

BULLETIN NO. 10.

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PLANTS OF GRAND CANYON NATIONAL PARK

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Grand Canyon Natural History Association.
Grand Canyon, Arizona.

GRAND CANYON NATURAL HISTORY ASSOCIATION
Grand Canyon National Park
Arizona

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This bulletin is published by the Grand Canyon Natural History Association as a part of its policy to stimulate interest, encourage scientific research and to catalog the natural science and historical resources of Grand Canyon National Park.

It is Number 10 of a series of bulletins published as occasional papers as material and manuscripts are made available, and when bulletins need revision due to the accumulation of new facts and added material.

In reference to this bulletin it should be noted that while the "Standardized Plant Names" was closely followed for scientific names, not all the popular names given in that work are here included. Furthermore in a few instances common names which have a long standing local usage and not listed in "Standard Plant Names" have been incorporated.

Consult the United States Geological Survey's topographic map of Grand Canyon National Park, Arizona (East and West Halves) for localities mentioned in this work.

Bulletin Number 11, "Butterflies of Grand Canyon National Park" is now in preparation and should be ready for publication after the collecting season, sometime in the Fall of 1947.

Louis Schellbach, III
Editor and Exec. Sec'y.

CHECKLIST OF PLANTS
OF
GRAND CANYON NATIONAL PARK

By
W. B. MacDougall
National Park Service

Bulletin No. 10.

Grand Canyon, Arizona
GRAND CANYON NATIONAL HISTORY ASSOCIATION
1947

ADDENDUM

The manuscript was completed up to January 1, 1946, but due to unavoidable delays final typing and editing was not completed until the end of the year.

New genera and species collected, determined and recorded during the year 1946, and added to the Grand Canyon National Park Herbarium, have been added in the form of an appendix. This should be consulted to bring the material up-to-date of January 1, 1947.

Editor.

NATURAL HISTORY BULLETINS

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(in preparation) | |

PREFACE TO THE THIRD EDITION.

THE first two editions of this checklist were issued while knowledge of the flora of the park was still very fragmentary. In an effort to make the list as complete as was reasonably possible, many species which were believed to occur in the area, but which had not actually been seen or collected, were included. For this reason it was inevitable that many errors crept into the manuscript. Since the publication of the second edition (Bull. No. 6, June, 1936) knowledge of the flora has been greatly increased, largely through the collections and studies made during the past several years by Mrs. Rose E. Collom. This increased knowledge has necessitated a new and thoroughly revised edition.

In this, the third edition of the checklist, the policy has been adopted of including only those species of plants that are represented by specimens in the Grand Canyon National Park herbarium, or for which there exists authentic evidence of collections having been made within the park boundaries. It is known that this list is still incomplete. Much more collecting will need to be done, especially in the more inaccessible portions of the park, before we can claim anything like a complete checklist. Furthermore, it is known that various individuals and institutions have collected plants within the park area in past times but have failed to make lists of such collections available to the National Park Service.

Before this revision was undertaken, letters were sent to a number of institutions known to have made collections within the park, requesting lists of such collections. The Museum of Northern Arizona was the only institution which found it possible to comply with the request at that time. This valuable aid given by the Museum of Northern Arizona is very gratefully acknowledged. More recently Dr. Thomas H. Kearney has compiled and made available to us a complete list of Grand Canyon plants in the Herbarium of the California Academy of Science. These specimens were mostly collected by Alice Eastwood or by Eastwood and Howell and their identifications have all been checked by Dr. Kearney. This list has been very helpful to us and the time and efforts expended by Dr. Kearney in order that our checklist might be as nearly complete as present knowledge permits is much appreciated.

The arrangement of the families of ferns and seed plants is that of THE FERNS AND FLOWERING PLANTS OF ARIZONA by Kearney and Peebles. Wherever there is a reference to 'Kearney and Peebles' in the text the above publication is referred to, and wherever there is a reference to 'Tidestrom and Kittell' the FLORA OF ARIZONA AND NEW MEXICO by these authors is meant. The nomenclature throughout conforms to STANDARDIZED PLANT NAMES so far as possible. In the case of species of seed plants not listed in STANDARDIZED PLANT NAMES the nomenclature is that of Kearney and Peebles. Numerals in the text preceded by Pl and enclosed in parentheses are the catalog numbers of specimens in the Grand Canyon National Park herbarium.

Misses Elzada U. Clover and Lois Jotter of the University of Michigan collected within the park boundaries in the summers of 1938 and 1939 and added many species to the known flora of the park. These species are included in the present checklist with citations of specimen numbers.

Some forty species of the plants listed here are not known to occur anywhere in Arizona outside of Grand Canyon National Park, and seven of them are not known from any other locality in the world.

Practically all of the specimens of vascular plants in the Grand Canyon National Park herbarium, upon which this list is based, were identified, or the identifications were verified, by personnel of the U. S. National Herbarium or by Dr. Thomas H. Kearney, Mr. Robert H. Peebles, both of the U. S. Department of Agriculture, or Dr. Lyman Benson formerly of the University of Arizona. In addition, Dr. Thomas H. Kearney very carefully reviewed the entire manuscript of the checklist just before its final revision and made many corrections and authentic additions to it. The macrofungi were identified by Dr. Alexander H. Smith of the University of Michigan, the lichens by Mr. Charles C. Plitt formerly of the University of Maryland or by Dr. John W. Thompson, Jr. of the University of Wisconsin, and the bryophytes by Mrs. Inez M. Haring and Dr. A. J. Grout. The help so freely given by all of these botanists is very gratefully acknowledged.

The undersigned gratefully acknowledges, also, the invaluable aid given by Mrs. Rose E. Collom in the compilation of this checklist, without which the task could scarcely have been accomplished in the time allotted to it, and the constant encouragement given by both Superintendent H. C. Bryant and Park Naturalist Louis Schellbach, which has served to make the work exceedingly pleasant throughout. The final decisions concerning each species included in the list were made by the undersigned, and he alone is responsible for any errors of scientific fact that may appear.

May, 1946

W. B. MacDougall.

THALLOPHYTA (ALGAE, FUNGI, AND LICHENS)

Almost nothing has been done on the algae in Grand Canyon National Park. We have in the herbarium one specimen of an unidentified species of Chara. So far as we know, no other algae have been collected in the park.

Knowledge of the microfungi of the park is also almost entirely lacking. A species of Melemposorella, a rust that forms witches' brooms on blue spruce (Picea pungens) is abundant on the North Rim, but no specific determination of it has been made. The same thing is true of a species of Valsa which forms cankers on aspen trees on the North Rim. The only microfungus for which we have a specific determination is the rust (Cronartium filamentosum) which occurs on ponderosa pine trees on both rims. Although microfungi are probably less abundant here than in many more humid regions, they offer a fertile field for investigation.

The following macrofungi were collected several years ago by Natt Dodge and were recently identified by Dr. Alexander H. Smith of the University of Michigan. They obviously constitute only a beginning of a study of the macrofungi of the park, but they represent the present state of our knowledge of this group of plants. They were collected on the North Rim. One other species of the Agaricaceae (Armillaria mellea) is known to occur in the park. It causes a root rot of coniferous trees.

AGARICACEAE

Agaricus silvicola Fr. (Pl 13 and 14)

Amanita muscaria (Fr.) Quel. (Pl 4)

Amanita pantherina (Fr.) Quel. A pale form. (Pl 15)

Amanita Sp. (Pl 2)

Armillaria albolaripes Pk. (Pl 5)

Amanitopsis vaginata var. livida Pk. (Pl 6)

Gantherellus cibarius Fr. (Probably) (Pl 9)

Gantherellus sp. (Might be C. cibarius) (Pl 3)

Collybia semitale (Fr.) Quel. (Pl 11)

Collybia velutipes (Fr.) Quel. (Pl 20)

Hygrophorus fragrans f. pallidus Smith. (Pl 18)

Hygrophorus gliocyclus Gr. (Pl 17)

Hygrophorus sp. nov.? (Pl 12)

Inocybe sororia Kauff. (Pl 7)

Lepiota clypeolaria (Fr.) Quel. (Pl 8)

Panaeolus separatus Fr. (Pl 1)

Pholiota adiposa (Fr.) Quel. (Pl 10)

BOLETACEAE

Boletus edulis Fr. (Pl 23)

Bright Angel Point on the North Rim. (Transparency No. 2124, 2123.)

Boletus granulatus Fr. (Yellow form) (Pl 22)

Boletus pinicola (Vitt.) Rea. (Pl 21)

(Some regard this as a sub-species of B. edulis)

Boletus versipellis Fr. (Pl 16)

POLYPORACEAE

Fomes pinicola (Swartz) Cooke. (Pl 14)

LICHENS

LECIDEACEAE

Lecidea atrobrunnea (Pam.) Schaer. (Pl 2113)

Found on Buggeln Hill on the South Rim.

Lecidea crenata (Tayl.) Nyl. (Pl 27)

Found on fine sandy soil along the South Kaibab Trail at 3000 feet elevation.

Lecidea parasema Ach. (Pl 2096)

Found in Aspen Canyon on the South Rim.

Lecidea platycarpa Ach. (Pl 2110)

Found on Coronado Point on the South Rim.

Psora crenulata Tayl. (Pl 2121 and 2122)
Found on Toroweap Point in Grand Canyon National Monument.

Psora decipiens (Ehrh.) Ach. (Pl 2102 and 2120)
Found in Toroweap Valley in Grand Canyon National Monument, and near the sewage disposal plant on the South Rim.

Rhizocarpon geographicum (L.) Lam. and DC (Pl 2106)
Found on Coronado Point on the South Rim.

PELTIGERACEAE

Peltigera canina (L.) Willd. (Pl 2112, 2115 and 2189)
Found at Dutchman Pond and ten miles south of Jacob Lake on the North Rim and in Aspen Canyon on the South Rim.

CLADONIACEAE

Cladonia chlorophaea (Floerke) Spreng f. simplex (Hoffm.) Arn.
(Pl 2182, 2184, 2187 and 2188)

Found at Chick Sevey Spring, Harvey Mule Pond, and in Little Dutchman Pasture on the North Rim and in Aspen Canyon on the South Rim.

Cladonia coniocraea Flk.? (Pl 2099)
Found in Aspen Canyon on the South Rim.

Cladonia mitrula Tuck. (Pl 2098, 2180, 2181 and 2186)
Found at Harvey Mule Pond on the North rim, along the North Kaibab Trail, and in Aspen Canyon on the South Rim.

Cladonia pyridata (L.) Fr. var. chlorophaea Flk. (Pl 34)
Found with moss near De Motte Park just outside the park boundary on the North Rim.

GYROPHORACEAE

Gyrophora hirsuta (Ach.) Fr. (Pl 26)
Found on Kaibab limestone along the Hermit Trail.

LECANORACEAE

Candelariella vitellina (Ehrh.) Mull. Arg. (Pl 2109)
Found on Coronado Point on the South Rim.

Lecanora cinerea (L.) Rohling (Pl 2107)
Found on Coronado Point on the South Rim.

ACAROSPORACEAE

Acarospora epilutescens Zahlbr (Pl 2123)
Found on Toroweap Point in Grand Canyon National Monument.

Acarospora sp. (Pl 35)
Found on fine, sandy soil on Cocopa Point on the South Rim.

PARMELIACEAE

Parmelia mollinscula Ach. (Pl 28)
Found on limestone on Cocopa Point on the South Rim.

Parmelia olivacea (L.) Ach. (Pl 2092, 2094 and 2104)
Found in Berry's Pasture, on Yavapai Point, and in Aspen Canyon on the South Rim.

USNEACEAE

Ramalina calcaris nearest var. subampliata Nyl. (Pl 33)
Found on branches of trees on Bright Angel Point on the North Rim.

Ramalina fastigiata (Pers.) Ach. (Pl 2118)
Found at Basin Spring on the North Rim.

Usnea cavernosa Tuck. (Pl 2119 and 2196)
Found at Basin Spring on the North Rim.

Usnea florida (L.) Hoffm. (Pl 25, 2100 and 2185)
Found on branches of trees at Yavapai Point on the South Rim.

TELOSCHISTACEAE

Teloschistes polycarpus (Ehrh.) Ach. (Pl 2093)
Found in Berry's Pasture on the South Rim.

CALOPLACACEAE

Caloplaca elegans (Link) Fries (Pl 2105, 2183 and 2192)

The species was found at Yavapai Point on the South Rim and the variety trachyphylla (Tuok.) Fink was found at Coronado Point on the South Rim and at Dragon View on the North Rim.

VERRUCARIACEAE

Staurothele olopima Wahl. (Pl 2116 and 2117)

Found on Bright Angel Point on the North Rim.

DERMATOCARPACEAE

Dermatocarpon miniatum (L.) Marm. var. complicatum (Lightf.) Fries (Pl 2111)

Found on Coronado Point on the South Rim.

BRYOPHYTA (MOSES AND LIVERWORTS)

FISSIDENTACEAE

Fissidens sublimbatus Grout (Pl 1881)

Found in woods at Tip-over Spring on the North Rim.

POLYTRICACEAE

Atrichum undulatum (Hedw.) Beauv. (Pl 47)

Found along the road four miles north of Grand Canyon Lodge on the North Rim.

Polytrichum juniperinum Hedw. (Pl 38 and 1882 to 1887, inclusive)

Found along the road near Grand Canyon Lodge and three miles north of the Lodge on the North Rim, and at various other places.

DITRICEAE

Ceratodon purpureus (Hedw.) Brid. (Pl 36, 37 and 1888 to 1910, inclusive)

Found at various places along the entrance road on the North Rim and occurring also on the South Rim. The form xanthopus (Sull) E.G.B. (Pl 37) was found at Point Imperial, Neal Spring, and in Little Dutchman Pasture on the North Rim.

ENCALYPTACEAE

Encalypta vulgaris Hedw. var. mutica Brid. (Pl 39 and 1911 to 1916, inclusive)

Found at Rowe Well and Grand View Point on the South Rim and at Point Imperial and along trails near Grand Canyon Lodge on the North Rim.

POTTIACEAE

Barbula unguiculata Hedw. (Pl 50)

Found at Indian Gardens in the canyon.

Desmotodon cermus (Heubem) Byr. Eur. (Pl 1918)

Found at Cliff Springs on the North Rim.

Didymodon tophaceus (Brid.) Jur. (Pl 1917)

Found at Kanabowmits Spring on the North Rim.

Gymnostomum recurvirostrum Hedw. (Pl 1919 and 1920)

Found at Cliff Springs on the North Rim.

Husnotiella pringlei (E.G.B.) Grout. (Pl 49)

Found at the junction of the Point Imperial and Cape Royal roads on the North Rim.

Pleurochaete squarrosa (Brid.) Lindb. (Pl 1921)

Found at the forks of upper Clear Creek in the Canyon.

Pterigoneurum ovatum (Hedw.) Dix. (Pl 42)

Found along the Dripping Springs Trail on the South Rim.

Tortula mucronifolia Schwaegr. (Pl 41)

Found on Bright Angel Point on the North Rim, and occurring also on the South Rim.

Tortula ruralis (Hedw.) Smith. (Pl 40 and 1923 to 1941, inclusive)

Common on both rims and in the canyon.

Weisia andrewsi Bart. (Pl 66)

Found at Rowe Well on the South Rim, and occurring also on the North Rim.

GRIMMIACEAE

Grimmia alpicola Hedw. (Pl 53)

Found at the junction of the Point Imperial and Cape Royal roads on the North Rim.

Grimmia apocarpa (L.) Hedw. var. atrofusca (Sch.) Husn.
(Pl 54 and 1942)

Found at the junction of the Point Imperial and Cape Royal roads on the North Rim.

Grimmia calyptrata Hook. (Pl 51)

Collected at Rowe Well on the South Rim. Fairly common on both rims.

Grimmia decipiens (Schultz) Lind. (Pl 55)

Found at Indian Gardens in the Canyon.

FUNARIACEAE

Funaria hygrometrica (L.) Hedw. (Pl 44 and 1943)

Found along Bright Angel Trail at 6400 feet.

Funaria mihlenbergi Turn. (Pl 43) (Pl 1944)

Found at the head of Hermit Creek Canyon.

ORTHOTRICHACEAE

Orthotrichum alpestre Hornsch (Pl 52 and 1945)

Found at Rowe Well on the South Rim.

TIMMIACEAE

Timmia austriaca Hedw. (Pl 1997)

Found in Aspen Canyon on the South Rim.

Timmia bavarica Hessel. (Pl 45 and 1946 to 1952, inclusive)

Found along the road three miles north of Grand Canyon Lodge on the North Rim.

BRYACEAE

Bryum argenteum L. var. lanatum (P.B.) Bry. Eur. (Pl 56 and 1953 to 1957, inclusive)

Common on both rims.

Bryum caespiticium L. (Pl 58 and 1958 to 1960, inclusive)

Found at Hull Tank on the South Rim.

Bryum gemmiparum DeNot (Pl 61 and 1961)

Found at Dripping Springs in the Canyon.

Bryum cirratum Hoppe and Hornsch (Pl 60)

Found at Grandview Point on the South Rim.

Bryum pallens Sw. (Pl 57 and 1962)

Found one mile east of Grandview Point on the South Rim and occurring also on the North Rim.

Leptobryum pyriforme (L.) Wils. (Pl 1963 to 1966, inclusive)

Found at Road Spring, Tip-over Spring, Kanabownits Spring and Robbers Roost on the North Rim.

We know of only three liverworts that have been collected within the park boundaries. These are Frullania catalinae Evans (Pl 2194) which was found at Coronado Point on the South Rim, Plagioschasma rupestris (Forst.) Steph. (Pl 2193) which was found at Basin Spring on the North Rim, and Riccia fluitans L. (Clover and Jotter 4372) which was found in Havasu Canyon.

PTERIDOPHYTA (FERNS AND FERN ALLIES)

2. POLYPODIACEAE (FERN FAMILY)

ADIANTUM (Maidenhair)

Adiantum capillus-veneris L. (Pl 68, 69, 70, 71 and 72)

Found in Phantom Canyon and along Bright Angel Trail in the Canyon at 3000 feet elevation and in Havasu Canyon.

CHEILANTHES (Lipfern)

Cheilanthes feei Moore (Pl 73 and 74)

Found at Rowe Well and Northeast of Grandview Point on the South Rim.

Cheilanthes wootoni (Pl 75)

Found along Bright Angel Trail in the Canyon at 3300 feet elevation.

CYSTOPTERIS (Bladderfern)

Cystopteris fragilis (L.) Bernh. (Brittlefern) (Pl 77, 78, 79, 80, 81, 82 and 83)

Found at Robbers Roost, Neal Spring and Kanabowmits Spring on the North Rim.

NOTHOLAENA (Cloakfern)

Notholaena limitanea Maxon

We have no specimen of this species but it is reported in Kearney and Peebles as occurring in Clear Creek Canyon in the park, and the 1936 edition of our checklist reports that it is found in clefts of rock on the South Rim.

Notholaena parryi D. C. Eaton (Pl 84 and 85)

Found in Bright Angel Canyon and at another undesignated place in the Canyon interior at 3300 feet elevation.

Notholaena simata (Lag.) Kaulf. (Pl 86 and 87)

Found along the South Kaibab Trail in the Canyon.

PELLAEA (Cliffbrake)

Pelleae longimcronata Hook. (Pl 88 and 89)

Found along Bright Angel Train in the Canyon at 3500 feet elevation.

Pellaea suksdorfiana Butters (Pl 90)

Found in Long Jim Canyon on the South Rim.

PTERIDIUM (Bracken)

Pteridium aquilinum (L.) Kuhn var pubescens Underw. (Pl 91)

Collected at Robbers Roost on the North Rim. Common at various places on the North Rim

WOODSIA (Woodsia)

Woodsia mexicana Fee (Pl 94)

Found along Bright Angel Trail in the Canyon at 4000 feet elevation.

Woodsia oregana D. C. Eaton (Pl 95 and 96)

Found at Robbers Roost and in Kaibab Basin on the North Rim.

6. EQUISETACEAE (HORSETAIL FAMILY)

EQUISETUM (Horsetail)

Equisetum arvense L. (Pl 100)

Found at Kanabownits Spring, near Bright Angel Spring, and $\frac{1}{2}$ miles west of Point Imperial on the North Rim.

Equisetum kansanum Schaffn. (Pl 1102)

Found at Robbers Roost and near Bright Angel Spring on the North Rim.

Equisetum laevigatum A. Br. (Pl 103 and 104)

Found at Greenland Spring on the North Rim and along Bright Angel Creek in the Canyon.

7. SELAGINELLACEAE (SELAGINELLA FAMILY)

SELAGINELLA (Selaginella)

Selaginella mutica D. C. Eaton (Pl 1828 and 2178)

Found along the Hermit Trail at about 6000 feet elevation, and near Kanabownits Spring.

Selaginella underwoodi Hieron (Pl 2222 and 2223)

Found in Kaibab Basin and Kanabownits Valley on the North Rim.

SPERMATOPHYTA (SEED PLANTS)

1. PINACEAE (PINE FAMILY)

ABIES (Fir)

Abies concolor (Gordon and Glendinning) Hoopes (White Fir)
(Pl 106 and 107)

Common along the North Rim and on slopes just below the Rim. It also occurs in a few places just below the South Rim.

Abies lasiocarpa (Hook.) Nutt. (Alpine Fir) (Pl 109)

Found only on the higher elevations on the North Rim.

JUNIPERUS (Juniper)

Juniperus communis L. var. montana Ait. (J. siberica Burged.)
(Dwarf Juniper) (Pl 110 and 111)

Common at various places on the North Rim.

Juniperus scopulorum Sarg. (Rocky Mountain Juniper) (Rocky Mountain Whitecedar) (Pl 114 and 115)

Found at the extremities of points along the edge of the canyon on the North Rim and extending down along the North Kaibab Trail to the base of the Redwall.

Juniperus utahensis (Engelm.) Lemmon (Utah Juniper)
(Pl 117, 118 and 119)

Common on both Rims.

PICEA (Spruce)

Picea engelmanni Parry. (Engelmann Spruce)

Common on higher parts of the North Rim.

Picea pungens Engelm. (Colorado Spruce, Blue Spruce)

Found at various places on the North Rim.

PINUS (Pine)

Pinus edulis Engelm. (Pinyon Pine) (Pl 129, 130, 131,
132 and 133)

Common on both Rims.

Pinus monophylla Torr. and Frem. (Singleleaf Pinyon Pine)

Found in Bright Angel Canyon near Roaring Springs and in Nankoweap Basin.

Pinus ponderosa Douglas (Ponderosa Pine) (Pl 136)

Common on both Rims.

PSEUDOTSUGA (Douglas fir)

Pseudotsuga taxifolia (Poir.) Britton (Pl 123, 124 and 125)
Common on the North Rim and in protected places below the South Rim in the upper part of the Canyon. A few trees are found just at the edge of the South Rim in several places.

2. GNETACEAE (JOINTFIR FAMILY)

EPHEDRA (Ephedra, Jointfir)

Ephedra nevadensis Wats. (Pl 138)

Found along the South Kaibab Trail at 3500 and 3700 feet elevation.

Ephedra torreyana Wats. (Pl 140)

Found along the North Kaibab Trail near Roaring Springs and in Havasu Canyon.

