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No

DESCRIPTION OF THE COLLECTIONS OF THE GEOLOGICAL MUSEUM, UNIVERSITY OF WISCONSIN.

Numerically arranged.

(Numbers 1 to 4449 - red on black)

U.W. Nos.

1- 88	Julian collection of miscellaneous rocks and thin sections (old) now in general Petrographic Collection.
89-148	Rocks, presented by C. W. Hall, from Minnesota. Those found incorporated in Petrographic collection.
149-170	Vacant. (specimens lost)
171	Chert from Missouri, in Petrographic collection.
172-177	Vacant.
178-213	Iron ores in display cases, etc. Formerly used for fossils (now transferred to fossil collection).
214-309	Set of analyzed iron ores from St. Louis Exposition. Hotchkiss. Boxed.
310-315	Miscellaneous iron ores.
320-495	Old metallurgical and ore collections, in large part lost or given away. Disposition of remainder indicated in old book.
496-945	Rosenbush collection of rocks, with sections. Incorporated in general petrographic collection.
946-1190	Old metallurgical and ore collections, in large part either lost or given away.
1191-1433	Metallurgical specimens from Henry collection. Some given away, others in display cases.
1500-1658	BROOKS COLLECTION. - Michigan rocks. Boxes 79-84.
1659-1668	Miscellaneous rocks (in petrographic collection).
1690-1770	Rocks from Henry collection. Incorporated in petrographi collection.
1790-2019	Haworth collection of Missouri rocks. Boxes 38-48.

U.W. Nos.

2020-2042	Rocks from Henry collection (Continued), incorporated in petrographic collection.
2043-2055	Miscellaneous -- largely lost.
2056-2083½	Williams collection of rocks, incorporated in mineral and petrographic collections.
2084-2323½	Hobbs, New England and Maryland rocks. Mainly boxes 130-132; part in petrographic collection.
323.1-2356.2	Chaper collection of rocks. Part in petrographic collection, remainder destroyed.
2359-2373	Norwegian rocks. Part in petrographic collection, rest destroyed.
2374-2387	All missing but 2375.
2400-2411	Rocks from Kemp. Petrographic collection.
2412-2450	Vacant. (fossils transferred to fossil collection).
2451-2468	Hobbs, New England and Maryland rocks - largely destroyed. Some in Box 132.
2469-2475	Minerals - most missing.
2476-2487	Phosphates from Florida. Economic Case 18.
2488-2557 2/3	Minerals - largely missing, rest in mineral collections.
2568-2580	Fossils, transferred to fossil collection.
2581-2610	Massachusetts rocks from Emerson. Part in petrographic collection, balance destroyed.
2611-2746	Minerals - all gone.
2747-2779	Minerals and fossils, nearly all gone.
2780-2806	New Jersey rocks, Nason. Petrographic collection, Metamorphic laboratory, and box 132.
2807-2968c	Minerals, fossils, ores, etc. Virtually all gone.
2969-2997	Pennsylvania rocks, Williams. Petrographic collection and box 132.
2998-3006	North Carolina rocks, Holmes, as last.
3007-3056	Fossils and minerals. Virtually all gone.
3057-3066	Miscellaneous ores, nearly all missing.
3068-3096	Baraboo rocks from Weidman. Petrographic collection, Box 49 and 76.
3097-3170.3	New South Wales ores, World's Fair at Chicago. Economic collections, many lost.

U.W.No.

3170-3203 Swedish iron ores. World's Fair, Chicago. Economic collection. Box 14, and some destroyed.

3204-3219 Minerals and ores from Oregon. World's Fair, Chicago. Economic collection, and missing.

3220-3237 Same from Washington. Same disposition.

3238-3250 Same from Michigan. Mainly missing.

3251-3272 Same from Ontario. Same disposition.

3273-3296 Same from Idaho, " "

3297-3304 2/3. Miscellaneous ores, from Idaho. Same disposition.

3305-3314 Same from Arizona, Same disposition.

