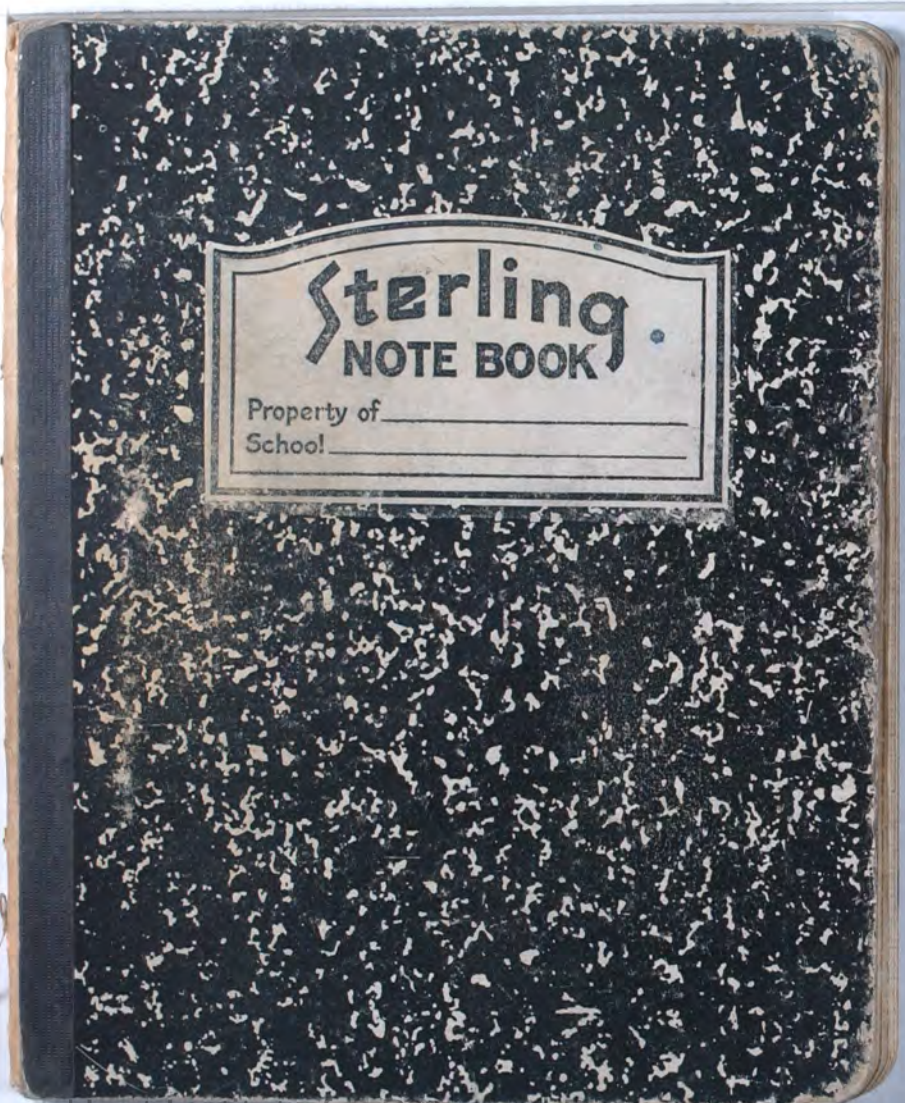
Hunt Institute for Botanical Documentation
5th Floor, Hunt Library
Carnegie Mellon University
4909 Frew Street
Pittsburgh, PA 15213-3890
Contact: Archives
Telephone: 412-268-2434
Email: huntinst@andrew.cmu.edu
Web site: www.huntbotanical.org

About the Institute
The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.



Sterling NOTE BOOK

NO. 110

DATE

FAMILY NAME GIVEN NAME

SECTION ROOM

	MON.	RM.	TUES.	RM.	WED.	RM.	THURS.	RM.	FRI.	RM.
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

Gabriel ~~Ferrand~~ (Farrand). U. S. mus. [illegible]

1. i eat, meal, heap, seek, sheep
2. I it, hill, sick, ship, ill, mint
3. e bed, let, shed, bell, sell
4. æ bad, back, as, man, fat
5. a calm, are, balm, harm
6. ɔ hot, pot, hough, hop, short
~~7. u put, full, pull, could, should~~
7. ɔ ought, ore, off, port, horn
8. u put, full, pull, could, should
9. u hood, moon, rude, hoof
10. A ʌ but, bus, buzz, buzzard, lump of
11. ə above, around, about, arise
12. ə: bird, girl, word, work, her

13. ei way, hay, bay, stay, Sate
14. ou go, know, hope, cold, show
15. ai high, right, sky, my, lie, write
16. au loud, house, how, mouse, our
17. ɔi oil, boy, choice, noise

18 iə fear, mere, hear, here
19 εə fair, hair, pear, there
20 ɔə door
21 uə poor, sure

tʃ ch as church ŋ ng as finger sink
θ th " thank
ð th " the thy
ʃ sh " she, show
ʒ zh " genie, pleasure
z s " present, zeal his
dʒ j " judge
j yes

Voiced	voiceless
dh (ð)	th θ
ʒ	ʃ
d	t
g	k
v	f
z	s
b	p

[illegible] Fälle [illegible]
[illegible]

Po — [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] Planck [illegible]
[illegible]

[illegible] Bau — [illegible]

Boose : Plasma - Bez.
Entwicklung der Samen — Staminf. [illegible]
Verhältnis v. Ba[illegible] zu [illegible] Blü[illegible]
(Samen — [illegible]) Wa[illegible]
~~[illegible]~~
[illegible] [illegible] Insekten
C. HOPKINS Cafe My.
C H O P K I N S Cafe [illegible]

Institute on Minorities

◆

OPENING SESSION: ST. PAUL'S BAPTIST CHURCH
10th and Wallace Streets, Philadelphia

OTHER SESSIONS:
SOUTHWEST Y. M. C. A.
1724 Christian Street, Philadelphia

APRIL 30 - MAY 2, 1943

Auspices of the

Youth Committee for Democracy

in cooperation with the

AMERICAN LABOR EDUCATION SERVICE

SPONSORS

Benjamin W. Barkas, Chairman, Labor Education Association

Merlin D. Bishop, International Representative, United Automobile Workers

George Craig, Eastern Pennsylvania Regional Director, C.I.O.

Harry Ferleger, Chairman, Education Committee, Philadelphia Central Labor Union

Milton Fromer, Executive Secretary, Jewish Youth Community

Michael Harris, District Director, United Steel Workers of America

Wayne Hopkins, Executive Secretary, Armstrong Association

Joseph McDonough, President, Philadelphia Central Labor Union

Samuel Otto, Manager, Philadelphia Joint Board, Waist & Dressmakers Union, I.L.G.W.U.

Theodore Spaulding, President, Philadelphia Branch, N.A.A.C.P.

Sol Stetin, Manager, South Jersey Joint Board, Textile Workers' Union of America

Charles W. Weinstein, Manager, Philadelphia Joint Board, Amalgamated Clothing Workers of America

REGISTRATION

Complete Institute	$1.00
Students - Special Fee	.50
Single Sessions	.35
Service men admitted free to all sessions	
Dinner (reservations in advance)	$1.00

Bird Seed Book,

In the Haverford Village - Archeological Exhibition there are seeds of the antiquity. ~~to~~ There are olive-seeds. Lentil seeds, pea ~~nuts~~ seeds and there are linseeds the remains of making linseed oil. Thereby ~~is interest~~ the follow is interesting. The lentils are small, they are ~~the~~ the same kind we find in present time in the Near East. ~~The same~~ These lentils possess a red color and that color is also mentioned in the Bible. We find in the Haverford-Exhibition two kinds of peas, big and small ones. This fact is also a well known. The people of the antiquity cultivated the field-, and the garden pea.

valuable [illegible] ei

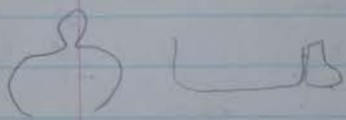
Trade in the Levante

Hiung-nu, Tsin-shi-Hwang-ti 336 BC

King-fu-tse = Wu-ti of the older Han-dy-

Han: Chang-Ch'ien: Yue-tchi, Skyths

An-tu.- Ktesiphon. - Sipon, 120 BC



Aceraceae Pistacia Schinus Aquifoliaceae

Anacardiaceae Schinus Cliftonia Ilex aquifolium

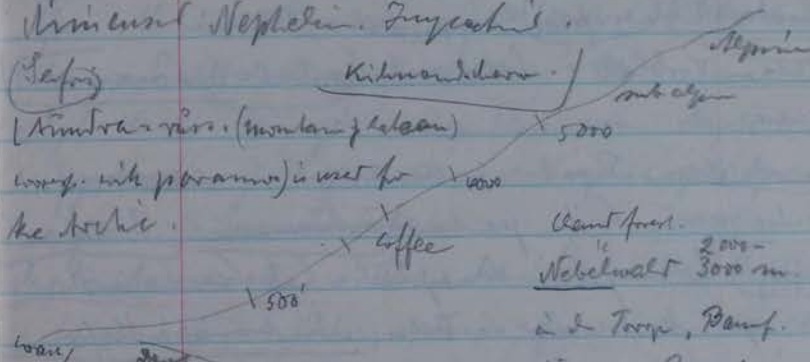
Celastraceae | Cel. scandens. | " crenata

Evonymus europaea, alata, Pachystima.

Staphylea. Aceraceae. Hippocastanaceae. Sapindaceae

Sapindus, Koelreuteria, Xanthoceras, Litchi

chinensis Nephelium. Tinycarpus.



(Sefen)

[Tundra-vers. (montane plateau)

corresp. with paramo) is used for

the Arctic.

Cloud forest.