Ephedra viridis Coville (Pl 139, 142 and 143)

Common on the South Rim, along the trails leading into the canyon, and in Havasu Canyon.

4. SPARGANACEAE (BURREED FAMILY)

SPARGANIUM (Burreed)

Sparganium simplex Huds. (Pl 146)

Found in a pond near the checking station on the North Rim.

5. NAIADACEAE (PONDWEED FAMILY)

POTAMOGETON (Pondweed)

Potamogeton diversifolius Raf. (Pl 147)

Found in a pond near Grandview Point on the South Rim.

Potamogeton foliosus Raf. var. macellus Fernald

Reported by Clover as occurring in Havasu Canyon (Clover 7187)

Potamogeton natans L. (Pl 1026)

Found at Greenland Lake on the North Rim.

7. ALISMACEAE (WATERPLANTAIN FAMILY)

ALISMA (Waterplantain)

Alisma plantago-aquatica L. (Pl 1811 and 1812)

Found at Swamp Lake on the North Rim.

8. GRAMINEAE (GRASS FAMILY)

AGROPYRON (Wheatgrass)

Agropyron pauciflorum (Schwein.) Hitch. (A. trachycaulum
(Link) Malte) (Pl 149)

Found near the railroad tracks in Grand Canyon Village on the South Rim.

Agropyron repens (L.) Beauv. (Quackgrass) (Pl 150)

Found near El Tovar Hotel in Grand Canyon Village on the South Rim. Exotic. Native to Eurasia.

Agropyron smithi Rydb. (Pl 153 and 154)

Found near the railroad tracks in Grand Canyon Village on the South Rim and at Pipe Creek in the Canyon. Reported to occur also on the North Rim. The var. molle (Scribn. and Smith) Jones has been collected in Grand Canyon Village near the railroad tracks.

AGROSTIS (Bentgrass)

Agrostis scabra Willd. (Pl 1031, 1032, 2131 and 2132)

Found at Greenland Lake, Kanabowmits Spring, Robbers Roost, in Kaibab Basin, and near the Checking Station on the North Rim.

Agrostis verticillata Vill. (Water Bentgrass) (Pl 161 and 162)

Found at Roaring Spring and Santa Maria Spring on the North Rim.

ALOPECURUS (Foxtail)

Alopecurus aequalis Sobol. (Pl 163 and 1033)

Found at Kanabowmits Spring on the North Rim.

ANDROPOGON (Bluestem)

Andropogon barbinodis Lag.

Found in Havasu Canyon (Herbarium of the Museum of Northern Arizona No. 4509)

Andropogon glomeratus (Walt) B.S.P. (Pl 2175)

Found near the mouth of Pipe Creek on the South Rim and collected by Clover and Jotter near the mouth of Bright Angel Creek.

ARISTIDA (Threeawn)

Aristida adscensionis L.

Collected by Clover and Jotter at the mouth of Bright Angel Creek (4085, 4098)

Aristida glauca (Nees) Walp. (Pl 164)

Found on Huxley Terrace in the Canyon.

Aristida longiseta Steud. (Pl 165)

Found at Pine Creek in the Canyon.

Aristida hamulosa Henr.

Found along Bright Angel Trail in the Canyon (Eastman 3756).

BLEPHARONEURON (Pine Dropseed)

Blepharoneuron tricholepis (Torr.) Nash (Pl 168)

Found in Big Spring Canyon, in Kaibab Basin and along the Cape Royal Road on the North Rim.

BOUTELOUA (Grama)

Bouteloua aristidoides (H.B.K.) Griseb.

Collected by Clover and Jotter in Havasu Canyon (4377).

Bouteloua barbata Lag. (Pl 169)

Found along the Clear Creek Trail in the Canyon.

Bouteloua curtipendula (Michx.) Torr. (Pl 170 and 171)

Bouteloua gracilis (H.B.K.) Lag. (Pl 172, 173, 174 and 175)

Found at various places on both Rims.

Bouteloua trifida Thurb. (Pl 176)

Found along the Hermit Trail at about 3800 feet elevation.

BROMUS (Brome)

Bromus anomalus Rupr. (Pl 185 and 1813)

Found at Kanabowmits Spring on the North Rim, and on Bright Angel Trail.

Bromus carinatus Hook. and Arn. Mountain Brome (Pl 2419)

Found at Kanabowmits Spring on the North Rim and along trails in the Canyon (Eastman 5799 and Eastman and Howell 1072)

Bromus catharticus Vahl (Pl 179)

Found near El Tovar Hotel on the South Rim. Exotic. Native to Europe.

Bromus ciliatus L. (Pl 180, 181, 182 and 2134)

Found at Neal Spring, Roaring Spring, Big Spring Canyon and along Transept Trail on the North Rim.

Bromus frondosus (Shear) Woot. and Standl. (Pl 183 and 184)

Found in Big Spring Canyon and at Kanabowmits Spring on the North Rim.

Bromus inermis Leyss.

Found at Grand View on the South Rim (Eastman 5198)

Bromus purgans L. (Pl 185)

Found along the Bright Angel Trail at about 4000 feet elevation.

Bromus racemosus L. (Pl 186)

Found along the railroad and along roads on the South Rim. Exotic. Native to Europe.

Bromus rigidus Roth (Pl 188)

Found near El Tovar Hotel on the South Rim. Exotic. Native to Europe.

Bromus rubens L. (Pl 189, 190 and 2135)

Found along the Bright Angel Trail, especially near Indian Gardens, and in Havasu Canyon.

Bromus tectorum L. Pl 191 and 2136)

Collected near El Tovar Hotel, at Hearst Ranch, and in Havasu Canyon on the South Rim.

CALAMAGROSTIS (Reedgrass)

Calamagrostis scopulorum Jones

We have no specimen of this species but it is reported in Kearney and Peebles as having been collected along the Kaibab Trail to Roaring Springs. (Eastwood and Howell 7075). Known in Arizona only from Grand Canyon.

CENCHRUS (Sandbur)

Cenchrus pauciflorus Benth.

Collected in Havasu Canyon by Clover and Jotter (4398).

CYNODON (Bermudagrass)

Cynodon glomerata (L.) Pers.

Found in Havasu Canyon. Exotic. Native to Eurasia.

DACTYLIS (Orohardgrass)

Dactylis glomerata L.

Found in Havasu Canyon in meadows on the North Rim, and along trails in the Canyon. Exotic. Native to Eurasia.

DIGITARIA (Crabgrass)

Digitaria sanguinalis (L.) Scop.

Found in Havasu Canyon by Clover and Jotter (4404).

ECHINOCHLOA (Cockspur)

Echinochloa crusgalli (L.) Beauv. var. zelayensis (H.B.K.) Hitchc. (Barnyardgrass).

Found in Havasu Canyon by Clover and Jotter (4399).

ELYMUS (Wildrye)

Elymus glaucus Buckl. (Pl 2221)

Found at Neal Springs on the North Rim.

Elymus triticoides Buckl.

We have no specimen of this species but it is reported in the 1936 edition of our checklist as having been found in the Canyon near Santa Maria Spring.

ERAGROSTIS (Lovegrass)

Eragrostis diffusa Buckl.

Found in Havasu Canyon by Clover and Jotter (4402).

FESTUCA (Fescue)

Festuca arizonica Vasey (Pl 192)

Found in Havasu Canyon.

Festuca dertonensis (All.) Aschers and Graebn.

Found west of Grand Canyon Village, South Rim. (Herbarium of the Museum of Northern Arizona B5118).

Festuca octoflora Walt.

Found at Hermit Rapids by Clover and Jotter (2286A).

Festuca ovina L. (Pl 194)

Found in Little Park on the North Rim.

GLYCERIA (Mannagrass)

Glyceria borealis (Nash) Batchelder (Pl 1034)

Found at Greenland Lake on the North Rim.

Glyceria striata (Lam) Hitchc. (Pl 2176)

Found at Robbers Roost on the North Rim.

HETEROPOGON (Tanglehead)

Heteropogon contortus (L.) Beauv.

We have no specimen of this species but it is reported in the 1936 edition of our checklist as occurring along the Clear Creek Trail in the Canyon.

HILARIA (Galleta)

Hilaria jamesi (Torr.) Benth. (Pl 198)

Found along Pipe Creek in the Canyon.

HORDEUM (Barley)

Hordeum gussonianum Parl. (Pl 199)

Found along the railroad tracks on the South Rim. Exotic. Native to Europe.

Hordeum jubatum L. (Pl 200, 201, and 202)

Found near El Tovar Hotel on the South Rim and at the head of the Kaibab Trail on the North Rim.

Hordeum murinum L. (Pl 203 and 204)

Found along the Hermit Trail at Santa Maria Spring in the Canyon.

IMPERATA (Satintail)

Imperata hookeri Rupr. (Pl 205 and 2137)

Found along Bright Angel Trail near the Colorado River.

KOELERIA (Junegrass)

Koeleria cristata (L.) Pers. (Prairie Junegrass) (Pl 206 and Pl 2417)

Found at the head of the Bright Angel Trail and near Rowe Well on the South Rim and at Neal Springs on the North Rim.

LOLIUM (Ryegrass)

Lolium perenne L.

Found at the mouth of Bright Angel Creek by Clover and Jotter (4094) and reported in Kearney and Peebles as occurring on the Kaibab Plateau near the Canyon.

MUHLENBERGIA (Muhly)

Muhlenbergia asperifolia (Nees. & Mey.) Parodi (Pl 2138)

Found near the mouth of Pipe Creek, South Rim, and at the mouth of Bright Angel Creek.

Muhlenbergia sylvatica Torr.

We have no specimen of this species but it is reported by Kearney and Peebles as having been collected at Grand Canyon (Toumey 169). Known in Arizona only from Grand Canyon.

Muhlenbergia wrightii Vasey (Pl 213 and 214)

Found along Milk Creek on the North Rim.

ORYZOPSIS (Ricegrass)

Oryzopsis bloomeri (Boland.) Ricker (Pl 215 and 216)

Found along the railroad tracks on the South Rim, along Pipe Creek in the Canyon, and reported by Kearney and Peebles as having been collected on a gravelly bank along the Bright Angel Trail in the Canyon (Silveus 1927). Known in Arizona only from Grand Canyon.

Oryzopsis hymenoides (Roem. and Schult.) Ricker (Pl 217, 218 and 2139)

Found in Havasu Canyon and along the railroad tracks on the South Rim, and at Cape Royal on the North Rim.

PANICUM (Witchgrass)

Panicum huachucae Ache.

We have no specimen of this but it is reported in Kearney and Peebles as occurring along the Bright Angel Trail.

POLYPOGON (Polypogon)

Polypogon monspeliensis (L.) Desf. (Rabbitfoot polypogon)
(Pl 235 and 1843)

Found at Muav Saddle in the Canyon and at Swamp Lake on the North Rim.

SECALE (Rye)

Secale cereale L.

Found at Grandview on the South Rim (Eastman 5720).
Exotic.

SETARIA (Bristlegrass)

Setaria lutescens (Weig.) Hubbard

Found in Havasu Canyon by Clover and Jotter (4396A).

Setaria macrostachya H.B.K.

Found at the mouth of Bright Angel Creek and in Havasu Canyon by Clover and Jotter (4082, 4396).

Setaria viridis (L.) Beauv.

Found in Havasu Canyon by Clover and Jotter (4397A).

SITANION (Squirreltail)

Sitanion hystrix (Nutt.) Smith (Bottlebrush) (Pl 151, 152, 238, 239, 1039 and 2141)

Found in Grand Canyon Village and eight miles east of the Village on the South Rim and at Kanabowmits Spring and Swamp Point on the North Rim.

Sitanion jubatum J. G. Smith

Found on South Kaibab Trail by Clover and Jotter (4147).

SPOROBOLUS (Dropseed)

Sporobolus contractus Hitchc.

Found at Granite Rapids by Clover and Jotter (2301A).

Sporobolus cryptandrus (Torr.) Gray

Found in Havasu Canyon by Clover and Jotter (4423).

Sporobolus flexuosus (Thurb.) Rydb.

Found on Kanab Trail by Clover and Jotter (2345).

STIPA (Needlegrass)

Stipa arida Jones (Pl 241)

Found along the Bright Angel Trail at about 4200 feet elevation.

Stipa columbiana Macoun var. nelsoni (Scribn.) Hitchc.
(Pl 242)

Found at Neals Spring on the North Rim.

Stipa comata Trin. and Rupr. (Pl 243)

Found near the railroad tracks on the South Rim.

Stipa coronata Thurb.

Found on the south Kaibab Trail by Clover and Jotter (4157). The variety depauperata Hitchc. is reported in Kearney and Peebles as occurring along Bright Angel Trail at 5000 feet elevation.

Stipa lobata Swallen

We have no specimen of this species but it is reported in Kearney and Peebles as having been collected on a rocky bank along Bright Angel Trail (Silveus 1928). Known in Arizona only from Grand Canyon.

Stipa lettermani Vasey (2220)

Found at Neal Springs on the North Rim.

Stipa scribneri Trin.

We have no specimen of this species but it is reported in Kearney and Peebles as having been collected on dry, rocky banks along the Bright Angel Trail (Hitchcock 10448) and along the Kaibab Trail to Roaring Springs (Eastwood and Howell 991). Known in Arizona only from Grand Canyon.

Stipa speciosa Trin. and Rupr.

Found along the south Kaibab Trail by Clover and Jotter (4131).

Stipa tenuissima Trin.

Found in Havasu Canyon (Herbarium of the Museum of Northern Arizona, No. 4957. Apparently the first record for the state of Arizona.)

TRIODIA (Triodia)

Triodia mutica (Torr.) Scribn. (Pl 246)

Found along the Hermit Trail in the Canyon.

Triodia pilosa (Buckl.) Merr. (Pl 247)

Found along the Tonto Trail at Pipe Creek.

Triodia pulchella H.B.K.

Reported by Clover and Jotter from the south Kaibab Trail, Hermit Rapids, and Havasu Canyon.

9. CYPERACEAE (SEDEGE FAMILY)

CAREX (Sedge)

Carex arthrota Olney (Pl 1035)

Found at Robbers Roost on the North Rim.

Carex curatorium Stacey

Known only from the type locality which is along the Kaibab Trail to Roaring Springs in the Canyon (Eastwood and Howell 1100, 1101 and 7073). We have no specimen.

Carex festivella Mackenzie (Ovalhead Sedge) (Pl 1851)

Found at Tip-over Spring on the North Rim.

Carex haydenia olney (Pl 1852)

Found at Kanabownits Spring on the North Rim.

Carex microptera Mackenzie (Smallwing Sedge)

Found at Neal Springs on the North Rim.

Carex nebraskensis Dewey (Pl 248)

Found in the Kaibab Basin on the North Rim.

Carex occidentalis Bailey (Pl 2219)

Found at Neal Springs on the North Rim.

Carex petasata Dewey (Pl 2125)

Found at Kanabownits Spring on the North Rim. This is the first record of the species in Arizona.

Carex praegracilis Boott (Pl 2127 and 2142)

Found near the mouth of Pipe Creek and at Hearst Ranch on the South Rim.

Carex rossi Boott

We have no specimen of this but there is a specimen in the herbarium of the California Academy of science that was collected on the North Rim (Eastman and Howell 888).

Carex rusbyi Mackenzie (Pl 2128)

Found along Transept Trail and in the vicinity of Robbers Roost on the North Rim.

Carex siccata Dewey (Pl 1840 and 1841)

Found at Swamp Lake and Tip-over Spring on the North Rim.

Carex thurberi Dewey (Pl 2126)
Found near the mouth of Pipe Creek.

Carex wootoni Mackenzie (Pl 2203)
Found near the Checking Station on the North Rim.

ELEOCHARIS (Spikesedge, Spikerush)

Eleocharis acicularis (L.) Roem. and Schult. var. occidentalis
Svenson. (Pl 1036)
Found near the Checking Station on the North Rim.

Eleocharis calva Torr. (Pl 2143)
Found at Hearst Ranch on the South Rim.

Eleocharis parishii Britton (Pl 249)
Found at Greenland Lake on the North Rim.

Eleocharis rostellata Torr.
We have no specimen of this species but it is reported in
Kearney and Peebles as having been collected at Grand Canyon
(Wooton 2012).

Eleocharis radicans (Poir.) Kunth
We have no specimen of this species but it is reported in
Kearney and Peebles as having been collected at Grand Canyon
(Tracy 363).

FIMBRISTYLIS (Fimbristylis)

Fimbristylis thermalis Wats.
We have no specimen of this species but it is reported in
Kearney and Peebles as occurring at the foot of Bright Angel
Trail in the Canyon. Known in Arizona only from Grand Canyon.

SCIRPUS (Bulrush)

Scirpus olneyi Gray (Pl 2067)
Found near the mouth of Pipe Creek.

16. JUNCACEAE (RUSH FAMILY)

JUNCUS (Rush)

Juncus acutus L. var. sphaerocarpus Engelm.
We have no specimen of this species but it is reported in
Kearney and Peebles that the only known collection from Ari-
zona is from the Grand Canyon (Rusby 849).

Juncus confusus Coville (Pl 2144 and 2145)

Found at Kanabownits Spring and Robbers Roost on the North Rim.

Juncus interior Wiet. (Pl 250)

Found at Buggeln Ranch on the South Rim. Kearney and Peebles report that variety arizonicus (Wieg.) Hermann is known from the Grand Canyon.

Juncus mertensianus Bong.

Kearney and Peebles report that this species is known in Arizona from one collection only. This was collected from DeMotte Park which is just outside the Park boundary on the North Rim. (M. E. Jones 6056).

Juncus saximontanus Nels. (Pl 251, 2034, 2035, 2146 and 2179)

Found at Roaring Spring on the North Kaibab Trail and in Kaibab Basin and at Robbers Roost on the North Rim. Some of our specimens are forma brunnescens (Rydb.) Hermann which is said to be the commonest rush in Arizona.

Juncus torreyi Coville

Found at the mouth of Bright Angel Creek by Clover and Jotter (4090).

Juncus tracyi Rydb. (Pl 1850 and 2129)

Found at Powell Saddle Spring and Cliff Springs on the North Rim. Known in Arizona only from Grand Canyon.

17. LILIACEAE (LILY FAMILY)

ALLIUM (Onion)

Allium cernuum Roth (A. neomexicanum Rydb.) (Nodding Onion)
(Pl 257)

Found in an open meadow near the North Rim Checking Station. Determined by the U. S. National Herbarium but we believe the determination is an error since the scapes are not recurved.

Allium palmeri Wats. (A. biceptrum Wats.) (Pl 258, 259 and 1816, and 255 and 256)

Found under ponderosa pines in Long Jim Canyon, in Grand Canyon Village and farther west along the road to Havasu Canyon on the South Rim and at Kanabownits Spring on the North Rim.

ANTHERICUM (Craglily, Amberlily)

Anthericum torreyi Baker (Pl 260 and 261)

Found in the cemetery on the South Rim.

BRODIAEA (Bluedicks, Covena, Grassnuts)

Brodiaea capitata Benth. var. pauciflora Torrey (Pl 262, 263 and 264)

Found along Hermit Trail in the Canyon and in Grand Canyon National Monument.

CALOCHORTUS (Mariposa, Segolily, Mariposalily)

Calochortus nuttalli Torr. and Gray. (Pl 266, 267, 268, 269, 270, 271 and 272)

This is the typical form with whitish to blue-lavender flowers. It is common on both rims.

FRITILLARIA (Fritillary)

Fritillaria atropurpurea Nutt. (Pl 275, 276 and 2147)

Found at Grandview Point on the South Rim and along Transept Trail and several other places on the North Rim.

NOLINA (Beargrass)

Nolina bigelovi (Torr.) Wats. (Pl 2043)

Found near the Ranger Station in Grand Canyon National Monument.

Nolina microcarpa Wats. (Pl 278)

Found in Havasu Canyon. (Herbarium of the Museum of Northern Arizona, B4472).

SMILACINA (False Solomonseal)

Smilacina stellata (L.) Desf. (Starflower) (Pl 280 and 281)

Found at Cliff Springs, Rock Springs, and Robbers Roost on the North Rim and east of Grandview on the South Rim.

YUCCA (Yucca, Soapweed, Spanish-bayonet, Datil)

Yucca angustissima Engelm.

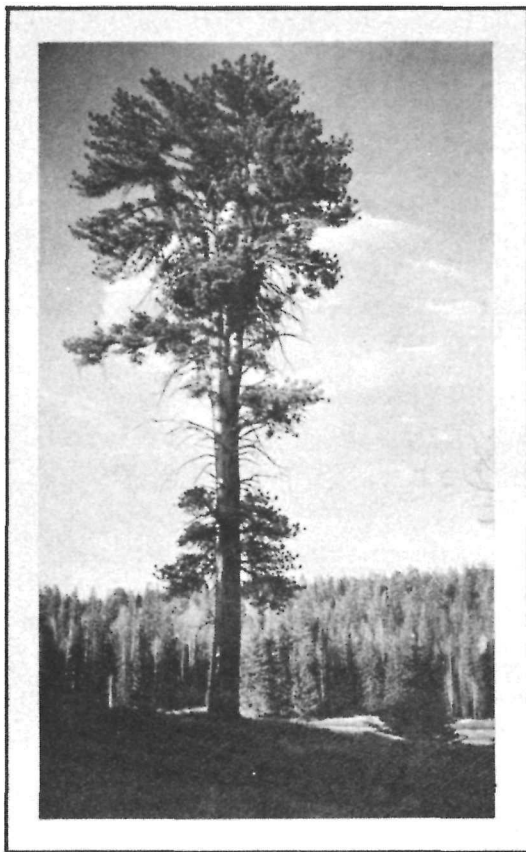
Found in Havasu Canyon. (Herbarium of the Museum of Northern Arizona, B4952).

Yucca baccata Torr. (Blue Yucca, Datil) (Broadleaf)
(Pl 282 and 283)

Found on both rims mostly in pinyon-juniper community.

Yucca baileyi Woot. and Standl. (Narrowleaf)

Common in the Canyon, especially in the blackbrush community.



Western Yellow Pine

N.N.Dodge

ZIGADENUS (Deathcamas)

Zigadenus elegans Pursh. (Pl 286 and 287)

Found at Kanabownits Spring and Robbers Roost on the North Rim.

18. AMARYLLIDACEAE (AMARYLLIS FAMILY)

AGAVE (Agave, Centuryplant, Mescal)

Agave utahensis Engelm. (Pl 1819 and 2714)

Found on both rims and, more abundantly, in the Canyon, especially in the blackbrush community.

19. IRIDACEAE (IRIS FAMILY)

IRIS (Flag, Fleur-de-lis)

Iris missouriensis Nutt. (Pl 288)

Found at Neal Spring on the North Rim.

SISYRINCHIUM (Grass, Blue-eyedgrass)

Sisyrrinchium demissum Greene (1023)

Found at Kaibab Basin on the North Rim.

20. ORCHIDACEAE (ORCHID FAMILY)

CALYPSO (Calypso)

Calypso bulbosa (L) Oakes (Pl 289)

Found near Farview on the North Rim.

