively Toxic; very medicinal  
 Benzylisoquinoline alkaloids  
 (not as concentrated in Fumariaceae)

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|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>PAPAVERACEAE</b>												
Argemone (Mexican Poppy)					L							
Bocconia			F+		L			X				fumarine chelerythrine Ca <sup>-</sup>
Chelidonium (Celandine Poppy)			FS		L			X				
Eschscholzia (California Poppy)	X				L							
Glaucium		oil			L	*oil						*fuel/soap *bitter *caustic narcotic
Macleaya				G*	L			X				
Papaver (Opium Poppy)		sd	FS	G	L	oil			X			narcotic
Sanguinaria (Bloodroot)			FS	G	L			X				narcotic Ca <sup>-</sup> ; antibiotic asstd medicinal alkaloids: cardioactive asstd med. alkaloids: cardioactive (i.e. protopine; stylophorine)
Stylophorum			FS	G	L							
<b>FUMARIACEAE</b>												
Corydalis		tu			G							cardiotoxins Halluc? med-tonic
Dicentra (Bleeding Heart)			FS									
Fumaria			FS	G								bitter-tonic diuretic asthma tx cardiotoxic- protopine

THE WITCH HAZEL SUB-CLASS (HAMAMELIIDAE)

ECONOMIC UTILIZATION OF THE WITCH HAZEL ORDER (HAMAMELIDALES)

Economic Virtues: Tannins (esp. use for Folk Medicine)  
Lumber

Chemotaxonomy: Iridoids

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- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<b>HAMAMELIDACEAE</b>													
Altingia					R	oil							Rasamala Oil
Bucklandia							X			W			
Distylium										W			
Hamamelis			F				X			W			astringt
Liquidambar			F		B	oil			X				balsam-perfume
---	---	---	---	---	---	---	---	---	---	---	---	---	---
<b>PLATANACEAE</b>													
Platanus										W			
---	---	---	---	---	---	---	---	---	---	---	---	---	---
<b>CERCIDIPHYLLACEAE</b>													
Cercidiphyllum										W			ornamental
---	---	---	---	---	---	---	---	---	---	---	---	---	---
<b>ALSO:</b>													
EUPTELEACEAE													
MYROTHAMNACEAE													
---	---	---	---	---	---	---	---	---	---	---	---	---	---





THE WITCH HAZEL SUB-CLASS (HAMAMELIIDAE)

ECONOMIC UTILIZATION OF THE WALNUT ORDER

Economic Virtues: Lumber  
 Tannins  
 Nuts/Seed Oil  
 Edible Nuts/Seeds  
 Naphthaquinone--Juglone

1. bevg	4. poison I=insect	6. oils/fats	10. Wood
2. food	G=gen'l P=fish	7. tannin(g)	Fibers
3. med: Folk	5. Mucus/Gum/Resin	8. dye	11. Sterols
Selective	Latex	9. esstl oils	Saponins

USES (See above key)

Genus	1	2	3	4	5	6	7	8	9	10	11	Notes
<b>JUGLANDACEAE</b>												
Carya (Hickory)		nut	F			oil	??			W		Juglone
Engelhardtia			F?				X		*?	W		*Incense
Juglans (Walnut/Butternut)		nut	FS			oil	X	X	?	W		Juglone
Platycarya								*X				*fruit
Pterocarya										*		matches, etc. Juglone
Rhoiptelea												

ECONOMIC UTILIZATION OF THE SWEET BAY ORDER

Economic Virtues: Wax, Aromatic (Bayberry; used in candles)  
 Essential Oils/Aromatics for Teas/Folk Medicine

Genus	1	2	3	4	5	6	7	8	9	10	11	Notes
<b>MYRICALES</b>												
<b>MYRICACEAE</b>												
Comptonia (Sweet Fern)	X		F					X				
Myrica (Bay Laurel)			F			wax		X				

ECONOMIC UTILIZATION OF URTICALES---THE NETTLES FAMILY

Economic virtues: Some edibility  
Fiber sources

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- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<b>URTICACEAE</b>													
Boehmeria (False Nettle)											F		decorative no sting
Cypholophis											F		
Dendrocide											F		painful
Forsskaolea											F		no sting
Laportea (Wood Nettle)											F		
Obetea											F		
Parietaria			F		M		X						
Pilea													ornamtl; no sting
Pipturis											F		
Procrida (Aluminum Weed/Clear Weed)													
Urera											F		alkaloidal spiny tree
Urtica (Nettles)		ep	FS?	*G							F		
-----													
<b>CANNABINACEAE</b>													
Cannabis (Hemp)			(FS ) ?		R						F		Neurotox.
Humulus (Hops)	X	yg-pts	FS		(R)				X	F?			neurotox?
-----													

U R T I C A L E S

ECONOMIC UTILIZATION OF THE MULBERRY FAMILY

Economic virtues: Edibility (vegetables and fruits)  
 Fiber sources  
 Some latex sources  
 Some selective toxins

1. bevg	4. poison I=insect	6. oils/fats	10. Wood
2. food	G=gen'l P=fish	7. tannin(g)	Fibers
3. med: Folk	5. Mucus/Gum/Resin	8. dye	11. Sterols
Selective	Latex	9. esstl oils	Saponins

FAMILY Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<b>MORACEAE</b>													
Antiaris				*	L								*antiarin X & Z used as dart px.
Artocarpus (Breadfruit)		ft/L			L G					WF			bark-fiber chewing gum
Brosimum (Cow Tree)					L					WF*			bark-fiber chewing gum
Broussonetia										F			bark-fiber
Cecropia			F		L	*wax				W			wax from fruit
Chlorophora			F				X	X					Mayan medicine wd: br-y. dye calking sap med'l rts
Dorstenia			F										ficin (vermif)
Ficus (Fig tree)			FS		L					W			
Maclura (Osage Orange)		ft			L		X	X		W			lectin
Malaisia										F			bark-fiber
Morus (Mulberry tree)		ft			L					W			leaves fed to silkworm. halluc?
Musanga	X												
Myrianthus		ft											
Poulsenia										F			bark-fiber
Treculia		sds											
-----													
<b>ULMACEAE (The Elm tree Family)</b>													
Chaetoptelea													
Celtis		ft/sds								W			
Phyllostylon													
Trema			F					X		WF			bark-dye softwood
Ulmus (Elm)			F		(M)					F			i.b.-fibers
Zelkoma													
-----													
<b>CECROPIACEAE</b>													
Cecropia		buds	*F	*G	*L					WF			*latex is used to rmv warts.
Poikilospermum													
-----													

ECONOMIC UTILIZATION OF MEMBERS OF THE PINK ORDER

Economic Virtues: Edibility  
 Pigments: Betalains (all but Caryophyllaceae and Molluginaceae)  
 Betacyanins (Caryophyllaceae and Molluginaceae)  
 Anthocyanins (all other families)  
 Soap-Ash  
 Soap substitute (Saponins)  
 (esp. Caryophyllaceae)  
 Lectins (Phytolaccaceae)

- 
- |                           |                             |               |                         |
|---------------------------|-----------------------------|---------------|-------------------------|
| 1. bevg                   | 4. poison I=insect          | 6. oils/fats  | 10. Wood                |
| 2. food                   | G=gen'l P=fish              | 7. tannin(g)  | Fibers                  |
| 3. med: Folk<br>Selective | 5. Mucus/Gum/Resin<br>Latex | 8. dye        | 11. Sterols<br>Saponins |
|                           |                             | 9. esstl oils |                         |

FAMILY Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>CHENOPODIACEAE</b>												
Anabasis					G							
Atriplex (saltbush)		veg		?								?=Oxalate is an anti-nutrient sce for sugar
Beta (Beet)		veg		?								
Chenopodium (Lamb's Quarters; Quinoa)		sd/veg		?								
Halogeton				*G								*oxalates kill livestock/sheep
Haloxyton					manna							
Salicornia		veg		?								dye/soap-ash
Salsola		veg		?								Na-oxalates
Spinachia		veg		?								
Suaeda							X					black-dye
-----												
<b>AMARANTHACEAE</b>												
Achyranthus		veg	F	?						*		brush-fiber
Alternanthera		veg	F	?								
Amaranthus		veg	F	?								
Celosia		veg	F	?								
-----												
<b>PORTULACACEAE</b>												
e.p.=Potherb												
Calandrina		ep	F	?								?=Oxalate is an anti-nutrient
Claytonia		ep	F	?								
Montia (Miner's Lettuce)		ep	F	?								
Portulacca (Purslane)		ep	F	?								
Talinum		ep	F	?								
-----												

ECONOMIC UTILIZATION OF MEMBERS OF THE PINK ORDER

Economic Virtues: Edibility  
 Pigments: Betalains (all but Caryophyllaceae and Molluginaceae)  
 Betacyanins (Caryophyllaceae and Molluginaceae)  
 Anthocyanins (all other families)  
 Soap-Ash  
 Soap substitute (Saponins) (esp. Caryophyllaceae)  
 Lectins (Phytolaccaceae)

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- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>CARYOPHYLLACEAE</b>												
Agrostemma		X		?								
Arenaria		X		?								
Caryophyllum												Decor
Cerastium (Chickweed)		X		?								
Corrigiola				F(tonic)					*			*rt: perfume
Cucubalus				F								astringent
Dianthus						oil						Decor
Gysophila				*G							Sa	sapotoxic Decor
Herniaria				F							Sa	Treats U.T.; vulnerary
Lychnis												
Melandrium											Sa	
Paronychia				F								diur; aphro
Saponaria (Soapwort)				F?							Sa	
Silene				F								
Spergulia				F								treats U.T. livestock fd
Stellaria (Chickweed)		X		?								
Tunica		X*										tea: flowers

ECONOMIC UTILIZATION OF MEMBERS OF THE PINK ORDER

Economic Virtues: Edibility  
 Pigments: Betalains (all but Caryophyllaceae and Molluginaceae)  
 Betacyanins (Caryophyllaceae and Molluginaceae)  
 Anthocyanins (all other families)  
 Soap-Ash  
 Soap substitute (Saponins) (esp. Caryophyllaceae)  
 Lectins (Phytolaccaceae)

- =====
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<b>AIZOACEAE</b>													
Aizoin		ep											
Gizekia		ep											
Lithops (Living rocks)													
Mesembryanthemum (Ice plant)		X											wash; chewed halluc alk: mesebrine. decor
Mollugo		X											
Trianthema		X	F										soap-ash
Tetragonia (New Zealand Spinach)		*veg											
-- -- -- -- --													
<b>PHYTOLACCACEAE</b>													
Gallesia												Sa	soap-ash; powdered plt =soap subst. *anthocyanins #px lectins soap-ash; powdered plt =soap subst. "rouge plant" soap-ash; powdered plt =soap subst.
Phytolacca (Pokeweed)		veg	FS	#	G			*X					
Rivina Stegnosperma								X					
-- -- -- -- --													
<b>PETIVERIACEAE (former Phytolaccaceae)</b>													
Petiveria		lvs?	*F					oil			@		*Mustard oil; "pipi rt" is a ctrirritant.
-- -- -- -- --													