Nebelwald 2000-3000 m

in d. Tropen, Baumf.

strand → Swamp and thicket (desert)

Namib. Ramalina reticulata

meadow → thicket →

(paramos) Epiphytic Utricularia (Sedum) Grabe

campos (Tropen)

Martinique is healthy

Costa - Sapota - swamps. W. Tagus. Rh. de, Laguncularia

Lonocarpus. E.J. + Sonaré, Conocarpus, Nipa fr, Acanthus,

Aegiceras. Sapotaceae. (Bruguiera) - Ipomoea pes-caprae

Mangrove. Cerbera uniflora Casuarina. Scaevola. Terminalia

Rhamnales. Paliurus spina christi. ⓑ
Hovenia. Colletia. Berchemia. ♄
Vitaceae Sympodia – false axis. Vitis vinifera]
Cissus. Ampelopsis. Parthenocissus, V. quadrangularis
(Australia [illegible], the stem [illegible])
Malvales. Hibiscus, Malva, Gossypium, Malva, Althaea
Tiliaceae Vorblatt? Corchorus capsularis. Sparmannia]
africana.
Sterculiaceae Theobroma cacao, Cola acuminata.
Bombacaceae. Ceiba pentandra. Adansonia, Bombax
(ceiba) La [illegible] in Venezuela (Caracas)
has a great [illegible] also in Cuba. Ambrosia] Helio-
tropium in the same [illegible]. [illegible], Hackenda.
Pelliciera, Rhizophora] [illegible], [illegible] Vitis =
[illegible] has a root [illegible] wood. – 2 plantagos

coffea arabica + Theobroma cacao [illegible] shade
tree. These are mostly leguminous (mature [illegible]
coffee) Inga, [illegible] Hura crepitans, Cordia, Brazilian [illegible]
Pithecolobium. Cecropia. [illegible] derived from the [illegible]
[illegible] Guatemala, S. [illegible] is the [illegible]

[illegible] of the Peria [illegible] ([illegible]) Bursera
gummifera] Nectandra, Miconia. Triforms. Gloxinia-
palm. Bryophyllum. Begonia [illegible] greater [illegible].
Smilax, Orchids (incl. alpine). Cecropia [illegible] peltata
Peperomia, Mimosa, Lantana, Passiflora, Gaultheria.
Compositae in the [illegible] Espeletia) Vernonia [illegible] Senecio –
Africa. Lobelia Rhynchogyna. (Hagen) (Gaudichaudii)
Pelargonium – Delphinium) Anacardium.
[illegible] Cacti, [illegible], Elaeagnaceae Shepherdia
Hippophaceae. Lythraceae. Cuphea platycentra
(cornfields) Lawsonia]
Melastomataceae. Tibouchina (Sobralia) Medinilla
Onagraceae. Ludwigia, Trapa, Fuchsia, Oenothera
Lopezia, Gaura.
Myrtaceae. Melaleuca, Myrtus, Eucalyptus,
Caryophyllus (clove), Eugenia jambosa, Pimenta off.
Lecythidaceae. Bertholletia.] Callistemon, Feijoa.
Punica granatum – Punicaceae.
Haloragidaceae. Myriophyllum, ~~[illegible]~~ Gunnera, Hippuris
Rhizophoraceae

Alte Stufe) . Ficus elastica, Calophyllum . Clusia .
rosea . Entwicklung . cyclanthus . Gnaccaceae . Pittosporum
Samen - baum Bombacaceae . Espeletia . 2 the higher
of the montane - the Alpine . (Edelweiss, [illegible])
Primula farinosa (Ruwenzori exped) Alpen ar.
Deserts) Botan Jahrb. (XVIII) 1937
W) Umbelliferae . Apium, Daucus, Pastinake (P
Past.) ect . - Cornaceae , 1 nur, flora
Aucuba japonica - Nyssa (very diff to trans-
plant . the long tap root) . (Theobroma purpurea
L.) in Panama . - Desmoncus (N.W.) Calamus (O.W)
Heliconia) Hedychium (N.W) in Jamaica . Maranta
Costus) Pereskia . Ananas, Magdalena . Vanilla pflz.
Pinus montezumae . Juniperus mexicana . Taxodium mucronatum
in the montane . Podocarpus, Zamia, Dion, Myrsine
Schinus molle = Pepper tree . Valeriana in the higher
Primula . Lysimachia . Plumbaginaceae . Armeria
Limonium . Myrsinaceae, Ardisia . Ebenaceae
Sapotaceae, Achras Sapota . Ebenaceae, Persimmon
Kakhi . Styrax japonica, St. obassia Halesia
Pterostyrax

Senfig) Cycads . Fruchtkonvertiert der Pollenschläuche)
Embryo - Entwicklung ? Columella ? Ceratozamia
mexicana ?) Savannah grass with scattered
trees . (Savanne & Schweinfurth) Schweinfurth ( )
Pampas - Prairie) A . [illegible] is more fertile
~~Palmae~~ - Dattelpalme - Phoenix sylvestris - Haiti

~~Aal~~ Ikpe
~~Wolle~~) Ikena
Tapioka ✓ Grammatophyllum the largest orchid
Alpflanzen in Java (Faber) (Freycinetia) Nepenthes am-
pullaria ([illegible] a [illegible] [illegible]) . Alpflanzen ar.
flora . Pflanzenbilder . Buitenzorg . Sangar
Reis . (Xanthorrhea - Kaz) (Thorn) (Alpinia)
Costus) - Banyan . Merbak .
Solanaceae , pflz) Brinjal . Capsicum . Pot. nur zur ~~[illegible]~~ fruits
in this country) (N . Tabak og Tryptophan
(Dura acido lacolactin)
Pol. bist. , Styrax , lendvart , Salix retusa ?
(Spaltenpfl.) . Kaiserliche [illegible] e Bern

Labiatae and Scrophularia Rat - Rusche et A.

Verbascum, Linaria, Cymbalaria, Antirrh. Digitalis, Mimulus

Paulownia Melampyrum, Scrophularia, Euphrasia

Calceolaria, Castilleja. – Orobanchaceae

Gesneriaceae mostly with hairy leaves, red of Am.

All fl. Streptocarpus Monophyllaea. Gloxinia

(= Sinningia) Isoloma aurantiaca, Saintpaulia

Bignoniaceae. Catalpa. Acanthaceae Beloperone

Lentibularia

Daryal – Daryal Berry – Acer Trautvetteri

(& Mountain Maple) Alfalfa. Heraclea

Fagus orientalis | Mantegazzianum?

Alhagi camelorum. – Artemisia Transcaucasica

Kanteleben. & Nadwitz

Rubus, Saxifraga (Sanders, Uhm, London

Linnaea borealis, Gierville

Dipsacaceae. Cnandiflora. Marrozianum

(Doyen) Alpen flora. Schroeter Sprinc –

Tsgrovot. Vavilov Asia

Longevity. Robin. Hey. in Kankanoi! for

Europe, Above Noodling:

Tower - Hey make windier

Tundra. high alpine meadow

Tangatell

Alpine

Kilimanjaro!

Alpenpflanze

Tasmania

1. Soll ich die Sache forcieren?
2.) Seifriz spricht vom "Assistent" Ich kann nur 2 h helfen, während die Unterrichtszeit 3 h beträgt.
3. Karl Schütz [illegible] [illegible] als die [illegible]
5. Soll ich mit Seifriz nochmals sprechen? Zu [illegible] war ich sehr nötig.
6.) Soll ich Benedict u. Dinner fragen? (Die Stelle ist gut nur die [illegible])
7.) Whewry belegen?

Engler:

Phelipaea

Zea Mays ✓
Secale cereale ✓
Avena sativa ✓
Agropyrum repens ✓
Triticum sativum ✓
Coix Lacryma-Jobi ✓
Iris versicolor ✓
Veratrum viride ✓
Convallaria majalis ✓
Helleborus niger ✓
Dioscorea villosa ✓
Humulus lupulus ✓ Aconit?
Saponaria officinalis ✓
Phytolacca americana ✓
Rumex crispus ✓
Cimicifuga racemosa
Podophyllum peltatum
Chenopodium ambrosioides
anthelminticum

Sanguinaria canadensis
Hydrangea arborescens
Glycyrrhiza lepidota
Baptisia australis
Galega officinalis
Glycine hispida
Trigonella foenum-Graecum
Geranium maculatum
Ruta graveolens
Rhamnus Purshiana
Althaea rosea
" officinalis
Prunus virginiana
Petroselinum sativum
Apocynum cannabinum
" androsaemifolia
Asclepias tuberosa
Datura Stramonium
Atropa Belladonna

Solanum Dulcamara
Digitalis purpurea
Verbascum Thapsus
Monarda fistulosa
Symphytum officinale
Monarda ~~fistulosa~~ punctata, didyma
Marrubium vulgare
Lavandula spica
" vera
Salvia officinalis
Mentha piperita
" viridis
" agnatica
" longifolia
Rosmarinus officinalis
Thymus Serpyllum
Arctium Lappa
Matricaria Chamomilla
Achillea Millefolium

Artemisia Abrotanum
Tanacetum vulgare
Inula Helenium
Pinus Strobus
Tsuga canadensis
Ptelea ~~trifoliata~~ trifoliata
Taxus cuspidata
Hamamelis virginiana
Rhamnus cathartica
Euonymus alata
Populus nigra italica
Wistaria chinensis
Ebenaceae canadensis (?)
Agaspe sinensis
Magnolia ~~sinensis~~ Soulangeana
Betula alba · fastigiata
Sassafras officinale
Aristolochia Sipho

The comp. [illegible] we find in the earth crust are:

O	1,4	46,5
Si	0,4	28.
Al	0,6	8
Fe	0,6	5
Ca	1,0	3,5
Na	1,0	3
K	1,3	2,5
Mg	0,7	2
	Å.	

We know that the K Atom is much larger than the [illegible] (X rays). The atom size are most importn. for replacing elements in minerals and this is important again for the plant.

Rock: aggregate of Minerals.

Igneous (Magma) \
Sedimentary / metamorphic.

[illegible] is a good indicator for the temp. because some [illegible] forms only are possible at a certain temp. The size of the grains in the ign. are proportional to the temp. of the '[illegible]'.
We have mineralizer Water, salt-solution. Weathering is 'Verwitterung'. Insolation. Diff. expansion of Feldspar [illegible]. Split of the rock. Erosion by wind. (Sand. [illegible]'. Water, ice are also agents for com—

Ceno	62	Late Cenozoic
		Early "
Meso	70	Up. Cretac.
		Low "
	30	Jurassic
	30	Triassic
Palaeo.	40	Permian
	80	Up. Carbon
		Low "
	50	Devonian
	30	Silurian
	40	Ordovician
	100	Cambrian
Proto	500	
Arch.	1000	

The fragments of the weathering does not remain in their place. They are removed by water: Sedimentary rocks. The igneous rock and the sedimentary rocks are sometimes not distinguished from each other.