CORALLORRHIZA (Coralroot)

Corallorrhiza maculata Raf. (Pl 290, 291, 292 and 1818)

Found on the North Rim near Neal Springs, at the head of the Kaibab Trail, at Point Imperial, and near Kanabownits Fire Tower.

Corallorrhiza wisteriana Conrad (Pl 1856)

Found at Robbers Roost on the North Rim.

EPIPACTIS (Helleborine)

Epipactis gigantea Dougl. (Serapias gigantea (Dougl.) (Eaton)
(Pl 294, 1025, 1790 and 2065)

Found at Cliff Springs and Powell Spring on the North Rim
and in Havasu Canyon.

GOODYERA (Rattlesnake-plantain)

Goodyera decipiens (Hook) Hubbard (Peramium decipiens Piper)
(Pl 295 and 296)

Found at Greenland Lake on the North Rim.

HABENARIA (Habenaria)

Habenaria sparsiflora Wats. var. laxiflora Rydb. (Pl 297,
298, 1024, 1792 and 1793)

Found at Roaring Spring and in Powell Saddle on the North
Rim.

SPIRANTHES (Ladies-tresses)

Spiranthes romanzoffiana Cham. (Pl 299)

Found in a meadow near Robbers Roost and in several other
meadows on the North Rim.

21. SAURURACEAE (LIZARDTAIL FAMILY)

ANEMOPSIS (Yerbamansa)

Anemopsis californica (Nutt.) Hook. and Arn.

This species was collected at Indian Gardens in 1917 by
Miss Eastwood (Eastwood 6104). Since this collection was
made more than a quarter of a century ago there is some doubt
as to whether the species actually occurs in the park at the
present time.

22. SALICACEAE (WILLOW FAMILY)

POPULUS (Poplar, Aspen, Cottonwood)

Populus tremuloides Michx. var. aurea (Tidestrom) Daniels
(Golden Quaking Aspen). (Pl 301 and 302)

Common on the North Rim. Found also in one ravine east
of Grandview Point on the South Rim.

Populus fremonti S. Wats. (Fremont Poplar, Fremont Cottonwood)
(Pl 304)

This species occurs along the banks of Bright Angel Creek, along the lower part of Bright Angel Trail, and in Havasu Canyon.

SALIX (Willow)

Salix bebbiana Sarg. (Bebb Willow). (Pl 306, 307 and 308)

Found at Point Imperial, at Kanabownits Spring and at Neal Spring on the North Rim.

Salix exigua Nutt. (Coyote Willow). (Pl 310 and 311)

Found at Phantom Ranch and along the Hermit Trail in the Canyon.

Salix goodingi Ball (Dudley Willow). (Pl 309)

Found along the banks of Bright Angel Creek, at Cliff Spring, and at Neal Spring on the North Rim. Also near the Union Pacific Power House.

Salix laevigata Bebb var. araguipa (Jepson) Ball

Found at the foot of Bright Angel Trail (Eastman 6081), along the Kaibab Trail at 4150 feet (H. and V. Bailey 1206) and in Havasu Canyon (Clover 4432).

Salix scouleriana Barratt (Pl 2064)

Found at Robbers Roost on the North Rim.

23. JUGLANDACEAE (WALNUT FAMILY)

JUGLANS (Walnut)

Juglans rupestris Engelm. var. major Torr.

Found in Havasu Canyon by Clover and Jotter (4406).

24. BETULACEAE (BIRCH FAMILY)

BETULA (Birch)

Betula fontinalis Sargent (Water Birch). (Pl 314)

Found at Bright Angel Spring and in Big Spring Canyon on the North Rim.

OSTRYA (Hophornbeam)

Ostrya knowltoni Coville (Pl 316, 317, 318, 319 and 320)
Found in Nankoweap Basin and along all of the trails
leading into the Canyon.

25. FAGACEAE (BEECH FAMILY)

QUERCUS (Oak)

Quercus gambeli Nutt. (Q. utahensis) (Gambel Oak) (Rocky
Mountain White Oak) (Pl 321, 322, 323, 324, 2171 and 2177)
The common white oak on both rims.

Quercus turbinella Greene (Scrub Live Oak, Scrub Oak)
(Pl 325, 326, 327, 328, 329 and 330)

Found at Powell Spring and Santa Maria Spring on the
North Rim and in Bright Angel Canyon and along Bright Angel
and Hermit Trails; also in Havasu Canyon.

Quercus undulata Torr. (Wavyleaf Oak, Rocky Mountain Shin Oak)
(Pl 331 and 332)

Found along the Kaibab Trail above Devil's Yard, at Uncle
Jim Point on the North Rim and in Muav Canyon.

26. ULMACEAE (ELM FAMILY)

CELTIS (Hackberry)

Celtis reticulata Torr. (Netleaf Hackberry, Paloblanco)
(Pl 333, 334, 335 and 336)

Found at Dripping Springs, in Havasu Canyon and along
Bright Angel Trail.

27. MORACEAE (MULBERRY FAMILY)

MORUS (Mulberry)

Morus microphylla Buckl. (Texas Mulberry) (Pl 337)

While this species is native to all of central and south-
eastern Arizona, the only place it has been found in the park
is in Havasu Canyon.

28. URTICACEAE (NETTLE FAMILY)

URTICA (Nettle)

Urtica serra Blume (U. breweri Wats.)

Reported from Grand Canyon in Kearney and Peebles and found at Deer Creek Falls by Clover and Jotter (2243).

PARIETARIA (Pellitory)

Parietaria floridana Nutt. (Pl 340)

Found on the South Kaibab Trail at about 4800 feet.

Parietaria pennsylvanica Muhl.

Reported from Grand Canyon in Kearney and Peebles and found in Havasu Canyon by Clover and Jotter (4410).

29. LORANTHACEAE (MISTLETOE FAMILY)

ARCEUTHOBIUM (Dwarfmistletoe)

Arceuthobium campylopodum Engelm (Pl 341)

The form divaricatum (Engelm) Gill of this species is common on pinyon pine on both rims. A specimen believed to be form microcarpum (Engelm.) Gill was collected on Engelmann spruce near the North Rim Checking Station.

PHORADENDRON (Mistletoe)

Phoradendron juniperinum Engelm.

Common on Utah juniper on both rims.

30. SANTALACEAE (SANDALWOOD FAMILY)

COMANDRA (Bastardtoadflax)

Comandra pallida A. DC. (Pl 343, 344 and 345)

Found at the junction of the Point Imperial and Cape Royal roads and at Powell Saddle on the North Rim.

33. POLYGONACEAE (BUCKWHEAT FAMILY)

ERIOGONUM (Eriogonum, Wildbuckwheat)

Eriogonum alatum Torr. (Wing Eriogonum). (Pl 346, 347 and 1810)

Found on Huxley Terrace and at Grandview Point on the South Rim and on Powell Saddle on the North Rim.

Eriogonum arcuatum Greene (Pl 352, 353 and 354)

Collected at Cape Royal, Point Sublime, and near the North Rim Checking Station. It occurs also on the South Rim.

Eriogonum aureum Jones (Goldenbuckwheat)

Found at Cape Royal by Clover and Jotter (4304 and 4314).

Eriogonum cognatum Greene (Pl 360 and 361)

Found at several places on the North Rim. Our specimens are labeled E. stellatum Benth. but we are following both Kearney and Peebles and Tidestrom and Kittell in calling them E. cognatum, a species which is very close to E. stellatum and known only from central and northern Arizona.

Eriogonum corymbosum Benth.

Found in Havasu Canyon by Clover and Jotter (7241).

Eriogonum deflexum Torr. (Skeletonweed). (Pl 357, 358 and 359)

Found in Long Jim Canyon and in Pasture Wash on the South Rim. Also at Indian Gardens.

Eriogonum flavum Nutt.

We have no specimen of this species but it is reported in Kearney and Peebles as occurring on the North Rim of Grand Canyon (Goodman and Hitchcock 1643, Kearney and Peebles 13696).

Eriogonum howellii Stokes var. subracemosum Stokes (Pl 374)

Collected only at Grama Point but reported as common on the North Rim.

Eriogonum inflatum Torr. and Frem. (Deserttrumpet, Bladderstem) (Pl 363 and 2173)

Collected near the South Kaibab Trail, in Havasu Canyon, and on Clear Creek Trail.

Eriogonum ovalifolium Nutt. (Pl 364 and 2044)

Collected in Slide Canyon on the North Rim and said to occur on several rocky points on that rim. Also found in Toroweap Valley.

Eriogonum polifolium Benth. (E. fasciculatum var. polifolium (Benth.) Torr. and Gray.) (Pl 365 and 366)

Our herbarium specimens are from Grand Canyon National Monument but the species is said to be quite common on rocky points on the North Rim.

Eriogonum racemosum Nutt. (Redroot Eriogonum). (Pl 367, 368 and 369)

Collected at Point Sublime, Cape Royal and near the Government Employees' Camp on the North Rim but occurs also on the South Rim.

Eriogonum simpsoni Benth. (Pl 370, 371 and 373)

Found at Point Imperial and Point Sublime on the North Rim and at Yaki Point on the South Rim.

Eriogonum wrighti Torr. (Pl 375 and 376)

Found at Waterloc Hill and Pasture Wash on the South Rim.

Eriogonum zionis J. T. Howell var. coccineum J. T. Howell (Pl 377 and 378, 1822 and 1825)

Found at Point Sublime on the North Rim and near Bass Camp on the South Rim. Dr. J. T. Howell states as follows concerning this species: "The scarlet-flowered variety of Eriogonum zionis is at present known only from the rim rocks of the Grand Canyon where it is a rare plant. The species, which has greenish-yellow flowers, seems to be equally rare and is apparently restricted to Zion National Park in southern Utah."

POLYGONUM (Knotweed, Smartweed)

Polygonum aviculare L. (Pl 379 and 380)

Exotic. Found at Neal Spring on the North Rim and in Havasu Canyon.

Polygonum bistortoides Pursh (Pl 381)

Found near the North Rim Checking Station.

Polygonum douglasi Greene (Pl 382 and 2059)

Found in DeMotte Park near the north park boundary and at Robbers Roost.

Polygonum sawatchense Small (Pl 383 and 384)

Found at Neal Spring on the North Rim and at Hull Tank and Trash Tank on the South Rim

Polygonum watsoni Small (Pl 385)

Found in DeMotte Park near the north park boundary.

PTEROSTEGIA (Pterostegia)

Pterostegia drymarioides Fisch. and Meyer
Found in Havasu Canyon by Clover and Jotter (6300A).

RUMEX (Dock, Sorrel)

Rumex acetosella L. (Sheep Sorrel) (Pl 386)
Exotic. Found near the North Rim Checking Station and in Kaibab Basin on the North Rim.

Rumex altissimus Wood (Pl 387)
Found at Greenland Lake on the North Rim.

Rumex californicus Rech. f. (Pl 391)
Found near the checking on the North Rim.

Rumex hymenosepalus Torr. (Canaigre, Wildrhubarb).
(Pl 388 and 389)
Found in Grand Canyon National Monument.

Rumex mexicanus Meisn. (Pl 390, 393 and 2061)
Found near the North Rim Checking Station, at Neal Spring, and at Robbers Roost on the North Rim.

Rumex triangulivalvis (Danser) Rech. f. (Pl 392 and 1846)
Found at Swamp Lake and Neal Spring on the North Rim.

34. CHENOPODIACEAE (GOOSEFOOT FAMILY)

ATRIPLEX (Saltbush)

Atriplex canescens (Pursh) Nutt. (Fourwingsaltbush)
(Pl 394 to 401, inclusive)
Found at Phantom Ranch, along Bright Angel Trail, in Pasture Wash, along the road to Hilltop, in Havasu Canyon and along Shinumo Creek.

CHENOPODIUM (Goosefoot)

Chenopodium album L. (Lambsquarters) (Pl 403 and 404)
Exotic. Found in Big Spring Canyon and in a few waste places and along roads on the North Rim.

Chenopodium capitatum (L.) Asch. (Pl 406)
Found at Neal Spring on the North Rim

Chenopodium fremonti S. Wats.
Found at Hilltop (Herbarium of the Museum of Northern Arizona, B4386), and in Havasu Canyon (Clover).

Chenopodium hiens Standl.

Found along the North Kaibab Trail (Eastman and Howell 7101).

Chenopodium incisum Poir. (C. cornutum (Torr.) Benth. and Hook.) (Pl 405)

Chenopodium incanum (Wats.) Heller

Found in Havasu Canyon. (Herbarium of the Museum of Northern Arizona, 4976).

Chenopodium murale L.

Found in Havasu Canyon. (Herbarium of the Museum of Northern Arizona, B4975).

Chenopodium rubrum L. (Pl 406)

Probably exotic. Found at Neal Spring on the North Rim.

EUROTIA (Winterfat)

Eurotia lanata (Pursh) Moq. (Pl 407 and 408)

Found in Pasture Wash on the South Rim, and also on Great Thumb.

GRAYIA (Hopsage)

Grayia spinosa (Hook.) Moq. (Pl 409)

Found in Grand Canyon National Monument.

SALSOLA (Russianthistle)

Salsola kali L. var. tenuifolia Tausch (S. pestifer A. Nels.) (Tumbling Russianthistle). (Pl 410)

Found in Pasture Wash and in Grand Canyon National Monument. Also in waste places in Grand Canyon Village.

35. AMARANTHACEAE (AMARANTH FAMILY)

AMARANTHUS (Amaranth, Pigweed)

Amaranthus hybridus L. (Pl 411)

Found in Havasu Canyon.

Amaranthus blitoides Wats.

Found in Havasu Canyon by Clover and Jotter (4408A).

Amaranthus powelli Wats.

Found in Havasu Canyon by Clover and Jotter (4406A).

36. NYCTAGINACEAE (FOUR-O'CLOCK FAMILY)

ABRONIA (Sandverbena)

Abronia nana Wats. (Pl 412 and 413)

Found along the Hermit Trail and along the Kaibab Trail at about 3000 feet elevation.

Abronia pumila Rydb. (Pl 414)

Found along the Bright Angel Trail near the river.

ALLIONIA (Allionia)

Allionia incarnata L. (Trailing-four-o'clock) (Pl 415, 416, 417, 418 and 419)

Quite common in the lower part of the Canyon and also in Havasu Canyon.

ANULOCAULIS (Amulocaulis)

Amulocaulis leisolenus (Torr.) Standl.

Found in Havasu Canyon by Clover (Clover 6464 and 7217).

BOERHAAVIA (Spiderling)

Boerhaavia coulteri (Hook. f.) Wats. (Pl 421)

Found in Havasu Canyon.

Boerhaavia wrighti Gray (Pl 422)

Found along the lower part of Bright Angel Trail and at Phantom Ranch in the Canyon.

Boerhaavia torreyana (Wats.) Standl.

Found in Havasu Canyon by Clover and Jotter (4386).

MIRABILIS (Four-o'clock)

Mirabilis bigelovi Gray (Heller) Munz (Pl 423 and 2151)
Found at Phantom Ranch in the Canyon.

Mirabilis multiflora (Torre.) Gray (Pl 424, 425, 426 and 427)
Found in Pasture Wash, in Havasu Canyon, along Bright
Angel Trail, and on Mormon Flat along the Kaibab Trail.

OXYBAPHUS (Oxybaphus)

Oxybaphus linearis (Pursh) Robinson (Pl 420)
Found at Rowe Well and in Pasture Wash on the South Rim
and at Phantom Ranch in the Canyon.

38. AIZOACEAE (AIZOON FAMILY)

TRIANTHEMA (Horse-purslane)

Trianthema portulacastrum L.
Found in Havasu Canyon by Clover (Clover 7164).

39. PORTULACACEAE (PORTULACA FAMILY)

CLAYTONIA (Springbeauty)

Claytonia rosea Rydb. (Pl 429 and 430 and 1045)
Found under pines on Buggeln Hill on the South Rim.

LEWISIA (Lewisia)

Lewisia pygmaea (Gray) Robinson (Pl 431, 432, 1794 and 2197)
Found in DeMotte Park just outside the north park bound-
ary on the North Rim and also abundant on Walhalla Plateau.

Lewisia rediviva Pursh (Pl 1795)
Found along the boundary fence near the Navahopi entrance
on the South Rim.

MONTIA (Indianlettuce, Minerslettuce)

Montia chamissoi (Ledeb.) Durand and Jackson (Pl 435)
Found in moist places near Kanabowmits Spring on the
North Rim.

Montia perfoliata (Donn) Howell (Pl 1864)
Found along Bright Angel Trail in the Canyon.

40. CARYOPHYLLACEAE (PINK FAMILY)

ARENARIA (Sandwort)

Arenaria aduleata Wats. (Pl 434, 435, 436 and 437)
Found near the North Rim Checking Station and at Robbers Roost on the North Rim as well as at Grandview on the South Rim.

Arenaria confusa Rydb. (Pl 438, 439 and 440)
Found near Neal Spring and in other meadows on the North Rim, and in Long Jim Canyon on the South Rim.

Arenaria eastwoodiae Rydb. (Pl 441)
Found near Milk Creek on the North Rim and at Grandview Point on the South Rim.

Arenaria fendleri Gray. (Pl 442)
Found at Swamp Lake on the North Rim.

CERASTIUM (Mouseear Chickweed, Powderhorn)

Cerastium arvense L. (Pl 443 and 1817)
Found near the North Rim Checking Station.

SILENE (Catchfly, Campion)

Silene menziesi Hook.
We have no specimen of this but it was collected at Greenland Lake on the North Rim in 1939 by Mrs. Collom.

Silene pringlei Wats. (Pl 444 and 445 and 446)
Found at Greenland Lake, Robbers Roost, near Point Sublime, and on Powell Plateau on the North Rim, and 200 feet below Hermit Rest Point on the South Rim.

Silene retramea Robinson
We have no specimen of this species. The species is known only from the type collection which was obtained on the South Rim of Grand Canyon (MacDougal 181).

STELLARIA (Starwort, Chickweed)

Stellaria jamesiana Torr. (Pl 447, 448, 449, 450, 451 and 452)

Found at Greenland Lake, Robbers Roost, Thompson Canyon, and near Cape Royal on the North Rim.

Stellaria nitens Nutt.

Found along the Hermit Trail (Eastman 6059A).

42. RANUNCULACEAE (CROWFOOT FAMILY)

ACONITUM (Monkshood)

Aconitum columbianum Nutt. (Pl 496)

Found at Kanabowmits Spring on the North Rim.

ANEMONE (Anemone)

Anemone tuberosa Rydb. (Pl 453, 454, 455, 456 and 457)

Found along Hermit Trail and in Bright Angel Canyon.

AQUILEGIA (Columbine)

Aquilegia scopulea James (Pl 458, 459, 460, 461, 462 and 463)

Collected at Neal Spring and known to occur at other places on the North Rim.

Aquilegia scopulea James var. pinetorum (Tidestrom) Payson (Pl 464 and 465)

Found at Greenland Spring, Neal Spring and near Little Dutchman Pasture on the North Rim.

Aquilegia chrysantha Gray (Pl 466 and 467)

Found along the Bright Angel Trail at about 3000 feet elevation and at Ribbon Falls.

Aquilegia triternata Payson (Pl 468)

Found at Ribbon Falls in the Canyon and in Long Jim Canyon on the South Rim.

CALTHA (Marshmarigold)

Caltha leptosepala DC. (Pl 1820, 2089 and 2090)

Found at Swamp Lake on the North Rim.

CLEMATIS (Clematis)

Clematis douglasi Hook. (C. hirsutissima Pursh.)
(Pl 471, 472, 473, 474 and 1789)

Not uncommon in open meadows on the North Rim.

Clematis eriophora Rydb. (Pl 474)

We have one specimen collected somewhere on the North Rim in 1933, exact location unknown.

Clematis ligusticifolia Nutt. (Virgin's Bower).

(Pl 475, 476, 477, 478, 479, 480, 481 and 482)

Found near Powell Spring and along the Cape Royal Road on the North Rim, and in Bass Canyon and Havasu Canyon on the South Rim.

Clematis pseudoalpina (Kuntze) Nels. (Pl 483 and 484)

Found along the Kaibab Trail below the North Rim.

DELPHINIUM (Larkspur)

Delphinium amabile Tidestrom. (Pl 485, 486 and 487)

Found along Pipe Creek on the South Rim and near Neal Spring on the North Rim.

Delphinium mensiesi DC. (D. pinetorum Tidestrom) (D. nelsoni Greene) (Pl 488, 489, 497, 1800, 2205 and 2206)

Found near the Checking Station and on Walhalla Plateau on the North Rim and on Buggeln Hill and at Hearst Ranch on the South Rim.

Delphinium scaposum Greene (Pl 490, 491, 492, 493, 494 and 495)

Found along the Bright Angel Trail in the Canyon and along Kanab Creek, near Two River Junction, on Point Sublime, and near the public garage on the North Rim.

RANUNCULUS (Buttercup)

Ranunculus bongardi Greene var. tenellus (Nutt.) Greene
(Pl 498 and 499)

Found at Kanabowmits Spring and Neal Spring on the North Rim.

Ranunculus cardiophyllus Hook. (Pl 501 to 508 and 514 to 519, inclusive)

Found at Point Sublime, near the North Entrance and at other places on the North Rim. Specimens 514 to 519 are variety subsagittatus (Gray) Benson.

Ranunculus collomae Benson (Pl 500, 509, 510, 2156 and 2157)

Found on Buggeln Hill on the South Rim, and in V. T. Meadow and at Greenland Lake on the North Rim.

Ranunculus flammula L. var. ovalis Benson (Pl 1796 and 2158)

Found at V. T. Ranch Meadow north of the Park Boundary on the North Rim and at Greenland Lake.

Ranunculus glaberrimus Hook.

This species was collected somewhere on the North Rim by McHenry (McHenry 2076, according to Kearney and Peebles) but we have no specimen in the herbarium and the species is not known to occur elsewhere in Arizona.

Ranunculus inamoenus Greene (Pl 511, 512 and 513)

Found at Kanabownits Spring and in DeMotte Park on the North Rim.

THALICTRUM (Meadowrue)

Thalictrum fendleri Engelm. (Pl 520, 521, 522, 523, 524, 525, 526 and 527)

Found in Thompson Canyon and at Kanabownits Spring, Neal Spring, and Greenland Lake on the North Rim and known to occur in other moist places on both rims.

43. BERBERIDACEAE (BARBERRY FAMILY)

MAHONIA (Mahonia)

Mahonia fremontii (Torr.) Fedde (Berberis fremontii Torr.) (Fremont Mahonia). (Pl 528 and 529)

Found south of Rowe Well on the South Rim and along Bright Angel Trail in the Canyon.

Mahonia repens (Lindl.) Don (Berberis repens Lindl.) (Creeping Mahonia, Oregongrape). (Pl 530, 531, 532, 533 and 534)

Found along the Bright Angel and Kaibab Trails, along the Cape Royal Road on the North Rim, and at Shoshone Point and in the vicinity of Long Jim Canyon on the South Rim.

45. PAPAVERACEAE (POPPY FAMILY)

ARGEMONE (Pricklepoppy, Thistlepoppy)

Argemone platyceras Link and Otto (Pl 535, 536 and 537)

Found along Bright Angel and Kaibab Trails and on Moran Point on the South Rim. The variety hispidula gray was found along the Hermit Trail (Eastman 5862).