3315-3320 Same from South Dakota. " "

3321-3353 " " British Columbia. Same disposition.

3354-3360c Miscellaneous -- all missing.

[illegible]3360c Casts of Ripple Marks. Sedimentary case.

3361-3389 Nearly all missing. Miscellaneous.

3390-3467 Rocks from Quinnesec Falls. A. T. Lincoln. Boxes 77 and 78 (79?)

3480-3548 Marquette rocks, Wis. Hobbs and Pretts. Boxes 49, 72, 74. Sections in Petrographic Laboratory.

3570-3595 Minerals, nearly all missing.

3596-3614 Rocks from Hobbs, miscellaneous. Nearly all in petrographic collection.

3614-3665 Fossils, transferred to new collection.

3666-3672 Marquette and Observatory Hill rocks. Box 74 and Petrographic collection.

3673-3683 Rocks and ores from Penokee District.

Economic Collections.

U.W. No.	
3684-3696	HAWORTH - Missouri rocks. Those found in box 48.
3697-3710	Miscellaneous specimens in display cases.
3750-3755	Marquette Rocks - Hobbs. Box 74 and Petrographic collection.
3755-3786	Miscellaneous Rocks. Mainly in Petrographic collection.
3787-3807	Minerals -- nearly all missing.
3808-3850	Utley rocks, Weidman. Box 74 and Petrographic collections. Some sections. Many are missing.
3851-3872d	Massachusetts Rocks, Emerson. Petrographic collection, Boxes 132 and 133 and metamorphic collection.
3873-3917	Minerals -- all missing.
3918-3936 ?	Mass. Waupaca rocks and minerals. Hobbs. Petrographic collection, and box 133. Several missing.
3937-4500 4477	WEIDMAN - Wis. Geol. & Nat. Hist. Survey. ~~In Weidman's possession, many boxed in South Hall. None have permanent numbers. Some breaks and duplications occur.~~
4060-4087	Fossils -- transferred.
4088-4123	Miscellaneous Rocks - largely in Petrographic collection.
4124-4142	Minerals - largely missing.
4143-4400	ASSIGNED TO WEIDMAN.
4408-4440	Marcellon and Observatory Hill rocks, Hobbs & Leith. Petrographic collection; Box 75, and some missing.
4442-4444	Rock from Ohio gas field. Petrographic collection.
4445-5000 ?	ASSIGNED TO WEIDMAN. ~~(Specimens have no numbers painted on)~~
4479-4509	All missing (minerals)
4601-4686	ROHN COLLECTION OF LAKE SUPERIOR ROCKS. Petrographic Lab.
4700-4900	Buckley -- apparently never used.
4901-4948	Wyoming rocks and minerals. Knight. Petrographic collection. Many lost.
4949-4991	Colorado rocks. Patton. Petrographic collection.

U.W. Nos.

5000-7999	WEIDMAN. ~~No painted numbers.~~ Black on white numbers many lost because of poor numbering
5001-5152	Krantz collection of ores, etc. In laboratory.
5153-5161	Sections of iron ore - Cuyuna Range. All missing.
5162-5267	Iron ores, Cuba. W. J. Mead and C. K. Leith. ~~In museum drawers.~~ In Rm 210 Rm 202 210
5268-5336	Iron ores, etc. Brazil. C. K. Leith and others. ~~In museum drawers.~~ Room 210 Rm 202 210
	(Note: Weidman's numbers are in part duplicated through error.)
8000-10,000	GRANT. Douglas Co. Petrographic collection and boxes. White on black numbers. (not U.S.G.S.!!) Black on white after this
10,001-10032	Minerals and rocks -- all lost except four in petrographic collection. (Red numbers) RED
10033-10131	Wyoming rocks (Knight) - virtually all discarded.
10132-10352	WELL SAMPLES - Schultz - ~~boxed.~~
10353-10394	Colorado rocks - Kuntz - Petrographic collection.
10395-10400	Vacant.
10401-10410	Miscellaneous rocks - Blackwelder.
10411-10500	Vacant.
10501-10537	Minerals, etc. Mills collection. In museum, or lost. GENEVIEVE
10538-10629	BUTTE COLLECTION, Kirk. ~~Boxes 1-3~~ Room 210 and metamorphic collection. Sections in metamorphic collection.
10630-10639	Miscellaneous specimens, mainly lost.
10640-10650	BUTTE, Continued.
10651-10670	Utah ores, Jessup. In economic collections.
10671-10677	Rib Hill Quartzite. In drawer of case 9 & metamorphic and igneous structure collections.
10678-10682	Specimens from Michigan Mine. Metamorphic collection, and lost.
10683-10685	Miscellaneous specimens, mainly minerals.
10691-10824	Miscellaneous ores - mainly in economic collections.