Silicic	intermediate	basic	ultrabasic
60% SiO_2	55 60	50 - 55	45 - 50 % SiO_2

Plutonic Rock = Tiefengestein

shallow " = Ganggestein.

Volcanic "

Quick 'Erkalten' makes 'glass' as it is in Obsidian. (porphyry means in Greek "purple")

Diorite has no Quartz it is mostly dark

	silic 60% % SiO_2	intermediate 55-60%	basic 50-55	ultrabasic 45-50 %
Superficial	Rhyolite	Andesite	Basalt	?
shallow	Porphyry	porphyry	Diabase	?
Deep	granite	Diorite	Gabbro	pyroxenite
	Quartz, K-Feldspar, few dark	Q, Na-Feldspar, more dark	Q. Ca-feldspar, much dark	No Quartz, little or no feldspar, mostly dark

Sidhan is very dense the crystals may move by temps within grains [illegible] certain manner. By weathering a cube may get a globe, a ball. The corners split off. (Sidan)

The result of weathering is: Quartz or without silica. Clay.

Sedimentary: Sandstone O, 75 %

Calcium bicarbonate → $CaCO_3$ Limestone

Igneous rocks → weathering → sediments → sedimentary rocks
metamorphism
Sand SiO_2, Clay $H_4Al_2Si_2O_9$, marl $CaCO_3$. (Stratus or bar
(= Schichte). Cementation is a form of metamorphism.
Iron-oxyde - minerals (Goethite) HO-Fe=O. Quartzite
is a sandstone cemented by silica. Moves etc. The
first metamorph is the formation of sediment stone
The heat has also a tremendous influence in
stone development. Warm or hot water: gneiss
granite → granite-gneiss → mylonite (or mica-gneiss
schist-ore, quartz-schist is pressed stone (Schistosity
Argillite → Shale → Microschist → Mica-gneiss. — Serpentine
Metamorphism may be A) dynamic (Ulertrust-tides)
B. Hydrothermal (Venturic). Serpentine is formed by
hot Water: Mg_2SiO_4 (Forine) $H_4 + Mg_3Si_2O_9$ = Serpentine
It is no good building stone.
Coloration of rocks. Many things are unknown.
Fe_2O_3 → hematite → red. (It contains crystals of
pyrite FeS_2 (Pyrite) it contains also MnO_2. There are
rings of MnO_2. (Fe_2O_3 has a very strong coloring power)
in Siena red. FeOOH goethite yellow (rust) Both
after are unsat. Fe_3O_4: magnetite black or
smoky brown. $Fe^{++}+F^{3+}$ → blue or green
(Ferrosulfate, ferro-silicate). Granite (SiO_2 69,28%,
Al_2O_3 = 16,28 Fe_2O_3 1.95, CaO 1,77, MgO 0.36.
K_2O 5,58, Na_2O 4,42, H_2O 0,36. This is a typical
al granite-analysis. Describe weathered Granite:
SiO_2: 57,03 Al_2O_3: 29.54 Fe_2O_3: 6,3, CaO: 0,07,
MgO 0.14, K_2O: 1.49, Na_2O: 1.12,

SiO_2	69, 28	57. 03
Al	16, 28	29. 54
Fe	1, 95	6. 30
Ca	1 77	0, 07
Mg	0. 36	0, 14
K	5 58	1.49
Na	4 42	1.12
H	0, 36	10. 31
fresh granite		weathered gr.

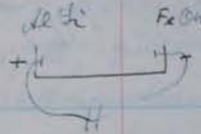
Weathering continued:
Argillite (MS)

	fresh	weathered	loss %
SiO_2	44.15%	24.7	57.57
Al_2O_3	30.84	39.90	—
Fe_2O_3	14.87	17.61	8.78
CaO	0.48	—	100.
MgO	0.??	0.25	28.??
K_2O	4.36	1.24	77.??
Na_2O	1.51	0.25	9?.64
H_2O	4.53	16.62	—

Kalium-Feldspat:
$K_2Al_2Si_6O_{16} + H_2CO_3$ = ($KCO_3 + H_2Al_2Si_6O_{16}$) → SiO_2 → [$H_2Al_2Si_?O_{12}$] - SiO_2
is not existing long while, unstable

→ $H_2 Al_2 Si_3 O_{10}$ (Anauxite cold climate - mineral) →
$H_2 Al_2 Si_4 O_8$ is Kaolinite, the purest clay.
kaoling: Chinese word for Kaolin.
$H_2 Al_2 Si_2 O_6$ is not stable → $H_2 Al_2 - O_4$ = Bauxite.
(Al fabr) in US A Bauxite is formed in some hot springs
Laterite is Bauxite ~~and~~ mixed with other minerals. (Fe)
Laterite is to use after magnetic purification.
Kaolite: $H_4 Al_2 Si_2 O_9$ (SiO_2 46,5% + Al_2O_3 39,53 + H_2O 14.2)
(W in Akot NS) Kaolite has the formula $H_4 Al_2 Si_2 O_9$.
= 46% SiO_2, 39,5% Al_2O_3, H_2O 15%. Clay is the
only stable silicate. It was found that there are
several clays: 3. Anauxite $H_{22} Al_{10} Si_{18}$
~~Kolo~~ Kaolinite } $H_4 Al_2 Si_2 O_7$. Kalinite $H_{24} Al_{12} Si_{4} O_{54}$
Silexite }
Nacrite ~ Photolite $Al_{13} Si_{11} O_{84}$.
$H_4 Al_4 Si_6 O_2$ = Beidellite. Bentonite is also such
a rock. It plays a part in softening of water.
Bentonite is volcanic ash. It may turn into
clay, but we don't know the process.
The softening means in this country are to replace
water again.

Langmuir made interesting experiments with spreading out
of a film which were one or a few molecules thick.
They act in some cases like a gas. Some
elements antagonize them. e.g. 4 & Ca.
Langmuir used pure H_2O + pure petrol oil +
stearin etc. The absorption film is the water film, held
by the Walls. e.g. The gluing quality of colloids
is absorption. Protective colloids are known, the same
is with the Brown movement. With the brown
movement a separation of the particles is possible.
The color in quartz may be a result of
colloidal particles. In Phila. a man made
slides of the so called blue quartz It contained
bubbles holding in water fine parts of C. These
~~were~~ were there of several millions of
years since quartz was formed. The blue is a
color of interference. The behavior of the
electrons reminds a little bit to the
ancient "~~ph~~ phlogiston". Electrophoresis
is the moving of the Ions (= Electrodialysis) The
el. charged colloids move. Does the non



The OH group may take better;
The plasticity is one of these
qualities when colloids are such.

We have coagulation and deflocculation
gel → sol
Deflocculation = peptization 1st f.

X. 29. Soil texture. Soil dry, than sieved.
then "coffee-macarone" + reaction cylinder
+ a little bit Na Oxalat. for the colloids to
100 ccm dest. H_2O + 60x shake then it must
stand a while. Than little cylinder + Aero-
meter for spec. weight. The life layer of the
Bouyoucos. Soil Science 23: 343. 1927. Earth is very thin
skin. The climate deter-
mine also the soil. Quartz is most resistant
to weathering.

A.) Rock fragments esp. quartz
B.) Colloids
a) inorgan.
b) organ.
} sizes texture

The following particles are mixed; That is inorganic
man (88) space; solid: 53% space 47%.

			soil classes:
Fine gravel	2,000 – 1,000	mm	sand, loam, silt loam
Coarse sand	1,000 – 0,500		
Sand	0,500 – 0,250		
fine sand	0,250 – 0,100		
very fine "	0,100 – 0,050		
silt (schlamm)	0,050 – 0,005		
clay	0,005 – 0,001 (10 billion particles – g.)		
ultra clay	0,001 – 0.		

e.g.

F.G.	C.S.	S.S.	F.S.	V.F.	St	Cl
2½	15 2	23½	37	11	7	5
2	5	5	15	14	40	16
1	2	2	5	11	65	15.

There is to use a chain of sieves. For separation
of the diff. size of the particles is used
also centrifuge or also the elutriation

The physical classification is easier to
make than the chemical one
water (wet peat e.g.)

Texture Diagram. The temperature of the
soil is very important.

	etc.	Disadvant.
coarse	pore space	too little H_2O
	warm (much H_2O)	hungry
fine	plant foods	too wet
		cold

West of the Rocky mountains there is rain – and

snowfall at the same quantities. The summer are free of rain. In the East there is rain the whole year and more rain than snow. This is the reason that plants of the west does not grow in the [illegible] while Asiatic pl. grow

(Mer-Trocky – D) very well where [illegible]

[illegible]

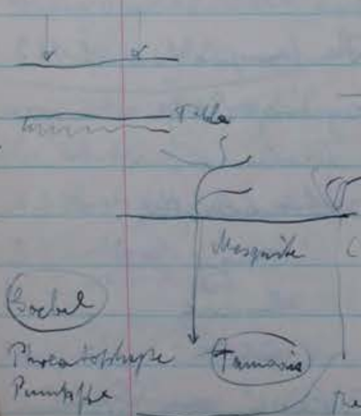
(Snow and germination).

Bound a Hygroscopic

(c) capillary  the water can move against gravity. When [illegible] goes greater than 15 mil" it loses the power of [illegible] of the ground

free.

The lysimeter investigates the solution of salts



[illegible] How is the germination [illegible] in that Phreatophytes?

In N. 7 the [illegible] water (Atlantic [illegible]) takes year

The Water falls [illegible]

Chicago – Black hills. Slow movement of the groundwater (Columbia [illegible])

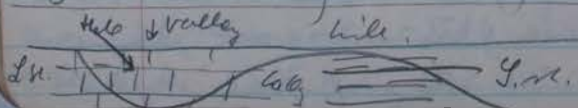
Dear Miss W.