ECONOMIC UTILIZATION OF MEMBERS OF THE PINK ORDER

Economic Virtues: Edibility  
 Pigments: Betalains (all but Caryophyllaceae and Molluginaceae)  
 Betacyanins (Caryophyllaceae and Molluginaceae)  
 Anthocyanins (all other families)  
 Soap-Ash  
 Soap substitute (Saponins) (esp. Caryophyllaceae)  
 Lectins (Phytolaccaceae)

=====

1. bevg	4. poison I=insect	6. oils/fats	10. Wood
2. food	G=gen'l P=fish	7. tannin(g)	Fibers
3. med: Folk	5. Mucus/Gum/Resin	8. dye	11. Sterols
Selective	Latex	9. esstl oils	Saponins

FAMILY Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>NYCTAGINACEAE</b>												
Abronia		rt										
Boerhaavia		rts	F									
Mirabilis			F				X					v. cathartic
Neea	X									*		Chew stick
Pisonia		X	F									
-- -- -- -- -- -- -- -- -- -- -- -- -- --												
<b>CACTACEAE</b>												
Acanthocereus												
Ariocarpus												Peyote-subst
Carnegiea		ft/sd										"Saguaro" woodwork
Cereus												
Echinocactus												
Echinocereus		ft										
Epithelantha												halluc?
Ferocactus												
Hylocereus		ft										
Lemaireocereus												"Organ Pipe"
Lophocereus		ft										
Lophophora												Peyote
Machaerocereus		ft		P	R							varnish
Nopalua		ft										
Opuntia		ft/lf										
Pachycereus		ft										H?-Carnegine
Pereskia		ft										
Selenicereus			?	?								*Dig. effect
Trichocereus		ft										H?-hordenine, mescaline.
<b>MOLLUGINACEAE</b>												



THE JOINTWEED ORDER--POLYGONALES

ECONOMIC UTILIZATION OF POLYGONACEAE

Major applications: Limited food sources (starch/cereals)  
 Folk Medicines: Laxatives (Anthraquinones)  
 Kino and other dyes

- =====
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
Antigonum		tu											
Coccoloba				P?			*X			W			*Kino
Eriogonum		lv/stem											Oxalate probs?
Muehlenbeckia		ft											lvs: cold, etc.
Neomillspaughia			F										
Oxyria		ep											Oxalate probs?
Polygonum		@		P			X	X					Oxalate probs?
Rheum		stem	FS	G				X					AQ: laxative
Rumex		X	F					X					Oxalate probs.
													Edible seeds:
													starch/cereals
													Oxalate probs?
Triplaris										W			

Genus \_\_\_\_\_

PLUMBAGINALES

ECONOMIC UTILIZATION OF THE PLUMBAGO FAMILY

Major applications: blistering agents used for folk medicines  
 Chemotaxonomy: Plumbagin (Naphthaquinone)

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
PLUMBAGINACEAE													
Ceratostigma			F*	G*									*cscs blistering
Plumbago			F*	G*									*cscs blistering
Limonium			F	G									astrigent
Statice		X	F				X						decorative

THE ROSE SUB-CLASS (ROSIDAE)

ECONOMIC UTILIZATION OF THE ROSE ORDER

Economic Virtues: Edible fruits  
 Mild tannins  
 Seed oils (Class #3c--Conjugated, unsaturated)  
 Cyanogenic glycosides  
 Aromatic oils/perfumery flowers  
 Heliotropin (used in perfumery and as a pediculicide)  
 Sugar alcohols, esp. Sorbitol.  
 Salicylates  
 Saponin source-- Quillaja

- 
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<b>ROSACEAE</b>													
Adenostoma													
Afrolicania						oil							"Po-Yoak Oil"
Agrimonia (Agrimony)			F				X						
Alchemilla			F				?						
Amelanchier (Serviceberry)		ft								W			
Armeniaca (see Prunus) (Almond)													
Cercocarpus			F							W			
Chrysobalanus		ft				oil							
Cliffortia			F										
Comarum			F				X	X					
Cotoneaster					*								manna-like
Couepia (Zapote amarillo)		ft*											
Cowania										F			bark-fiber
Crataegus (Hawthorn)		ft	FS?							W			?-flavonoid
Cydonia (Quince)		ft	FS?		M	oil							
Dryas	X												
Eriobotyra (Loquat)		ft*											
Ferolia										W			
Filipulenda			FS							X			Salicylate heliotropin
Fragaria (Strawberry)	X	ft	F										
Gillenia			F	*									*emetic
Geum (Avens)		x								x			
Hagenia			F				X						
Kerria													
Licania (Monkey apple)		ft				oil							

THE ROSE SUB-CLASS (ROSIDAE)

ECONOMIC UTILIZATION OF THE ROSE ORDER

Economic Virtues: See page 1

- 
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>ROSACEAE</b>												
Malus (Apple)	X	ft	FS?		M					W		
Mespilus		ft										
Neurada												
Parinarium						oil						Neou oil
Photina		ft										
Physocarpus (Ninebark)			FS									Salicylate?
Potentilla (Cinquefoil)			FS?				x					
Prunus avium			FS? *			oil						*for Gout: keracyanin Cyan glyc. Cyan glyc.
Prunus (apricot, peach, plum, cherry, etc.)	?	ft	FS? *			oil	x	X				
Pyracantha												Sa
Pyrus (Pear)	X	ft	FS?		M	oil				W		
Pygeum												
Rosa (Rose)	X	ft	FS	*		oil	?		X			Cyan glyc Vit C
Rubus (Raspberry/Blackberry)	X	ft	FS?					X				
Sanguisorba		x										flavort
Sorbus (Mountain Ash)	?	ft	FS				X	X				flavort Sorbitol
Spiraea (Hardhack)			FS									Salicylate
Quillaja			?								Sa	
<b>SUB-FAMILY ROSINAE (?)</b>												
<b>CHYRSOBALANACEAE</b>												
Chrysobalanus		ft				oil						*Licanic A.
Licania						oil*						*Licanic A.

ALSO: SURIANACEAE  
CROSSOSOMATAACEAE  
ANISOPHYLLEACEAE

RHABDODENDRACEAE  
NEURADACEAE

THE ROSE SUB-CLASS (ROSIDAE)

ECONOMIC UTILIZATION OF THE SAXIFRAGE FAMILY

Economic Virtues: Folk medicines  
 Flavonoids (dyes?)  
 Cyanogenic glycosides  
 Some fixed oils (Class #3A)

- 
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<b>SAXIFRAGACEAE</b>													
Astilbe													smoked
Chrysosplenium		X											
Dichroa			F										anti-malaria anti-pyretic
Heuchera			F										astringt
Mitella (Miterwort)			F										diur/astrgt
Pancheria										W			
Parnassia			F*										for CNS/epil.
Philadelphus									X				"mock orange"
Saxifraga (Saxifrage)		X	F										
Tellima													
Tiarella													
<b>RIBESIOIDEAE</b>													
Ribes (Currants)	?	ft	F			*oil		X					flavort gamma-Ln A. Vit C, etc.
<b>GROSSULINAE</b>													
<b>GROSSULARIACEAE</b> (GROSSULARIOIDEAE)													
Grossularia		ft											
<b>HYDRANGEACEAE</b> (HYDRANGIOIDEAE)													
Hydrangea	X		F	G*						W			narcotic? *Cyan glyc.
<b>[LIGNIDAE]</b>													
<b>GROSSULININAE?:</b>			<b>GREYIACEAE</b>				<b>BRUNIACEAE</b>						
			<b>COLUMNELLIACEAE</b>				<b>ALSEUOVMIACEAE</b>						

THE ROSE SUB-CLASS (ROSIDAE)

ECONOMIC UTILIZATION OF THE SAXIFRAGE FAMILY

Economic Virtues: Decorative  
Folk medicines

- 
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>CRASSULACEAE</b>												
Cotyledon		lvs										
Crassula												
Echeveria			F									decor
Sedum			F									lax.; decor
Sempervivum (hen 'n chick)			F									
Umbilicus												
. . . . .												
<b>CEPHALOTACEAE</b>												
Cephalotus												
. . . . .												
<b>CUNONIINEAE; CUNONIACEAE</b>												
Ceratopetalum										W		
Cunonia												
Pancheria												
Schizomeria												
Weinmannia			F*		G		X					*Q-adultrt
. . . . .												
<b>CONNARACEAE</b>												
Agelaea			F									
Cnestis				G								occ. px
Connarus			F	P			X					
Rourea				*						W		* herbivore px * homicidal
. . . . .												
ALSO:	<b>DIALYPETALANTHACEAE</b>					<b>BRUNELLIACEAE</b>						
	<b>EUCRYPHIACEAE</b>					<b>DAVIDSONIACEAE</b>						
	<b>PITTOSPORINAE; PITTOSPORACEAE</b>											
	<b>BYBLIDACEAE</b>											



THE SPURGE ORDER (EUPHORBIALES)

ECONOMIC UTILIZATION OF THE SPURGE FAMILY

Economic Virtues: Assorted folk medicines  
 Latex Products  
 Selective toxins/Systemic Toxins (Animal poisons)  
 Diterpene Esters (irritant co-carcinogens; esp. Phorbol and Mezerein.)  
 Fixed Oils (esp. Castor Oil)  
 Starch (Manioc)  
 Myrobalans  
 Some non-protein amino acids  
 Lectin: Ricin

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- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>EUPHORBIACEAE</b>												
Aleurites (Tung tree)						oil						Tung oil
Cephalocroton						oil						
Chrozophora						oil						
Cnidoscolus						oil						Penao oil
Croton				G		*oil						*px oil
Euphorbia (Spurges)			F+	#G	L							Ltx: wart rmvl --antileukemic: diterpene esters
Fluggea			F	P	M		X					Aphrod.
Garcia				#G		*oil						*purgtv oil
Hevea (Rubber tree)					L*	oil						*Para rubber
Hippomane			F*	G*	L*							*Irrit/med ltx
Hura			F*	G*	L*							*Irrit/med ltx Tx: leprosy, furuncles; vesicant.
Jatropha (Manioc/Tapioca)		#fd		#G		oil	x	x				# "Manioc" starch (tapioca); prussic acid Ca <sup>-</sup> Jatrophene
Joanessia				#G		*oil						*purgtv oil
Macaranga	ft/sd									F*		fiber for envelopes
Mallotus			F+			oil						hair from seed capsules= vermifuge

THE SPURGE ORDER (EUPHORBIALES)

ECONOMIC UTILIZATION OF THE SPURGE FAMILY

Economic Virtues: See first page.

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|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
Micranda					L*							*rubber prep'n
Omphalea			F+		L	oil						vermifg; purg; anthelm.
Pedilanthus (Candellila)					L*	wax						*caustic irrit Candellila wax
Petalostigma		ft#		P								#quince-like flav (bitter); "opium antidote"
Phyllanthus		ft	F+	*				X				*emblic myrobalan" suicidal recipe med: ophth; tonic; astrgt, digest.
Poinsettia												decor
Ricinodendron						oil						Manketti nut
Ricinus (Castor bean)			FS?	G#		oil						Castor oil Ricin (lectin)
Sapium					L#							*Latex--arrow px
Sesbiana (Jumping Beans)		#sd		*	L*							*Ltx--arrow px #"jumping bean"
Stillingia			F	*G								*Cyan glyc.
Synadenium				#								#Livestock px
Tetracarpium						oil						
Toxicodendrum (Hyaenanche)				#								#fruit used to kill hyenas in Africa
Tragia			F									Ctrirrit for gastralgia.