U.W. Nos.

10825-10839	Rare metal ores. Thomas. Economic collection.
10840-10900	COBALT ORES - HOTCHKISS. Special collection. Rm 210
10901-10906	Illinois-Kentucky fluorspar. Mead. ~~Boxed~~. Rm 210
10907-10970	Largely copper. Miscellaneous ores, in economic collection.
10971-10984	COBALT ORES, Continued.
10985-10999	Copper ores, Economic collection.
11001-11418	LAKE SUPERIOR Sandstone, Thwaites. Boxes 29-37, and petrographic collection. (Black numbers begin here.) (see Weidman collection)
11450-11477	Miscellaneous Wisconsin rocks, mainly from Wausau. Drawer in museum and petrographic collection.
11500-15000	FLORENCE COUNTY and other northern rocks. Hotchkiss and others. Some in petrographic collection, in Hotchkiss' office, mainly boxed.
15001-15501	Vacant.
15501-17000	WELL SAMPLES - Wisconsin. All ~~boxed~~ in case. See special index and files in Hotchkiss' office. Cont. at 50,001
17001-17225	Miscellaneous ores with a few rocks. Economic collections.
17058-17131	Pb-Zn ores
17226-17252	Coals and Bitumens. Economic collection.
17253-17274	Cambrian rocks of New Brunswick. Matthew. Those not incorporated in petrographic collection were discarded.
17275-17294	Miscellaneous ores, economic collections.
17295-17301	Iceland spring deposits. Samuel Weidman. Petrographic, fossil and mineral collections.
17302-17322	Cuban iron ores, Mead. With other Cuban ores.
17325-17341	Rocks and ores collected by C. K. Leith in Scotland and Germany. ~~Petrographic~~ and economic collections. Room 210
17343-17375	Broken Hill, Australia, ores. Van Hise. Stored in museum.
17376-17405	Miscellaneous rocks, etc., mainly petrographic collection.

U.W. Nos.

17406-17417	Grain and texture of igneous rocks. Lane. Texture case.
17418-17429	Rocks and minerals, Winchell. Petrographic and mineral collection.
17430-17490	Miscellaneous rocks, mainly petrographic collection.
17491-17506	Weathering of diabase, Mead. Metamorphic collection. (~~Trap~~ 17305)
17507-17530	Wisconsin clays, Buckley. Petrographic collection and in ~~attic~~. original boxes.
17531-17620	Miscellaneous rocks and ores.
17621-17641	Siskiyou, Calif., rocks and sections, Winchell. Petrographic collection.
17642-17649	Rutile rocks and minerals, Virginia. Disposition ?
17650-17657	Miscellaneous Wisconsin specimens.
17658-17675	Rocks collected by C. K. Leith, 1913. Drawer in hall ~~museum~~.
17676-17700	Rocks from Foote Min. Co. Petrographic collection.
17701-17929	Montana rocks and minerals with sections, Winchell. Petrographic collection, and boxed.
17930-17949	Foote rocks, continued. Petrographic collection.
17950-17957	Miscellaneous specimens.
17958-18048	Rocks from Canada and Alaska, Thwaites. Petrographic and structure collections.
18049-18100	Miscellaneous specimens.
18101-18168	Thin sections of Utah Rocks, Winchell. Petrographic collection.
18169-18176	Arkansas rocks, Segall. Petrographic collection.
18178-18308	Thin sections of rocks, etc., from National, Nev., Winchell. Petrographic collection.
18309-18327	Miscellaneous rocks. Petrographic collection.
18328-18334	Thin sections, Cripple Creek, Colo. Winchell. Petrographic collection.