CORYDALIS (Corydalis)

Corydalis aurea Willd. (Capnoides aureum Kuntze.)

(Pl 538, 539, 540 and 541)

Found at Yavapai Point and along the South Entrance Road on the South Rim and at several places on the North Rim. Also on Bright Angel Trail in the Canyon.

46. CRUCIFERAE (MUSTARD FAMILY)

ARABIS (Rockcress)

Arabis fendleri (Wats.) Greene (Pl 542 and 543)

Found at Hermit Rest and along the Hermit Trail.

Arabis glabra (L.) Bernh. (Towermustard). (Pl 544)

Found at Robbers Roost on the North Rim.

Arabis gracilipes Greene (Pl 2207)

Found near Grand Canyon Lodge on Bright Angel Point.

Arabis perennans Wats. (Pl 545, 546, 547 and 548)

Found at Yavapai Point and Grandview Point on the South Rim and at Roaring Springs in Bright Angel Canyon.

Arabis pulchra Jones var. pallens Jones (Pl 2050)

Found along the Kaibab Trail.

ATHYSANUS

Athysanus pusillus (Hook.) Greene

Found along Hermit Creek (Eastman 6008).

CAMELINA (Falseflax)

Camelina microcarpa Andrz.

Found at Grandview on the South Rim (Eastman 5805).

CAULANTHUS (Wildcabbage)

Caulanthus crassicaulis (Torr.) Wats. (Pl 1869)

Found at Shoshone Point on the South Rim.

DESCURAINIA (Tansymustard)

Descurainia californica (Gray) Schulz (Pl 549, 555 and 559)
Found at Neal Spring on the North Rim.

Descurainia longipedicellata (Howell) (Sophia filipes (Gray)
Heller) (Pl 550)
Found along the Hermit Trail.

Descurainia halictorum Cockerell. (Pl 550 and 551)
Found near the Wayside Museum of Archaeology on the South
Rim.

Descurainia incisa (Engelm.) Britt. (Sophia incisa
(Engelm.) Greene) (Pl 552, 553, 554 and 556)
Found at Greenland Lake, Neal Spring and Cliff Spring on
the North Rim.

Descurainia obtusa (Greene) Schulz (Pl 558)
Found in Long Jim Canyon on the South Rim.

Descurainia pinnata (Walt.) Britton
Subspecies halictorum (Gill.) Detling was found near
El Tovar Hotel in 1916 and subspecies ochroleuca was found
along Hermit Creek (Eastman 6070A).

Descurainia sophia (L.) Webb (Pl 557)

DRABA (Draba, Whitlowwort)

Draba asprella Greene (Pl 560, 561, 562 and 563)
Found at Neal Spring and in Powell Saddle on the North
Rim. Var. kaibensis is reported by Kearney and Peebles as
having been collected at Grand Canyon by Cottam (Cottam 2650).

Draba cuneifolia Nutt. (Pl 1865)
Found at the junction of the Yavapai Point road with
Highway 64 on the South Rim.

Draba rectifrustra Hitchc. (Pl 564)
Found at Robbers Roost on the North Rim.

ERYSIMMUM (Erysimm, Western Wallflower)

Erysimm capitatum (Dougl.) Greene (Pl 565, 566 and 573)
Found at Yavapai Point and in Long Jim Canyon on the
South Rim, and at Neal Springs on the North Rim.

Erysimm elatum Nutt. (Pl 567, 568, 569, 570 and 571)
Found in Long Jim Canyon and in Grand Canyon Village on
the South Rim as well as along Hermit Trail, and also at
Greenland Lake on the North Rim.

Erysimum oblongeolatum Rydb. (Pl 2074, 2075, 2076 and 2077)
Found at Greenland Spring and elsewhere on the North Rim.

Erysimum repandum L. (Pl 572)
Found along the south Kaibab Trail.

HESPERIDANTHUS (Hesperidanthus)

Hesperidanthus linearifolius (Gray) Rydb. (Pl 574, 575, 576, 614, 615 and 2078)
Found in Long Jim Canyon on the South Rim, and at Greenland Lake, Ribbon Falls and Cape Royal on the North Rim.

LEPIDIUM (Pepperweed, Peppergrass)

Lepidium lasiocarpum Nutt.
Found along Hermit Creek (Eastman 5959)

Lepidium montanum Nutt. (Pl 577, 578, 579, 1877 and 2161)
Found in Toroweap Valley, Grand Canyon National Monument. The first three specimens are var. jonesi (Rydb.) Hitchc. While the last two are var. glabrum Hitchc.

Lepidium perfoliatum L.
Found at Grandview on the South Rim (Eastman 5809).

LESQUERELLA (Bladderpod)

Lesquerella arizonica Wats. (Pl 580, 581, 582, 583, 584, 585, 586 and 587)
Found in Long Jim Canyon and in Grand Canyon Village on the South Rim, along Hermit Trail in the Canyon, and in Slide Canyon and Grand Canyon National Monument on the North Rim.

Lesquerella intermedia (Wats.) Heller (Pl 588)
Found at Yavapai Point on the South Rim.

Lesquerella purpurea (Gray) Wats. (Pl 589 and 590)
Found at Hermit Rest on the South Rim and along the Hermit and Kaibab Trails and at Phantom Ranch in the Canyon.

PHYSARIA (Twinpod)

Physaria chambersi Rollins
Found along the North Kaibab Trail (Eastman and Howell 1028)

RORIPPA (Rorippa)

Rorippa nasturtium-aquaticum (L) Schinz and Thell.
(Watercress) (Pl 591, 592, 593 and 594)

Found along Bright Angel Trail and at Phantom Ranch in the Canyon.

Rorippa obtusa (Nutt.) Britton (Fieldcress) (Pl 595 and 1809)
Found at Neal Spring and Swamp Lake on the North Rim.

Rorippa palustris Besser (R. islandica (Oeder) Borbas)
(Marshcress) (Pl 596)

Found at Kanabownits Spring on the North Rim.

Rorippa sphaerocarpa (Gray) Britton (Pl 597)
Found at Kanabownits Spring on the North Rim.

SISYMBRIUM

Sisymbrium altissimum L. (Tumblemustard) (Pl 598 and 599)

Found at Hull Tank on the South Rim and along the Kaibab Trail in the Canyon.

Sisymbrium irio L.

Exotic. Found in Havasu Canyon by Clover (Clover 6425), and along Hermit Trail (Eastman 5960).

STANLEYA (Princesplume, Desertplume)

Stanleya pinnata (Pursh.) Britton (S. arcuata rydb.)
(Pl 600 to 610, inclusive)

Found along the Bright Angel Trail and the Kaibab Trail, both North and South, and in Havasu Canyon.

STREPTANTHUS (Twistflower)

Streptanthus cordatus Nutt. (Pl 612 and 613)

Found at Hermit Rest on the South Rim and along the South Kaibab Trail.

THELYPODIUM (Thelypody)

Thelypodium integrifolium (Nutt.) Engl.

Found at the foot of Bright Angel Trail (Wolf 3180).

Thelypodium wrighti Gray (Pl 616 and 617)

Found at Havasu Canyon and reported in the 1936 edition of our checklist as occurring at Grandview Point on the South Rim.

Thelypodium rhomboideum Rydb.

Found in Havasu Canyon by Clover (Clover 4379).

THLASPI (Pennycress)

Thlaspi fendleri Gray (T. purpurascens Rydb.)
(Pl 618, 619, 620, 621, 622 and 623)

Found at Buggeln Hill on the South Rim and at Robbers
Roost, Thompson Canyon and near the Checking Station on the
North Rim.

THYSANOCARPUS

Thysanocarpus laciniatus Nutt. var. crenatus (Nutt.) Brewer
Found along Hermit Creek (Eastman 5955).

47. CAPPARIDACEAE (CAPER FAMILY)

CLEOME (Spiderflower, Rocky Mountain Beeplant)

Cleome serrulata Pursh (Pl 624)

Collected in Grand Canyon Village and known to occur in
other places on both rims.

Cleome lutea Hook. (Yellow Spiderflower)

Found in Havasu Canyon by Clover and Jotter (4381 and
4395).

49. CRASSULACEAE (ORPINE FAMILY)

SEDUM (Stonecrop)

Sedum stenopetalum Pursh (Pl 625 and 626)

Found west of the old Checking Station on the North Rim.

50. SAXIFRAGACEAE (SAXIFRAGE FAMILY)

FENDLERA (Fendlebush, Fendlerbush)

Fendlera rupicola Gray (Pl 627, 628, 629, 630, 631, 632,
647, 650, 651, 652 and 653)

Found east of Hilltop on the South Rim, along Bright
Angel Trail, and one-half mile down on the Berry Trail.

FENDLERELLA (Fendlerella)

Fendlerella utahensis (Wats.) Heller (Pl 633, 634, 635,
636 and 637)

Found at Grandview Point on the South Rim, along Bright
Angel and Kaibab Trails, and at Cape Royal on the North Rim.

HEUCHERA (Alumroot)

Heuchera parvifolia Nutt. (Pl 638)

Collected at Robbers Roost and in Little Dutchman Pasture on the North Rim, and found at Grandview Point and near Bass Camp on the South Rim. Our plants are probably variety arizonica Rosendahl et al., the type of which was collected at Grand Canyon (Eastwood 5775).

Heuchera rubescens Torr. (Pl 640, 641, 642, 643 and 644)

Found at Neal Spring, Greenland Lake, and Uncle Jim Point on the North Rim and at Grandview Point on the South Rim.

Heuchera versicolor Greene (Pl 639 and 1801)

Found along the Bright Angel and North Kaibab Trails.

LITHOPHRAGMA (Woodland Star)

Lithophragma tenella Nutt. (L. australis Rydb.)

(L. bulbifera Rydb.) (Pl 645 and 646)

Found in Long Jim Canyon and four miles east of Moran Point on the South Rim.

PHILADELPHUS (Mockorange)

Philadelphus microphyllus Gray (Pl 648 and 649)

Found along Bright Angel Trail at 5500 feet and in Bass Canyon at 6500 feet. Var. argenteus (Rydb.) Kearney and Peebles (P. argenteus Rydb.) has been collected at Point Imperial on the North Rim.

Philadelphus serpyllifolius Gray (P. argyrocalyx Woot.)

(Pl 650, 651, 652, 653, 654)

Found along the Hermit Trail at 5000 feet, along the Kaibab Trail at 6300 feet, and at Point Imperial and Bright Angel Point on the North Rim.

RIBES (Currant, Gooseberry)

Ribes cereum Dougl. (Wax Currant) (Pl 655, 656, 657, 658, 659 and 660)

Found at Buggeln Hill, Bass Camp, and Pasture Wash on the South Rim.

Ribes inebrians Lindl. (Squaw Currant) (Pl 661, 662, 663, 664, 665 and 666)

Found at various points along the South Rim and along the upper parts of the trails leading into the Canyon. Also at Cape Royal on the North Rim and in the upper part of Bass Canyon.

Ribes inerme Rydb. (Whitestem Gooseberry) (Pl 667)

Found at Point Imperial on the North Rim.

Ribes leptanthum Gray (Gooseberry) (Pl 668, 669, 670, 671, 672, 673 and 674)

Found at Neal Spring, on Bright Angel Point and on Powell Plateau on the North Rim, on Grandview Point on the South Rim, and on the upper parts of both the Bright Angel and Kaibab Trails

Ribes montigenum McClatchie

Found at Neal Spring on the North Rim (H. and V. Bailey 1231).

Ribes velutinum Greene (Gooseberry) (Pl 675 and 676)

Found at Grandview Point on the South Rim and along the Bright Angel Trail at 6500 feet elevation.

Ribes viscosissimum Pursh (Pl 677 and 678)

Found at Grandview Point on the South Rim. Not known to occur elsewhere in Arizona.

SAXIFRAGA (Saxifrage)

Saxifraga rhomboidea Greene (Pl 679, 680, 681 and 2079)

Found near the Checking Station on the North Rim, and at Hull Tank on the South Rim.

52. CROSSOSOMATACEAE (CROSSOSOMA FAMILY)

CROSSOSOMA (Crossosoma)

Crossosoma parviflorum Robins. and Fern.

Known only from the type specimen collected in the Grand Canyon (Gray in 1885). The type specimen shows fruit but not flowers and there is some question whether it is specifically distinct from C. bigelovi Wats. which occurs elsewhere in Arizona.

53. ROSACEAE (ROSE FAMILY)

AMELANCHIER (Serviceberry)

Amelanchier goldmani Woot. and Standl. (Pl 684, 685 and 686)

Found at Kanabownits Spring, Neal Spring, and Cape Royal on the North Rim.

Amelanchier nitens Tidestr. (Pl 2159)
Found along the Kaibab Trail.

Amelanchier polycarpa Greene (Pl 687 and 688)
Found along the Kaibab Trail from 4100 to 5500 feet, and known to occur on the North Rim. Not known to occur elsewhere in Arizona.

Amelanchier utahensis Koehne (Pl 682, 683 and 689 to 702, inclusive)
Found at Grandview and Yavapai Points on the South Rim and along the upper parts of all trails leading into the Canyon.

CERCOCARPUS (Mountain Mahogany)

Cercocarpus intricatus Wats. (Pl 703, 704, 705 and 706)
Found at Bright Angel Spring on the North Rim and at an unspecified location on the South Rim. Our specimens are mostly variety villosus Schneider (C. arizonicus Jones.)

Cercocarpus ledifolius Nutt. (Pl 707, 708, 709, 710 and 711)
Found at Bright Angel and Uncle Jim Points and at Point Imperial on the North Rim, at Grandview Point on the South Rim, and one-half mile down on the Berry Trail. Not known to occur elsewhere in Arizona.

Cercocarpus montanus Raf. (Pl 712, 713, 714, 715, 716, 717 and 718)
Found at Powell Spring on the North Rim, along the upper parts of Hermit and Berry Trails, and at Roaring Spring on the Kaibab Trail.

CHAMAEBATIARIA (Tansybush, Desertsweet, Fernbush)

Chamaebatiaria millefolium (Torr.) Maxim. (Pl 719, 720, 721 and 722)
Common on both Rims.

COLEOGYNE (Blackbrush)

Coleogyne ramosissima Torr. (Pl 723, 724, 725 and 726)
Very abundant on the Tonto Shelf.

COWANIA (Cliffrose, Quininebush)

Cowania stansburiana Torr. (Pl 727 to 737, inclusive)
Common on both Rims.

FALLUGIA (Apacheplume)

Fallugia paradoxa (D. Don) Endl. (Pl 738, 739, 740, 741 and 742)

Quite common in the Canyon and occurring at various places on both Rims.

FRAGARIA (Strawberry)

Fragaria cuneifolia Nutt. (F. ovalis (Lehm.) Rydb.)
(Pl 743, 744 and 745)

Found near the Checking Station on the North Rim.

GEUM (Avens)

Geum strictum Ait. (Pl 746)

Found at Neal Spring and Kanabownits Spring on the North Rim.

HOLIDISCUS (Rockspiraea, Oceanspray)

Holidiscus discolor (Pursh) Maxim. var. dumosus (Nutt.) Dippel
(Pl 747, 748, 749, 750, 751 and 752)

Found at Neal Spring, Robbers Roost and near Grand Canyon Lodge on the North Rim. Var. glabrescens (Greenman) Jepson has been collected eight miles east of Grand Canyon Village on the South Rim.

POTENTILLA (Cinquefoil)

Potentilla anserina L. var. concolor Seringe (Silverweed)
(Pl 753)

Found in DeMotte Park just outside the park boundary on the North Rim.

Potentilla biennis Greene

Found west of Grand Canyon Village (Herbarium of the Museum of Northern Arizona B5114). Reported from Grand Canyon by Kearney and Peebles (Toumey 98). Not known to occur elsewhere in Arizona.

Potentilla diversifolia Lehm. (Pl 754, 755, 756 and 757)

Found at Kanabownits Spring and in a meadow near the Checking Station on the North Rim.

Potentilla hippiana Lehm. (Pl 758, 759 and 760)

Found in the meadow near the North Rim Checking Station and in Fuller Canyon on the North Rim.

Potentilla monspeliensis L. (Pl 761, 762, 763 and 764)
Found at Kanabowmits Spring, Neal Spring and Greenland Lake on the North Rim.

Potentilla osterhouti (Nels.) J. T. Howell (Pl 777)
Found at Cliff Spring, Point Sublime, and Bright Angel Point on the North Rim.

Potentilla paradoxa Nutt. (Pl 765 and 766)
Found at Cliff Spring on the North Rim. The proper identification of this species is somewhat in question.

Potentilla propinqua Rydb. (P. hippiana Lehm. var. diffusa (Gray) Lehm.) (Pl 767 and 768)
Found at Robbers Roost and Greenland Lake on the North Rim.

Potentilla pulcherrima Lehm. (Pl 769)
Found at Kanabowmits Spring on the North Rim.

PETROPHYTUM (Rockmat)

Petrophytum caespitosum Rydb. (Spiraea caespitosa Nutt.) (Pl 770, 771, 772, 773 and 774)
Common on both Rims. Var. elatior Wats. has been collected in Havasu Canyon and along Bright Angel Trail near the Colorado River.

PRUNUS (Cherry, Plum, Peach, Apricot)

Prunus fasciculata (Torr.) Gray
Found in the Canyon at Tanner Rapids and Hermit Rapids by Clover and Jotter (2296, 2298A and 2299)

Prunus virginiana L. var. demissa (Nutt.) Torr. (Chokecherry) (Pl 775 and 776)
Found at Neal Spring on the North Rim.

ROSA (Rose)

Rosa stellata Wootton (Pl 778)
Reported by Kearney and Peebles as having been found on Powell Plateau on the North Rim in 1908 (Ferriss in 1908). A specimen in the Grand Canyon Herbarium collected by Hawbecker in 1935 on the Mesa Ermita on the South Rim appears to be R. stellata var. mirifica (R. mirifica Greene). The species is not known to occur elsewhere in Arizona.

Rosa woodsii Lindl. var. fendleri (R. fendleri Crepin)
(Pl 779 and 780)

Abundant on limited areas east of Grandview on the South Rim.

Rosa arizonica Rydb. (Pl 781, 782 and 783)

Found at Neal Spring and Cape Royal on the North Rim.

RUBUS (Blackberry, Raspberry)

Rubus idaeus L. var. strigosus (R. strigosus Michx var. arizonicus (Greene) Kearney and Peebles) (Pl 784)

Collected at Bright Angel Spring on the North Rim and found at various places on the North Rim.

Rubus neomexicanus Gray (Pl 785, 786 and 787)

Found along the North Kaibab Trail and on Bright Angel Point on the North Rim.

Rubus procerus Muell (Pl 788)

Found at Indian Gardens. Exotic.

SORBUS (Mountainash)

Sorbus dumosa Greene (Pl 789 and 790)

Found at Point Imperial and at the head of Kaibab Trail on the North Rim.

54. LEGUMINOSAE (PEA FAMILY)

ACACIA (Acacia)

Acacia greggi Gray (Catclaw) (Pl 791, 792 and 793)

Found in Havasu Canyon, along Shimmo Creek, the lower part of Bright Angel Trail, and in other places in the bottom of the Canyon on both sides of the River.

AMORPHA (Amorpha)

Amorpha fruticosa L. var. occidentalis (Abrams) Kearney and Peebles. (Indigobush).

Found at Deer Creek Falls by Clover and Jotter (2340).

ASTRAGALUS (Loco, Milkvetch, Poisonvetch, Locoweed)

Astragalus artipes Gray (Pl 794 and 795)

Found in Long Jim Canyon and near the Rim three miles east of Yaki Point on the South Rim.

Astragalus amphioxys Gray (Pl 796 and 2017)

Found along Pipe Creek and Hermit Rest Trail in the canyon. Specimen 2017 is the variety melanocalyx (Rydb.) Tidestrom.

Astragalus bryanti Barneby

The type specimen of this species was collected by Dr. H. C. Bryant at the head of Phantom Creek in 1939. It has also been collected at the mouth of Hermit Creek (Eastwood 5991).

Astragalus curtilobus Tidestrom (Pl 798)

Found near Grandview Point on the South Rim.

Astragalus diphyus Gray (Blue Loco) (Pl 799, 800 and 801)

Found at Robbers Roost, Cliff Springs and Greenland Point on the North Rim.

Astragalus hosackiae Greene (Pl 802)

Found in Long Jim Canyon on the South Rim.

Astragalus humistratus Gray (Pl 803, 821 and 2019)

Found along Bright Angel Trail and at Robbers Roost and Marble Flat on the North Rim. Both the varieties sonorae (Gray) Jones and tenerimus Jones are represented among our specimens.

Astragalus impensus (Sheld.) Woot. and Standl.

(Pl 804 to 809, inclusive)

Found at Cape Royal and Cliff Springs on the North Rim.

Astragalus lentiginosus Dougl. (Specklepod Loco)

(Pl 810, 811, 2016, 2052 and 2209)

Found along the Hermit and Kaibab Trails and at Shoshone Point on the South Rim. It is also known to occur on the North Rim. The varieties mokiaceus (Gray) Young and palans Jones are represented among our specimens and the type of variety oropedi Barneby (Eastman and Howell 7064) was collected on the North Kaibab Trail.

Astragalus newberryi Gray (Pl 812)

Found one-half mile east of Hermit Rest.

Astragalus nuttallianus DC. (Pl 803)

Found along Bright Angel Trail.

Astragalus praelongus Sheldon (Pl 1994)

Found at Lee Canyon on the Topocobya Trail on the South Rim and in Havasu Canyon.

Astragalus purshi Dougl. (Pl 812)

A specimen in the Grand Canyon Herbarium, collected by Hawbecker in 1935 one-half mile east of Hermit Rest on the South Rim is so labeled. Since this is beyond the normal range of the species the specimen may have been incorrectly identified.

Astragalus scaposus Gray (Pl 813, 814 and 815)

Found along Hermit Trail and along the South Entrance Road. This species is very close to A. calyoosus and may not be distinct from it.

Astragalus sonorae Gray var. tenerimus (Jones) Kearney and Peebles (Pl 816)

Found in the Kaibab Basin on the North Rim.

Astragalus thompsonae Wats. (Pl 817, 818, 819 and 820)

Found along the road leading to Rowe Well on the South Rim.

Astragalus zionis Jones

Found at the mouth of Hermit Creek (Eastman 5993).

CASSIA (Senna)

Cassia covesi Gray (Pl 822, 823, 824 and 826)

Found at Phantom Ranch, along Clear Creek Trail and in Havasu Canyon.

CERCIS (Redbud)

Cercis occidentalis Torr. (Pl 827, 828, 829, 830 and 831)

Found along the Bright Angel and Hermit Trails.

KRAMERIA (Krameria)

Krameria parvifolia Benth.

This species is reported in Kearney and Peebles as occurring in the bottom of Grand Canyon and was collected there by Clover and Jotter (2383).

LATHYRUS (Peavine)

Lathyrus arizonicus Britton (Pl 2210)

Found near Bishop's Cabin on the South Rim.

Lathyrus graminifolius (Wats.) White (Pl 832, 838, 834 and 835)

Found along the Bright Angel and Hermit Trails.