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THE SPURGE ORDER (EUPHORBIALES)

ECONOMIC UTILIZATION OF OTHER FAMILIES

Economic Virtues: Some folklore applications  
decorative  
Jojoba Oil: Eicosenoic and Docosenoic acid, Waxes, Esters.

Note: NO LATEX  
See non-protein amino acids.  
Buxaceae has seco-iridoids.

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|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>PANDANACEAE</b>												
Freycinetia		x								F		
Panda		ft+								F		
-----												
<b>BUXACEAE</b>												
Buxus			*								W	
(Box wood)												herbal med (Barosma) adulterant; Buxine. Decor. Decor.
Pachysandra												
Styloceras										W		
-----												
<b>SIMMONDSIACEAE</b>												
Simmondsia	*	sd				oil						
(Jojoba)												Jojoba oil

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S A P I N D A L E S

RELATED GENERA

Economic virtues: Folklore medicines  
 Toxicity; incl. Cancer drugs and selectively toxic alkaloids  
 Major flavorant/medicinal herb in Angostura Bitters  
 Toxicity  
 Lumber sources  
 Some oils, gums and manna.

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|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
Genus													
RUTACEAE													
Acronychia			FS	G+					X				Ca <sup>+</sup> : acronychine
Amyris					G								Elemi gum; Manna
Atalantia			F			oil							
Barosma			F			oil							
(Buchu)													
Calodendron						oil							
. . . . .													
Casimiroa													
(White sapote)													
Chaetospermum													
Correa	X												
Dendrosma										W			
Evodia			F										
. . . . .													
Feronia		ft			G				X*	W			ink mfg
(Elephant Apple)													
Flindersia					G					W			
Galipea			*F+?										*Angostura's Bitters.
(Cusparia; Angostura bark)													
Melicope					G								
Monniera													
. . . . .													
Murraya			F							W			cosmetic bk.
(curry leaf tree)													
Phellodendron			FS					X		W			BIQ's
Pilocarpus			FS										pilocarpine
Raputia			F										

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S A P I N D A L E S

ECONOMIC UTILIZATION OF RUE FAMILY (RUTACEAE)

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<u>TODDALIOIDEAE</u>												
Ptelea			FS?	G								stom/tonic anthelm.
Skimmia				G								
Toddalia	?	ft	F							?	W	arom tonic. anti-pyr. no berberine





S A P I N D A L E S

ECONOMIC UTILIZATION OF SIMAROUBACEAE

Economic virtues: Bitter agents--Quassins (Rearranged Triterpenes)  
 (also known as Simaroubolides).  
 Folk Medicines--Febrifuges, bitter-tonics.  
 Cancer drugs--Ailanthine, Bruceantinol, Bruceantin,  
 Bruceantarin, Quassimarin, Holacanthone,  
 Glaucarubinone, and Undulatone.

Chemotaxonomy: Fatty Acids: Tariric Acid (found only in this Family)

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- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
SIMAROUBACEAE													
Ailanthus (Tree of Heaven)			F		R			X		W			tonic
Brucea			F										bitter bark; tonic Ca <sup>+</sup> Bruceantin
Castela			F										fevers; eczema; anemia
Desbordesia		sd											
Hannoa			F							W			
Harrisonia			F (bk)										
Irvingia		sd	?			f/o					Sa		
Picramnia			F										bitter tonic tx: skin, stim/alter.
Picrasma			F					X					bitter bk yellow wd
Quassia			F*										*bitter tonic Quassin
Samadera			F (bk)										
Simaba			F (bk)										
Simarouba			F (bk)										
Soulamea			F (bk)										

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S A P I N D A L E S

ECONOMIC UTILIZATION OF ANACARDIACEAE

Economic virtues: Tannins; Quebracho  
 Resins/Gums/Varnish/Lacquer  
 Folk Medicines (incl. causticity)  
 Edible fruits/nuts/seeds  
 Numerous forms of toxicity

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- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
Pachycormus							X						
Pistacia (Pistacio)		nut	F	G*	G/R	oil		?					*px oil
Pleiogynium		sd											
Poupartia		ft											
Quebrachia							X						Quebracho
Rhodosphaera													
Rhus (Toxicodendron) (Poison Ivy) (Poison Sumack) (Poison Oak)	X		F	G*	R+	oil*	X	X	?	W+			dye/ink *px oil R: varnish flavorant charcoal Quebracho Cubeb subst.
Schinopsis							X						
Schinus		ft	F		G								
Sclerocarya	X	ft											
Semecarpus		ft	F	*		oil*	X						vermicide vesict oil (Oriental Cashew)
Sorendeia		ft					X						
Spondias	X	ft					X						
Tapirira		ft*											*@bitter

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S A P I N D A L E S

ECONOMIC UTILIZATION OF ZYGOPHYLLACEAE

Economic virtues: Numerous folk medicines  
 Gums and resins  
 Saponins (Soap substitutes)  
 Fish poisons

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|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>ZYGOPHYLLACEAE</b>												
Balanites			F+	P	G R	oil				W	*	*soap prod.
Bulnesia		x		P	R#					X W	*	*ditto
Guaiac			F	?	R					X W	Sa	#Guaiac-like rheum/gout; skin.
Kallstroemia		X										
Larrea (Mesquite)		x	F									anti-septic (terpenes)
Nitraria		ft										
Peganum						oil		X				Aphrod. lactagogue Harmalines (Narcotic?) anti-ox: NDGA
Porlieria			F								?	for washing
Tribulus		ft--	F									diuretic
Zygophyllum	X	buds	*									*caper-like fodder

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THE ROSE SUB-CLASS (ROSIDAE)

ECONOMIC UTILIZATION OF THE SANDALWOOD ORDER

Economic Virtues: Fragrant wood (used for perfumes/cosmetics)  
 Folklore medicines.  
 Some edible fruits.

Chemotaxonomy: Polyacetylenes

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- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>SANTALACEAE</b>												
Arjona		rt										
Colpoon							X					
Eucarya			F						X			
Exocarpus									X*	W*		fragrant wd
Fusanus		ft							X*	W*		fragrant wd
Jodina							X					
Osyria									X			Rutin
Pyrularia		ft				*						px oil?
Santalum (Sandalwood)			F						X*	W*		fragrant wd

THE ROSE SUB-CLASS (ROSIDAE)

ECONOMIC UTILIZATION OF THE SANDALWOOD ORDER

Economic Virtues: Some waxes and oils  
 Folklore medicines.  
 Some fragrant wood (used for perfumes/cosmetics)

- 
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>BALANOPHORACEAE</b>												
Balanophora						wax						*illum'n
-----												
<b>OLACACEAE (sp?)</b>												
Liriosma (Muiria puama)			F*									*stim/tonic; aphrod.; campesterol; & sitosterol.
Olax		*										*spice
Ongokea						oil *						*purgtv; industr'i tonic; aphrod.;
Ptychopetalum (Muiria puama)												campesterol & sitosterol.
Strombosia												
Ximenia										W		Cyan glyc. (HCN)
-----												

THE ROSE SUB-CLASS (ROSIDAE)

ECONOMIC UTILIZATION OF THE SANDALWOOD ORDER

Economic Virtues: Edible fruits.

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
OPILIACEAE													
Champereja		ft											
Meliantha													

ALSO:

- DIPENDONTACEAE
- MISODENDRACEAE
- MEDUSANDRACEAE
- EREMOLEPIDACEAE

PLACEMENT?:

- |                                 |     |                    |
|---------------------------------|-----|--------------------|
| ELAEAGNACEAE (OLEASTER FAMILY)  | oil | 15% Linolenic Acid |
| PUNICACEAE (POMEGRANATE FAMILY) | oil | Punicic Acid       |





LEGUMES ORDER (FABALES)

ECONOMIC UTILIZATION OF LEGUME FAMILY (LEGUMINOSAE)

Economic Virtues: See page 1

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- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
Anadenanthera													Halluc? (Tryptamines)
Andira				G									Goa powder Chyrsarobinin (Anthraquinone) lectin?
Arachis (Peanut)						oil							
Aspalanthus			F*				X						stomachic xanthines
Astragalus (Tragacanth)					G								
Butea			F		G					WF			Kino
Caesalpinia (divi-divi)							X	X		W			Ca-Cesalin
Cajanus Canavalia	X	ed	F	?									crop concanavaine Coffee subst.
Cassia (Senna)			FS					X					Senna glyc. anthrones
Castanospermum		ed	S			oil							Castanospermine
Ceratonia (Locust Bean; Carob)					G								
Cicer (Chick Pea)		sd	F+										
Cladastris								X					yellow wd purgative
Colutea (Bladder Senna)			FS+										
Copaifera (Copaiba)			F		R					W			
Coronilla (Crown Vetch)				G						W			lectin
Cyamopsis (Guar bean)					G								Guar gum
Crotalaria													Allied N-Oxides of Pyrrolizidines
Cytisus (Scotch Broom)				G									Sparteine halluc? forage narcotic
Dalbergia			F							W			



LEGUMES ORDER (FABALES)

ECONOMIC UTILIZATION OF LEGUME FAMILY (LEGUMINOSAE)

Economic Virtues: See page 1

=====												
1. beverage	4. poison I=insect	6. oils/fats	10. Wood									
2. food	G=gen'l P=fish	7. tannin(g)	Fibers									
3. med: Folk	5. Mucus/Gum/Resin	8. dye	11. Sterols									
Selective	Latex	9. essential oils	Saponins									
-----												
Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
Hedysarum	?	x	F?						x			Licorice rt
Hymenaea		pulp	F		R					W		Copal
Indigoifera (Indigo bean)								X				Indigo fodder
Inocarpus (Polynesian chestnut)		sd										
Kennedia										F		twine
Krameria			F				X	X				tonic/astrgt mouthwash red dye alkaloid
Laburnum (Golden Chain)				G*								
Lens (Lentil Bean)		sd										
Leucaena		sd										decor
Lonchocarpus		x	F	GPI				X				laxative
Lotus												fodder
Lupinus (Lupine)		(sd)		G*		oil						Sparteine fodder
Medicago		@	F	(G)		oil			X			coumarins
Melilotus (Sweet Clover)									X			dicoumarol
Milletia				I								rotenone
Mimosa (Mimosa)						oil						Fodder Halluc? (NN-DMT) Albazine
Mucuna		sd	FS*	IG *								*DOPA (bug repel) bristly pods
Mundulea				IP								rotenone
Myrocarpus					Bals				X			
Myrospermum			F		oleo-R							
Myroxylon					Bals				X			Bals. Tolu/peru
Ougeinia				P								
Oxytropis				*								horse px.
Pachyrrhizus (Yam Bean)												
Parkia (Sudan coffee)		sd				oil	X	X				Leprosy tx. Kino