U.W. Nos.

18335-18384a	Michigan rocks, Mead. Metamorphic collection.
18384-18399	Magpie Mine, Ont., rocks. Mead. Metamorphic collection.
18401-18409	Miscellaneous Brazil specimens. Shearer. Mainly petrographic collection.
18410-18413	Louisiana clays, Bennett.
18414-18476	WISCONSIN ROCKS - HOTCHKISS and Thwaites. Special collection.
18477-18483	Miscellaneous rocks, largely in igneous rock case.
18484-18491	Drill cores from Arizona and Ontario, Mead. Economic and metamorphic collections.
18500-18598	ROCKS NEAR MADISON - Thwaites. Special collection.
18601-18609	Sections of sphalerite and wurtzite. Mineral collection.
18610-18618	Ontario drill cores, Continued.
18619-18625	Miscellaneous Wisconsin rocks and ores.
18626-18630	Mead collection, Michigan, continued.
18631-18633	Miscellaneous.
18634-18648	Sections of minerals, Winchell. Mineral and petrographic collections.
18649-18658	Grain of diabase - sections, Lane. Special collection.
18659-18699	Sections of rocks and minerals, Tonopah, Nev., and Vancouver Island, Winchell. Petrographic and mineral collections.
18700-18708	Miscellaneous specimens.
18709-18816	HART COLLECTION of COPPER ORES and rocks. Special collection.
18824-18849	Panama Rocks - W. J. Mead - Special

U.W. Nos.

19001-19597	DISPLAY COLLECTION OF MINERALS.
19600-19999	GENERAL MINERAL COLLECTION.
20001-20499	Meteorites.
20501-24500	General mineral collection, continued.
24500-24999	Wisconsin Rocks - F.T.T.
25000-49999	Wisconsin Geological & Natural History Survey collections.
50000-54999	WELL SAMPLES.
55000-59999	C.K. LEITH, in hall
60000-64999	U. of W. collections, continued.
65000-69999	W.J. MEAD, in hall
70000-	WELL SAMPLES

KEY I

To disposition of specimens

EMC - Emmons Mineralogy Class Collection

MS - Museum Mineral Storage

MX - Museum mineral Exhibition

MA - Analyzed Collection (X-ray room)

EX - Economic Exhibit

ES - Economic Collection- storage room 206

UW - Indicates University number (black numbers on white)

ABBREVIATIONS INDICATING DISPOSITION OF SPECIMENS.

B Boxed, number following

C Case, number following (stored specimens)

Cr, Collection of crystals (not shown in special list

D Drawer, number following, indicates location of stored specimens

E Collection of economic minerals, letter following indicates special collection

- a - aluminum
- co cobalt and nickel
- cu copper
- cl coals
- j gold
- c iron
- l lead and zinc
- m manganese
- n non-metallic, general
- r rare metals
- s silver and silver lead

El Economic Labaratory Collection

D Display collection of minerals. Number following indicates classification in table. Letter not given in special list of this collection 19001-19600.

G Collection of gem and ornamental minerals (not shown in special list)

M University mineral collection (not including display minerals). Letter not given in special list 19601-20000, 20501-

Numbers following indicate classification in table.

Me Metamorphic collection.

Ml " Labaratory Collection

-- Missing.

P Collection of pseudomorphs (not shown in special list).

S Thin sections (not given where an entire collection is sectioned)

Se Sedimentary structure collection

ST Structural Col.

T Collection showing textures of igneous rocks (not shown in special list)

V University rock collection. Number following indicates classification in table.

W Collection of Wisconsin rocks.

Wm Collection of Wisconsin minerals and ores.