Lathyrus euocosmus Butters and St. John (Pl 836 and 1797)

Found in Long Jim Canyon and at Yavapai Point on the South Rim.

Lathyrus parvifolius Wats. (Pl 837, 839 and 2211)

Found along the Kaibab Trail at about 7250 feet elevation.

LOTUS (Deervetch, Deerclover)

Lotus longebracteatus Rydb. (Pl 840, 841 and 842)

Found along the South Entrance Road on the South Rim and in Big Spring Canyon on the North Rim.

Lotus utahensis Ottley (Pl 843 and 844)

Found at Robbers Roost, Neal Spring and elsewhere on the North Rim.

LUPINUS (Lupine)

Lupinus brevicaulis Wats.

Found along Bright Angel Trail (Eastman 6090).

Lupinus hilli Greene (Pl 845, 846, 847 and 852)

Found in Long Jim Canyon and near Rowe Well on the South Rim, and near the cafeteria on the North Rim.

Lupinus kingi Wats. (L. sileri Wats.) (Pl 848, 849 and 850)

Found near Cape Royal and in Kaibab Basin on the North Rim, and at Grandview Point on the South Rim.

Lupinus osterhoutianus C. P. Smith (Pl 1798)

A pink flowered variety found near the cafeteria on the North Rim.

Lupinus palmeri Pursh (Pl 851 853, 854, 855 and 856)

Found near the park boundary east of the South Entrance highway.

MEDICAGO (Medic)

Medicago lupulina L. (Black Medic). (Pl 857 and 858)

Found at Neal Spring and Cliff Spring on the North Rim.

MELILOTUS (Sweetclover)

Melilotus alba Desr. (White Sweetclover) (Pl 859, 860 and 861)

Common along the Rim Road on the South Rim and known to occur on the North Rim. Exotic. Native to Eurasia.

Melilotus officinalis (L.) Lam. (Yellow Sweetclover)
(Pl 862)

Collected at Greenland Lake on the North Rim and common along the Rim Road on the South Rim. Exotic. Native to Eurasia.

Melilotus indica (L) All. (Pl 2208)

Found along West Rim Drive and near Rowe Well on the South Rim and in Havasu Canyon.

OXYTROPIS (Crazyweed, White Loco)

Oxytropis lamberti Pursh (*O. sericea* Nutt.)
(Pl 863 and 864)

Found in Long Jim Canyon and near Shoshone Point on the South Rim.

PETALOSTEMON (Prairieclover)

Petalostemon candidus Michx. (*P. oligophyllum* (Torr.) Rydb.
(White Sweetclover) (Pl 865, 866 and 867)

Found near Rowe Well on the South Rim and at Cape Royal and Cliff Springs on the North Rim.

Petalostemon searlsiae Gray (Pl 868, 869 and 870)

Found on Buggeln Hill, near the Wayside Museum of Archaeology, and in Havasu Canyon on the South Rim.

PHASEOLUS (Bean)

Phaseolus angustissimus Gray (Pl 871, 872, 873 and 874)

Found near the Yavapai Road junction on the South Rim and reported in the 1936 edition of our checklist (as *P. dilatatus* Woot. and Standl.) as occurring in Long Jim Canyon and at Rowe Well on the South Rim.

PROSOPIS (Mesquite)

Prosopis glandulosa Torr. (*P. juliflora* (Swartz) DC var.
glandulosa (Torr.) Cockerell). (Pl 875, 876 and 878)

Found at Indian Gardens and Phantom Ranch in the Canyon and in Havasu Canyon.

PSORALEA (Sourfpea)

Psoralea tenuiflora Pursh (Pl 879, 880, 881 and 882)

Found at Rowe Well on the South Rim and at Powell Spring and in the vicinity of Piute Point on the North Rim, and reported as occurring at Cape Royal on the North Rim.

ROBINIA (Locust)

Robinia neomexicana Gray (Pl 883, 884, 885, 886, 887 and 888)

Common on both Rims.

TRIFOLIUM (Clover)

Trifolium andinum Nutt (Pl 889 and 2164)

We have one specimen, collected at Cape Royal on the North Rim in 1929. The species is not known to occur elsewhere in Arizona.

Trifolium fendleri Greene (Pl 890)

Found at an unspecified place on the North Rim in 1933 and so identified by the U. S. National Herbarium. It looks like *T. pinetorum*.

Trifolium hybridum L. (Alsike Clover). (Pl 891)

Found near the Checking Station on the North Rim. Exotic. Native to Europe. Not known to occur elsewhere in Arizona.

Trifolium pinetorum Greene (Pl 892 and 893)

Found at Neal Spring, Fawn Spring, Greenland Lake, Robbers Roost and near Bright Angel Point on the North Rim. Also in DeMotte Park just outside the North Park Boundary.

Trifolium repens L. (White Clover) (Pl 894)

Found at Bright Angel Spring on the North Rim. Exotic. Native to Europe.

Trifolium subcaulescens Gray (Pl 895)

Found near Grandview Point on the South Rim.

VICIA (Vetch)

Vicia americana Muhl. (Pl 896 and 2212)

Found at Neal Spring and Cliff Spring on the North Rim, and near Bishop's Cabin on the South Rim.

55. GERANIACEAE (GERANIUM FAMILY)

ERODIUM (Heronbill)

Erodium cicutarium (L.) L'Her. (Alfileria, Filaree).
(Pl 897, 898, 899, 900 and 1824)

Found at Hermit's Rest on the South Rim and along the Hermit Trail, at Phantom Ranch and at various places on the Tonto Shelf in the Canyon.

Erodium texanum Gray

Found in Havasu Canyon by Clover and Jotter (6412).

GERANIUM (Geranium, Cranesbill)

Geranium atropurpureum Heller (Pl 901, 902, 903, 904, 905 and 906)

Collected in Long Jim Canyon on the South Rim and at Kanabowmits Spring, Farview Point and along Trancept Trail on the North Rim. Common in ponderosa pine forests on both rims. Most of our specimens have glandular pubescence on the pedicels and sometimes on the stems and, therefore, are variety furcatum (Hanks) Kearney and Peebles (G. furcatum Hanks).

Geranium richardsoni Fisch. and Trautv. (Pl 907, 908, 909, 910 and 911)

Found at Neal Spring, Greenland Lake, and Cape Royal on the North Rim.

57. LINACEAE (FLAX FAMILY)

LINUM (Flax)

Linum lewisi Pursh (Pl 912, 913 and 914)

Found along the Rim Road three miles east of Yaki Point, at Rowe Well and at Hilltop on the South Rim, and along Bright Angel Trail at about 4000 feet elevation in the Canyon. It also occurs, especially along roads, on the North Rim.

Linum puberulum (Engelm.) Heller (Pl 1992 and 1996)

Found along Topocoby Trail and Lee Canyon on the South Rim and in Grand Canyon National Monument.

58. ZYGOPHYLLACEAE (CALTROP FAMILY)

LARREA (Creosotebush)

Larrea tridentata (DC) Coville (Pl 915)

Found in the lower end of Toroweap Valley in Grand Canyon National Monument.

TRIBULUS (Caltrop)

Tribulus terrestris L. (Pl 916)

Found in Havasu Canyon. Exotic. Native to southern Europe.

59. RUTACEAE (RUE FAMILY)

PTELEA (Hoptree)

Ptelea pallida Greene (Pl 917 to 927, inclusive, and 2042 and 2051)

Found at Yaki Point on the South Rim, at Bright Angel Point on the North Rim, and along all trails leading into the Canyon.

THAMNOSMA (Desertrue)

Thamnosma montana Torr. and Frem. (Turpentine broom)
(Pl 928 to 934, inclusive)

Found along Bright Angel Trail, along Pipe Creek, and in Hermit Basin in the Canyon, and in the lower end of Toroweap Valley in Grand Canyon National Monument.

62. MALPIGHIACEAE (MALPIGHIA FAMILY)

JANUSIA

Janusia gracilis Gray (Pl 929, 930 and 2172)

Found at Phantom Ranch and along Clear Creek Trail above Bright Angel Creek.

63. POLYGALACEAE (MILKWORT FAMILY)

POLYGALA (Polygala, Milkwort)

Polygala alba Nutt.

We have no specimen of this but the species is reported by Kearney and Peebles as occurring in the park.

64. EUPHORBIACEAE (SPURGE FAMILY)

BERNARDIA (Bernardia)

Bernardia incana Morton (Pl 931 to 938, inclusive, and 2066)

Found along the Kaibab Trail, Clear Creek and Shinumo Creek, and in Havasu Canyon and Grand Canyon National Monument.

DITAXIS (Ditaxis)

Ditaxis neomexicana (Muell. Arg.) Heller (Pl 939)

Found along Clear Creek Trail above Phantom Point.

EUPHORBIA (Euphorbia, Spurge)

Euphorbia arizonica Engelm. (Pl 940, 941, 942 and 943 and 2027)

Found at Phantom Ranch, along the Clear Creek Trail, and at Roaring Spring on the Kaibab Trail, and known to occur also on the North Rim.

Euphorbia fendleri Torr. and Gray (Pl 944 and 945)

Found near the South Entrance Road and near Grandview Point on the South Rim and at Cape Royal on the North Rim.

Euphorbia incisa Engelm. (Pl 948, 949, 950, 951 and 952)

Found along the Pasture Wash Road on the South Rim and at Greenland Lake on the North Rim.

Euphorbia lurida Engelm. (Pl 1876)

Found at the junction of the Yavapai Point road with Highway 64 and west of Grand Canyon Village on the South Rim.

Euphorbia palmeri Engelm. (Pl 946, 947 and 2029)

Found near the park boundary east of the South Entrance Road and at Kanabownits Spring on the North Rim.

Euphorbia polycarpa Benth. var. hirtella Boise. (Pl 2154)
Found along Clear Creek Trail in the Canyon.

Euphorbia revoluta Engelm.
Found along the Bright Angel Trail (Eastman 3706).

65. CALLITRICHEACEAE (WATERSTARWORT FAMILY)

CALLITRICHE (Waterstarwort)

Callitriche palustris L. (Pl 953)
Found at Lookout Lake outside of the park boundary on the North Rim.

67. ANACARDIACEAE (CASHEW FAMILY)

RHUS (Sumac)

Rhus trilobata Nutt. (Skunkbush, Squawbush) (Pl 954, 955, 956, 957, 958, 595, 960 and 961)
Found in Bright Angel Canyon, at Indian Gardens, along Hermit Trail, in Havasu Canyon, and in Grand Canyon National Monument.

68. GELASTRACEAE (BITTERSWEET FAMILY)

CANOTIA (Canotia)

Canotia holacantha Torr. (Pl 962)
Found in Havasu Canyon

FORSELLESIA (Greasebush)

Forsellesia nevadensis (Gray) Greene (Pl 963 to 969, inclusive)
Found along Bright Angel Trail, on the Tonto Shelf, and in Grand Canyon National Monument.

MORTONIA (Mortonia)

Mortonia utahensis A. Nels. (M. scabrella Gray var. utahensis Coville) (Pl 970)
Found in Havasu Canyon.

PACHISTIMA (PACHYSTIMA) (Pachistima, Boxleaf)

Pachistima myrsinites (Pursh) Raf. (Myrtle Boxleaf, Mountain
Lover) (Pl 971)

Found at Robbers Roost on the North Rim and Powell Saddle
on the North Rim.

69. ACERACEAE (MAPLE FAMILY)

ACER (Maple)

Acer glabrum Torr. (Rocky Mountain Maple) (Pl 972)

Collected on the North Kaibab Trail. The species occurs
in various places along the slopes of the Kaibab Limestone on
both Rims.

Acer grandidentata Nutt. (Bigtooth Maple) (Pl 973, 974,
975 and 976)

Found along the North Kaibab Trail and east of Grandview
Point on the South Rim.

Acer negundo L. var. interius (Britton) Sarg. (A. interius
Britton) (Box-elder). (Pl 977 and 978)

Found along the North Kaibab Trail and in Havasu Canyon.

71. RHAMNACEAE (BUCKTHORN FAMILY)

CEANOTHUS (Ceanothus)

Ceanothus fendleri Gray (Buckbrush) (Pl 979 and 980)

Found at Cape Royal and Greenland Lake on the North Rim
and believed to occur also on the South Rim.

Ceanothus greggi Gray (Pl 981, 982, 983 and 984)

Found on Shoshone Point and just below Tahuta Point on
the Big Thumb on the South Rim, in Powell Saddle on the North
Rim, and in Grand Canyon National Monument.

Ceanothus martini M. E. Jones (Pl 985, 986 and 987)

Found at the base of Transept Trail, at the head of Roar-
ing Springs Canyon, and at Uncle Jim Point on the North Rim.

CONDALIA (Condalia)

Condalia lycioides (Gray) Weberb. (Zizyphus lycioides Gray)
(Lotebush) (Pl 988 and 989)

Found in Havasu Canyon and reported as occurring in
Shinumo Canyon and on the Great Thumb.

RHAMNUS (Buckthorn)

Rhamnus betulaeifolia Greene (Birchleaf Buckthorn)
(Pl 990, 991, 992, 993 and 2042)

Found at Roaring Springs on the North Kaibab Trail and on
both the Bright Angel Trail and the South Kaibab Trail. Also
in Toroweap Valley in Grand Canyon National Monument.

72. VITACEAE (GRAPE FAMILY)

PARTHENOCISSUS (Creepew, Virginiacreepew)

Parthenocissus vitacea (Knerr) Hitchc.

Found in Havasu Canyon by Clover and Jotter (4388).

VITIS (Grape)

Vitis arizonica Engelm. (Canyon Grape) (Pl 994)

Collected at Roaring Springs and reported as occurring at
other places along Bright Angel Creek, in Cataract Canyon, and
in Nankoweap Basin.

74. MALVACEAE (MALLOW FAMILY)

ILIAMNA (Wild-hollyhock)

Iliamna grandiflora (Rydb.) Wiggins (Phymosa grandiflora
Rydb.) (Pl 995)

Found in South Canyon on the Kaibab Plateau outside the
north boundary of the park.

MALVA (Mallow)

Malva neglecta Wallr. (M. rotundifolia of authors. Not L.)
(Pl 996 and 997)

Found at Neal Spring on the North Rim, and in Grand Canyon
Village and Havasu Canyon.

SIDALCEA (Checkermallow)

Sidalcea neomexicana Gray (Pl 998 and 999)
Found on the Buggeln Ranch on the South Rim.

SPHAERALCEA (Globemallow)

Sphaeralcea angustifolia (Cav.) G. Don var. cuspidata Gray
(Pl 1000)
Found at Rowe Well on the South Rim.

Sphaeralcea fendleri Gray (Pl 1001)
Found in Havasu Canyon.

Sphaeralcea grossulariaefolia (Hook. and Arn.) Rydb.
var. pedata (Torr.) Kearney (Pl 1002, 1003 and 1004)
Found along the Bright Angel and South Kaibab Trails and
in Havasu Canyon.

Sphaeralcea incana Torr. var. cuneata Kearney
Found in Havasu Canyon by Clover (Clover 165).

Sphaeralcea parvifolia Nels. (S. marginata York)
(Pl 1002 to 1009, inclusive)
Found at Yavapai Point, along the Berry Trail below
Grandview Point, in Pasture Wash, at Hilltop, in Havasu Canyon,
and at various other places on both Rims.

Sphaeralcea rusbyi Gray
Found along Hermit Trail (Eastman 6052) and along Bright
Angel Trail (Meiere in 1917).

Sphaeralcea subhastata Coult. var. connata Kearney
(Pl 1010 and 1011)
Found along Dripping Springs Trail.

75. STERCULIACEAE (CACAO FAMILY)

AYENIA (Ayenia)

Ayenia pusilla L. (Pl 1012)
Found along Clear Creek Trail below Phantom Point.

76. HYPERICACEAE (ST. JOHNSWORT FAMILY)

HYPERICUM (St. Johnswort)

Hypericum anagalloides Cham. and Schlecht. (Pl 1013)
Found at Lookout Lake on the North Rim.

Hypericum formosum H. B. K. (Pl 1014)
Found at Kanabowitz Spring and in several other moist situations on the North Rim.

82. VIOLACEAE (VIOLET FAMILY)

VIOLA (Violet)

Viola canadensis L. (White Violet) (Pl 1015, 1016 and 1788)
Found at Road Spring on the North Rim.

Viola nephrophylla Greene (Blue Violet) (Pl 1017 and 1018)
Found at Neal Spring and Kanabowitz Spring on the North Rim.

84. LOASACEAE (LOASA FAMILY)

MENTZELIA (Mentzelia, Stickleaf, Blazingstar)

Mentzelia albicaulis Dougl. (Pl 1019)
Found in Grand Canyon National Monument.

Mentzelia integra (Jones) Tidestrom
Found along the Kaibab Trail in the Canyon (Clover 4151).

Mentzelia multiflora (Nutt.) Gray (M. pumila var. multiflora (Nutt) Urban and Gilg) (Pl 1020)
Found at Point Sublime on the North Rim, in Grand Canyon Village on the South Rim, and along the South Kaibab Trail in the Canyon.

Mentzelia rusbyi Woot. (Pl 1021)
Found on Point Sublime on the North Rim and at the Lauzon Ranch, outside the park, on the South Rim.

PETALONYX (Sandpaperplant)

Petalonyx parryi Gray

Found in Havasu Canyon (Clover 6463).

EUCNIDE (Rocknettle)

Eucnide urens Parry (Pl 1022 and 2161)

Found in Havasu Canyon and along the lower part of Bright Angel Trail.

85. CACTACEAE (CACTUS FAMILY)

ECHINOCACTUS (Barrelcactus)

Echinocactus acanthodes Lemaire (Ferocactus acanthodes Brit. and Rose) California Barrelcactus

Reported by Clover and Jotter as occurring near the Bass Cable in the Canyon and at several other localities.

Echinocactus lecontei Engelm. (Ferocactus lecontei Britt. and Rose) California Barrelcactus

Reported in the 1936 edition of our checklist as occurring on the Tonto Shelf in the Canyon.

ECHINOCEREUS (Hedgehogcactus)

Echinocereus canyonensis Clover and Jotter

Found near the Bass Cable in the Canyon. (Type, Clover and Jotter, 2317).

Echinocereus engelmanni (Parry) Rumppler

Found in Havasu Canyon (Clover and Jotter 4334) and at Hermit Rapids, Cape Royal and along Bright Angel Creek.

Echinocereus fendleri (Engelm.) Rumppler

Reported by Clover and Jotter as occurring in Havasu Canyon, at Hermit Rapids, and at the mouth of Bright Angel Creek.

Echinocereus octacanthus (Muhlenpfordt) Britt. and Rose

Found near Bright Angel Creek, along Hermit Creek, and two miles above Bass Cable in the Canyon. (Clover and Jotter 2303 and 2317A).

MAMMILLARIA (Fishhook Cactus, Pincushion Cactus)

Mammillaria arizonica Engelm. (Coryphantha arizonica Britt. and Rose)

Reported in the 1936 edition of our checklist as occurring both on the North Rim and in the Canyon. It is believed to occur also on the South Rim.

Mammillaria tetrancistra Engelm. (Phellosperma tetrancistra Britt. and Rose)

Found in Havasu Canyon (Clover and Jotter 4442) and in several places in Grand Canyon.

OPUNTIA (Pricklypear, Cholla, Cane Cactus)

Opuntia aurea Baxter

Found at Indian Gardens in the Canyon (Clover and Jotter 4165).

Opuntia chlorotica Engelm. and Bigel.

Found two miles above Bass Cable in the Canyon and in Havasu Canyon, (Clover and Jotter 2316 and 4441).

Opuntia engelmanni Salm-Dyck

Reported by Clover and Jotter as occurring in Havasu Canyon and at several places in Grand Canyon.

Opuntia erinacea Engelm.

Found at Bass Cable and in Havasu Canyon (Clover and Jotter 4434).

Opuntia hystricina Engelm. and Bigel.

Reported in the 1936 edition of our checklist as having been collected in Nankoweap Basin and reported by Clover and Jotter from several places in the park.

Opuntia mojavensis Engelm.

Found in Havasu Canyon (Clover and Jotter 4436).

Opuntia phaeacantha Engelm.

Found in Havasu Canyon and at Indian Gardens on Bright Angel Trail (Clover and Jotter 4167).

Opuntia polycantha Haworth

Reported by Clover and Jotter as having been found at Hermit Creek and several other places in the Canyon.

Opuntia rhodantha Schum.

Found at Cape Royal on the North Rim (Clover and Jotter 4330).

Opuntia vaseyi (Coulter) Britt. and Rose

Found two miles above Bass Cable in the Canyon (Clover and Jotter 2318).

Opuntia whipplei Engelm. and Bigel.

This is the common cholla or cane cactus on both Rims.

86. ELAEAGNACEAE (OLEASTER FAMILY)

SHEPHERDIA (Buffaloberry)

Shepherdia rotundifolia Parry (Lepargyrea rotundifolia Greene) (Pl 1023, 1024, 1025 and 2163)

Found at Cape Royal on the North Rim and at Lipan Point on the South Rim. It is also known to occur at various other rocky points on both Rims.

88. ONAGRACEAE (EVENINGPRIMROSE FAMILY)

EPILOBIUM (Willowweed)

Epilobium adenocaulon Hausskn. (Pl 1026)

Found at Fawn Spring on the North Rim.

Epilobium alpinum L. (Pl 1027 and 1028)

Found at Milk Creek on the North Rim.

Epilobium angustifolium L. (Fireweed) (Pl 1029 and 1030)

Found at various places along roads on the North Rim.

Epilobium californicum Hausskn. (Pl 1031)

Found at Robbers Roost on the North Rim.

Epilobium fastigiatum (Nutt.) Piper (Pl 1032)

Found at Greenland Spring on the North Rim.

Epilobium halleianum Hausskn. (E. drummondi Hausskn.)

(Pl 1033, 1034 and 1035)

Found in Kaibab Basin and in DeMotte Park just outside the north park boundary on the North Rim.

Epilobium paniculatum Nutt. (Pl 1036)

Found at Neal Spring on the North Rim.

GAURA (Gaura)

Gaura coccinea Nutt. (Pl 1037, 1038 and 1039)

Found at Pasture Wash on the South Rim and in Havasu Canyon.

Gaura parviflora Dougl. (Pl 1040)

Found in Havasu Canyon on the South Rim.

GAYOPHYTUM (Groundsmoke)

Gayophytum nuttalli Torr. and Gray (Pl 1041, 1042, 1043, 1044 and 2031)

Found at Hull Tank on the South Rim and at Robbers Roost and at Greenland Spring and along the road between Farview and Cape Royal on the North Rim. Some of our specimens are variety typicum Munz.

Gayophytum ramosissimum Torr. and Gray (Pl 1045)

Found in Fuller Canyon on the North Rim.

OENOTHERA (Eveningprimrose)

Oenothera brevipes Gray (Pl 1046)

Found on the South Kaibab Trail at about 5500 feet.

Oenothera caespitosa Nutt var. marginata (Nutt.) Munz
(Pl 1047, 1048 and 1049)

Found at Pasture Wash, at Rowe Well, and along the road to Hilltop on the South Rim.