LEGUMES ORDER (FABALES)

ECONOMIC UTILIZATION OF LEGUME FAMILY (LEGUMINOSAE)

Economic Virtues: See page 1

- =====
- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
Parkinsonia		sd	F			oil						
Pentaclethra			@	P		oil				W	Sa?	Owala oil
Phaseolus (Beans)		sd	@									macaroni prod
Physostigma (Ordeal Bean)			FS	?							St	Eserine Stigmasterol
Piscidia			F	IP						W		rotenone
Pithecellobium	pulp/sd		F		M							tamarind-like
Pongamia				P		oil						illum'n
Prosopis (Mesquite)					G					W		
Psoralea (Tonka Bean)		rt										coumarins?
Pterocarpus							X	X		W		Kinos
Pueraria (Kudzu vine)		ep								F		fodder
Rhynchosia			FS?									Halluc Curare- antidote?
Robinia (Black Locust)				G*						W		*lectin
Sesbania		x								WF		
Sophora		@	?	G		oil		X		W		Cytisine Rutin Halluc. tx meat px?
Spartium								X		W*		brooms bk fiber? Sparteine?
Spatholobus				I								rotenone
Stryphnodendron			?					X*				40% Tannin astrgt, etc.
Stylosanthes (squaw medicine)			F									fodder
Swartzia										W		

LEGUMES ORDER (FABALES)

ECONOMIC UTILIZATION OF LEGUME FAMILY (LEGUMINOSAE)

Economic Virtues: See page 1

- =====
- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
Sweetia		*	F*							W		*bitter bk w/ sweetine. spice
Tamarindus (Tamarind)		pod				oil						
Tephrosia				GIP				*				cardiotonic *low grade Indigo coumarin Camarou Oil Copal
Torresia (false tonka)						oil			X			
Trachylobium					R							
Trifolium		x								X		fodder
Trigonella (Fenugreek)	?	*	F*			M oil				X		
Vicia (Vetch)				G								
Vigna		Pods										
Wisteria										F		Coffee subst. bark fiber
Xylia					G		X					Kino

ECONOMIC UTILIZATION OF THE GERANIUM ORDER (GERANIALES)

Economic Virtues: Dyes, mainly tannic acids.  
 Folk medicines  
 --mild tannic acids (astringent)  
 Some edibility  
 Cyanogens/Thiocyanogens (-SCN)

- 
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>GERANIACEAE</b>												
Erodium (Storksbill)		veg	F				X	x				sd: hygrometer
Geranium (Wild Geranium)			F				X	x	*			Geraniol
Pelargonium (indoors Geranium)		?	?				?	?	*			decor *sce: terpin hydrate made with the insect repellent Geraniol.
Wendtia			F									
<b>OXALIDACEAE</b>												
Averrhoa (Starfruit)		ft										Vit C
Biophytum Oxalis (Shamrock; Wood Sorrel)		lvs		??								Oxalic A: anti-nu?
<b>BALSAMINACEAE</b>												
Balsamina Impatiens (Touch-me-not)			F			(M) oil		x				Parinaric Acid Balsaminasterol
<b>TROPAEOLACEAE</b>												
Tropaeolum (Nasturtium)		veg *		?		oil						S-Cyan glyc. *Vit C. Oil: Behenic & 82% Erucic A.
<b>LIMNANTHACEAE</b>												
Limnanthes						oil/wax						-SCN



ECONOMIC UTILIZATION OF THE POLYGALA ORDER (POLYGALALES)

Economic Virtues: Oils and vegetable fats  
 Salicylate/Methyl-salicylate sources  
 Hallucinogenic Harmaline Alkaloids (Yagi)  
 Some fiber, edible fruit, saponins, toxicities.

- 
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>POLYGALACEAE</b>												
Polygala	X		F	?*		oil/butter				F	Sa	Sal/Met-Sal Malakung butter Cheyi/Numbum Oil
(white ipecac) Securidaca			F*	G#						F	Sa#	#-has 5% saponins *ordeal med.
Trigoniasstrum											W	
<b>MALPIGHIACEAE</b>												
Banisteriopsis (Yagi)	X*											*Yagi bevg; Halluc.; Harmaline alk.
Bunchosia		ft										
Byrsonima		ft		P						W		
Diplopterys												
Galphimia				I								
Heteropteris										F		
Hiptage			F*	I								*skin med; bitter.
Malpighia		ft	F									
<b>VOCHYSIACEAE</b>												
Erisma						fat *						*Japoti butter
Vochysia												
<b>KRAMERIACEAE</b>												
Krameria			F					X				Leg. parasite
<b>XANTHOPHYLLACEAE</b>												
Xanthophyllum			F			oil		X				bitter (tonic)
<b>TRIGONIACEAE</b>												
??Trigoniasstrum	(see Polygalaceae)										W	
<b>TREMANDRACEAE</b>												



THE UMBEL ORDER (APIALES)

ECONOMIC UTILIZATION OF CARROT FAMILY (APIACEAE)

Economic Virtues: Food sources  
 Aromatics/Spices  
 Gums, gum-resins, and oleo-resins  
 (applicable to Cosmetics and incense mfg)  
 Folk medicine  
 Indigo Dye  
 Irritant resins/oils (poisonous)  
 Toxic alkaloids  
 Fixed Oils: Type 6 (Petroselenic Oleic, Linoleic acids)

Chemotaxonomy: Highly substituted prenylated coumarins (esp. Apioideae)  
 (i.e. dihydrofurocoumarins,  
 furocoumarins,  
 pyranocoumarins)  
 Polyacetylenes  
 Oligosaccharide--Umbelliferose

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>UMBELLIFERAE/APIACEAE</b>												
Aethusa				G								Coniine
Amburona									x			coumarin
Ammi			FS?						x			coumarin (methoxsalen) khellin-- cv/bronch dil
Amorpha (indigo bush)								?				
Anethum (Dill)		pt	F							x		
Angelica												
Anthriscus (Chervil)		pt	F							x		
Apium (Celery)		pt	F		oleoR					x		
Archangelica		x	F									
Azorella			F		*R							tx hypochondr., mtn sickness; *Bolax resin-- illumintn.
Bupleurum												
Carum (Caraway)		ed	?							x		
Cicuta (Wild Hemlock)			?	G						(*)		
Conium (Water Hemlock)				G						(x)		Coniine
Coriandrum (Coriander)		ed	?							x		







ECONOMIC UTILIZATION OF THE MYRTLES ORDER (MYRTALES)

Economic virtues: Edible fruits  
Kinos  
Some aromaticity  
Some oils  
Piscicidal due to kinos/tannins

- =====
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevq      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>MYRTACEAE</b>												
Angophora							X	X				Kino subst.
Bockhousia									X			
Callistemon (Bottlebrush)						oil						
Eucalyptus		X	F	P*	#;G		X*		X	WF		*Kino: Dye?; Piscicidal
Eugenia (Cloves)		ft	F	G+			X	X	X	W		#Manna Cloves-spice
Feijoa		ft	F				X				Sa	med: tannin
Leptospermum	x		F							W		
Melaleuca (Cajeput)			F+			oil						"Cajeput"
Metrosideros			F							W		
Myrciaria		ft										
Myrtus (Myrtle)			F						X	W		
Pimenta (Allspice)		*				oil				*		*"Allspice"
Psidium (Guava)		ft*	(F)									*Guava
Rhodomyrtus		ft		G*			*	*			Sa	*19% tannin
Spermolepis				G*			X					*Kino
Syzygium		ft	F							W		
-----												
<b>ONAGRACEAE</b>												
Circaea												
Epilobium (Fireweed)			F									
Fuchsia			F						X			decor
Ludwigia	x						*					ep: blk dye
Oenothera (Evening Primrose)	x					oil						GLA
-----												

ECONOMIC UTILIZATION OF THE MYRTLES ORDER (MYRTALES)

ECONOMIC UTILIZATION OF MELASTOMATACEAE & LYTHRACEAE

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>MELASTOMATACEAE</b>												
Blakea							X					
Clidemia		ft	F									
Conostegia		ft										
Dionychia								X				anthelm
Dissotis			F									
Marumia		ft/yg-pt	F									
Medinella		lv/ft										
Melastoma			F					*				tooth blackng
Memecylon		ft						X		W		
Miconia	X	ft	F				X	X		*		*charcoal astrgt
Mouriria		ft										
---												
<b>LYTHRACEAE</b>												
Ammannia				G#								#blistering tonic
Cuphea			F*									*intox'g w/ heimine, lythrine, cryogenine.
Heimia	*			G*								
Lafoensia								X	X			
Lagerstroemia				*			X			W		*narcotic; med: astrgt
Lawsonia (Henna)			F					X*	X			Henna dye Lawson (Naphthaquinone) ophthalmia
Lythrum (Loosestrife)		?	F									
Nesaea		X										
Pemphis										W		
Physocalymna										W		
Punica (Pomegranate)		ed	FS?				X					" Pomegranate" alkaloid.
Woodfordia					G			X				
---												

ECONOMIC UTILIZATION OF THE MYRTLES ORDER (MYRTALES)

M Y R T A L E S  
ECONOMIC UTILIZATION OF THYMELAEACEAE

Economic Virtues: General Poisons--rubefacient properties.  
 --taenifuges/drastics  
 --arrow poisons  
 Fibers  
 Irritant/Co-carcinogens  
 Diterpene esters: Phorbol and Mezerein  
 (Cancer drugs?)

- =====
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
THYMELAEACEAE													
Aquilaria										X			fragt wood perfumant; Agar?
Conystylus													
Dais											F		
Daphne			F	GP							F		
Daphnopsis			F										drastic
Dirca			F*	G*									px fruit irrit/vesict
Edgeworthia													
Funifer			F*	G*							F		paper prod.
Gnidia				GP*							F		*taenifuge *arrow px; criminal px
Gyrinops											W		
Lagetta											F		"lace bark"
Lasiophora				GP									purgtv; criminal px vesicant
Lasiosiphon				GP									
Passerina											F		bk--cordage
Pimelea											F		
Thymelaea													
Wikstroemia											F		fibers for banknotes, bk for robe.