WHT W.H. Twenhofel in sedimentation collection

A 13 Chimney rock showing condensation of gases in pore space. Bauxite, Arkansas

B 10 Moa District, Cuba

B 26 Basalt schist Lake Superior ML 7

D.254 Pyrolusite (radiated) Loc: Cayuna Range, Mont.

D.270 Calcite (bicolored crystal) Loc: Joplin, Missori

D.275 Smithsonite after calcite Loc: Mineral Point, Wisconsin Source: Henry Coll.

E 56 Anthracite Coal Mahanoy District, Schuylkill Valley, Pennesylvnia

("H" Series)

H 6 Granite pegmatite showing graphic ingrow Ilchester, Maryland

H 8 Granite pegmatite showing graphic ingrowth Hitterö, Norway

H 17.1 Granite Rhyolite Mt., Cripple Creek, Colorado

H 24.1 Granite Bavano, Lago Maggior, Italy W.H.H.

H 40-15 Oolite Stoddard, Verona Co., Wis.

H 43 Granite Orbicular Granite Craftsbury, Vermont

H 51 Granite Var. Granitite Dorseys Run Station, B&O Railroad, Maryland

H 56 Granite Porphyry Schneeburg, Saxony, Germany

H 75 Schist Var. Spotted Schist (Knotenschieter) Grube Sarsehwart, Schneeberg, Saxony, Germany

H 88 Porphry

H 100.10 Rhyolite Quartz Porphyry Ceder Island North shore of Lake Superior. Source: W.H. Hobbs

H 107.2 Rhyolite Fragment of compound Spherulite Silver Cliff, Colo. Specimen donated by Norris Johnes Oshkosh 1970

H 107.4 Rhyolite Spherulite from Rhyolite Rosita, Califoria

H 107.6 Rhyolite Spherulites (lithophysae) Silver Cliff, Colo. Specimen donated byNorris Johnes Oshkosh 1970

H 107.7 Spherulites in Rhyolite Specimen Mt. west of Estes Park, Colo. Specimen donated by Norris Johnes Oshkosh 1970

H 115 Rhyolite Liparite Austro-Hungary

H 116.25½ Flow banding in rhyolite resembling gneis Marcellon, Wisconsin (ML 4)

H 116.33 Rhyolite Quartz keratophre Baraboo, Wis.

H 126 Rhyolite Lithophsae filled with Fayalite (?) etc. Near foot of Monte Pe Pelato, Lipari Island

H 127.3 Rhylotite Spherulitic Rhyolite Overley Hill, Wellington, Shropshire

H 134 Obsidian with Lihtophsae (Fayalite and Tridymite) Obsidian Cliffs, Yellowstone National Park

H 136 Glass

H 153 Obsidian and Pumice Fossa di Roechi Rossi, Lipari Islands Source: W.H. HOBBS

H 162 Felsite Pitchstone Korbitz, near Meissen, Saxony, Germany Source: W.H. Hobbs

("H" Series)

H 165 Pitchstone Large Spherulite (secondary) in Pitchstone Fluid structure run through Spherulite Korbitz near Meissen, Germany

H 167 Pitchstone Spheroidal Pitchstone Korbitz near Meissen, Saxony, Germany

H 203 Trachyte showing eutaxitic stucture Pianure, near Naples, Italy

H 209 Pumice bomb of 1888 showing Breadcrust structure Italy(?)

H 243.4 Nepheline Syenite Vindicator Mine, Bull Hill, Cripple Creek, Colo.

H 262.4 Phonolite Lookout Mountain, Colo.

H 262.5 Phonolite Summit of Bull Cliff, Cripple Creek, Colo.

H 262.8 Phonolite Rhyolite Peak, Cripple Creek, Colo.