Oenothera multijuga Wats. var. parviflora (Wats.) Munz
(Pl 1050)

Found on the South Kaibab Trail at 5000 feet.

Oenothera coronopifolia Torr. and Gray (Pl 1051, 1052 and 1053)

Found in Long Jim Canyon and at Trash Tank on the South Rim.

Oenothera hartwegi Benth. (Pl 1054)

Found in Long Jim Canyon on the South Rim.

Oenothera hookeri Torr. and Gray (Pl 1055)

Found at Vista Encantada on the North Rim.

Oenothera lavandulaefolia Torr. and Gray (Pl 1056, 1057, 1058, 1059, 1060 and 1061)

Found at Scenic View, at Rowe Well, and along the South Entrance Road on the South Rim, and in Grand Canyon National Monument.

Oenothera longissima Rydb. (Pl 1062, 1063, 1064, 1065, 1066 and 1067)

Found along the Cape Royal Road on the North Rim and along Bright Angel Creek.

Oenothera micrantha Hornem. var. exfoliata (Nels.) Munz

Found in Havasu Canyon by Clover and Jotter (2327 and 4384).

Oenothera multijuga Wats. (Pl 1068)

Found in Havasu Canyon.

Oenothera pallida Lindl. (Pl 1069)

Found along Bright Angel Trail at the bottom of the Canyon, and in Havasu Canyon.

91. UMBELLIFERAE (PARSLEY FAMILY)

APIUM (Celery)

Apium graveolens L. (Pl 1070)

Abundant in Havasu Canyon. Exotic. Native to Europe.

CAUCALIS (Falsecarrot)

Caucalis microcarpa H. and A.

Found along Hermit Creek (Eastman 5977)

CYMOPTERUS (Cymopterus)

Cymopterus purpurascens (Gray) Jones (Pl 1872 and 2201)

Found along the east boundary fence, on Mohave Point, and on Mormon Flat near the Kaibab Trail.

LIGUSTICUM (Ligusticum, Lovage, Chuchupate)

Ligusticum porteri Coult. and Rose (Pl 1071, 1072 and 1073)

Found at Neal Spring and Greenland Spring on the North Rim.

LOMATIUM (Lomatium, Biscuitroot, Indianroot)

Lomatium leptocarpum (Nutt.) Coulter and Rose (Pl 2124)

Found in the vicinity of Ariel Point on the North Rim.

Lomatium macdougalii Coult. and Rose (Pl 1074, 1075 and 1076)

Found at Yavapai Point, in Long Jim Canyon, and one mile west of the Auto Camp on the South Rim.

OREOXIS (Oreoxis)

Oreoxis macdougalii (Coul. and Rose) Rydb. (Pl 1077 and 1078)

Found on the upper part of the South Kaibab Trail just below Yaki Point and on the Berry Trail just below Grandview Point. These are the only localities known for the species in Arizona.

OSMORHIZA (Sweetroot, Sweetcicely)

Osmorhiza obtusa (Coul. and Rose) Fernald. (Pl 1079 and 1080)

Collected at Neal Spring and Kanabowmits Spring and reported also from Robbers Roost on the North Rim.

PERIDERIDIA (Yampa, Wildcaraway)

Perideridia gairdneri (Hook. and Arn.) Mathias.

(Carum gairdneri Gray) (Pl 1081 and 1082)

Found at Greenland Lake and Milk Creek on the North Rim.

PSEUDOCYOPTERUS (Pseudocymopterus)

Pseudocymopterus montanus (Gray) Coul. and Rose (Pl 1083, 1084 and 1085)

Found at Greenland Lake and near the Checking Station on the North Rim.

PTERYXIA (Pteryxia)

Pteryxia petraea (Jones) Coul. and Rose (Pl 1086, 1087, 1088 and 1089)

Collected at Lookout Point, along the Hermit Trail, near the head of the South Kaibab Trail and known to occur at various places on both rims. Not known to occur elsewhere in Arizona.

92. CORNACEAE (DOGWOOD FAMILY)

CORNUS (Dogwood)

Cornus stolonifera Michx. (Pl 1090, 1091, 1092, 1093 and 1094)

Found at Neal Spring, Greenland Spring, and near a spring on Bright Angel Point on the North Rim.

GARRYEA (Silktassel)

Garrya flavescens Wats. (Pl 1095, 1096 and 1799)

Found abundantly along the Kaibab Trail from Bright Angel Point to Roaring Springs and occurs also along Bright Angel Trail.

Garrya wrightii Torr.

Found along Grandview Trail. (Eastman 5760).

94. ERICACEAE (HEATHER FAMILY)

ARCTOSTAPHYLOS (Manzanita)

Arctostaphylos patula Greene (A. platyphylla Kuntze.)
(Greenleaf Manzanita) (Pl 1097, 1098, 1099 and 1100)

Found in the vicinity of Farview Point, and along the Cape Royal Road near the north end of the Walhalla Plateau on the North Rim, and along the upper part of the North Kaibab Trail.

Arctostaphylos pungens H.B.K. (Pointleaf Manzanita)
(Pl 1101 to 1107, inclusive)

Found at Yaki Point on the South Rim, at Swamp Point, McKinnon Point, and Uncle Jim Point on the North Rim, and at Roaring Springs on the North Kaibab Trail.

PHYLLODOCE (Mountainheath)

Phyllodoce empetriformis (Smith) Don (Pl 1108)

Collected in 1928 along the South Kaibab Trail by former Park Naturalist McKee. This is far south of the normal range of the species but the specimen was identified by the U. S. National Herbarium and seems to be authentic.

PTEROSPORA (Pinedrops)

Pterospora andromedea (Nutt.) (Pl 1109, 1110 and 1111)

Collected at the junction of the Cape Royal and Point Imperial roads and found at various other places on the North Rim.

PYROLA (Pyrola, Shinleaf)

Pyrola picta Smith (Pl 1118, 1119, 1120 and 1121)

Found at Greenland Spring, at the junction of the Cape Royal and Point Imperial roads, and near the Kanabowmits Fire Tower on the North Rim.

Pyrola secunda L. (Pl 1115, 1116, 1117 and 1803)

Found at Kanabownits Spring and Neal Spring on the North Rim.

Pyrola virens Schweigg. (Pl 1112 and 1113)

Found at Neal Spring and Robbers Roost on the North Rim.

95. PRIMULACEAE (PRIMROSE FAMILY)

ANDROSACE (Rockjasmine)

Androsace septentrionalis L. (Pl 1122, 1123 and 2218)

Found at Grandview Point and on Buggeln Hill on the South Rim and at Greenland Spring, Fawn Spring, Little Dutchman Meadow, and Kaibab Basin on the North Rim. The varieties of this species intergrade and are difficult to distinguish but we have specimens identified as var. diffusa (Small) Knuth, var. glandulosa (Woot. and Standl.) St. John, and var. puberulenta (Rydb.) Knuth.

DODECATHEON (Shootingstar)

Dodecatheon radicum Greene (Pl 1130, 1131, 1132 and 1133)

Collected in a meadow near the North Rim Checking Station and known to occur at several other places on the North Rim.

PRIMULA (Primrose)

Primula specuicola Rydb. (Pl 1134, 1135, 2199 and 2200)

Found at Cliff Springs on the North Rim. Not known to occur elsewhere in Arizona.

96. OLEACEAE (OLIVE FAMILY)

FRAXINUS (Ash)

Fraxinus anomala Torr. (Singleleaf Ash) (Pl 1136 to 1144, inclusive)

Found along all trails leading into the Canyon and also along the Rim Trail between Yaki Point and Shoshone Point.

Fraxinus cuspidata Torr. var. macropetala Rehder
(F. macropetala Eastw.) (Fragrant Ash, Flowering Ash)
(Pl 1145, 1146, 1147, 1148 and 1149)

Found along the Bright Angel Trail and known to occur at several places on both rims.

Fraxinus lowelli Sarg.

Found in Havasu Canyon by Clover and Jotter (2346).

Fraxinus velutina Torr. var. glabra (Thornber.) Rehder
(Smooth Ash, Arizona Ash). (Pl 1150)

Found in Havasu Canyon.

MENODORA (Menodora)

Menodora scabra Gray (Pl 1151, 1152, 1153 and 1154)

Found at Pasture Wash and at the Cemetary near Grand Canyon Village on the South Rim.

100. GENTIANACEAE (GENTIAN FAMILY)

CENTAURIUM (Centaurium)

Centaurium calycosum (Buckl.) Fernald (Pl 1155, 1156 and 1157)

Found at the mouth of Garden Creek in the Canyon.

FRASERA (Fraseria, Elkweed)

Fraseria albomarginata Wats. (Pl 1124, 1125 and 1126)

Found at Hopi Point and near Rowe Well on the South Rim.

Fraseria paniculata Torr.

Found west of Rowe Well on the South Rim. (Herbarium of the Museum of Northern Arizona B5188).

Fraseria speciosa Dougl. (Greengentian, Deersears) (Pl 1129)

Common in open pine forests on both Rims.

GENTIANA (Gentian)

Gentiana heterosepala Engelm. (Pl 1158 and 1159)

Found in DeMotte Park on the North Rim just north of the park boundary.

Gentiana parryi Engelm. (Pl 1160, 1161 and 1162)

Found in Kaibab Basin and at Robbers Roost on the North Rim.

101. APOCYNACEAE (DOGBANE FAMILY)

AMSONIA (Amsonia)

Amsonia eastwoodiana Rydb. (Pl 2000 and 2001)

Found along the Hermit Trail and the South Kaibab Trail.

APOCYNUM (Dogbane)

Apocynum androsaemifolium L. (Spreading Dogbane) (Pl 1064)

Found at Robbers Roost on the North Rim

Apocynum cannabinum L. (Indianhemp) (Pl 1065)

Found at Rowe Well on the South Rim, at Indian Spring in the Canyon, and in Havasu Canyon.

Apocynum sukdorfi Greene (Pl 1999)

Found in Havasu Canyon.

102. ASCLEPIADACEAE (MILKWEED FAMILY)

ASCLEPIAS (Milkweed)

Asclepias capricornu Woods subsp. occidentalis Woods

Found along Bright Angel Trail (Meiere in 1917) and somewhere on the North Rim (Eastman and Howell 927)

Asclepias galioides H.B.K. (Poison Milkweed) (Pl 1170)

Found in Grand Canyon Village and at several places along the East Rim Drive between Grand Canyon Village and the Wayside Museum of Archaeology.

Asclepias latifolia (Torr.) Raf.

Found along Hermit Trail (Eastman 5887a).

Asclepias tuberosa L. (Butterfly Milkweed, Butterflyweed). (Pl 1171)

Found at Powell Spring on the North Rim.

ASCLEPIODORA (Antelopehorns)

Asclepiodora decumbens (Nutt.) Gray (Pl 1172, 1173, 1174 and 1175)

Found at Cape Royal on the North Rim, in Hermit Basin in the Canyon, and along East Rim Drive on the South Rim.

FUNASTRUM (Climbingmilkweed)

Funastrum heterophyllum (Engelm.) Standl. (Pl 1176, 1177 and 1178)

Found at Phantom Ranch, at various places on the Tonto Shelf, and in Havasu Canyon.

103. CONVOLVULACEAE (CONVOLVULUS FAMILY)

CUSCUTA (Dodder)

Cuscuta campestris Yuncker (Pl 1179)

Found in Havasu Canyon.

IPOMOEA (Morningglory)

Ipomoea oocinea L. var. hederifolia (L.) Gray (Starglory)
(Pl 1180)

Found in Havasu Canyon.

104. POLEMONIACEAE (PHLOX FAMILY)

COLLOMIA (Collomia)

Collomia grandiflora Dougl. (Pl 1181, 1182 and 1183)

Found at Cape Royal, Farview Point, and at other places along the Cape Royal Road on the North Rim.

Colomia linearis Nutt. (Pl 1184, 1185, 1186 and 1187)

Found at Kanabownits Spring, Fawn Spring, Robbers Roost, and Greenland Spring on the North Rim.

GILIA (Gilia)

Gilia aggregata (Pursh.) Spreng. (Skyrocket) (Pl 1188)

Found at Cape Royal on the North Rim and in Havasu Canyon.

Gilia arenaria Benth. (Pl 1189 and 1190)

Found at Yavapai Point on the South Rim and on the South Kaibab Trail, at 5000 feet elevation.

Gilia arizonica (Greene) Rydb. (Pl 1191 to 1198, inclusive)
Collected at Grandview on the South Rim and at Cape Royal on the North Rim and common in various other places on both Rims and along the upper parts of the trails leading into the Canyon.

Gilia bigelovi Gray
We have no specimen of this but a specimen was collected by Eastwood near Hermit Creek (Eastwood 6022).

Gilia gracilis (Dougl.) Hook. (Pl 1199)
Found on Buggeln Hill and west of Grand Canyon Village on the South Rim.

Gilia inconspicua (Smith) Dougl. (Shygillia)
Specimens in the Herbarium of the Museum of Northern Arizona (B5121 and B4932) were collected west of Grand Canyon Village and at Hilltop on the South Rim.

Gilia longiflora (Torr.) Don (Pl 1200, 1201 and 1202)
Found at Trash Tank on the South Rim and at Bright Angel Point, Cape Royal, and along the Cape Royal Road and the main entrance road on the North Rim.

Gilia multiflora Nutt. (Pl 1203)
Collected at Rowe Well and along the Pasture Wash Road about ten miles west of Grand Canyon Village on the South Rim. It is common at various places on the South Rim.

Gilia polyantha Ryd. var. whitingi Kearney and Peebles (Pl 1204)
Found ten miles west of Grand Canyon Village on the South Rim.

Gilia pungens (Torr.) Benth. (Granitegillia)
Found along Grandview Trail (Eastman 5697)

Gilia setosissima (Torr. and Gray) Gray
Found in Havasu Canyon. (Herbarium of Museum of Northern Arizona B4967).

PHLOX (Phlox)

Phlox austromontana Coville (Pl 1205, 1206 and 1207)
Found at various places on the South Rim between Grand Canyon Village and Lipan Point. Also on the Hermit Trail and on Marble Flat.

Phlox diffusa Benth. (Pl 1208 to 1214, inclusive)
Found at various undesignated places on the North Rim.

Phlox grayi Woot. and Standl. (Pl 1867)

Found near the east boundary fence on the South Rim.

Phlox longifolia Nutt. (Pl 1215, 1216, 1217, 1218 and 1219)

Found in Long Jim Canyon, in Grand Canyon Village, and at Moran Point on the South Rim, and along Hermit Trail at Hermit Basin.

105. HYDROPHYLLACEAE (WATERLEAF FAMILY)

ELLISIA (Ellisia)

Ellisia micrantha (Torr.) Brand (Phacelia micrantha Torr.)
(Pl 1220)

Found at Roaring Spring on the Kaibab Trail.

HESPEROCHIRON

Hesperochiron pumilus (Dougl.) Porter (Pl 2191)

Found on Walhalla Plateau on the North Rim.

NAMA

Nama dichotomum (R. & P.) Choisy

Found along the road to Grandview on the South Rim (Eastwood 3648).

NEMOPHILA

Nemophila aurita Lindl. var. arizonica (Jones) Brand (Purple Nemophila)

Found along Hermit Creek (Eastman 6024).

PHACELIA (Phacelia)

Phacelia corrugata Nels. (Pl 1221, 1222 and 1223)

Found on the Bright Angel and South Kaibab Trails and at undesignated place on the North Rim.

Phacelia cryptantha Greene

Found along Hermit Creek (Eastman 5985).

Phacelia filiformis Brand (Pl 1224 and 1225)

Found at Indian Cave on the South Rim, at Cliff Spring on the North Rim and in Havasu Canyon. Very rare and known only from Grand Canyon National Park.

Phacelia glehomaefolia Gray (Pl 1229 to 1233, inclusive)
Found along the Kaibab and Bright Angel Trails, in Havasu Canyon and in Toroweap Valley in Grand Canyon National Monument.

Phacelia heterophylla Pursh (Pl 1234, 1235, 1236 and 1237)
Found at Greenland Spring and Neal Spring on the North Rim.

Phacelia laxiflora J. T. Howell (Pl 1814)
Found along Bright Angel Trail and Hermit Trail in the Canyon, and near Toroweap Point.

Phacelia pedicellata Gray (Pl 1238 and 1239)
Found on the South Kaibab Trail at 3500 feet elevation.

Phacelia rotundifolia Torr. (Pl 1240)
Found at Phantom Ranch, along Pipe Creek, and along Bright Angel Trail in the Canyon.

Phacelia saxicola Gray
Found near Rowe Well and near El Tovar Hotel on the South Rim. (Herbarium of the Museum of Northern Arizona B5187).

106. BORAGINACEAE (BORAGE FAMILY)

AMSINCKIA (Fiddleneck)

Amsinckia intermedia F. & M.
Found along Hermit Creek (Eastman 6016).

Amsinckia menziesi (Lehm.) Nels. and MacBr. (Pl 1241)
We have an undated specimen collected at an unspecified place on the South Rim and so determined. Since neither Kearney and Peebles nor Tidestrom and Kittell recognize this species as occurring in Arizona, there seems some doubt as to its correct determination.

Amsinckia tessellata Gray
Found along Hermit Trail and at Indian Gardens (Eastman 6069 and 6094).

COLDENIA (Coldenia)

Coldenia hispidissima (Torr.) Gray var. latior Johnston
(Pl 1242)

CRYPTANTHA (Cryptantha)

Cryptantha barbigera (Gray) Greene (Pl 1243 and 2198)
Found at Phantom Ranch and along Clear Creek Trail in the Canyon.

Cryptantha capitata (East.) Johnston (Pl 1244)
Found on the Hermit Trail (type) and the North Kaibab Trail as far down as Roaring Springs. Known only from Grand Canyon National Park.

Cryptantha confertiflora (Greene) Payson (Pl 1245 and 2085)
Found on the South Kaibab Trail at 5700 feet elevation.

Cryptantha fendleri (Gray) Greene
Found along Grandview Trail (Eastman 3633).

Cryptantha flava (Nels.) Payson (Pl 1245)
Found in Grand Canyon National Monument.

Cryptantha fulvocanescens (Gray) Payson (Pl 1246)
Found along the Hermit Trail.

Cryptantha gracilis Osterh. (Pl 1247 and 1248)
Found at Yavapai Point and at the Grandview Road junction on the South Rim.

Cryptantha holoptera (Gray) McBride
Found in Havasu Canyon by Clover (Clover 5034).

Cryptantha jamesi (Torr.) Payson (Pl 1249, 1250, 1251 and 2081)
Found at Neal Spring and Bright Angel Spring on the North Rim and on the South Kaibab Trail at 7000 feet, and near the east boundary fence on the South Rim.

Cryptantha modesta Payson (Pl 1251 and 1252)
Found along the Hermit Trail.

Cryptantha pterocarya (Torr.) Greene (Pl 1253)
Found along Hermit Trail in the Canyon.

Cryptantha racemosa (Wats.) Greene (Pl 1254 and 2167)
Found along Bright Angel Trail at 3000 feet, in Havasu Canyon, and along Clear Creek Trail.

Cryptantha setosissima (Gray) Payson (Pl 1255)
Found at Cape Royal on the North Rim.

Cryptantha virginensis (Jones) Payson (Pl 1860)
Reported by Johnston in Kearney and Peebles as occurring along the Hermit Trail. Not known to occur elsewhere in Arizona.

HACKELIA (Hackelia)

Hackelia floribunda (Lehm.) Johnston (Lappula floribunda Greene) (Pl 1256, 1257, 1258, 1259 and 1260)

Found at Neal Spring on the North Rim.

LAPPULA (Stickseed)

Lappula redowski (Hornem.) Greene (L. occidentalis (Wats.) Greene) (Pl 1261 and 1262)

Found in Thompson Canyon on the North Rim and in Grand Canyon Village on the South Rim. Var. desertorum (Greene) Johnst. has been found along Hermit Trail (Eastman 5982).

LITHOSPERMUM (Gromwell)

Lithospermum multiflorum Torr. (Pl 1263, 1264 and 1265)

Found at Greenland Lake, Cliff Springs, and Cape Royal on the North Rim.

PECTOCARYA (Combseed)

Pectocarya heterocarpa Johnst.

Found at Hermit Camp (Eastman 6020).

Pectocarya platycarpa Munz and Johnst.

Found along the trail to Monument Creek (Eastman 6029)

PLAGIOBOTHRYIS (Popcornflower)

Plagiobothrys arizonicus (Gray) Greene

Found at Hermit Camp (Eastman 5966).

Plagiobothrys jonesi Gray (Pl 2213)

Found along Clear Creek Trail in the Canyon.

MERTENSIA (Bluebells)

Mertensia franciscana Heller (M. pratensis Heller) (Pl 1266 and 1267)

Found at Neal Spring, Greenland Lake, and Little Dutchman Pasture on the North Rim.

Mertensia maddougali Heller (Pl 1268)

Found on Buggeln Hill on the South Rim.

107. VERBENACEAE (VERBENA FAMILY)

VERBENA (Verbena, Vervain)

Verbena bracteata Lag. and Rodr. (Pl 1269)
Found in Grand Canyon Village, South Rim.

Verbena goodingi Briq. (Pl 2045)
Found in Toroweap Valley, Grand Canyon National Monument.

Verbena maddougali Heller (Pl 1270, 1271, 1272, 1273
and 1274)
Collected at Hull Tank on the South Rim and known to
occur at various places on both rims.

Verbena wrighti Gray
Found at Hilltop on the South Rim (Herbarium of Museum of
Northern Arizona B4926).

LIPPIA (Lippia)

Lippia wrighti Gray (Pl 1275 and 1276)
Found along the Clear Creek Trail in the Canyon and in
Havasu Canyon.

108. LABIATAE (MINT FAMILY)

AGASTACHE (Giant hyssop)

Agastache pallidiflora (Heller) Rydb. (Pl 1277 and 1278)
Found at Robbers Roost and in the vicinity of Neal Spring
on the North Rim.

DRACOCEPHALUM (MOLDAVICA) (Dragonhead)

Dracocephalum parviflorum Nutt. (Moldavica parviflora (Nutt.)
Britton) (Pl 1279, 1280, 1282 and 1283)
Found at Neal Spring and Greenland Lake on the North Rim.

HEDEOMA (False pennyroyal, Mock pennyroyal)

Hedeoma drummondi Benth. (Pl 1284, 1285, 1286, 1287 and 1288)
Collected near Rowe Well and at Hull Tank on the South
Rim and at Powell Saddle and Swamp Point on the North Rim.

Hedeoma nanum (Torr.) Greene subsp. typicum Stewart

Found along Bright Angel and the North Kaibab Trails and the trail to Monument Creek (Eastman 3690 and 6038, and Eastman and Howell 1027).

MENTHA (Mint)

Mentha arvensis L. (M. penardi (Briq.) Rydb.)

(Pl 1289, 1290 and 1291)

Found at Kanabownits Spring and at Milk Creek on the North Rim.

MONARDA (Beebalm)

Monarda pectinata Nutt. (Pl 1292)

Found at Hull Tank on the South Rim.