TABLE

M Y R T A L E S

ECONOMIC UTILIZATION OF COMBRETACEAE

Economic virtues: Some gums. oils, and vegetable butters.  
 Some edible fruit  
 Some folklore medicines  
 Myrobalans (tannins)

Chemotaxonomy: Fixed Oils/ Fatty Acids  
 Type 4 or 10:  
 Palmitic, Oleic, Linoleic, Stearic acids

- =====
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
COMBRETACEAE												
Anogeissus					G						W	Ghatti gum
Combretum		ft				*oil						Mangrove butter-like ornamtl
Conocarpus			F								W	charcoal tonic/astr anti-pyr anthelm. ornamtl
Quisqualis		#	F		G	oil						ornamtl
Terminalia						oil	X	*				*ft: belleric myrobalans; astr/tonic; anthelm.
-----												
PENAEACEAE (Close to Legume??)												
Brachysiphon												
Endonema												
Glishcocolla												
Penaea					G							
Saltera												
(Sarcocolla)												
.....												
Sonderothamnus												
Stylapterus												
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ECONOMIC UTILIZATION OF THE BITTERSWEET ORDER (CELASTRALES)

Economic virtues: Decorative  
Folklore medicines

Chemotaxonomy: Icacineae has seco-iridoids  
Salvadoraceae has Thiocyanogens

- =====
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>AQUIFOLIACEAE</b>												
Ilex (Holly, Yerba Mate)		*X	F	G						W		Richin Caffeine X-mas decor
Nemopanthus (Mountain Holly)		ft										
<b>ICACINACEAE</b>												
Apodytes										W		
Icacina		sds/tu										flour prod.
Sarcostigma						oil						
Uranda									x	W		arom wood
Villaresia		X										Maté subst.
<b>SALVADORACEAE</b>												
Dobera										X		
Salvadora (Toothpaste Tree)		*lv	F+			oil/fat				W		Kikuel oil; *=-SCN's?: mustard- flavored lvs.
<b>CORYNOCARPACEAE</b>												
Corynocarpus		ft/s d										
<b>DICHAPETALACEAE</b>												
Dichapetalum		x		*						W		*livestock px
<b>AEXTOXICACEAE</b>												
Aextoxicon										W		
<b>STAPHYLEACEAE</b>												
Staphylea (Bladdernut)						oil						

ALSO:  
STACKHOUSIACEAE  
GEISSOLOMATACEAE



THE ROSE SUB-CLASS (ROSIDAE)

ECONOMIC UTILIZATION OF THE MISTLETOE FAMILY

Economic Virtues: Toxic lectins  
 Rubber Source?  
 Wax?  
 NB: Parasitic

- 
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<b>LORANTHACEAE (VISCACEAE)</b>													
Arceuthobium													
Loranthus			F+?	G#	*		X*						*-Oak variety #-px lectin; rubber-like product.
Ochanostachys													
Phoradendron			FS*	G*									Juniper var. Oxytoxic Card/nv tox. Phoratoxin Tyramine *Rubber sce?
Phthyrusa					*								
Psittacanthus			FS?										
Strombosia													
Struthanthus					*								*Rubber sce? Tyramine (PS)
Viscum			FS*	G#									#Viscin (a lectin)

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THE ARUM SUB-ORDER--ARUMS & CATTAILS

ECONOMIC UTILIZATION OF THE CATTAIL AND ARUM ORDERS

Major Economic Virtues: Edible parts  
 Starchy Rootstocks  
 Decorative  
 Fiber sources

=====

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>TYPHINAE; TYPHALES</b>												
<b>TYPHACEAE (Typhoideae)</b>												
Typha (Cattail)		veg	F		M					F		rt starch
<b>SPARGANIACEAE (Sparganioideae)</b>												
Sparganium (Great Bulrush)		veg	??							F?		
---												
<b>LEMNACEAE</b>												
Lemna (Duckweed)												ref: Gerard
Spirodela												ditto
Wolffia												ditto
---												

ECONOMIC UTILIZATION OF THE PALM TREE SUB-CLASS (ARECIDAE)

ECONOMIC UTILIZATION OF THE PALM TREE FAMILY/ORDER

Economic virtues: Source for a drink--Toddy  
 Tropical oils/butters  
 Carnauba Wax  
 Edible fruit/seed; source for starch  
 Vegetable Ivory (Tagua)  
 Fibers--esp. Raffia and Rattan

- =====
- |                           |                             |               |                         |
|---------------------------|-----------------------------|---------------|-------------------------|
| 1. bevg                   | 4. poison I=insect          | 6. oils/fats  | 10. Wood                |
| 2. food                   | G=gen'l P=fish              | 7. tannin(g)  | Fibers                  |
| 3. med: Folk<br>Selective | 5. Mucus/Gum/Resin<br>Latex | 8. dye        | 11. Sterols<br>Saponins |
|                           |                             | 9. esstl oils |                         |

FAMILY Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<b>ARECALES/ARECACEAE</b>													
Acrocomia	*		#F										**"Toddy" #sugar/starch
Areca (Betel nut)			FS										Arecoline (Halluc?) "Sugar palm"
Arnega	*	*											*butter subst.
Astrocaryum		nuts				*oil							*Palmyra gum; sugar.
Borassus (Tall palm)		x			G	*oil				F			
Calamus										F			Rattan fiber
Caryota	*	#								F			**"Toddy Palm" #=sago
Ceroxylon (Wax Palm)													
Chamaedora													
Cocos (Coconut)		ft											
Coelococcus (Tall/Ivory p)										*			*Tagua
Copernicia (Carnauba p.)						*wax							*Carnauba wax
Corypha										F			
Cyrtostachys													
Daemonorops (Dragon's Blood)						*R				F			Rattan fiber *Dragon's blood
Dipsis													
Elaeis						oil							palm oil
Geonoma													
Guilielma		*ft											chestnut flavor
Howeia													
Hyphaene		ft	F								*		*veg. ivory (*Tagua)
Iriartea													
Jubaea ("Honey Palm")	*	#F				f/o							*Toddy #sugar/starch
Livistona (**"cabbage p.")		*bud											
Nipa		x								F			





ECONOMIC UTILIZATION OF THE PALM TREE SUB-CLASS (ARECIDAE)

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<u>Genus</u>													
<u>CYCLANTHALES</u>	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>PANDANALES;</b>													
<b>PANDANACEAE</b> (Pandanoideae )													
Pandanus		@							x				arom/perf. aphrod.
Sararanga										F			few are edible lvs: cordage, bags, rope.
- - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>FREYCINETIACEAE</b> (or Freycinetioideae )													
Freycinetia										F			Fibers: fine mats; Roots: fish traps.
- - - - -	-	-	-	-	-	-	-	-	-	-	-	-	-









ECONOMIC UTILIZATION OF THE MALLOW ORDER (MALVALES)

THE MALLOW FAMILY (MALVACEAE)

Economic Virtues: Cyclopropene oils  
 Fatty Acids  
 Fibers  
 Mucilage  
 Gossypol

1. bevg	4. poison I=insect G=gen'l P=fish	6. oils/fats	10. Wood
2. food	5. Mucus/Gum/Resin Latex	7. tannin(g)	Fibers
3. med: Folk Selective		8. dye	11. Sterols
		9. esstl oils	Saponins

USES (See above key)

Genus	1	2	3	4	5	6	7	8	9	10	11	Notes
<b>MALVACEAE</b>												
Abelmoschus (Musk Mallow)		veg	FS *		M							*plasma extdr
Abutilon					M	oil				F		
Althaea (Marsh Mallow)	X	veg	F		M	oil				*F		*Paper
Gossypium (Cotton)			FS			oil				F		Gossypol
Hibiscus (Rose of Sharon)	X	veg	F			*oil				F		bark fiber for ropes ed. pods *cosmetics Sudanese tea -org acids
Hoheria	X									FW		rope fiber demulct drk
Kosteletzkya			F									
Kydia					M					F		rope fiber
Lavatera		rts	F							F		med. root
Malachra										F		jute-like fiber
Malva (Mallow)		veg	F		M							
Maxwellia										W		flexible
Pavonia					M (rt)					F		bark fiber
Plagianthus										F		bark fiber for ropes/nets
Sida	X	?	F		M					F		jute-like fiber bitter root asstd meds
Sidalcea												
Sphaeralcea												Chewing Stick
Thespesia			F	G*		oil				FW		bark fiber *Gossypol
Urena						oil						
Wissadula										F		bark fiber

ECONOMIC UTILIZATION OF THE MALLOW ORDER (MALVALES)

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

THE STERCULIA FAMILY

Economic Virtues: Edibility; Teas/Beverages.  
 Folk medicines, with some selective toxins.  
 Bark Fibers; some lumber/wood sources  
 Some oils and fats.

=====

USES (See above key)

=====

Genus	1	2	3	4	5	6	7	8	9	10	11	Notes
Fam: STERCULIACEAE												
Abroma			F							F		bark fiber
Brachychiton (bottle tree)										F		
Buettneria	X											Sarsp.Subs.
Cochlospermum??					G					F		Pod-Kapok
Cola nitida (Cola nut)	X	X	FS			Fat						Caffeine
Commersonia										F		bark fiber
Erythropsis										F		bark fiber
Firmiana										WF		bark fiber
Fremontia			F			M (i.b.)						
Guazuma		ft	F							W		
Helicteres			F							F		bark fiber pod drug
Heritiera	X	sd							X	W		Charcoal False Cola
Kleinhovia			F							F		bark fiber
Leptonychia										W		carving
Pterospermum										W		
Rulingia										F		inner bark
Scaphium												
Sterculia	X	sd	FS?		G	Oil				WF		bark fiber
Theobroma	X	X	FS			*Fat						*"butter"
Waltheria			F							F		Asstd meds.



ECONOMIC UTILIZATION OF THE MALLOW ORDER (MALVALES)

Economic virtues: Lumber; Fibers (seed floss)  
 Edible parts; used for teas (esp seeds.fruit)  
 Limited mucilaginous virtues.  
 Fixed Essential Oils: Palmitic, Stearic, Behenic, and Eicosenoic

1. bevg	4. poison I=insect	6. oils/fats	10. Wood
2. food	G=gen'l P=fish	7. tannin(g)	Fibers
3. med: Folk	5. Mucus/Gum/Resin	8. dye	11. Sterols
Selective	Latex	9. esstl oils	Saponins

USES (See above key)

Genus	1	2	3	4	5	6	7	8	9	10	11	Notes
<b>BOMBACEAE</b>												
Adansonia (Baobab tree/Monkey's Bread)						oil				W		
Bombacopsis										W		
Bombax (Indian Kapok)			F		G	oil				WF		
Cavanillesia										W		
Ceiba (Kapok)			F			oil				F		seed floss
Chorisia (Floss Silk Tree)	ff					oil				F		seed floss
Cullenia	ff									W		
Durio (Durian)	ff	ft/sds										
Eriodendron		ft/sds										
Matisia	sds	ft/ff								F		
Ochroma										W		"Balsa Wood"
Pachira	sds	sds										
Quariribea	X	X										Flavorant for Chocolate
<b>BASSWOODFAMILY (TILIACEAE)</b>												
Berria										W		
Cistanthera										W		"Ironwood"
Clappertonia												
Columbia										F		bark fiber (nets/rope/ cordage)
Corchorus (Jute)	X	lvs				oil				F		Jute fiber
Commersonia										F		bark fiber
Diplodiscus		sds										starchy
Entelea										W		floats/rafts
Grewia										WF		bark fiber
Honkenua										F		bark fiber
Luehea										W		
Muntingia		ft										
Schoutenia										W		
Sparmannia										F		bark fiber
Tilia (Basswood)	X		F		M	oil				?		
Trichospermum												
Triumfetta					M					F		bark fiber

ECONOMIC UTILIZATION OF THE VIOLET ORDER (VIOLALES)