H 265 Natrolite in Phonolite Tertiary Oberschaffhausen, Kaiserstuhl, S. Germany

H 265.6 Scoriaceous Leucite Phonolite Leucite Hills, Wyoming Professor Knight

H 274 Diorite Hornblende Diorite Schriesbeimenthal, Odenwald

H 282.11 Inclusion in Soda Granite Crugers Station New York

H 282.12 Inclusions of Group 4 in Soda Granite Crugers Station, New York

("H" Series)

H 282.17 Hornfels Sillimanite, garnet, biotite, etc. near contact Stony Point, N.Y.

H 283.1 Diorite with orthoclase v. napoleonite Corsica W.H.H.

H 321.1 Mica Andesite Hypersthene Cavedi Paransana, Monte Cimino near Viterbo

H 326.2 Andesite Battle Mt., Colo

H 326.8 Hypersthene Andesite Camp Ground, Crater Lake, Oregon

H 329 Andesite Pumice Mt. Shasta, California

H 330.3 Hornblende phenocrysts in Stenzelberg Andesite Siebengebirge, N.W. Germany

WHH

H 365 Diabase in contact with sheared Tuff (Shlstein) Rübeland, Harz, Germany

H 399.2 Amygdaloid Basalt with copper Quincy Mine, Keweenaw Pt., Mich

H 437.1 Dolerite Palisades in quarries at Eldorado Weehawken, New Jersey

H 487 Dunite Corum Hill, Cullasaja, Macon Co., North Carolina

H 491 Peridotite Var. Kimberlite Syracuse, New York

H 528 Basalt Pertersburg, Siebengebirge, Germany WHH

("H" Series)

H 531 Dolerite Löwenburg, Siebengebirge, Germany W H H

H 539 Slag

H 543 Augite in volcanic ash Monte Rossi, Eltria

H 555 Sandstone included in Lava Etna, Sicily Specimen donated by R.A. Paull Dept. of Geology U.W. of Milwaukee

H 556 Tuff containing Augite crystals South slope of Mt. Rossi Etna, Sicily

H 622 Basalt (?) Lava of 1760 Vesuvius, Monte Somma, Italy

H 662 Mica nodule from piperno Block found on road near Palaznola Alban Hills (462)

H 682 Trachyte with Leucite Phenocrysts Lavalato Rome, Italy Source: W.H. Hobbs

H 983 Andesite Tuff Bull Cliff, Cripple Creek Colo

H 1010 Chloritic schist with lime layers Germany (N 7)

H 1029 Augite granululite Germany : Hartmannsdorf, Saxony (ML) Specimen donated to Norris Johnes, Oshkosh

("H" Series)

H 2451 Dolerite Palisades in quarries at Eldorado Weehawkem, New Jersey

H 2831 Diorite Var Corisite showing orbicular structure Corsica

H 3262 Andesite Battle Mountain, Colorado Ex. H.B.P. Specimen donated to L. Pray

H 3597 Sandstone Vra. Greenland Meissen, Saxony, Germany

H 3947 Tremolite marble New England (O 11)

(Continued Series)

K 8 Fluorite developed into a sdhist by shearing along a fault Loc:Kentucky Fluorspar Dist. Source: M.D. Harbaugh

L 66.9 Mangamese Psilomelane MnO_2 Huronian Hurley Iron Co., Wis. (ES 35)

S1 177 Lepidolite Loc: Unknown *Stockwell

1 - 88 Julian Collection of Rocks with old thin sections.
(Petrographic collection). (V.R.C.)

7.3 Decomposed gneiss Wis. (ML9)

24 Hematite pseudomorphous after garnet Locality unknown

26 Kyanite Moores, Delaware Co., Penna.

33 Biotite Sylvan Lake, South Dakota
33 Quartz (drusy)

50 Structure:-Amorphous, Deweylite $4MgO \cdot 3SiO_2 \cdot 6H_2O$
Webster, North Carolina

59 Selenite Detroit, Michigan.

89 - 148 Minnesota Hall, C.W. Igneous, metamorphic & sedimentary rocks.
University Rock Collect. Petrog. Lab General Col.