MONARDELLA (Monardella)

Monardella odoratissima Benth. (Pl 1293, 1294, 1295 and 1815)

Found on the North Kaibab Trail at 7800 feet elevation.

PRUNELLA (Selfheal)

Prunella vulgaris L. (Pl 1296, 1297 and 1298)

Found at Fawn Spring and Robbers Roost on the North Rim.

SALAZARIA (Bladdersage)

Salazaria mexicana Torr. (Pl 1299)

Found in Grand Canyon National Monument

SALVIA (Sage)

Salvia aethiopsis L. (Pl 1300 and 1301)

Found in Grand Canyon Village near Bright Angel Lodge. Exotic. Native to the Mediterranean region.

Salvia carnososa Dougl. (Desertsage, Purplesage)

(Pl 1302 to 1309, inclusive)

Found along the South Kaibab Trail at about 5500 feet elevation.

Salvia davidsoni Greenm.

Found in Havasu Canyon by Clover (Clover 7032).

109. SOLANACEAE (POTATO FAMILY)

DATURA (Datura, Thornapple)

Datura meteloides DC. (Sacred Datura) (Pl 1310 and 1311)

Found at Indian Gardens, along Bright Angel Creek, and at various other places in the Canyon.

LYCIUM (Wolfberry, Desertthorn)

Lycium andersoni Gray (Pl 1312, 1313 and 1314)

Found on the Bright Angel Trail at 2800 feet, on the Hermit Trail, and in Havasu Canyon.

Lycium pallidum Miers (Pl 1315 and 1316)

Found on the Tonto Shelf in the Canyon, at Pasture Wash on the South Rim, in Havasu Canyon, and in Grand Canyon National Monument.

NICOTIANA (Tobacco)

Nicotiana attenuata Torr. (Pl 1317, 1318 and 1319)

Found in Grand Canyon Village on the South Rim, at Ribbon Falls in the Canyon, and in Grand Canyon National Monument.

Nicotiana trigonophylla Dunal (Pl 1320, 1321 and 1322)

Found on the South Kaibab Trail at 3000 feet elevation and in Havasu Canyon.

PHYSALIS (Groundcherry)

Physalis crassifolia Benth. (Pl 1323, 1324 and 1325)

Found at Point Sublime on the North Rim and in Phantom Canyon and along Bright Angel Creek and Clear Creek Trail in the Canyon.

Physalis fendleri Gray

Found along the North Kaibab Trail (Eastman and Howell 1019).

Physalis hederasifolia Gray (Pl 1326 and 1327)

Found at Cliff Spring on the North Rim.

SOLANUM (Nightshade)

Solanum douglasi Dunal (Pl 1328 and 1329)

Found in Havasu Canyon.

Solanum elaeagnifolium Cav. (Pl 1330)
Found on the Tonto Shelf in the Canyon.

110. SCROPHULARIACEAE (FIGWORT FAMILY)

CASTILLEJA (Paintedcup, Paintbrush)

Castilleja chromosa Nels. (Pl 1332, 1333, 1334, 1335
and 1336)

Found on the South Kaibab Trail at about 4000 feet elevation and in Slide Canyon on the North Rim at about the same elevation.

Castilleja confusa Greene (Pl 1331 and 1337)

Found in Long Jim Canyon on the South Rim and at Neal Spring on the North Rim.

Castilleja eremophila Woot. and Standl. (Pl 1338)

Found on Marble Flat in the Canyon. This species is believed by Kearney and Peebles to be synonymous with C. chromosa but our specimens of the two species, as determined by the U. S. National Herbarium, are dissimilar. Possibly this specimen is incorrectly determined.

Castilleja flava Wats. (Pl 1339)

Found in DeMotte Park just north of the park boundary on the North Rim.

Castilleja integra Gray (Pl 1340, 1341 and 1342)

Found in Grand Canyon Village and at Rowe Well on the South Rim.

Castilleja linariaefolia Benth. (Pl 1343, 1344, 1345, 1346
and 1347)

Found in Long Jim Canyon and at Hull Tank on the South Rim and at the junction of the Cape Royal and Point Imperial roads and along the Point Sublime road on the North Rim.

COLLINSIA (Collinsia)

Collinsia parviflora Dougl. (Pl 1348 and 2166)

Found on Buggeln Hill on the South Rim and along Transept Trail on the North Rim.

CORDYLANTHUS (Birdbeak, Clubflower)

Cordylanthus parviflorus (Ferris) Wiggins (Pl 1349 and 1350)
Found at Yaki Point and Grandview Point on the South Rim.

Cordylanthus tenuifolius Pennell

Found on Grandview Point by Eastwood (Eastwood 3629).
The type specimen of this species was collected somewhere
along the Grand Canyon (Eggleston 15677a).

MAURANDIA (Maurandia)

Maurandia antirrhiniflora Humb. and Bonpl. (Climbing-
snapdragon) (Pl 1351, 1352, 1353 and 1354)

Found in Bright Angel Canyon and in Havasu Canyon.

MIMULUS (Monkeyflower)

Mimulus cardinalis Dougl. (Pl 1355 to 1360, inclusive)

Found at several places along Bright Angel Creek and in
Havasu Canyon.

Mimulus guttatus DC. (Pl 1361, 1362 and 1363)

Found at Phantom Ranch.

Mimulus primuloides Benth. (Pl 1364, 1365, 1366, 1367
and 1368)

Found near the North Entrance Checking Station on the
North Rim.

Mimulus rubellus Gray

Found along the North Kaibab Trail (Eastman and Howell
1071)

ORTHOCARPUS (Owlclover)

Orthocarpus luteus Nutt. (Pl 1369, 1370, 1371, 1372
and 1373)

Found at Greenland Spring, on Marble Flat, in the Kaibab
Basin, and in DeMotte Park on the North Rim.

Orthocarpus purpureo-albus Gray (Pl 1374, 1375, 1376
and 1377)

Found at Rowe Well on the South Rim and near Cape Royal
on the North Rim.

PEDICULARIS (Pedicularis, Lousewort, Woodbetony)

Pedicularis centranthera Gray (Pl 1378)

Collected at Grandview Point on the South Rim and known to occur at various places on both Rims.

PENSTEMON (Penstemon, Beardtongue)

Penstemon barbatus (Cav.) Roth (Scarlet Bugler)
(Pl 1379 to 1385, inclusive)

Common on both Rims. Most of our specimens are subspecies torreyi (Benth.) Keck, which has the lower lip of the corolla smooth instead of bearded.

Penstemon bridgesi Gray (Pl 1386 and 1387)

Found at Cape Royal on the North Rim and in Long Jim Canyon on the South Rim.

Penstemon eatoni Gray (Pl 1390, 1391, 1392, 1393 and 1394)

The typical species, which is smooth throughout, has been collected on the South Kaibab Trail at 5700 feet elevation. Much more common in the Park is variety undosus Jones (subs. undosus (Jones) Keck), which has the stems puberulent. This variety has been collected at Yavapai Point on the South Rim, on the Hermit Trail, in Havasu Canyon, and in the lower end of Toroweap Valley in Grand Canyon National Monument.

Penstemon jamesi Benth.

Found near El Tovar Hotel on the South Rim (Eastman 5661).

Penstemon linarioides Gray (Pl 1388, 1389, 1395, 1396 and 1397)

Found in Long Jim Canyon and south of Grandview Point on the South Rim, and at Cape Royal and Greenland Spring on the North Rim, and south of Yaki Point on the South Rim. Some of our specimens are variety viridis.

Penstemon micranthus Nutt. (Pl 1398 to 1403, inclusive, and 2002)

Found west of the old Checking Station, near the present Checking Station, and in other undesignated places on the North Rim.

Penstemon pachyphyllus Gray subsp. congestus (Jones) Keck
(Pl 1404 to 1409, inclusive)

Found at Yavapai Point, west of Rowe Well, and at other undesignated places on the South Rim and also on the Hermit Trail.

Penstemon palmeri Gray (Pl 1410, 1411 and 1412)

Found along Bright Angel Trail and along Pipe Creek in the Canyon and along West Rim Drive on the South Rim.

Penstemon rydbergi Nels. (Pl 1398 and 1399)

Found near the Checking Station on the North Rim. Not known to occur elsewhere in Arizona.

Penstemon thompsoniae (Gray) Rydb. (Pl 1413)

Found in the south end of Pasture Wash on the South Rim and in Slide Canyon on the Kaibab Plateau north of the park on the North Rim.

Penstemon utahensis Eastw. (Pl 1414, 1415 and 1416)

Found on the Kaibab and Hermit Trails at about 5600 feet elevation.

Penstemon virgatus Gray (Pl 1417, 1418 and 1419)

Found at Cape Royal on the North Rim. It has also been collected in Fuller Canyon and in DeMotte Park just outside the park on the North Rim.

VERBASCUM (Mullein)

Verbascum thapsus L. (Pl 1420)

Collected on Buggeln Hill and common in various other places on the South Rim. Exotic. Native to Europe.

VERONICA (Speedwell)

Veronica americana Schwein. (American Brooklime)

(Pl 1421, 1422 and 1423)

Found at Kanabowmits Spring on the North Rim.

Veronica peregrina L. var. xalapensis (H.B.K.) Pennell

(Pl 1424, 1425, 1426 and 1427)

Collected at Buggeln Hill on the South Rim and at Neal Spring on the North Rim and known to occur at several other places on the North Rim.

Veronica serpyllifolia L. (Pl 1804)

Found at V. T. Ranch just north of the park boundary.

111. BIGNONIACEAE (BIGNONIA FAMILY)

CHILOPSIS (Desertwillow)

Chilopsis linearis (Cav.) Sweet (Pl 1428)

Found in Havasu Canyon.

112. MARTYNIACEAE (UNICORNPLANT FAMILY)

MARTYNIA (Martynia, Unicornplant)

Martynia parviflora Wooton (Pl 1429)
Found in Havasu Canyon.

113. OROBANCHACEAE (BROOMRAPE FAMILY)

OROBANCHE (Broomrape)

Orobanche fasciculata Nutt. (Pl 1430, 1431, 1432 and 1433)
Found at Duck-on-rock and west of Rowe Well on the South Rim.

115. PLANTAGINACEAE (PLANTAIN FAMILY)

PLANTAGO (Plantain)

Plantago eriopoda Torr. (Pl 1434)
Found at Robbers Roost on the North Rim.

Plantago fastigiata Morris
Found at Tanner Rapids in the Canyon by Clover and Jotter (2288) and reported also from Havasu Canyon.

Plantago lanceolata L. (Buckhorn Plantain) (Pl 1435)
Found at Neal Spring on the North Rim. Exotic. Native to Europe.

Plantago purshi Roem. and Schult. (Pl 1436 and 1437)
Found in Long Jim Canyon on the South Rim and along Bright Angel Trail at 3700 feet elevation.

116. RUBIACEAE (MADDER FAMILY)

GALIUM (Bedstraw)

Galium aparine L.
Found along Hermit Creek (Eastman 6007) and on the North Rim (Eastman and Howell in 1933)

Galium munzi Hilend and Howell

Found along the North Kaibab Trail (Eastman and Howell 1008 and 7087).

Galium rothroeki Gray

Found along Grandview Trail (Eastman 3605) and on the North Rim (Eastman and Howell 953 and 994).

Galium stellatum Kellogg var. eremicum Hilend and Howell

(Pl 1438, 1439, 2165 and 2214)

Found along Bright Angel and Clear Creek Trails in the Canyon.

Galium triflorum Michx. (Pl 1441, 1442 and 1443)

Found at Roaring Spring in Bright Angel Canyon.

Galium watsoni (Gray) Heller (Pl 1444, 1445 and 1446)

Found near Grand Canyon Lodge and at the Checking Station on the North Rim, and along Bright Angel and Hermit Trails.

Galium wrighti Gray (Pl 1440)

Found along Hermit Trail at about 5500 feet elevation.

HOUSTONIA (Bluets)

Houstonia wrighti Gray (Pl 1447)

Found at Hull Tank and on Duggeln Hill on the South Rim.

KELLOGGIA (Kelloggia)

Kelloggia galioides Torr. (Pl 1448)

Found at Greenland Lake on the North Rim and reported by Kearney and Peebles as occurring on both Rims.

117. CAPRIFOLIACEAE (HONEY-SUCKLE FAMILY)

LINNAEA (Twinflower)

Linnaea borealis L. var. americana (Forbes) Rehder (Pl 1821)

Found at an unspecified place on the North Rim.

SAMBUCUS (Elder)

Sambucus coerulea Raf. (Pl 1449, 1450, 1451 and 1452)

Collected along the Cape Royal Road on the North Rim. This is the common elder on both Rims.

Sambucus microbotrys Rydb. (S. racemosa L. var. microbotrys (Raf.) Kearney and Peebles)

We have no specimen of this species but it is reported in Kearney and Peebles that it occurs on both sides of the Grand Canyon.

SYMPHORICARPOS (Snowberry)

Symphoricarpos oreophilus Gray (Pl 1453 to 1466, inclusive)
Fairly common on both Rims as well as along the upper parts of the trails leading into the Canyon.

Symphoricarpos longiflorus Gray (Pl 1467, 1468 and 1469)
Collected along the upper part of the North Kaibab Trail and known to occur also on the Kaibab Plateau.

Symphoricarpos parishii Rydb. (Pl 1472)
Found on the South Kaibab Trail at about 6500 feet elevation.

Symphoricarpos rotundifolius Gray (Pl 1471)
Found on the South Kaibab Trail at about 6500 feet elevation.

Symphoricarpos utahensis Rydb. (Pl 1470)
Found along the Hermit Trail in the Canyon.

118. VALERIANACEAE (VALERIAN FAMILY)

VALERIANA (Valerian)

Valeriana acutiloba Rydb.
Found along Grandview Trail (Eastman 5710).

Valeriana edulis Nutt. (Pl 1474)
Found at Robbers Roost on the North Rim, and in Fuller's Canyon.

Valeriana micrantha Nelson (Pl 1473 and 1805)
Found at Neal Spring on the North Rim.

119. CUCURBITACEAE (GOURD FAMILY)

CUCURBITA (Gourd)

Cucurbita foetidissima H.B.K. (Buffalogourd) (Pl 1475)
Found in Havasu Canyon and believed to occur also in and about Grand Canyon Village.

120. CAMPANULACEAE (BELLFLOWER FAMILY)

CAMPANULA (Bellflower)

Campanula parryi Gray (Parry Bellflower, Harebell)
(Pl 1476, 1477, 1478, 1479, 1480 and 2170)

Collected at Neal Spring, Greenland Spring and Big Spring on the North Rim and found in most of the meadows on the North Rim.

LOBELIA (Lobelia)

Lobelia cardinalis L. subsp. graminea (Lam.) McVaugh
(Pl 1481 to 1485, inclusive)

Found along Bright Angel Creek, in the lower part of Hance Canyon, and on Toroweap Point in Grand Canyon National Monument.

NEMOCLADUS (Nemocladus)

Nemocladus glanduliferus Jepson var. orientalis McVaugh

Found in Havasu Canyon by Clover (Clover 6244).

121. COMPOSITAE (SUNFLOWER FAMILY)

ACHILLEA (Yarrow, Milfoil)

Achillea lanulosa Nutt. (Pl 1486, 1487, 1488 and 1489)

Found at Greenland Spring, along the Cape Royal Road and near the North Rim Checking Station on the North Rim.

ACTINEA (Actinea)

Actinea acaulis (Pursh) Spreng. var. arizonica (Greene) Blake
(Pl 1490 to 1499, inclusive)

Common on both rims and along the upper parts of the trails leading into the Canyon.

Actinea cooperi (Gray) Kuntze

Found along the South Kaibab Trail by Clover and Jotter (4112). We have no specimen of this species but Kearney and Peebles report that it was collected by Osterhout (6991) from the Bright Angel Trail and by Macdougall (189) at an unspecified place in the Grand Canyon.

Actinea richardsoni (Hook) Kuntze var. floribunda (Gray) Cory
(Pingue, Pingwing) (Pl 1500, 1501, 1502, 1503 and 1504)

Found at various places between Yaki Point and Grandview
on the South Rim and in Grand Canyon Village.

Actinea subintegra (Cockerell) Blake (Colorado Rubber Plant)
(Pl 1505 to 1509, inclusive)

Common on the North Rim.

AGOSERIS (Agoseris, Mountain Dandelion)

Agoseris arizonica Greene (Pl 1510 and 2070)

Found along the Cape Royal Road on the North Rim.

Agoseris glauca (Pursh) Dietr. var. parviflora (Nutt.) Rydb.
(Pl 1511, 1512 and 1513)

Found at Robbers Roost on the North Rim and known to
occur at several other places on the North Rim.

Agoseris glauca (Pursh) Dietr. var. laciniata (Eaton) Smiley
(Pl 1514 and 1515)

There is some question as to the proper identification of
the specimens placed here but we have one specimen collected
in Long Jim Canyon on the South Rim and labeled A. taraxici-
folia (Nutt.) Dietr. and another collected in a meadow near
the Checking Station on the North Rim and labeled A. glauca
(Pursh.) Dietr. var. which, in our opinion, are identical and
belong here according to the tentative treatment of the genus
as set forth in Kearney and Peebles. This variety has been
collected in the Park by Eastman (5441 and 5788).

ANAPHALIS (Pearleverlasting, Pearlyeverlasting)

Anaphalis margaritacea (L.) Gray (Pl 2217)

Found along the road to Robbers Roost on the North Rim.

ANTENNARIA (Pussytoes)

Antennaria aprica Greene (Pl 1516, 1517, 1518 and 1519)

Found on Buggeln Hill and near Grandview Point on the
South Rim and at Greenland Lake on the North Rim.

Antennaria arida Nels. (Pl 1520)

Found near the Checking Station on the North Rim.

Antennaria marginata Greene
(Eastman 5786).

Antennaria rosulata Rydb. (Pl 1521 and 1522)

Found in a meadow near the North Rim Checking Station and in other meadows on the North Rim.

APLOPAPPUS (Goldenweed)

Aplopappus acradenius (Greene) Blake (Pl 1523)

Found along Bright Angel Creek near Phantom Ranch in the Canyon.

Aplopappus drummondi (Torr. and Gray) Blake (Pl 2004)

Found along Shinumo Creek.

Aplopappus gracilis (Nutt.) Gray (Pl 1524 and 2002)

Found near Grandview Point on the South Rim.

Aplopappus heterophyllus (Gray) Blake (Pl 1525)

Found at Robbers Roost on the North Rim.

Aplopappus nuttalli Torr. and Gray (Pl 1526)

Found at an unspecified place on the North Rim.

Aplopappus parryi Gray (Pl 2003)

Found in the Kaibab Basin on the North Rim.

Aplopappus salicinus Blake

This species is known only from the type collection on Bright Angel Trail (Eastwood 10). We have no specimen.

Aplopappus scopulorum (Jones) Blake

We have no specimen of this species but it is reported in Kearney and Peebles as occurring on both sides of Grand Canyon (Eastwood 3586, Eastwood and Howell 7111). Not known to occur elsewhere in Arizona.

Aplopappus spinulosus (Pursh.) DC. var. gooddingi (Nels.)

Blake (Pl 1527, 1528, 1529, 1530 and 2153)

Found on the South Kaibab Trail at about 3300 feet elevation, in Havasu Canyon and in Grand Canyon National Monument.

Aplopappus watsoni Gray

We have no specimen of this species but it is reported in Kearney and Peebles as occurring on rocks at Grand Canyon at about 7000 feet (Eastwood in 1905, Blake 9815, 9818).

ARNICA (Arnica)

Arnica cordifolia Hook. (Pl 1531, 1825 and 2215)

Found on Walhalla Plateau on the North Rim. Not known to occur elsewhere in Arizona.

Arnica foliosa Nutt. (Pl 1532)
Found near the Checking Station on the North Rim.

ARTEMISIA (Sagebrush, Wormwood)

Artemisia bigelovi Gray (Pl 1533, 1534, 1535 and 1536)
Found at Point Sublime and Grama Point on the North Rim.

Artemisia carruthi Wood (Pl 2057)
Found at Robber's Roost on the North Rim.

Artemisia dracunculoides Pursh (Pl 1537, 1538 and 2058)
Found at Hull Tank on the South Rim and at Neal Spring
and in Kaibab Basin on the North Rim.

Artemisia frigida Willd. (Estafiata) (Pl 1541, 1542, 1806
and 2079)

Found at Point Sublime on the North Rim and near Wayside
Museum of Archaeology and east boundary fence on the South
Rim. Also found near El Tovar Hotel on the South Rim (East-
man 3603).

Artemisia gnaphalodes Nutt.
Found along the road to Grandview (Eastman in 1913) and
on the North Rim (Eastman and Howell 7006).

Artemisia ludoviciana Nutt. (Pl 1543)
Found at Powell Saddle on the North Rim and in Havasu
Canyon.

Artemisia nova A. Nels.
Found along the road to Grandview (Eastman 3602) and on
the North Rim (Eastman and Howell 7042).

Artemisia pacifica Nutt. (Pl 1539 and 1540)
Found at Hull Tank on the South Rim and at Greenland
Point on the North Rim.

Artemisia tridentata Nutt. (Pl 1544 to 1549, inclusive)
Common on both Rims.

ASTER (Aster)

Aster abatus Blake (Pl 1550, 1551, 1552 and 1553)
Found along the South Kaibab and Hermit Trails, at Hill-
top on the South Rim, and in Havasu Canyon.

Aster adenolepis Blake (Pl 1554, 1555, 1556 and 2053)
Found along the road to Cape Royal and at Robbers Roost on the North Rim.

Aster adscendens Lindl. (Pl 2055 and 2056)
Found at Robbers Roost on the North Rim.

Aster aquifolius (Greene) Blake (Pl 1558, 1559 and 1560)
Found at Neal Spring and in Kaibab Basin on the North Rim.

Aster arenosus Blake (Pl 2072)
Found one mile east of the south entrance highway on the South Rim.

Aster caeruleus DC.
Found along the North Kaibab Trail (Eastman and Howell 7123).

Aster cichoriaceus (Greene) Blake
Found in Havasu Canyon by Clover and Jotter (4367).

Aster canescens Pursh (Pl 1565 and 1566)
Found at Hull Tank, in Long Jim Canyon and at Hilltop on the South Rim and reported as occurring also on the North Rim. It is also found in Havasu Canyon.

Aster commutatus (Torr. and Gray) Gray var. polycephalus (Rydb.) Blake (Pl 1561 to 1564, inclusive)
Found at Hull Tank and near Grandview on the South Rim and in the vicinity of River View and on Point Sublime on the North Rim.

Aster foliaceus Lindl. var. burkei Gray (Pl 1567)
Found in a meadow near Kanabowmits Spring on the North Rim.

Aster glaucodes Blake (Pl 1568 and 1569)
The typical form has been collected in Havasu Canyon and the variety pulcher Blake has been collected along the West Rim Drive on the South Rim and is reported in Kearney and Peebles as occurring on the North Rim.

Aster hirtifolius Blake (Pl 1570, 1571, 1572, 1574 and 2071)
Found in Grand Canyon Village on the South Rim, and along trails in the Canyon.

Aster intricatus (Gray) Blake (Pl 2032)
Found in Toroweap Valley in Grand Canyon National Monument.