I discovered myself, this means my photos, in the new. ed. issue of . . .

I would appreciate it very much to have, if possible, ~~one~~ or 2 reprints. The photos are very good and I thank you for the one title which you printed them. I have my German text I gave you [illegible] too long. But a few things I want to mention: Please don't forget the stone of a plum is formed by the inner layer of the fruit wall, the endocarp. In cycas (and also in Ginkgo) by the hard layer is formed by integuments (~~[illegible]~~ from which the seed coat [illegible] in gym. pl.) An inclosing fruit leaf is not present in Gym. – It always troubles me that 'flower' means 'Blüte' and 'Blume'. With your last lines you touches on a [illegible] solved problem in Gy.

are washed away and C & D are more or less sterile (Tung-öl-Tree, fruit). Browning is bad because the soil becomes more soluble and it is easier quickly away. The function of the earthworm is very important. The earth may make $CaCO_3$ in its digesting apparatus and this is more ... (18 t per acre of ...) With K. Permanganate - they come out of the soil. Then on a sunny day the soil dries out and they come back ...

pedocal (Ca-Boden) - Pedalfer (Al-Fe). It is
arid (semi-Chernozem) humid. Chernozem - black-grassland - soil - Chestnut - earth - brown (Chestnut soil) Sierozem - desert gray, rendzina = dense clay, solonetz - alkali desert, solonchak. -
humid: Pedalfer: Podsol, Planosol, Ortstein, Krotovinas - 3 orders: zonal (with clear developed layers) intrazonal - (?) azonal (ungeschichtet)
Podzol. Lakewood (tertiary sand) A. gray, B orange
C. yellow sand. (loam) (Pine barrens). -



1. Podzol — major groups:

a) gray brown — Chester — granite or gneiss — A. light brown clay pan; B. deeper brown; C gray brown + unweath. mica

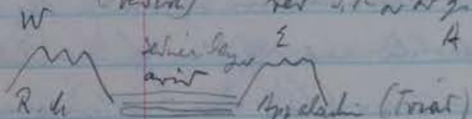
Manor - schistose rocks } very fertile soils
Hagerstown $CaCO_3$ $MgCO_3$

A. brown
B. red brown
C. gray brown clay

Series of Lime [illegible]

[illegible] Volusia S.st + glacial (N. Penn.

Penn soil — Mesozoic Triassic
sandstone (red soil), red S.st or argillite (Fe_2O_3 ...)
A red loam



Montalto (diabase — A. dark brown; B. brown; C orange brown

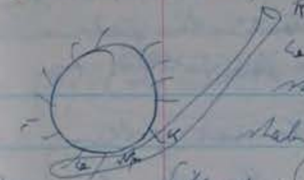
Sassafras - soil (S.N.J.)
"gray brown podzolic"
(fruit ...), Collington: derived from 'marl':
greensand (from glauconite) (Al, SiO_2, K, Fe)
Elkton clay alluvial deposits (sweet gum)
Cecil (C. county) orange brown. (Gabbro) another is
Norfolk-soil (yellow brown) from sands of coastal Plain

Growing on (Md.) (chocolate-brown) of serpentine (Cerastium ? arvense var villosa [is a circumpolar pl. but varies very much) — Soil-texture, the arrangement of the mixtures.

Colloids: { coagulation (flocculation) / Solution (deflocculation) — like ± repels charge.

Some minerals contain: Feldspar, Micas, Rutile (TiO_2) & Zircon ($ZrSiO_4$) & Tourmaline. One of the soils Penn silt loam K-Feldspar 5%, K-mica 9%. Min. other than quartz 18%. K is most important as a plant food. It may originate from Feldspar in the soil. (F. sol. 16% K_2O.) — Soil-colloids. Farmer distinguished between fertile and sterile of soil. The soil analysis showed no diff. Then the percentage of this & p. changed with the season spring: 10% fertile 5. sterile, Autumn 7% fertile, 20% sterile. The colloids are here of paramount importance.

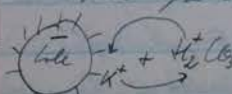
The particles of the colloid particles have an adsorption power. Some elements are also necessary for stabilisation. Ca is necessary for stabilisation of these colls. How is the root taken off? In fewer words we have distinguished (as chain of cells) → roots with root hairs. In the root R.h. } take K, Ca or Na away. If the Ca is taken away the colls become instabil. Ca is very important. If this stabilisation disturbed the the water may move different. (Erosion)



Soil-Chemistry: (Aufschliessen with Na_2CO_3 + HCl afterwards) SiO_2 rem. + HF. later + NH_4OH → Al_2O_3, Fe_2O_3, MnO_2 + P_2O_5 precipit. + $(NH_4)_2C_2O_4$ (Am. oxalat) CaC_2O_4. Then $HNa(NH_4)PO_4$ → $Mg(NH_4)PO_4$

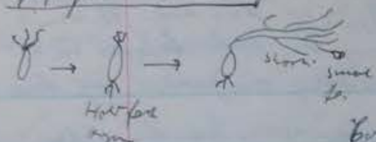
The fields are not homogen. The soil is different on diff. spots. It was calculated how long the diff. salts would last. But it is important

that in diff soils the roots go diff deep. Then comes the fact of the erosion which takes fertilizing salts away — Soil-Solution (soil extraction). The water is hold fast by capillarity and it is not easy to squeeze it out. If it is pressed out, the pressure must be so strong that the soil changes its composition. Centrifugation would also not help. Good is Alkohol or NH_4CNS. Evaporation of soil extract gives a certain sequence of salts.



CO_2 removes the K from the coll. H_2CO_3 is solvent for salts

Epiphyte – Chemistry. In U.S.A. Tillandsia usneoides makes ... fruits.



The make a few holdfast organ ~~no roots~~

Bottle like the ear. fallen short. They live on very rich water. Are they lacking of dust? In the river of the forests? Are the live of materials solved in the rain water. 2 rainwater in

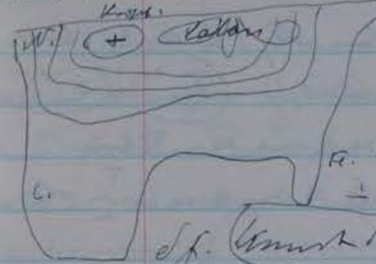
Cl. 32			found: (Salt Kristalle
SO_4 14.		in Rain (Gartensaltun) [Ramalina]	it seems
CO_3 10,5	Fe_2 1,52	Ashes of. CaO 10	that SiO_2
NO_3 9,5	Al. 0,5	Na_2O 15 Fe_2O_3 13	is abundant
SiO_2 7,0	Ca 8,5	K_2O 12 SiO_2 28	. Insects
Mg. 3,5	K. 2,1, Na. 16,5	MgO 10 P_2O_5 3	may

furnish P, fairly in the rain water. Insects are ... live in the sacious leaves. Another Tillandsia in Fl.

B is also in el. wires. — B: (it is bad for the stomach) it originates from Tourmaline within the soil (CO_2 B_2O_3) Si. is mostly unsoluble (CO_2 makes it soluble). The roots of Artemisia 12, Rosmd 1,5. Uncovered 32,5. Equisetum 49,5, Andropogon 65,5 % SiO_2

They make selection of the salts in the water

The plant takes ... from the soil the K ion and the soil becomes more and more sour (Vollrong). The use of J is very small. 1/1000 to 1 mg. S. Carol. was called 'Iodine-State'. The vegetables of this state were sold in Chicago and the Kropf ...



cf. Unused Sugar. The electrical charge plays a great role.

Na^+ Cl^- — Na^+ Ca^{++} Soil colloid $(Fe(OH))^+$. $(PO_4)^{\equiv}$ Ca^{++}

In soil colloid chemistry plays a tremendous role.

K^+ Al silicate attracts very much K. Mg Tillandsia contains very much sodium. Mg^{++} is necessary for making of Chlorophyll. Tobacco needs more Mg than Epiphytic Orchids, Ericaceae every other plant. The use of Mg is differ. (Tobacco needs it for Chlorophyll, when lack 'Sand-Drown' a Chlorophyll disease). For other plant Mg is toxic, when Ca present, much less. The size of Mg-soluble is of importance. (Cuba Mg serpentine soil). The 'soil amendment': Ca^{++} is very important. $Ca^{++}(CO_3)^{=} + Ca_5^{++}F(PO_4)_3^{\equiv}$

$Ca^{++}(CO_3)^{=} \rightarrow CaO$ (Quick-lime) $\rightarrow Ca(OH)_2 + CO_2 = CaCO_3 + H_2O$.

Ca makes the colloid particles stable; Ca has the follg.

1.) absorbed by plants. 2.) plate 'colloids (makes it stable) 3.) neutralizing acids. — It must not be Ca-carbonate. $Ca^{++}SiO_3^{=}$

or Ca silicate (from slag) does it also.

Ca^{++} K^{++} Ca^{++} (Walkstone Pf. $CaSO_4$). — Fe^{++} Fe^{+++}

is originally also poisonous, but without Fe, Chlorosis. (green veined chlorosis). Fe. forms complexes with other compounds. — $AlSO_4$ is very unstable.

$FeCl_3 + NH_4OH \to Fe_2O_3 + H_2O + Al_2O_3$

$AlCl_3 + NH_4OH$. (Grit = Mn, ...)

Mn. The first to cultivate pineapples in Hawaii. The soil is poisonous and is antagonistic to several other elements. Fe. it is poured into the heart of the pl. where the grit. is not there. In Brazilian the (scales) prevent the form of silicate.) The chlorosis is prevented). — Al. If it is necessary or not. This question is not answered yet. Lycopodium is very rich in Al. It ... is the ... — ~~Symplocos~~ Symplocos, a flowering plant the same. (The berries are very sour, ...) Hickory. The other elements are more or less important. Se is very poisonous. it derives of volcanic ash and is abundant in Wyoming. Astragalus stores Se. (the genus is very difficult) Aragallus, the cruciferae Stanleya are similar.

(Treleasen) The Chile-saltpeter contains a little Li. Cr. — The diff. plants take out of the soil diff. elements, the one (grass much Si, Clay. much Na). — The amount of protein changes in wheat with the year. a dry year produces more protein. + $NaNO_3$ more protein. Money of $NaNO_3$ with airplane?