ASSORTED FAMILIES

Economic virtues: Folk medicines (esp. emetics)  
Some edible plants

Chemotaxonomy: Seco-iridoids

1. bevg	4. poison I=insect	6. oils/fats	10. Wood
2. food	G=gen'l P=fish	7. tannin(g)	Fibers
3. med: Folk Selective	5. Mucus/Gum/Resin Latex	8. dye	11. Sterols Saponins
		9. esstl oils	

FAMILY Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>LOASACEAE</b>												
Iridoids lead chemotaxonomists to place this is in its own sub-order.												
Blumenbachia												
Caiophora												
Loasa												
Mentzelia		sds										
-----												
<b>BEGONIACEAE</b>												
Begonia		X	F									
Hillebrandia												
-----												
<b>VIOLACEAE</b>												
Alsodeia		X										
Corynostylis			*?									*Emetic
Ionidium			*?									*Emetic
Melicytus									W			Charcoal
Rinorea		veg			M							v. mucusy lvs
Viola (Violet/Pansy)		ep	F		(M)					(Sa)		Candy; Vit C
-----												

ECONOMIC UTILIZATION OF THE VIOLET ORDER (VIOLALES)

THE CUCUMBER FAMILY

Economic virtues: Edible fruit/seed/root  
 Some selective toxins  
 --Cucurbitacins (potential Cancer drugs)  
 --purgatives  
 --mitogenic protein: possible AIDS drug  
 Generally toxic (purgative, depilatory)  
 Gourds, Luffa sponge  
 Seed oils  
 non-protein amino acids noted

Chemotaxonomy: Fixed oils  
 non-protein amino acids noted

```

=====
1. bevg          4. poison I=insect  6. oils/fats       10. Wood
2. food          G=gen'l P=fish     7. tannin(g)      Fibers
3. med: Folk    5. Mucus/Gum/Resin 8. dye             11. Sterols
    Selective      Latex              9. esstl oils     Saponins
=====
    
```

FAMILY Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
CUCURBITACEAE													
Acanthosicyos		sd/ft				oil							
Actinostemma (Gokiszuru seed)						oil							
Adenopus			*	*									*depilatory (used for hides)
Anisosperma			FS										drastic anthelm. anti-syphilis
Apodanthera			F										
Benincasa		f/v				oil							
Bryonia			F			oil							cathartic/purgative
Cayaponia			F										drastic
Citrullis (Melons)		ft				oil							
Coccinea		f/v											
Cucumis (Gourds/melons)		f/v				oil							
Cucurbita (Cucumber)		veg	F										
Cyclanthera		f/v											
Ecballium			F*										*purgative
Echinocystis			F	*				?					*purgative
Elaterium		f/v											
Fevillea (Sequa oil)						oil							
Hodgsonia						oil							
Lagenaria			F			oil							*purgative
Luffa (Luffa sponge)		f/v	F	P		oil				F			Yerba Mate gourd bath sponge bitter

ECONOMIC UTILIZATION OF THE VIOLET ORDER (VIOLALES)

THE CUCUMBER FAMILY

```

=====
1. bevg          4. poison I=insect  6. oils/fats      10. Wood
2. food          G=gen'l P=fish     7. tannin(g)     Fibers
3. med: Folk    5. Mucus/Gum/Resin 8. dye            11. Sterols
   Selective      Latex              9. esstl oils    Saponins
=====
    
```

FAMILY Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>CUCURBITACEAE</b>												
Megarrhiza		sd/rt	F									bitter tx VD, rheum
Melothria			F									soporific
Microsechium			F									purg/diur.
Momordica (Balsam apple)		veg	F	I		oil					Sa	mitogenic
Polakowskia		f/v										
Sechium		f&v	F									pulmonary cataplasm
Sicana		ft	F					X				anti-infl. sd: purg. & anthelm.
Sicyos		*rt	F									skin: piles ft: throat *bitter, starchy diuretic
Telfairia		ft/veg;sds				oil		X			Sa	
Trichosanthes		ft	FS								Sa	starch; AIDS

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THE HEATH ORDER--ERICALES

ECONOMIC UTILIZATION OF THE HEATH ORDER

Economic benefits: Folk medicines  
 Some edible parts, esp. fruit  
 Diterpene--Grayanotoxin  
 Unedo dye  
 Oil of Wintergreen  
 Sterols/Saponins  
 Iridoids (esp. Ericaceae, Monotropaceae, Pyrolaceae)  
 Narcotic? Nervine? Hallucinogenic?

=====

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
ERICACEAE												
Agapetes	*											
Andromeda							*					
Arbutus		ft	F			oil	*			W		
Arctostaphylos		ft	F					*				unedo dye narc/Halluc?
(Bearberry; uva ursi)												
Azalea		gall		?								
Calluna	*						*	*				
Chamaedaphne	*											
Chimaphila			F									diur.
Chiogenes	*							?*				Wintergreen?
Clethra		lvs										
Disterigma		ft										
Epigaea			F									
(Training Arbutus)												
Erica								*		W		
(Heath)												
Gaultheria		ft	FS						*			
(Wintergreen)												
Gaylussacia		ft										
(Huckleberry)												
Kalmia			FS?	GI*						W		Narc/Halluc? *Grayanotoxin
(Mountain Laurel)												
Ledum	*			I								
(Labrador Tea)												Grayanotoxin *errhine
Leucothoe			F*									
Macleania		ft										
Monotropa			F									nervine/Halluc?
(Indian Pipe)												
Oxydendrum			F									ornamtl
Pernettya												Halluc: andro- medotoxin?
Pyrola	*		F									
Rhododendron	*		F	I*G						W		*Grayanotoxin
Vaccinium		ft	F									

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ECONOMIC UTILIZATION OF THE TEA ORDER (THEALES)

Economic Virtues: Wood products  
 Folk Medicines (due to astringent tannins)  
 Tannins used as Piscicides and Dyes.

- =====
- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>THEACEAE</b>												
Adinandra										*W		colorful wood
Anneslea										W		
Camellia (Thea)	X		FS			oil	X					caffeine, etc. tx angina, etc. Tea seed oil
Eurya	X	subst								W		
Gordonia							X	X		W		
Laplacea			F							W		
Plocarium										*W		*colorful (red)
Schima					*P					W		*pisc. bark
Ternstroemia			F		*P					W		*pisc. bark
Visnea			F									astringt
-----												
<b>HYPERICACEAE</b>												
Ascyrum												
Garcinia		ft	F		R/G		*b	X		W		*butter
Hypericum			FS	*G				*X				*Hypericin Photosens. Decoratv
-----												

ECONOMIC UTILIZATION OF THE TEA ORDER (THEALES)

Economic Virtues: Oils (Class #9)  
 Oleic, Linoleic, Arachidic and Lignoceric Acids  
 Some Palmtic Acid; Behenic Acid.  
 Folk medicines  
 Application to Soap industry  
 Some dyes

=====

- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>ACTINIDIACEAE</b>												
Actinidia		ft										
<b>OCHNACEAE</b>												
Brackenridgea								*X				*yellow dye
Gomphia			FS?			*oil						*Bati Oil for tx leprosy; batiputa fat
Lophira						oil/fat						Niam fat (soap)
Ochna												

- ALSO:  
 ELATINACEAE  
 SPHAEROSPALACEAE  
 SARCOLAENACEAE  
 OCHNACEAE









THE ASTER ORDER (ASTERALES)

ECONOMIC UTILIZATION OF THE ASTER FAMILY

Economic Virtues: See page 1

- =====
- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
Arctium (Burdock)		x	F			oil						inulin
Arnica			F									bitter-tonic irritant
Artemisia (Desert Sage; Wormwood; Mugwort Sagebrush;)	X+		F			oil			X+			+Absinthe anthehm.; bitter; stomachic. effective hemostat
Aspilia			F*									
Aster		yg										
Athrixia	x (lvs)											
Atractylis					G							
Baccharis			FS					X				Tonic; febr; diuretic Ca <sup>-</sup> Baccharin Cyan glyc. sds/rt/yg-plt
Bahia												
Balsamorhiza (Balsamroot)		*										
Bidens (Beggar's Tick)	x	X										*flower'g tops
Blumea									#			#-camphor-like
Boltonia		yg-pt										
Brachylaena		*	S*									*Diabetic tx Sialagogue
Brauneria			F									tx fever/dx
Brickelia			F									
Buphtalum		flav.							X			
Calendula (Marigold)			F		G							bitter. Calendulin Saffron adult.
Carduus (Holy Thistle)												
Carlina (Artichoke)			F									rt: emmen/purg
Carthamus						oil		X				red-Y; sd cake yellow; purgtv
Centaurea (Knapweed)		yg	F					X				
Centipeda			F							X		Bitter; Myriogenic acid.
Ceruana											*	*Brooms
Chrysactinia (Damianita)			F									anti-spasm; Sopor; diur; aphrod.



THE ASTER ORDER (ASTERALES)

ECONOMIC UTILIZATION OF THE ASTER FAMILY

Economic Virtues: See page 1

- =====
- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
Helianthus (Sunflower; Jerusalem Artichoke)	sd/tu					oil							
Helenium (Sneezeweed)			F										Errhine
Helichrysum	x	X	F										Bitter; skin medicine.
Heterothalamus			F					X	x	*			*Brooms Arom; febr. Yellow dye roots chewed
Hymenopappus		*											
Hypochoeris		yg	F										diuretic
Inula (Elecampane)		*	FS?			oil		X					Elecampane oil *Inulin--Db tx yellow dye; Cyan glyc?
Kleinia					R				X				
Kuhnia (False Boneset)			F										Bitter-tonic; febrifuge.
Laciniaria		rt											
Lactuca (Lettuce)		veg	FS?			oil							
Leontodon (False Dandelion)		*	F										*Coffee subst; leonurin
Leyssera		x(lvs)											
Liatris (Blazing Star)			FS										Ca-Liatriin (SQL)
Libothamnus					R								woody; incense
Lygodesmia		lv			G(L)								
Madia (Tarweed)						oil							
Matricaria (Chamomile)			F										bitter; verm.
Microseris		tu											
Mutisia													
Myriogyne			F										Myriogynic Acid
Olearia										W			ornamtl





ECONOMIC UTILIZATION OF THE MINT ORDER (LAMIALES)

Economic Virtues: Essential Oils  
 Some Iridoids (instead of essential oils)  
 Diterpene: Forskolin  
 Herbs/Spices--Food flavorants and aromatics  
 Edibility  
 Folklore medicines; some selective toxins  
 Natural Insect repellants  
 Steroidal Growth Hormones  
 Outdoor gardens  
 (Lectins)  
 Chia

- =====
- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<b>LABIATAE</b>													
Acolanthes			F						X				febrifuge
Agastache	x								X				
Ajuga			?						no				ster. Hh.
Anisomeles			F						X				perfumant carm; tonic
Calamintha			F							x	?		Stim: Stom. Aphrod.
Cedronella	x												
Coleus (Coleus)		?	F										Diterpene; H?
Collinsonia (stone root)			F		MR		x						
Cunila			F										
Elscholtzia			F										Ainu rx for hangover
Fuerstia			F										Galactagogue malaria tx. lungs, spleen
Galeopsis			F			oil							
Hedeoma (Pennyroyal)			F	?					X				GI med; (px?) pulegone vanilla-like
Hoslundia									X				Chia seeds
Hyptis	x	lv/sd	F		(M)								carminative
Hyssopus (Hyssop)	?		F						X				
Lagochilus													Halluc(?)
Lallemantia			F		(M)	oil			X				*Lallemantia oil (for varnishes); psyllium-like. Kidney/GI med.; diterpene Forskolin.
Lamium (Dead Nettle)		veg/rt	FS										"Oil of Spike"
Lavandula (Lavendar)			F						X				

ECONOMIC UTILIZATION OF THE MINT ORDER (LAMIALES)

Economic Virtues: See page 1.