Aster spinosus Benth.
Found at the foot of Bright Angel Trail (Eastman 3746).

BACCHARIS (Baccharis)

Baccharis emoryi Gray (Pl 1576, 1577, 1578, 1579 and 1580)
Found along Pipe Creek, in Bright Angel Canyon, Shinumo
Canyon and Havasu Canyon.

Baccharis glutinosa Pers. (Sweepwillow) (Pl 1581, 1582,
1583 and 1584)
Found at Phantom Ranch in the Canyon, in Havasu Canyon,
and along Bright Angel Trail.

BAHIA (Bahia)

Bahia dissecta (Gray) Britton (Pl 1585, 1586 and 1587)
Collected at various places on both Rims. Most abundant
on the South Rim.

BAILEYA (Baileya)

Baileya multiradiata Herv. and Gray (Pl 2046)
Found in Toroweap Valley in Grand Canyon National Monu-
ment.

BEBBIA (Bebbia)

Bebbia juncea (Benth.) Greene (Pl 1588 and 1589)
Found at Phantom Ranch in the Canyon.

BRICKELLIA (Brickellbush)

Brickellia atractyloides Gray (Pl 1590 and 2169)
Found at Phantom Ranch in the Canyon.

Brickellia californica (Torr. and Gray) Gray (Pl 1591)
Found along the Bright Angel Trail at about 3200 feet
elevation and at Grandview Point on the South Rim.

Brickellia grandiflora (Hook.) Nutt. (Pl 1592 and 1593)
Found at Cliff Springs on the North Rim and in Long Jim
Canyon on the South Rim.

Brickellia longifolia Wats. (Pl 1594, 1595, 1596 and 2216)
Found at Phantom Ranch and along the Bright Angel and
River Trails at about 3000 feet elevation. Not known to occur
elsewhere in Arizona.

Brickellia multiflora Kellogg
We have no specimen of this species but it is reported in
Kearney and Peebles as occurring on the North Rim (Eastwood
and Howell 7106). Not known to occur elsewhere in Arizona.

Brickellia oblongifolia Nutt. var. linifolia (Eaton) Robinson
(Pl 1597 and 1598)

Found in upper Bass Canyon at 6500 feet elevation and at Point Sublime on the North Rim.

Brickellia scabra (Gray) Nels.

Found along the North Kaibab Trail (Eastman and Howell 7083).

CHAENACTIS (Chaenactis, Falseyarrow)

Chaenactis macrantha D.C. Eaton

Found along the trail to Monument Creek (Eastman 6028).

Chaenactis stevioides Hook. and Arn. (Herbarium of the Museum of Northern Arizona, B4925)

Found in Havasu Canyon.

Chaenactis xantiana Gray (Herbarium of the Museum of Northern Arizona, B4925)

Found in Havasu Canyon.

CHRYSOPSIS (Goldaster, Golden-aster)

Chrysopsis fulcrata Greene (Pl 1599 and 1600)

Found at Hull Tank and near Grandview Point on the South Rim.

Chrysopsis hispida (Hook.) DC. (Pl 1601)

Found in Big Spring Canyon and in Powell Saddle on the North Rim.

Chrysopsis villosa (Pursh) Nutt. (Pl 1602 to 1606, inclusive)

Found at Greenland Lake and Cape Royal on the North Rim and reported as occurring also on the South Rim. It is also found in Havasu Canyon.

CHRYSOTHAMNUS (Rabbitbrush)

Chrysothamnus depressus Nutt. (Pl 1607 and 1608)

Found near Grand Canyon Village and two miles south of Moran Point on the South Rim.

Chrysothamnus greenei (Gray) Greene var. filifolius (Rydb.)

Blake

Found on Hermit Trail.

Chrysothamnus nauseosus (Pall.) Britton var. graveolens (Nutt.) Hall (Pl 1609 to 1613, inclusive)

Found at Cliff Springs on the North Rim and two miles south of Yaki Point, in Pasture Wash and in Havasu Canyon on the South Rim. Variety junceus was found along Bright Angel Trail by Eastman (Eastman 3703).

Chrysothamnus parryi (Gray) Greene var. nevadensis (Gray) Hall (Pl 1614 and 1615)

Found at Cape Royal on the North Rim and in Long Jim Canyon on the South Rim.

Chrysothamnus viscidiflorus (Hook.) Nutt. var. elegans (Greene) Blake

Found along the South Kaibab Trail by Clover and Jotter (4140 and 4150)

CIRSIIUM (Thistle)

Cirsium arizonicum (Gray) Petrak
(Eastman 5789).

Cirsium neomexicanum Gray (Pl 1616)

Found at Phantom Ranch in the Canyon and in Havasu Canyon.

Cirsium nidulum (Jones) Petrak (Pl 1617, 1618 and 1619)

Found near the cafeteria on the North Rim and along Bright Angel Trail at about 4600 feet elevation.

Cirsium undulatum (Nutt.) Spreng. (Pl 1620 and 1621)

Found near River View on the North Rim

Cirsium wheeleri (Gray) Petrak (Pl 1622, 1623, 1624 and 1625)

Found at Robbers Roost on the North Rim and in Long Jim Canyon and at Rowe Well on the South Rim.

CREPIS (Hawksbeard)

Crepis intermedia Gray

We have no specimen of this species but it is reported in Kearney and Peebles as occurring at Grand Canyon (Toumey 664, Ward in 1901). Not known to occur elsewhere in Arizona.

Crepis occidentalis Nutt. (Pl 1626, 1627, 1628 and 1629)

Found along the Transept Trail on the North Rim and one and one-half miles west of Moran Point and west of Rowe Well on the South Rim.

DYSSODIA (Dogweed)

Dyssodia acerosa DC. (Pl 1630 and 1631)

Found in Havasu Canyon and in Grand Canyon National Monument.

Dyssodia pentachaeta (DC.) Robinson (Pl 1632 and 1633)

Found at Phantom Ranch and along the Clear Creek Trail in the Canyon.

Dyssodia porophylloides Gray (Pl 1634)

Found at Phantom Ranch in the Canyon.

Dyssodia thurberi (Gray) Robinson (Pl 2168)

Found at the foot of the North Kaibab Trail in the Canyon.

ENCELIA (Encelia)

Encelia farinosa Gray (Brittlebush, Incienso)

(Pl 1635 and 1636)

Found in the vicinity of Phantom Ranch in the Canyon.

Encelia frutescens Gray (Pl 1637, 1638 and 1639)

Found along the lower parts of the Kaibab Trail near the river and in Grand Canyon National Monument.

ERIGERON (Fleabane)

Erigeron canadensis L.

Found in Havasu Canyon by Clover and Jotter (4390).

Erigeron canus Gray

Found near El Tovar Hotel (Eastman 5646).

Erigeron concinnus (Hook. ' Arn.) Torr. & Gray

(Pl 1640, 1641, 1642 and 1643)

Found one-half mile east of Hermit Rest on the South Rim, along the Bright Angel and South Kaibab Trails in the Canyon at 4000 and 5000 feet elevation, and in Grand Canyon National Monument.

Erigeron divergens Torr. & Gray (Pl 1644, 1645 and 1646)

Collected at Greenland Lake on the North Rim. Common on both Rims.

Erigeron eatoni Gray (Pl 1647 and 1648)

Found just under Grandview Point on the South Rim and in Little Dutchman Pasture on the North Rim.

Erigeron flagellaris Gray (pl 1649 to 1654, inclusive)

Found near Grandview Point on the South Rim, at Robbers Roost, Swamp Point, and Big Spring Canyon on the North Rim, and in Grand Canyon National Monument.

Erigeron formosissimus Greene (Pl 1660, 1661, 1664 and 1665)

Found at Robbers Roost, Big Spring and near the Checking Station on the North Rim. Both variety typicus Cronquist and variety viscidus (Rydb.) Cronquist are represented among our specimens.

Erigeron lobatus Nels.

Found at the mouth of Bright Angel Creek by Clover and Jotter (4093).

Erigeron macranthus Nutt. (Pl 1655, 1656, 1657 and 1658)

Found in Long Jim Canyon on the South Rim and at Greenland Spring and Neal Spring on the North Rim.

Erigeron nudiflorus Buckl. (Pl 1659)

Found near Grandview Point on the South Rim.

Erigeron oreophilus Greenm.

Found along the North Kaibab Trail (Eastman and Howell 7078).

Erigeron ursinus Eaton (Pl 1666)

Found near the Checking Station on the North Rim.

Erigeron utahensis Gray (Pl 1667 and 1879)

Found along Bright Angel Trail at about 4800 feet elevation, in Havasu Canyon and along Hermit Trail.

EUPATORIUM (Eupatorium, Thoroughwort)

Eupatorium herbaceum (Gray) Greene (Pl 1668, 1669 and 1670)

Found at Neal Springs and Cliff Springs on the North Rim and along the North Kaibab Trail at about 7600 feet elevation.

FRANSERIA (Bursage)

Franseria eriocentra Gray (Pl 1671 and 1672)

Found along the Clear Creek Trail and along the Kaibab Trail in the vicinity of the Redwall Limestone.

GAILLARDIA (Gaillardia, Blanketflower)

Gaillardia pinnatifida Torr. (Pl 1673, 1674 and 1675)

Found at Trash Tank and in Long Jim Canyon on the South Rim, and at Rowe Well.

GNAPHALIUM (Cudweed, Everlasting)

Gnaphalium macouni Greene (Pl 1676)
Found in the Kaibab Basin on the North Rim.

Gnaphalium palustre Nutt. (Pl 1677)
Found in the Kaibab Basin on the North Rim.

Gnaphalium wrighti Gray (Pl 1678)
Found at Phantom Ranch in the Canyon.

GRINDELIA (Gumweed)

Grindelia aphanactis Rydb. (Pl 1679)
Found along the West Rim Drive on the South Rim.

Grindelia squarrosa (Pursh) Dunal var. serrulata (Rydb.)
Steeyermark (Pl 1680)
Found near Grandview Point on the South Rim.

GUTIERREZIA (Snakeweed)

Gutierrezia lucida Greene (Pl 1681)
Found about eight miles east of Grand Canyon Village on
the South Rim.

Gutierrezia microcephala (DC.) Gray (Pl 1682)
Found along Clear Creek Trail in the Canyon.

Gutierrezia sarothrae (Pursh) Britt. and Rusby
(Pl 1683, 1684 and 1685)
Common on both Rims.

HELIANTHELLA (Helianthella)

Helianthella quinquenervis (Hook.) Gray (Pl 1686, 1687
and 1688)
Found near the Checking Station and at Marble Flat on the
North Rim.

Helianthella microcephala Gray (Pl 1689 and 1690)
Found at Powell Spring on the North Rim.

HELIANTHUS (Sunflower)

Helianthus petiolaris Nutt. (Pl 1691)
Found at Trash Tank on the South Rim.

HIERACIUM (Hawkweed)

Hiercium fendleri Schultz Bip. (Pl 1832)
Found near Swamp Point on the North Rim.

HYMENOCLEA (Burrobrush)

Hymenoclea salsola Torr. and Gray (Pl 1692 and 1693)
Found in the lower end of Toroweap Valley in Grand Canyon National Monument.

HYMENOPAPPUS (Hymenopappus)

Hymenopappus lugens Greene (Pl 1694, 1695, 1696, 1697 and 1698)
Collected at Grandview Point and west of Rowe Well on the South Rim and known to occur at various other places on both Rims.

LACTUCA (Lettuce)

Lactuca serriola L. var. integrifolia Bogenhard
Found in Havasu Canyon by Clover and Jotter (4393).

LAPHAMIA (Laphamia)

Laphamia congesta Jones
Found at Cape Royal on the North Rim (Peirson 7419).

Laphamia toumeyi Robins. and Greenm. (Pl 1699)
Collected near the Grand Canyon Lodge on the North Rim and known to occur on both Rims. Known only from Grand Canyon National Park.

MADIA (Tarweed)

Madia glomerata Hook. (Pl 1700 and 1701)
Found in the Kaibab Basin on the North Rim.

MALACOTHRIX (Malacothrix)

Malacothrix clevelandi Gray
Found along Hermit Creek (Eastman 6012).

Malacothrix torreyi Gray (Pl 1702)
Found in Pasture Wash on the South Rim.

OXYTENIA

Oxytenia acerosa Nutt.

Found near the lower end of Bright Angel Trail (Eastman 3714).

PARTHENIUM (Parthenium)

Parthenium incanum H.B.K. (Pl 1703)

Found in Havasu Canyon and reported in Kearney and Peebles as common in the lower parts of Grand Canyon.

PECTIS (Pectis, Fetid-marigold)

Pectis papposa Harv. and Gray (Pl 1704)

Found in Havasu Canyon.

PEREZIA (Perezia)

Perezia wrightii Gray (Pl 1705, 1706, 1707 and 1708)

Found along Bright Angel Trail and at Phantom Ranch in the Canyon and in Havasu Canyon.

PLUCHEA (Pluchea)

Pluchea sericea (Nutt.) Coville (Arrowweed)

(Pl 1709, 1710 and 1711)

Found at Phantom Ranch in the Canyon and in Havasu Canyon.

POROPHYLLUM (Poreleaf)

Porophyllum gracile Benth. (Pl 1712 and 1713)

Found at Phantom Ranch in the Canyon and in Havasu Canyon.

PSILOSTROPHE (Paperflower)

Psilostrophe sparsiflora (Gray) Nels. (Pl 1714 to 1723, inclusive)

Found in Long Jim Canyon on the South Rim, along the Hermit and Kaibab Trails in the Canyon and in Grand Canyon National Monument.

Psilostrophe tagetina (Nutt.) Greene

Found along Hermit Trail (Eastman 5865).

RATIBIDA (Prairieconeflower)

Ratibida columnaris (Sims) Don (Pl 1724)
Found near Shoshone Point on the South Rim.

SANVITALIA

Sanvitalia aberti Gray
Found near El Tovar Hotel (Eastman 3647).

SENECIO (Groundsel)

Senecio lynceus Greene (Pl 1725)
Found in DeMotte Park just outside the park boundary on the North Rim.

Senecio macdougalii Heller (Pl 1726 and 1727)
Found at Neal Springs and Greenland Springs on the North Rim.

Senecio monoensis Greene (Pl 1728)
Found in Pasture Wash on the South Rim.

Senecio multilobatus Torr. and Gray (Pl 1729)
Found one mile south of the South Entrance on the South Rim.

Senecio quercetorum Greene
Found in Havasu Canyon (Herbarium of the Museum of Northern Arizona B4987).

Senecio spartioides Torr. and Gray (Pl 1730)
Found two miles south of Yeki Point on the South Rim.

Senecio stygius Greene (Pl 1731)
Found near Rowe Well on the South Rim and along the South Kaibab Trail in the Canyon. The type specimen was collected somewhere in Grand Canyon by Lemmon in 1884.

Senecio uintahensis Nels. (Pl 1732 to 1737, inclusive)
Found near Grandview Point on the South Rim, on the South Kaibab Trail at 7000 feet elevation, and near the Checking Station on the North Rim and known to occur at other places on both Rims.

SOLIDAGO (Goldenrod)

Solidago altissima L. (S. canadensis var. arizonica Gray)
(Pl 1738)
Found near Grandview Point on the South Rim.

Solidago graminea (Woot. and Standl.) Blake
(Pl 1740 and 1741)

Found in South Canyon north of the park boundary on the North Rim.

Solidago missouriensis Nutt. (Pl 1739)

Found in Thompson Canyon on the North Rim.

Solidago nana Nutt. (Pl 1742, 1743 and 1744)

Found at Fawn Spring, Robbers Roost, and near the Checking Station on the North Rim.

Solidago petradoria Blake (Pl 1745, 1746 and 1747)

Found at Cape Royal and Point Sublime on the North Rim.

Solidago trinervata Greene (S. sparsiflora Gray)

(Pl 1748, 1749, 1750 and 1751)

Found at Neal Springs and Cape Royal on the North Rim, in Long Jim Canyon on the South Rim and in Havasu Canyon.

SONCHUS (Sowthistle)

Sonchus asper (L.) Hill (Pl 1752)

Found near Bright Angel Creek. Exotic. Native of Europe.

Sonchus oleraceus L.

Found in Havasu Canyon. Exotic. Native to Europe. (Herbarium of the Museum of Northern Arizona B5002). Also found along the South Kaibab Trail by Clover and Jotter (4129).

STEPHANOMERIA (PTILORIA) (Wirelettuce)

Stephanomeria pauciflora (Torr.) Nels. (Pl 1753 to 1761, inclusive, and 2041)

Found at Cape Royal, Cliff Springs and Greenland Point on the North Rim, in Bright Angel Canyon and along Clear Creek Trail in the Canyon, in Havasu Canyon, and near the Ranger Station in Grand Canyon National Monument.

Stephanomeria tenuifolia (Torr.) Hall (Pl 2060)

Found at Cape Royal on the North Rim.

Stephanomeria thurberi Gray (Pl 1762)

Found at Rowe Well on the South Rim.

TARAXACUM (Dandelion)

Taraxacum laevigatum (Willd.) DC. (Pl 1764 and 1767)

Found near Grandview Point and five miles west of Moran Point on the South Rim.

Taraxacum officinale Weber (T. palustre var. vulgare (Lam.) Fernald) (Pl 1763, 1765 and 1858)

Found at various places on both Rims. This is the common dandelion of the United States.

TOWNSENDIA (Townsendia)

Townsendia arizonica Gray

Found twelve miles west of Grand Canyon Village (Herbarium of the Museum of Northern Arizona B4408).

Townsendia excapa (Richards.) Porter (Pl 1768, 1769, 1770, 1771 and 1772)

Found in Grand Canyon Village, in Long Jim Canyon and four miles west of Moran Point on the South Rim.

TRAGOPOGON (Goatsbeard)

Tragopogon dubius Scop. (Pl 1773)

Found near Wayside Museum on the South Rim.

TRIXIS (Trixis)

Trixis californica Kellogg (Pl 1774, 1775, 1776 and 2152)

Found along the Bright Angel and Kaibab Trails and at Phantom Ranch in the Canyon.

UROAPPUS

Uropappus linearifolius Nutt. (Microseris linearifolia (DC) Schultz Bip.)

Found along Hermit Creek (Eastman 5980).

VERBESINA (Crownbeard)

Verbesina encelioides (Cav.) Benth. and Hook. (Pl 1777 and 1778)

Common in Grand Canyon Village and along roadsides on the South Rim. Also found in Havasu Canyon.

VIGUIERA (Goldeneye)

Viguiera multiflora (Nutt.) Blake (Pl 1779 to 1787, inclusive)

Fairly common on both Rims and collected at several locations. Var. nevadensis (Nels.) Blake is less common than the straight species but it has been collected at Neal Springs on the North Rim and one and one-half miles south of Grandview Point on the South Rim.

ADDENDUM TO CHECKLIST OF PLANTS

OF

GRAND CANYON NATIONAL PARK

January, 1947

THALLOPHYTA (ALGAE, FUNGI AND LICHENS)

Division MYXOMYCETEAE (Slime Moulds)

Lycogola sp. (Slime Mould) (No specimen in herbarium)
(Photo-transparency "2126 in Grand Canyon collection)

Found at spray beds on dead stump in National Park Service Headquarters area, Bright Angel Point, North Rim.

Division EUMYCETEAE (True Fungi)

BASIDIOMYCETES : URIDALES (Rusts)

Coleosporium crowellii Cummins (Rust) (No specimen in herbarium)

Reported by James L. Mielke in "The Plant Disease Reporter" Vol. 30, No. 11, November 1946. Found on the South Rim widely spread on *Pinus edulis*.

Peridermium coloradense (Rust) (No specimen in herbarium)

Reported by J. L. Mielke and R. W. Davidson in "The Plant Disease Reporter" Vol. 31, No. 1, January 1947. Found in North Rim forests, causing Witches' Brooms.

AGARICALES : POLYPORACEAE (Pore Fungi)

Polyporus circinatus (No specimen in herbarium)

Reported by J. L. Mielke and R. W. Davidson in "The Plant Disease Reporter" Vol. 31, No. 1. A common root and butt rot cancer in *Picea engelmanni*. Found in North Rim forests.

Polyporus sp. (No specimen in herbarium; photo-transparency #2125 in Grand Canyon collection)

Yellow and white mass on old sawed stump found near National Park Service Headquarters on Bright Angel Point, North Rim.

AGARICACEAE (Gill Fungi)

Lentinus lepidens (Scaley Lentinus) (No specimen in herbarium)

Reported by J. L. Mielke and R. W. Davidson in "The Plant Disease Reporter" Vol. 31, No. 1, January 1947. Found on North Rim on Picea engelmanni.

Tricholoma rutilans (?) (Tricholoma) (No specimen in herbarium; photo-transparency #2126 in Grand Canyon collection)

Found near National Park Service Headquarters on Bright Angel Point, North Rim.

LYCOPERDALES : LYCOPERDACEAE (Puffballs)

Calvatia gigantea (Pers. Lloyd) (Giant Calvatia) (No specimen in herbarium, but photo-print mounted on Pl 2428)

Found on South Rim in open Pinus ponderosa forest.

SPERMATOPHYTA (Seed Plants)

8. GRAMINEAE (Grass Family)

AGROPYRON (Wheatgrass)

Agropyron pseudorepens (Scribner and Smith) (False Quackgrass) (Pl 2418)

Found at Kanabowmits Spring on North Rim.

HORDEUM (Barley)

Hordeum nodosum (Meadow Barley) (Pl 2420)

Found at Neal Springs on North Rim.

9. CYPERACEAE (Sedge Family)

CAREX (Sedge)

Carex near scaparia Schkuhr (Broom Sedge) (Pl 2421)
Found in Kanabownits Canyon, North Rim.

Carex subfusa W. Boott (Pl 2422)
Found at Neal Springs on the North Rim.

16. JUNCACEAE (Rush Family)

JUNCUS (Rush)

Juncus longistyles Torr. (Pl 2423)
Found at Neal Springs on the North Rim.

54. LEGUMINOSAE (Pea Family)

ASTRAGALUS

Astragalus humillimus Gray ? (Pl 2424)
Found at Cape Royal just south of parking area on the
North Rim.

58. ZYGOPHYLLACEAE (Caltrop Family)

KALLSTROEMIA (Caltrop)

Kallstroemia californica (Wats.) Vail (Pl 2425)
Found at Grand Canyon Village.

106. BORAGINACEAE (Borage Family)

LITHOSPERMUM (Gromwell)

Lithospermum incisum Lehm (Narrowleaf Gromwell) (Pl 1113)
Found on South Rim along Flagstaff Road. Is the same as
L. linearifolium.

Lithospermum linearifolium Goldie
Same as L. incisum.

Lithospermum angustifolium
Same as L. linearifolium.

121. COMPOSITAE (Sunflower Family)

CHRYSOTHAMNUS (Rabbitbrush)

Chrysothamnus nauseosus var. gnaphalodes (Green) Hall ?
(Rubber Rabbitbrush) (Pl 2426)
Found at Cape Royal parking area.

GNAPHALIUM (Cudweed)

Gnaphalium grayi Nels and Macbri. (Pl 2427)
Found at Neal Springs on the North Rim.

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The Editor.