The burning of the wood was used first by the Indians and taken over by the white men.

Humus. It is a result of decomposition of dry matter. (collagen ...) more is lignin and the protein. C : N = 10 : 1.

Decomposition: Unrestricted (bacteria): CO_2, H_2O, N_2 — Ca^{O}, K_2^{O} etc. liberated rapidly (...) — Restricted (fungi) soluble acids — K, Ca liberated slowly — medium soil (...). Moor, Peat (...) (Origin of ... Torf) Paint). W... Laterium.

sour ... for the ... a toxic soil not acid. — Dehydroxystearic $C_{18}H_{36}O_4$ also vanillin is toxic the soil. (Cumarin) (rice + blue green algae?). Water is ionized H^+ : $(OH)^-$ it is (10^{-7}) l. The hydrogen ion gives the Hydrogen Hydrogenation / soil taste. — The ... plays

an ancient important role.

p^H = potenz = voltage (potential electricity). The ionis[ing] of

$H^- + H_2O^+ \rightarrow H_3O$ Water. The strong acids have to be

ionised completely. $[H^+] = \frac{1}{[OH]}$ — Hydrolysis

The splitting up of molecules by water.

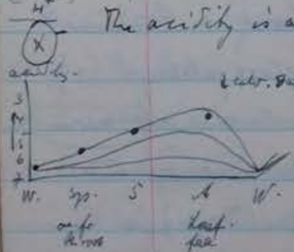
$NaCl + HOH \rightleftharpoons NaOH + HCl$. everything is neutral

$NH_4Cl + HOH \rightleftharpoons NH_4OH + HCl$. "Büffer" (= Puffer)

$CaCO_3 + 2HOH \rightleftharpoons Ca(OH)_2 + H_2CO_3$ ("weak", "strong"). reaction is the

resistance against the changing of acidity. Carbonates (or peptone) acts as 'buffer'. In black the 'buffer-reaction' is more important. Acidity. [Sandstone!] Moorfrage

In organic	organic
rain, HNO_3, H_2SO_4, H_2CO_3	oxalic ($H_2C_2O_4$) by oxydation of carbohydrates
salts of weak bases + strong acid	lactic $CH_3\,CH(OH)\,COOH$
$(NH_4)NO_3$, $Al\,Cl_3$, Colloids	Ammon oxalat., humic acid.



The acidity is also influenced by the seasons.

What the farmer calls 'sauer' is not sour in chemical sense.

Brom-thymol-blue (yellow, green, blue acid) is the best indicator of the acidity. These exist indicators which show

diff. colors, depending from the acidity. (La Motte Chem. Prod. Co. Balt. (Md.) Stockist!) PH. 4 5 6 7 8 9

acid soil pl. | circum-neutral Pl.

Erica cean. | most of our garden pl. (Mediterranean)

Bleaching Sphagnum

Oxydation is a movement change of the [ele]ctron.

$Fe^{++} \rightarrow Fe^{+++}$. $Fe^0 + O^= = (FeO)^+$, $H^+ \cdot O^= \cdot H_2O$

The same is with Pt = sponge + H_2. In this case H is like a + charged metal. There exist also electrical methods for identifying the acidity. — The same plants may grow together, if the root systems are in diff. levels. (Lady slipper pH 2 Sep. B. Tamarin, another Cyprip. in A Hoyne Ph 4. — Sundew plants polymers are very acid — Liquid pastures acid. Cornelian, Rhodod. + Chimaphila N, acid. — Amanita [illegible] — Beech forest pl. — Largest Sarothamnus Heath fern. 'Advance' magnum! — Pyrus is acid.

Garden Acid or Chem.

Back Cover

Bethold Laufer
Introduction of Tobacco into Europe — B633.5 L363.2

Tobacco and its use in Asia — B633.5 L363

Sino-Iranica — Mu 572.07 F455

Reinhard Lind
Book on Kalabagh — B634.5 B294

Bibliography Howard H. Barkley, NJ 1900

Tag 27 XII. 41

Wheat vor Ganges (many grains) | Record Pl. [illegible] 2600

[illegible] ([illegible]), [illegible] (35 [illegible]) [illegible] 150

(they [illegible] man) [illegible] [illegible] 2750

500

Umbelliferae. [illegible] ([illegible]) [illegible] 2250

[illegible] 80, Plantago ([illegible] [illegible])

[illegible] 100 | [illegible] [illegible] in Parks.

[illegible] [illegible], Ran[illegible] [illegible]. [illegible] [illegible], [illegible] [illegible] [illegible]

[illegible] in [illegible]. — They are [illegible] in the [illegible] of [illegible]

[illegible] [illegible] for the [illegible] West [illegible]. [illegible] in the [illegible].

Trop. US. [illegible] (300) – [illegible]

([illegible] 400, W. US. 45, Trop. U.S. 200 Asia 50

[illegible] [illegible]. [illegible] [illegible], [illegible] [illegible].

[illegible] [illegible]. Pol. [illegible]. Pol. 13 [illegible]

[illegible]. Pol. [illegible] ([illegible]). [illegible]

[illegible] in [illegible]

[illegible] – [illegible], Plantago [illegible], [illegible] [illegible] [illegible]

[illegible] [illegible] – von [illegible]. [illegible]. [illegible] [illegible]

Xanthium [illegible]. [illegible] [illegible] + [illegible]

[illegible] [illegible]. Pistia!

Berthold Laufer

Alfalfa, Grape-Vine, Pistachio, Walnut,

Pomegranate, Sesame, Flax, Coriander

Cucumber, Chive, Onion, Shallot,

Garden Pea, Broad Bean (Vicia faba)

Saffron, Turmeric, Safflower, Jasmine

Henna, Manna, Asa foetida, Galbanum

[illegible], [illegible], Indigo, Rice, Pepper

Sugar, Myrobalan, [illegible] Peach,

Brassica, Cummin, Date Palm,

Spinach, Sugar Beet, Lettuce,

Ricinus, Almond, Fig, Olive

B.S. Bal. (Pinus) [illegible]. | Fisher ([illegible]) | San Francisco Names (+ Fam)

[illegible], [illegible]. — Difficulty in cultivation — [illegible]. [illegible]

[illegible] – [illegible]. [illegible] – [illegible] [illegible]. ([illegible] [illegible])

[illegible] [illegible] – Pergola – [illegible] – [illegible] – [illegible] = [illegible]

[illegible] Gerechte. [illegible] [illegible] – [illegible] – [illegible], See, [illegible] –

[illegible], [illegible] [illegible] Parks in [illegible]

[illegible] in [illegible] Morris. Whang

34 Cuminum 5970
36 Musineum · Museum 5972
38 Arracacia 5978
39 Smyrnium 5965
40 Eulophium 6036
42 Erigenia 5960
43 Hohenackeria 5993
44. Bupleurum 5994
17 Eryngium 5923
20 Astrantia 5920
22 Sanicula 5918
24. Actinotus 5907
28 Pycnocycla 5930
29 Physospermum 5967
57 Sison 6018

84. Prangos 5988
42a Orogenia 5961
Oreya
38 Velaea 5975
36a Museniopsis 5876
25. Lagoecia 5924
27 Echinophora. 5927.
30 Molopospermum 5943
32 Lecokia 5984
1. Hydrocotyle 5893
3. Trachymene 5897
6. Azorella 5910
9 Spananthe 5905
10 Bowlesia 5902
47 Lichtensteinia 5990
48 Trinia 5998
49 Apium 6004
50 Apiastrum 5959
51 Oreosciadium 6004
52 Cicuta 6011
53 Ammi 6016
56 Carum 6020

90 Phellopterus 6086
91 Lophosciadium 6104
92 Wittmannia 6039
93 Oenanthe 6046
94 Crantzia 6047
95 Cynosciadium 6044
96 Discopleura 6043
97 Eurytaenia 6060
98 Aethusa 6048 I
101 Capnophyllum 6103
102 Siler 6130
104. Polemannia 6045
107. Selinum 6065
109 Trochiscanthes 6066
110 Meum 6067
113 Pleurospermum 5981
111. Cymopterus 6089
Pseudocymopterus 6091
112 Ligusticum 6071
114. Aciphylla 6077

59. Falcaria 6018
60 Sium 6038
Berula 6038
61 Aegopodium 6034
62 Pimpinella 6033 I
65. Cryptotaenia 6015
66. Conopodium 6025
68 Osmorrhiza 5941
69 Myrrhis 5942
69a Podosciadium 6036
70 Oreomyrrhis 5957
71 Chaerophyllum 5935
Ammoselinum 6005
73 Scandix 5939
74 Anthriscus 5938
77 Athamanta 6052
80 Seseli 6042
81 Foeniculum 6062
88 Carlogs. 5987

47. Myrtaceae ?Actinodium 5622
7 Calytrix 5615
13. Baeckea 5612
18. Leptospermum 5599
19 Kunzea 5601
20 Callistemon 5602
22 Melaleuca 5603
24. Beaufortia 5610
30 Eucalyptus 5598
33 Syncarpia 5593
34. Lysicarpus 5590
38 Metrosideros 5588
45 Psidium 5559
49 Myrtus 5558
52 Nelitris 5562
55 Calyptranthes 5575
58 Eugenia 5578
68. Heteronema 5707
Mel. Osbeckia 5658
Rhexia 5664
Tetrazygia 5758

Lythra
1 Ammannia 5474
2 Peplis 5475
3. Didiplis 5475
9. Cuphea 5478
10. Lythrum 5476
12 Nesaea 5486
20 Antherylium 5492
24. Lagerstroemia 5493
27 Punica 5507 (P. ceae!)
Onag.
1. Epilobium 5795
2 Zauschneria 5794
3. Jussiaea 5791
4 Ludwigia 5793
5 Clarkia 5799
6 Gayophytum 5818
7 Eulobus 5815
106. Miconia 5759
133 Mouriria 5786
8. Oenothera 5804

116 Thaspium 6076
Selinum
117 Selinum 6070
120 Levisticum 6083
121 Angelica 6082
122 Archangelica 6082
123 Ferula 6109.
125 Peucedanum 6116
125. Pastinaca 6120
Boisduvalia
Onag. 8. Boisduvalia 5798
8. Godetia 5801
9 Eucharidium 5800
11 Hauya 5797
13 Lopezia 5824
16 Gaura 5819
Samydaceae
18. Stenosiphon 5820
18 Heterogaura 5821
20 Circaea 5828
21. Trapa 5829 ~~5824~~
Samyd. Casearia 5343
11. Laetia
15 Homalium 5313 ! Fl.