- =====
- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
Leonitis			F			oil						tapeworm; snake bite, skin disx.
Leonurus (Motherwort)			F					*				*green dye
Leucas			F									Mosq repellt; GI troubles.
Lycopus (Bugleweed)		x	F							X		
Majorana (Marjoram)		x	F							X		
Mappia						oil						
Marrubium (Horehound)	x		F							X		candy
Melissa (Lemon Balm)		x	F							X		
Mentha (Peppermint; Spearmint)	x	x	F							X		
Mesona			F							X		coolant
Micromeria (Yerba Buena)	X		F							?		
Microtanea										X		Khasi patchouli
Michosma												
Moluccella				?								Lectin
Monarda (Bee Balm)	x	x	F							X		Oil of Thyme diaph; flav.
Myrtis						oil						
Nepeta (Catnip)			F									Bitter agent; SQL; halluc?.
Ocimum (Basil)		x	F			oil				X		med'l paste
Origanum (Oregano)		x	F							X		
Orthosiphon		tu	F								Sa	rheum/gout med
Perilla		lv				oil						spice; condimt; sweetener: perillartine
Plectranthus		tu	F	I								Kaffir potatoes Insecticide; sore throat.

ECONOMIC UTILIZATION OF THE MINT ORDER (LAMIALES)

Economic Virtues: Assorted, due to Essential Oils (see page 1).

- =====
- |                           |                             |                   |                         |
|---------------------------|-----------------------------|-------------------|-------------------------|
| 1. beverage               | 4. poison I=insect          | 6. oils/fats      | 10. Wood                |
| 2. food                   | G=gen'l P=fish              | 7. tannin(g)      | Fibers                  |
| 3. med: Folk<br>Selective | 5. Mucus/Gum/Resin<br>Latex | 8. dye            | 11. Sterols<br>Saponins |
|                           |                             | 9. essential oils |                         |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
Pogogyne									X			Pinole flavrt
Pogostemon (Patchouli)									X			
Poliomintha		plt										Flowers for seasoning.
Prunella (Selfheal; Heal All)		@								no		
Pycnanthemum			F							X		diaph; flavt; aromatic.
Pycnonthamnus	x											shrub
Rosmarinus (Rosemary)			F							X		perf; flavt; carm; stim;
Salvia (Sage) (Chia)	x	sd	F			oil				X		Chia Oil; Oil of Sage; astrgt; dystry; stom; halluc? lectin.
Satureja (Savory)			F							X		Oil of Savory
Scutellaria (Scullcap)			F							@		nervine
Sideritis	x									X		
Solenostemon (see Coleus)		tu	F									med'l bath
Stachys			F									febr; tonic;
Teucrium			F					x				gout; splenic.
Thymus (Thyme)			F							X		Carm; stom; flavorant.
Trichostema (Tarweed)			F	P								Fish Px; febr; anodyne.
Zizyphora			F	?								Cordial; Stom. pulegone.





ECONOMIC UTILIZATION OF THE MINT ORDER (LAMIALES)

THE VERVAIN FAMILY (VERBENACEAE)

Economic Virtues: Folk medicine Citronellol  
 Some toxicity Iridoids  
 Saponins (Quinine subst.)

- =====
- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
VERBENACEAE (incl. Avicenniaceae)												
Avicennia (Barilla)		ft					X			W		soap ash k.a. "barilla". Poultice for fevr & colic. Arrow px.
Callicarpa			F	P*								
Citheroxylum										W		
Clerodendron	yg	pts	F	G		oil						Purgtv bark Tomentose mass= body decor.
Dicrastylis												
Duranta				G*		oil					Sa	Px saponin in fruit
Faradaya				P								
Gmelina			F			oil				W		Anodyne. Arom; Tonic; Stimulant.
Lantana			F	G								
Lippia (Lemon Vervain)	x		F						X			
Petitia										W		
Premna										W		lvs chewed
Stachytarpheta			F									
Tectona (Common Teak)			F			oil*						lvs: diuretic. *Teak nut
Verbena (Vervain)			F	I								Insect repellt: Verbenalin, Citronellol.
Vitex (Chast Tree)		ft	F					X		WF		Med: dx; fever; anti-aphrod.; basketry.
-----												
HYDROPHYLLACEAE												
Eriodictyon	*		Y	G								*bitter-tonic. (tastes like Strychnine).
Hydrophyllum (Waterleaf)		yg	plt									
Phacelia												
-----												
CALLITRICHACEAE												Iridoids

THE NIGHTSHADE ORDER--SOLANALES

ECONOMIC UTILIZATION OF THE NIGHTSHADE FAMILY

Economic virtues: Selective toxicity  
 Medicinal  
 --Belladonna and steroidal alkaloids.  
 --Cancer drugs (Withanolides)  
 Some edible parts, esp. tubers and fruits.

Chemotaxonomy: Protease inhibitors in Solanum Family  
 Isoprenoid Alkaloids (Steroidal alkamines)  
 Seed oils with Linoleic, Oleic, Palmitic and Stearic Acids.

- =====
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
SOLANACEAE													
Acnistus		ft											
Atropa (Deadly Nightshade)			FS										BD alks
Brugmansia													
Brunfelsia			FS										BD alks Strychnine Rheum/Syph.
Capsicum (Pepper)		ft									Sa		
Cestrum			F										febr; stom
Chamaesaracha		ft											
Cyphomandra		ft											
Datura (Angel's Trumpet; Jimsonweed)			FS										BD alks
Duboisia			FS	PI							Sa		BD alks Duboisine
Fabiana	lv		F										Tonic; diur; Gall bladder; bladder. BD alks
Hyoscyamus (Henbane)			FS										
Ichroma													Halluc
Latua													BD alks; H.
Lycium		ft											
Lycopersicon (Tomato)		ft									Sa		
Methysticodendron			FS										Scopolamine
Nicotiana (Tobacco)			FS										tobacco
Mandragora (Mandrake)			FS										Sterol alk
Nicandra								oil					

THE NIGHTSHADE ORDER--SOLANALES

ECONOMIC UTILIZATION OF THE NIGHTSHADE FAMILY

Economic virtues: Selective toxicity;  
 Medicinal  
 --Belladonna and steroidal alkaloids.  
 Some edible parts, esp. tubers and fruits.  
 Steroid precursors

- 
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
Genus													
<b>SOLANACEAE</b>													
Petunia													decor
Physalis (Ground Cherry)		ft										Sa	
Salpichroa		ft											
Saracha		ft	F										Labor med.
Scopolia			FS										BD alks.
Solanum (Potato)		ft/rt										StSa	BD alks; Sterol alks. Steroid preC: solasodine.
Withania			FS									StSa	Coagult; narcotic; Aphrod.; Cheese mfg.

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THE MADDER ORDER--RUBIALES

THE MADDER ORDER--RUBIALES  
ECONOMIC UTILIZATION OF THE MADDER FAMILY--RUBIACEAE

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
RUBIACEAE												
Duroia			?	G								Cicatrizing; vesicant; (browning rxn). Quinine subst.
Esenbeckia			F							W		
Euxylophora (Brazilian Satinwood)										W		
Exostemma			F							W		Quinine subst.
Feretia							*					*Indigo dye
Galium (Cleavers/Bedstraw)		ft	FS					x				coumarin
Gardinia			F?	I	R			X				Combee resin (insecticide) Cosmetics tattoos lvs--dx tea red dye
Genipa		ft	F(f t)					x				
Geophila			F									
Grumilea								x				
Guattarda										F		bark fiber
Heinsia		ft							#	W		#fr leaves
Houstonia (Bluets)												decorative
Hymenodictyon			F(bk )							W		
Isertia											*	lvs: soap sub.
Ixora											#	#--sm. woodwork
Ladenbergia			F									bitter- tonic Quinine subst.
Lecointea								x				yellow esstl oil (like sandalwood)
Leptactina									x			
Mitracarpum			F									treatmt for ulcers & arrow poisoning.
Mitragyna			FS?									antipyr; diur; opium subst; Harmine alk.
Morinda			F			oil			x			rts: rheum, dye
Mussaenda			F									Int'l worms, eye infx, and fever.
Nauclea			F									Bitter.
Oldenlandia			F	?					x			Oxytoxic; (labor aid)

RUBIALES

ECONOMIC UTILIZATION OF RUBIACEAE

- |                           |                             |               |                         |
|---------------------------|-----------------------------|---------------|-------------------------|
| 1. bevg                   | 4. poison I=insect          | 6. oils/fats  | 10. Wood                |
| 2. food                   | G=gen'l P=fish              | 7. tannin(g)  | Fibers                  |
| 3. med: Folk<br>Selective | 5. Mucus/Gum/Resin<br>Latex | 8. dye        | 11. Sterols<br>Saponins |
|                           |                             | 9. esstl oils |                         |

USES (See above key)

FAMILY	1	2	3	4	5	6	7	8	9	10	11	Notes
Genus												
<b>RUBIACEAE</b>												
Mussaendopsis										W		
Paederia		*	F									Fetid aroma *Invalid food
Palicourea (Coto bark)			FS	G								bk: astr, rheum tx; CNS/cardiac poison.
Pausinystalia (Corynanthe; Yohimbe)			FS									Harmaline alk. Aphrod.
Pinckneya			F									Bitter bark; anti-pyr; malaria tx; tonic.
. . . . .												
Plectronia		ft								W		
Pogonopus			F									Quinine subst.
Psychotria			FS									rheum, emmen, dysentery; N,N-DMT.
Randia		ft		P*				#				*arrow px antidote. #ink dye. foamant for fire extinguishers.
Remijia (Cuprea			FS	bark				x				bk: coppery color; Quinine sce.
. . . . .												
Richardsonia			FS									Ipecac sce.
Rubia (Madder)								X				Red dye
Sarcocephalus (West African Boxwood)	ff	ft	F (rt)					(rt)		W		febrifuge; Quinine subst.; tonic; digestive stim; pot'ly toxic to woodworkers. blackening chewing stick
Schradera												Red dye; purg/febr.
Sickingia			F				X	X		W		
. . . . .												
Timonius		ft										
Uncaria (Black			F					X				catechu tannic Gambir) acid.
Vangueria		ft	F					X				Gamboge color; anthelm, rheum, pleurisy, eyes.

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THE PLANTAIN ORDER (PLANTAGINALES)

ECONOMIC UTILIZATION OF THE PLANTAIN FAMILY (PLANTAGINACEAE)

Economic Virtues: Folk medicine  
Some nutrition/food value (Low toxicity)

Chemotaxonomy: Iridoids

- =====
- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
PLANTAGINACEAE													
Bougeria													
Litorella (Pondweed)													
Plantago (Plantain; Psyllium)		veg	F		M	oil?							