2. Cevallia 5381
3 Petalonyx 5382
6a. Sympetaleia 5385
7 Mentzelia 5383
7 Eucnide 5384
8 Loasa 5389
Turn.
1. Turnera 5360
3. Passiflora 5372
17 Carica 5377
Cucurb.
1 Hodgsonia (Hodgsonia) 8576
10. Lagenaria 8610
11. Luffa 8594
16 Momordica 8591
18. Cucumis 8599
19. Citrullus 8598
23 Cephalandra 8628
26. Ecballium 8596
28. Cucurbita 8622
31. Begonia 8595
33 Zehneria 8562
34. Melothria 8562

4. Sicydium 8587
44. Maximowiczia 8578
45. Ceratosanthes 8580
46. Apodanthera 8559
57. Echinocystis 8629
51. Megarrhiza 8629
52. Elaterium 8634
54. Cyclanthera 8641
55. Sicyos 8637
56. Sicyosperma 8638
59. Microsechium 8640
Begonia
1. Begonia 5397
Dati
1. Datisca 5395
Cact.
1. Melocactus 5409
2. Mamillaria 5411
3. Anhalonium 5413
5. Echinocactus 5408
7. Cereus 5401
8. Phyllocactus 5404
9. Epiphyllum 5405
14. Opuntia 5414

13. Peireskia 5421
Fic.
1. Mesembrianthemum 2405
2. Tetragonia 2403
8. Sesuvium 2394
9. Trianthema 2395
10. Gypselea 2396
13. Telephium L. ~~2451~~ 2451
= Gray 3161. trans. (Caryoph.)
14. Mollugo 2387
14. Glinus 2388
15. Pharnaceum 2389
20. Giseckia 2382
21. Semonvillea 2376
125. Anethum 6063
Glaptera 6089
Arctemora 6107
Tiedemannia 6104
~~Ferula~~
127 Heracleum 6122
129 Polytaenia 6102
131 Malabaila 6123
134 Tordylium 6128

135. Johrenia 6100
138 Coriandrum 5953
139 Bifora 5956
140 Cuminum 6002
Trepo
141 Trepocarpus 6003
143 Exoacantha 6139
145. Orlaya 5952
144 Artedia 6140
145 Daucus 6142
146 Caucalis 5985
Torilis 5945
149 Laserpitium 6136
151 Thapsia 6137
Araliaceae
1. Myodocarpus 5886
4. Aralia 5881
9. Astrotricha 5867
11. Panax 5883
13. Fatsia 5848
16. Meryta 5851
17. Sciadophyllum 5852

18. Schefflera 5852
30 Cussonia 5872
35. Hedera 5853
36. Oreopanax 5853
8. Woodfordia ~~8636~~ 5427
10. Fuchsia 5823
1. Gronovia 5380
Pass
1. Malesherbia 5363
50. Trianosperma 8625
75. Sechium 8636
3. Aizoon 2407
Corn
1. Alangium 6157
2. Marlea 6157
4. Corokia 6158
5. Benthamia 6159
Cornus 6159
Umb.
Detweya 5973
Deweya

1 Clematis 2542 — 27 Actaea 2537
2 Naravelia 2542 — 28 Cimicifuga 2537
3. Thalictrum 2548 — 29 Xanthorhiza 2535
3a. Hepatica 2541 — 30 Paeonia 2528 (2523)
4 Anemone 2541 — 1. Dilleniaceae — 5098
6 Adonis 2549 — 13. Hibbertia 5702
7. Calliantheumum 2526 — 17. Crossosoma 3315
10. Ranunculus 2546 — 1. Calycanthus 2663
12 Caltha 2524 — 1. Drimys 2658
16 Hydrastis 2529 — 2. Illicium 2657
17 Trollius 2526 — 4. Magnolia 2651
18 Helleborus 2527 — 7. Liriodendron 2654
19 Eranthis 2528 — 8. Schizandra 2656 I
20 Coptis 2534 — 9. Kadsura 2655
21 Isopyrum 2532 — 14. Stauntonia 2673
22 Nigella 2530 — 30. Anona 2729
23 Aquilegia 2538 — 45. Eupomatia 2731
25 Delphinium 2539 — 1. Aspidocarya 2592
26 Aconitum 2540 — 8. Calycocarpum 2599 Calycocarpum
18 Menispermum 2567 — 15. Limacia 2607
21 Cissampelos 2574 — 16. Cocculus 2570

7.
8. Garrya 6150 — 16. Diptyllelia 2560
9. Griselinia 6164 — 17. Jeffersonia 2534
Engler: Xanthoceras # 4844 — za 6157 — 18. Podophyllum 2558
8526 — 19. Achlys. 2561
um 8575 — 1. Caboomba 2509
um 8576 — 2. Brasenia 2510
um 8577 — 3. Nuphar 2574 (2574)
nella 2571 — 4. Nymphaea 2573
tris. 2543 — 8. Nelumbium 2508
tvetteria 2575 — 1. Sarracenia 3130
ma 189 — 2. Darlingtonia 3131
1. Sageraea 2672 — 1. Platystemon 2836
Berb. Carbizabala 2557 — 2. Platytegnia 2835
Akebia 2555 — 3. Romneya 2837
8 Berberis 2566 — 5a Canbya 2855
9. Bongardia 2565 — 5. Arctomecon 2854
10 Leontice 2565 — 4. Papaver 2853
11. Caulophyllum 2565 — 6. Argemone 2852
12. Vancouveria 2562 — 7. Meconopsis 2851
13. Vancouveria 2564 — 9. Stylophorum 2843
14. Epimedium 2564 — 10. Sanguinaria 2841

1 Clematis 2542
2 Naravelia 2542
3. Thalictrum 2548
3a. Hepatica 2541
4 Anemone 2541
6 Adonis 2549
7. Callianthemum 2526
10 Ranunculus 2546
13 Caltha 2524
16 Hydrastis 2522
17 Trollius 2526
18 Helleborus 2527
19 Eranthis 2528
20 Coptis 2534
21 Isopyrum 2532
22 Nigella 2530
23 Aquilegia 2538
25 Delphinium 2539
26 Aconitum 2540
18 Menispermum 2567
21 Cissampelos 2574

27 Actaea 2537
28 Cimicifuga 2537
29 Xanthorrhiza 2535
30 Paeonia 2528 (2523)
— Dilen.
1. Empedoclea 5098
13. Hibbertia 5102
17. Crossosoma 3315
1. Calycanthus 2663
1. Drimys 2658
2. Illicium 2657
4. Magnolia 2651
7. Liriodendron 2654
8. Schizandra 2656 I
9. Kadsura 2655
14. Asimina 2673
30. Anona 2729
40. Eupomatia 2731
1. Aspidocarya 2592
8. Calycocarpum 2599 Calycocarpum
15. Limacia 2607
16. Cocculus 2570

~~Corpus~~
8. Garrya 6150
9. Griselinia 6168
11. Nyssa 6151
Capri.
Adoxa 8526
Sambucus 8575
Viburnum 8576
Triosteum 8577
4a Anemonella 2541
8. Myosurus 2543
9. Trautvetteria 2545
2nd 6440 Chlorant.
Ascarina 1869
1. Sargentia 2672
Berb.
Lardizabala 2557
Akebia 2555
8 Berberis 2566
9. Bongardia 2565
10 Leontice 2565
11. Caulophyllum 2565
Vinde
12. Nandina 2562
13. Vancouveria 2564
14. Epimedium 2564

16. Diphylleia 2560
17. Jeffersonia 2559
18. Podophyllum 2558
19. Achlys. 2561
Nym.
1. Cabomba 2509
2. Brasenia 2510
3. Nuphar 2574 (2574)
4. Nymphaea 2573
8. Nelumbium 2508
1. Sarracenia 3130
2. Darlingtonia 3131
Papa.
1. Platystemon 2836
2. Platystigma 2835
3. Romneya 2837
5a Canbya 2855
5. Arctomecon 2854
4. Papaver 2853
6. Argemone 2852
7. Meconopsis 2851
9. Stylophorum 2843
10. Sanguinaria 2841

11. Bocconia 2847
12. Glaucium 2848
13. Roemeria 2849
14. Chelidonium 2845
15. Dendromecon 2838
16. Hunnemannia 2839
17. Eschscholtzia 2840
18. Hypecoum 2834
20. Dicentra 2856
22. Corydalis 2858
24. Fumaria 2861
6. Symphocarpus 8518
7. Abelia 8520
8. Linnaea 8520-I
9. Lonicera 8523
11. Diervilla 8524
11. Weigelia (gela) 8524
13. Alseuosmia 8522
26 Ricotia 2968
27 Fibichia 3037
1. Matthiola 3042
3. Parrya 3053
5. Cheiranthus 3005
7. Nasturtium 2965
8. Barbarea 2961
9. Arabis 3001
10. Dryopetalon 2964
12. Streptanthus 2870
12a Caulanthus 2869
13. Cardamine 2966
14 Dentaria 2967.
15. Jonanthus 2963 I, I
16 Leavenworthia 2971.
17 Morettia 3035
19. Notoceras 3027
21. Alyssum 2857
24 Limaria 2969
25. Selenia 2970
28. Platyspermum 2972
31. Anbrietia 2991
32. Vesicaria 3019
34 Physaria 2982
34. Alyssum 3006
36 Draba 2984.
36 Heterodraba 2989
38. Athysanus 2993
38 Erophila 2989
40 Lobularia 2907
43. Schizopetalon 2978
44 Hesperis 3041
45. Malcolmia 3032
46 Dontostemon 3058
49 Sisymbrium 2917
50. Eutrema 2913
51. Conringia 3055
53. Smelowskia 2996
54 Erysimum 3004
56. Greggia 3003
57. Syrenia 3004
59 Stanleya 2866
60. Warea 2865
61. Tholyposmum 2868
62. Heliophila 2875
67. Blennosia 3061
69. Tropidocarpum 2974
69a Stanfordia 3074
70. Braya 3021
72. Camelina 2987
76 Subularia 2881
77. Bursica 2949
78. Diplotaxis 2946
79. Eruca 2944
81. Savignya 2939
82. Moricandia 3057.

Duplicate.

94. Lepidium 2883 I
92. Senebiera 2884
91. Tonopsidium 2891
90. Noccaea 2985
88. Capsella 2986
86. Camelina 2936

85

Vella 2937
83. Orychophragmus 3056
99. Aethionema 2896
105. Psychine 2934
106. Notothlaspi 2863 I.
112. Biscutella 2889
113. Heldreichia 2904
116 Thlaspi 2903
117. Iberis 2892
118. Teesdalia 2882
120. Hutchinsia 2985
122. Lyrocarpa 2980 I
123. Synthlipsis 2979
124. Peltaria 2910
126 Clypeola 3007
127. Thysanocarpus 2993
129. Isatis 2934
132. Dipterygium 3094
135. Neslia 2988
139. Tesiera 2928

140. Calepina 2924
141 Schimpera 2925
142. Myagrum 2922
145. Euclidium 3038
147. Bunias 3046
152 Zilla 2941
153 Crambe 2958
155. Rapistrum 2956
156. Cakile 2920
157. Enarthrocarpus (enarthro) 2952
159. Erucaria. 2919.
164. Raphanus (Rha) 2950 I
170 Chorispora 3051
171. Sterigma 3048
1. Dactylaena 3091
2. Cleome 3082
3. Cleomella 3083
4. Cristella (Cristatella) 3089
5. Isomeris 3086
6. Polanisia 3090

7. Gynandropsis 3087
8. Wislizenia 3084
9. Oxystylis 3085
15. Cadaba 3109
17. Capparis 3101
19. Atamisquea 3100
1. Astrocarpus 3123
2. Caylusea 3122
4. Reseda 3125
5. Oligomeris 3126
6. Ochradenus 3127
1. Cistus 5242
2. Helianthemum 5245
3. Hudsonia 5247
4. Lechea 5248
1. Corynostylis 5268
Viola 5274
6. Ionidium 5271
15. Melicytus 5266
16. Hymenanthera 5267

18. Sauvagesia 5726
1. Canella 5254
1. Cochlospermum 5250
2. Amoreuxia 5251
17. Flacourtia 5327
! 1. Pittosporum 3252
2. Hymenosporum 3254
3. Bursaria 3255
6. Billardiera 3258
1. Tetratheca 4272
1. Sarcocephalus 8231
3. Cephalanthus 8230
22. Bouvardia 8199
54 Pinckneya 8129
58. Rondeletia 8173
82 Pentodon 8145
83. Oldenlandia 8136
86. Houstonia 8141
87. Mallostoma 8144
102. Gonzalea 8239

137. Hamelia 8329
140. Catesbaea 8330
151. Basanacantha 8322
126. Coccocypselum 8250
162. ~~Weberia (Stylocoryne)~~ Tarenna. Gaertn. 85 8278 8278)
166. Randia 8283
167. Gardenia 8285
168. Genipa 8290
196. Guettarda 8361
197. Antirrhoea 8363
202. Machaonia 8370
209. Erithalis 8371
211. Chiococca 8376
214. Hodgkinsonia 8374
217. Scolosanthus 8379
227. Plectronia 8352
235. Ixora 8384
245. Strumpfia 8391
251. Coelospermum 8458
246 Morinda 8463

257. Faramea 8456
263 Psychotria 8399
286 Paederia 8430
324 Richardsonia 8464
292 Putoria 8452
297. Kelloggia 8448)
296 ~~Mitchella~~ Mitchella 8457
300 Nertera 8445
307 Coprosma 8446
312 Ernodea 8468
314. Diodia 8471
316. Crusea 8378
319 Spermacoce 8475
319 Borreria 8473
323 Mitracarpum 8479
327. Callipeltis 8491
328. Vaillantia 8488
329. Rubia 8484
331. Galium 8486
334. Asperula 8485

1. Salomonia 4277.
2. Polygala 4273
4. Muraltia ~~42~~ 4278 4278
5. Mundtia 4279
12. Monnina 4276
15. Krameria 3543 Polyg.
1. Frankenia 5233
335. Crucianella 8483)
336. Phuopsis 8484
337. Sherardia 8482
5. Valeriana 8532
6. Centranthus 8531)
7. Fedia 8530
8. Plectritis 8527.
9. Valerianella 8529.
330. Relbunium 8490
39. Exostemma 8219
1. Velezia 2504
2. Dianthus ~~2507~~ 2502
3. Tunica 2498

5. Drypis 2495
6. Gypsophila 2497.
7. Saponaria 2503
8. Silene 2490
9. Cucubalus 2496
10. Lychnis 2491
12. Holosteum 2431
13. Cerastium 2430
14. Stellaria 2429
16. Arenaria 2443
17. Buffonia 2436
18. Sagina 2433
19. Colobanthus 2434
22. Queria 2440
23. Spergula 2449
24. Lepigonum 2450
25. Drymaria 2452
26. Polycarpon 2453
28. Loeflingia 2459
29. Cerdia 2464

34. Polycarpaea 2455
1. Portulaca 2421
5. Talinopsis 2410
7. Talinum 2406
– Asperula odorata –
– " cynanchica –
1. Elatine 5231
2. Bergia 5230
1. Ascyrum 5167
2. Hypericum 5168
2. Elodes 5768
1. Clusia 5781
16. Garcinia 5799
20 Calophyllum 5778
Rheedia 5797
28. Caryocar 5735
12. Eurya 5157
17. Stuartia 5152
22. Gordonia 5148
24. Camellia 5147

1. Dryobalanops 5213
1. Sarcolaena 4935
31. Malope 4980
2. Kitaibelia 4981
4. Althaea 4991
5. Lavatera 4990
6. Malva 4992
7. Callirhoe 4992
8. Sidalcea 4993
9. Napaea 4994
10. Malvastrum 4995
11. Plagianthus 4997
12. Hoheria 5003
13. Anoda 5002
15. Gaya 5000
16. Sida 4998
17. Bastardia 5001
20. Wissadula 4985
21. Abutilon 4983
22. Sphaeralcea 4986

23. Modiola 4987
24. Malachra 5005
25. Urena 5006
26. Pavonia 5007
28. Malvaviscus 5009
29. Kosteletzkya 5015
33. Senra 5011
34. Hibiscus 5013
36. Fugosia 5019
37. Thespesia 5018
38. Ingenhouzia 5021
39 Gossypium 5020
52. Cheirostemon 5045
53. Fremontia 5046
1. Sterculia 5083
2. Tarrietia 5087
Valeriana tripteris
" sylvatica
edulis officinalis
dioica exaltata

33. Stipulicida 2458
1. Patrinia 8535
8. Calandrinia 2407
9. Claytonia 2414
10. Spraguea 2408
12. Montia 2416
12a. Hectorella 2415
14. Calyptridium 2409
15. Lewisia 2422
1. Tamarix 5239
2. Myricaria 5240
4. Reaumuria 5237
5. Fouquiera 5241
x3. Palava 4982 √ Malvae Tournefort
1. Triplostegia 8537
2. Morina 8539
3. Dipsacus 8540
4. Cephalaria 8541
5. Scabiosa 8546

1. Boopsis 8725
2. Calycera 8726
10. Helicteres 5081
20. Hermannia 5056
21.x Mahernia 5056 [illegible]
23. Melochia 5057
25. Waltheria 5059
30. Guazuma 5069
31. Ayenia 5063
33. Rulingia 5060
37. Thomasia 5072
40. Lasiopetalum 5077
1. Brownlowia 4943
8. Grewia 4966
13. Triumfetta 4975
Heliocarpus 4976
[15. Entelea 4952
16. Sparmannia 4957.
18. Corchorus 4953
24. Tilia 4964

37. Aristotelia 4927.
29. Prockia 5307.
38. Elaeocarpus 4921
Linum 3945
Reinwardtia 3946
2 Erythroxylon 3956
1. Vantanea 3955
1. Byrsonima 4255
2. Malpighia 4251
14. Galphimia 4244
22. Heteropteris 4226
27. Stigmaphyllon 4228
40. Hiraea 4210
45. Gaudichaudia 4217.
46. Aspicarpa 4233
48. Janusia 4231
1. Tribulus 3978
4. Sericodes 3961
8. Zygophyllum 3965
10. Fagonia 3963

11. Larrea 3973
12. ~~Guaiacum~~ Guaiacum 3968
13. Porliera 3969
Linum Linum
Order 34.
21

1. Sparganophorus 8729 [
8. Centratherum 3738
16. Vernonia Burt 8751
28. Stokesia 8763
38. Elephantopus 8775
41. Piqueria 8778
48. Sclerolepis 8792
54. Ageratum 8795
50. Trichocoronis 8805
56. Stevia 8799
59. Hofmeisteria 8800
60. Carminatia 8807.
66. Eupatorium 8816
31. Eriostemon 4023
32. Phebalium alium 4025 Phebalium

1. Biebersteinia 3929.
4. Geranium 3924
5. Erodium 3927
6. Pelargonium 3928
7. Tropaeolum 3942
8. Limnanthes 4540
9. Floerkea 4542
15. Oxalis 3936
19. Impatiens 4856
1. Spiranthera 4030
10. Ruta 4072
12. Peganum 3958
|13. Dictamnus 4026
15. Thamnosma 4074
19. Diosma 4041
22. Adenandra 4038
23. Barosma 4036
24. Agathosma 4037
27. Zieria 4021
28. Boronia 4017

45. Melicope 3997
41. Correa 4031
44. Diplolaena 4034
47. Astrophyllum 4007
48. Nematolepis 4004
51. Xanthoxylum 3990
53. Geijera 3992
~~Order~~ Decatropis Hook. f. 4001
Order 39.
55.
66 Helietta 4067.
67. Acronychia 4079.
69. Casimiroa 4075
73. Micromelum 4089 | 50
76. Murraya 4090
80. Atalantia 4096
81. Citrus 4100
84. Canotia 4659
1. Quassia 4114
5. Simaruba 4111
6. Ailanthus 4124
9. Castela 4128