- - - - -





TABLE

SCROPHULIALES

ECONOMIC UTILIZATION OF RELATED FAMILIES

Economic virtues:

Some Iridoids (dyes, bitter agents, etc.)  
Oils; esp. Sesame  
Lignan--Sesamin

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=====
1. bevg          4. poison I=insect      6. oils/fats          10. Wood
2. food          G=gen'l P=fish          7. tannin(g)         Fibers
3. med: Folk    5. Mucus/Gum/Resin      8. dye                11. Sterols
      Selective          Latex                  9. esstl oils        Saponins
=====

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FAMILY	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<b>LENTIBULARIACEAE</b>													
Genus													
Lentibularia													
Pinguicula (Butterwort)													Insectivore Coagulant?
Polympholyx													
Utricularia (Bladderwort)													Insectivore
---													
<b>OROBANCHACEAE</b>													
Parasitic Plants													
Conopholis			F										"Squaw drops" astringent
Epifagus			F										"Beech drops" vulnerary
Orobanche (Pinesap)		rt											
Phelypaea		rt											
---													
<b>PEDALIACEAE</b>													
Ceratotheca		sd/plt				oil							
Craniolaria		rt	F										laxative anti-infl.
Harpagophytum			F										iridoids: harpagoside, procumbide.
Martynia		x	F										
Pedaliium		veg											
Rogersia			F										mucosal med.
Sesamum (Sesame)		sd/veg	F+			oil							galactagogue Sesamin
Uncaria	x		X					X	X				for dysentery for print'g beer additiv





THE BELLFLOWER ORDER (CAMPANULALES)

THE ECONOMIC IMPORTANCE OF THE BELLFLOWER FAMILY (CAMPANULACEAE)

Economic Virtues: Selective toxins  
 Some edibility  
 Some Decorative quality

Chemotaxonomy: Polyacetylenes

- =====
- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
<b>CAMPANULACEAE</b>												
Adenophora		rt										Sa
Campanula (Bellflower)		rt/plt										
Clermontia		rt										
Codonopsis			F									tonic; aphrod.
Isotoma			FS	G								Isotomine-- heart blocker; anti-asthma; Halluc? v. px.
Lobelia (Indian Tobacco)			FS	G								Nicotinic px halluc? Inulin? Ornamtl
Phyteuma		x										
<b>GOODENIACEAE</b>												
Scaevola		ft										W
<b>ALSO:</b>												
	PENTAPHRAGMATACEAE				STYLIDIACEAE				DONATIACEAE			
	SPHENOCLEACEAE				BRUNONIACEAE							

ECONOMIC UTILIZATION OF THE TEASEL ORDER (DIPSACALES)

Economic Virtues: Seco-Iridoids--Dyes and Folk medicines  
 Aromatics  
 Some Dyes and Folk medicines  
 Some edible fruit

- =====
- |              |                    |                   |             |
|--------------|--------------------|-------------------|-------------|
| 1. beverage  | 4. poison I=insect | 6. oils/fats      | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)      | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye            | 11. Sterols |
| Selective    | Latex              | 9. essential oils | Saponins    |

Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<b>DIPSACACEAE</b>													
Cephalaria						oil							
Dipsacus (Teasel)						oil							textile prod.
Kielmeyera			F										skin/lung meds.
Scabiosa (pin cushion flower)													
-----													
<b>VALERIANACEAE</b>													
Cetranthus			?										Valepotriates
Fedia		lvs											
Nordostachys									X				Perfume; hair products; Indian Nard.
Plectritus		ep	FS										
Valeriana		?	FS										Valepotriates
Valerianella (Corn Salad)		lf				oil							
-----													
<b>CAPRIFOLIACEAE</b>													
Abelia													
Caprifolium													seco-iridoids
Linnaea													
Lonicera (Honeysuckle)		ft											
Sambucus (Elderberry)		ft	F	G				X		W			px peashooter CN Glyc.
Symphoricarpos (Snowberry)		ft											
Triosteum			F										Febr; emet; diaph; tonic; lax; adult. scopoletin
Viburnum		ft	F										
-----													
<b>ADOXIACEAE???</b>													
<b>CALYCERACEAE (seco-iridoids)</b>													





THE LILY SUB-CLASS (LILIIDAE)

ECONOMIC UTILIZATION OF THE LILY ORDER

Major Economic Virtues: Edible parts, some palatability.

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
<b>PONTEDERIINAE</b>													
<b>PONTEDERIACEAE</b>													
Eichornia		x	?										Palatable
Monochornia		x	?										" stem
Pontederia (Pickerel weed)		x	?										"

**PHYLANDRACEAE**  
Phyllandra

ECONOMIC UTILIZATION OF THE LILY ORDER

Major Economic Virtues: Starchy rootstocks--edible  
Minor medicinal applications.

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes		
	1	2	3	4	5	6	7	8	9	10	11			
<b>LILIANAE</b>														
<b>TACCACEAE</b>														
Tacca (Arrowroot)													X*	*"Arrowroot"

**TRICHOPODACEAE**

**STEMONACEAE**

Pentastemon

Stemona

tu FS?

vermicidal-  
stemonine





ECONOMIC UTILIZATION OF THE ASSORTED FAMILIES OF THE LILY ORDER

Major Economic Virtues: Selective toxins--medicines (Lily Fam.)  
 Fibers (Lily and esp. Agave family)  
 Sterols (esp. Dioscorea)

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
Genus													
<b>HAEMODORACEAE</b>													
Anigozantes (Kangaroo paws)													ornamtl
Conostylis													
Haemodorum (Bloodroot)													
Lachnanthes			F					X					
Wachendorfia	x		FS					?					

ALSO:      HANGIANACEAE      VELLOZIACEAE      CYANASTRACEAE  
             PHILHYDRACEAE

ECONOMIC UTILIZATION OF THE ASSORTED FAMILIES OF THE LILY ORDER

Major Economic Virtues: Selective toxins--medicines (Lily Fam.)  
 Fibers (Lily and esp. Agave family)  
 Sterols (esp. Dioscorea)  
 --precursors for steroids: Diogenin, Hecogenin

Chemotaxonomy: Alkaloids related to benzylisoquinolines.

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes		
	1	2	3	4	5	6	7	8	9	10	11			
<b>AMARYLLIDACEAE</b>														
Amaryllis														
Furcraea (Mauritius Hemp)											*F			
Galanthus			S?	?									Tx myasthenia gravis.	
Leucojum														
Narcissus (Daffodil)														
Ungernia			S?	?									Treating myasthenia gravis.	
---														
<b>ALOACEAE</b>														
Aloe			FS		M							?	anti-bact.	
---														
<b>AGAVACEAE</b>														
Agave	X	ft									*F	StSa	hecogenin *Ixtle	
Xerophyllum (Beargrass)											F			
Yucca											F			
---														
<b>DIOSCOREACEAE</b>														
Dioscorea (Mexican Yam)	x	X	FS	GP				X				StSa	"Yam"  starch flavorant anthocyanin *yg pts/rt	Diosgenin
Tamus (Black Bryony)		*												
---														
<b>SMILACACEAE</b>														
Smilax (Sarsaparilla)	X		FS											
---														



ECONOMIC UTILIZATION OF THE LILY ORDER; IRIS SUPER-FAMILY

Major Economic Virtues: Acaroid Resin  
Fiber

- =====
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

USES (See above key)

FAMILY	1	2	3	4	5	6	7	8	9	10	11	Notes
<b>Genus</b>												
<b>XANTHORRHEACEAE</b>												
Anthocarpus												
Baxteria												
Chaemaexeros												
Kingia										F		from lvs
Lomandra										F		"
Xanthorrhoea						*Resin						*Acaroid















COMMELINIDAE

ECONOMIC UTILIZATION OF THE GRASSES

Major Virtues: Edible grains/starches  
 Livestock fodder  
 Some Fibers  
 Some Coumarins

- 
- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY	USES (See above key)											Notes	
	1	2	3	4	5	6	7	8	9	10	11		
Genus													
CYPERALES (continued)	= [GRAMINALES?]												
POACEAE (GRAMINAE)													
Agrostis (Red Top)													Fodder
Alopecurus (Foxtail)													
Ammophila (beach grass)													
Andropogon										F			Hay; hats
Anthistiria (Common Kangaroo Grass)													
Anthoxanthum										X			Coumarins
Aristida (Wire/Hat grass)											F		
Arundo				F (rts)							W		fishing poles organ pipes poles/shafts
Arundinaria (Reed)											F+		
Avena ("Oat")		F	@								?		
Bambusa (Bamboo)		F	F+								F+		Silica
Beckmannia													Forage
Bromus													Fodder
Coix (Job's Tears)													necklaces
Cymbopogon										x			aromatic
Dendrocalamus		F	?								FW		
Euchlaena		*	*										Poss ancestor to Corn.
Elymus		x									*F		*paper, rope
Eragrostis (Love Grass)											F		Forage
Festuca (Fescue)													pasture
Geitonoplesium											F		
Heirochloa													coumarin
Imperata		x	F								F		
Lolium													Px w/ fungi
Lygeum											F		...for sails, mats, ropes.

C O M M E L I N I D A E

ECONOMIC UTILIZATION OF THE GRASSES

- |              |                    |               |             |
|--------------|--------------------|---------------|-------------|
| 1. bevg      | 4. poison I=insect | 6. oils/fats  | 10. Wood    |
| 2. food      | G=gen'l P=fish     | 7. tannin(g)  | Fibers      |
| 3. med: Folk | 5. Mucus/Gum/Resin | 8. dye        | 11. Sterols |
| Selective    | Latex              | 9. esstl oils | Saponins    |

FAMILY Genus	USES (See above key)											Notes
	1	2	3	4	5	6	7	8	9	10	11	
CYPERALES (continued); [GRAMINALES?]												
POACEAE (GRAMINAE)												
Melocalamus (Woody grass)			F								W?	
Melocanna											FW	
Muehlenbergia												Forage
Nardus (Mat grass)			F								F?	aromatic; vulnerary
Oryza (Rice)		X	F									
Oryzopsis (Indian Wild Rice)		X	@									
Oxynanthera												
Oxytenanthera												
Panicum (Millet)	X	X	F							X		
Phalaris (Canary Grass)		X										Bird seed
Phragmites		?				Gum					F	reeds; arrows
Phyllostachys (Bamboo)		X									W	
Poa (Blue grass)												Forage/Hay
Saccharum (Sugar cane)	X	X	?								X	
Secale (Barley; Rye)												
Setaria (Foxtail)												
Sorghum			F					*			?	*red dye
Spinifex											F	
Stipa											*F	*for sails, mats, ropes.
Themeda		X										
Triodia (Porcupine grass)						R						
Triticum (Wheat; Durum)												
Tripsicum		F	@								?	fodder
Zea (Corn)	@	X	@									
Zizania (Wild Rice)		X	@									Decor

--- --- --- --- --- --- --- --- --- --- --- --- --- --- ---