10. Holacantha 4119
11. Cneorum 3985
18. Cneoridium 4075
20. Suriana 4106
26. Balanites 3980
28. Picramnia 4131
30. Koeberlinia 5253
1. Odina 5712
(Rhamnaceae) 5. Stenanthium Gray | 4893
Stenanthemum Reiss
1. Boswellia 4149
6. Bursera 4150
6. Elaphrium 4150
Choisya 4006
Order 39
17 Amyris 4084
1. Cuivisia 4171
3. Turraea 4171
7. Melia 4175
9. Dysoxylum 4179
14. Aglaia 4189
27. Trichilia 4195

28. Owenia 4791
30. Swietenia 4164
35. Cedrela 4155
Flindersia 4064 | Ilavea Planch. = Meliosma Blume
1. Chailletia 4283
1. Aptandra 2133
3. Ximenia 2136
5. Olax 2131
11. Schoepfia 2129
21. Pennantia 4690
1. Ilex 4614
2. Cliftonia 4609
3. Nemopanthes 4615
1. Cyrilla 4611
1. Euonymus 4618
5. Pachystima 4633
16. Celastrus 4625
17. Maytenus 4626
20. Myginda 4649
26. Schaefferia 4653
28. Elaeodendron 4640

31. Glossopetalum (Ord.?) 4652
30. Mortonia 4561
36. Hippocratea 4661
39. Ilavea (Celast.) — Ord. 97 ? — (Clethra 4773; Planch. 4881)
1. Stackhousia 4663
1. Ventilago 4858
3. Paliurus 4860
4. Zizyphus 4861
5. Condalia 4862
6. Microrhamnus 4863
8. Berchemia 4868
9. Karwinskia 4867
10. Rhamnus 4875
11. Reynosia 4864
13 Ceanothus
Ceanothus. Linn 4877.
Order 49.
134
14. Sentia 4874
15. Sageretia 4873
17. Colubrina 4882

18. Phylica 4886
22. Alphitonia 4889
23. Pomaderris 4890
27. Cryptandra 4893
29. Discaria 4897
30. Adolphia 4898
35 Gouania 4902
24 Vitis, Linn. 4909 |!
Order 50
1 2
Ampelopsis 4916
1. Urvillea 4729
2. Serjania 4723
5. Cardiospermum 4726
21. Aesculus 4721
22. Ungnadia 4846
24. Cupania 4786
25. Ratonia 4791
I. Thouinia ~~Poteau~~ Poit. 4733
Order 57
29

30. Atalaya 4735
32. Melicocca 4760
43. Sapindus 4739
47. Nephelium 4774
48. Euphoria 4773
53. Heterodendron 4782
54. Harpullia 4841
55. Hypelate 4833
60. Acer 4720
61. Negundo 4720
63. Dodonaea 4831
65. Alectryon 4781
66. Ptaeroxylon 4157
68. Aitonia 4168
69. Melianthus 4854
72. Staphylea 4665
1. Sabia 4850
1. Rhus 4594
3. Pistacia 4568
Heeria Schlecht. 5642
Order 68
20 (Melast.)

7. Mangifera 4585
8. Anacardium 4546
15. Schinus 4582
32. Corynocarpus 4613
35. Duvaua 4582
1. Moringa 3128
~~1. Byrsocarpus 3421~~
6. Paullinia (Sap.) 4724
Xanthoceras 4844 Order 57
Sp. 57 sorbifolia Bunge
Adenostyles 8820
67. Mikania 8818
70. Brickellia 8823
71a Barroetea 8824
71. Carphochaete 8822
72. Kuhnia 8825
73. Liatris 8826
74. Trilisa 8821
74. Garberia 8827
75 Carphephorus 8828

76 Gymnosperma 8829
77. Xanthocephalum 8830
78 Gutierrezia 8835
78. Amphiachyris 8835
79. Grindelia 8833
80. Pentachaeta 8836
81. Aphantochaeta 8836
84. Heterotheca 8841
85. Chrysopsis 8844
87. Xanthisma 8837
88. Aplopappus 8842
" Acamptopappus 8838
89. Bigelovia (?) 8855
90. Ericameria 8853
91. Solidago 8847
83. Bradburia 8840
92. Brachychaeta 8850
93. Lessingia 8858
99. Pteronia 8862
106. Grangea 8865
108 Egletes 8873

109. Aphan. Aortephus 8871
109a. Greenella 8872
110. Keerlia 8870
110a. Athalfogeron 8877
113. Lagenophora 8874
116. Brachycome 8878
117. Bellis 8879.
118. Bellium 8890
121. Sparicis 8881
122 Mairia 8883
123 Minuria 8884
124. Calotis 8885
126. Townsendia 8895
127. Distasis 8886
128 Chaetopappa 8886
129 Psilactis 8885
131. Boltonia 8892
131a. Dichaetophora 8891
132. Corethrogyne 8897
133. Eremiastrum 8899
135. Sericocarpus 8904
136. Aster 8900

136. Bellidiastrum 8900
136. Linosyris ~~8900~~
136 Calimeris 8900
137 Felicia 8929
142. ~~Olea~~ Olearia 8916.
147. Celmisia 9391
151. Erigeron 8901
150. Brachyactis 8900
152. Vittadinia 8903
156 Conyza 8926
157 Haastia 8922
162 Chrysocoma 8930
167 Baccharis 8933
169 ~~Tarchonanthus~~ Tarchonanthus 8937
173 Pluchea 8941
176 Tessaria 8942
182 Epaltes 8953
184. Pterocaulon 8957
190 Evax 8966
191 Psilocarphus 8965
192 Micropus 8963

Monoptilon 8888
125
192 Stylocline 8964
193 Diaperia 8966
195. Filago 8969
196. Ifloga 8967
215. Gnaphalium 8992
216 Raoulia 8993
217 Leptorhynchos 9071
218 Waitzia 9012
219 Helipterum 9000
220 Helichrysum 9006
225 Cassinia 8994
226 Phaenocoma 8997
230 Ixolaena Ixiolaena 9005
232 Millotia 9073
234. Rutidosis 9015
235. Ammobium 9017
238. Eriochlamys 9021 9021
239 Humea 9019
242 Ixodia 9024
245 Angianthus 9028

247 Calocephalus 9030
257 Craspedia 9033
265 Relhania 9050
267 Leysera 9052
271. Athrixia 9055
203 Antennaria 8978
207 Leontopodium 8982
208 Anaphalis 8983
212 Lasiopogon 8987
213. Phagnalon 8988

Pentstemon 7508
42 Collinsia 7503
43. Tonella 7504
44. Chionophila 7509
57. Lyperia 7518
63. Mazus 7525
64. Dodartia 7526
71. Mongania 7533
74 Conobea 7545
75. Herpestis 7546
62. Mimulus 7524
Berendtia 7515
A. Gray

Ruselia (Russelia) 7496
79. Gratiola 7542 Jacq.
81. Artanema 7559
84. Torenia 7561
85. Vandellia 7560
85. Lindernia 7562
86. Hysanthes 7564
88. Micranthemum 7544
95. Amphianthus 7557
96. Limosella 7558
97. Sibthorpia 7572
99. Scoparia 7576
100. Capraria 7574
103. Digitalis 7593
104. Isoplexis 7593
105. Erinus 7594
108. Ourisia 7590
110. Synthyris 7583
111 Wulfenia 7584
113. Paederota 7579
114. Veronica 7579
108. Anisacanthus

123 Buchnera 7622 (7622)
124. Striga 7625
125. Rhamphicarpa 7624
129 Sopubia 7616
133. Seymeria 7602
134. Macranthera 7601
137 Gerardia 7604
140 Castilleja 7631

7. Stemodia 7534
Scrophularia 7505

1 Aeginetia 7789
3 Phelipaea 7788
6. Aphyllon 7791
7. Orobanche 7791
8. Lathraea 7794
9. Conopholis 7790
10. Boschniakia 7796
11. Epiphegus 7792
1. Utricularia 7901
4. Pinguicula 7898
1 Columnellia 7897
1. Bellonia 7867

6. Gloxinia 7873
7. Achimenes 7874
14. Isoloma Benth. 7880
18. Gesnera 7887.
19. Sinningia 7888
21. Pentarhaphia 7891
23 Tussacia 7859
34. Rhabdothamnus 7848
38. Cyrtandra 7855
53. Rhynchoglossum 7833
63 Streptocarpus 7823
65. Ramondia 7800
1. Tynanthus 7681
5. Bignonia 7705
12 Distictis 7674.
23. Catalpa 7727.
24. Chilopsis 7726
26. Tabebuia 7732
32. Tecoma 7733
52. Crescentia 7759
1. Martynia 7784
8 Sesamum 7777

Jacaranda 7725
1 Mendoncia 7910 (Mendoncia)
2 Thunbergia 7914
3. Elytraria 7908
8 Hygrophila 7926
12. Calophanes 7939
14. Ruellia 7965
21. Blechum 7930
44. Acanthus 7981
45. Sclerochiton 7978
48. Barleria 7973
55. Crossandra 7985
58. Stenandrium 7990
61. Berginia 7996
63. Anthacanthus 8036
77. Aphelandra 7992
93. Justicia 8094
94. Siphonoglossa 8049
95. Beloperone 8048
100. Dianthera 8094
100a. Carlowrightia 8074
100b. Gatesia 8070
101. Jacobinia 8097

Pranthemum 7466
Amisacanthus 8075
Dicliptera 3031
Tetramerium 8028
Peristrophe 8026
Myoporum 8112
Eremophila 8110
Ostia 8114
Bontia 8111
Hebenstretia 7566
Selago 7568
Gymnandra 7581
Globularia 7903
7. Phygmea 8115
12. Pityrodia 7166
15. Spartothamnus 7165
18. Lantana 7144
19. Lippia 7145
22. Bouchea 7148
23. Stachytarpheta
24. Priva 7153
Verbena 7138