147 Opal. Buena Vista, Colorado

102 Molybdenite Aldfield Township, Pontiac Co., QUEBEC, Canada

103 Chalcopyrite $CuFeS_2$ tetragonal
Province of Uge, Japan

110 Amygdaloid Basalt Good Harbour Bay , Minn. (Lake Superior)

118 Amphibole Eganville, Ontario

121 Iron Limestone, Critacerus, North side of Minnesota River, Minn. (ES50)

129 Dolomite Ninninger, Minn. (ML14)

133 Microline $K_2O \cdot Al_2O_3 \cdot 6SiO_2$ (var. Amazonstone)
triclinic Pikes Peak, Colorado

137 Wulfenite (MS) (818)

139 Orpiment, As_2S_3 and Realgar, AsS (MS) (27)

141 Shale sandy & glauconitic clay. Upper Cambrian, Franconia,- Lower Mazomanie Zone. Newton, Vernon Co. Wis.

147 Opal Buena Vista, Colorado

159 ES 1 Cinnabar in Mississippian (Jack Fork) sandstone
Pike County, Arkansas

Iron Ores, mainly obtained at St. Louis Exposition, 1905.

178-213

mainly in Iron case

U.W.No.		Name.	Locality.
178		Iridescent Iron	Iron Mt., Custer Co., S.D. Mineral series.
179	Case 21	Fe. 38.685, Mn. 9.345 SiO_2 17.560 P. .442	Pine Grove, Cumberland Co., Pa.
180	Case 24	Porphyritic hematite or [corundum]?	Port Henry, N. Y.
181	Case 21	Manganiferous iron ore (2 spec.) Fe 42, Mn.19	Iron Co., Mo.
182	Case 15	~~Psilomelane (3 spec.)~~	" " " Recat. LO 9659. 12/9/34. 269
183	Case 24	Brown Ore Fe 51, SiO_2 9, Al_2O_3 3.73 CaO .75, P .40, S .10	Alabama.
184	Case 21	Specular Iron Ore (Hematite ?)	Va. I.,C. & Coke Co. Dewey, Bedford Co., Va.
185	Case 16	Gossan Ore	Isabella, Tenn.
186	Case 24	Clinton Hematite (oolitic)	Tennessee.
187	Case 21	Magnetite	Cranberry, Tenn.
188	Case 21	Bessemer Ore, new bed	Barton Hill, Mineville, N.Y.
189	Case 24	Pipe ore	Va. I., C., & Coke Co., Little Wythe, Wythe Co., Va.
190		Hematite Fe. 65.50, SiO_2 1.58, P. .097, S. .012	Sunrise Mine, Wyoming.
191	Case 21	Hematite	Idaho.
192		Mineral Paint	Gibson Devel. Co., San Pedro, N. Mex.
193	Case 21	(Hematite) Bessemer ore, Fe 61.5, P. T. Mn 0.46, S.22, SiO_2 8.56	Center Co., Tenn.

U.W.No.	Name.	Locality.
194 E1	~~Manganiferous ore, Mn 50.50 Si 2.86, P .09, H_2O 5.50~~	~~Minas Geraes, Brazil.~~ LO 9430 Recat.
ES 53 1943	Limonite Ore from old river gravels	Seneca, Crawford Co., Wisconsin
195 Case 24 Case 11 ?	Limonite	Rock Island Mines, Lincoln Co., N. Mex. (?Nevada?)
196	Manganese (gold $6. per ton)	Palastine Mine, Red R. Dist, , N. Mex.
197 Case 21	Mineral paint	San Pedro Dist., N. Mex.
198 E1 Case 15	~~Hematite (?), Fe_2O_3 98.5, SiO_2 0.6, CaO, Al_2O_3 0.9~~	~~Minas Geraes, (Sabara) Brazil~~ LO 9431 Recat.
199	~~Pyrolusite (?)~~	~~Independence Co., Ark.~~ Recat. LO 9560.
200 E1	Iron Ore (magnetite)	Olive Mine, 9 mi. E. of Llano, Tex.
201 E1	Hematite, Fe 60.03, S 0.9, P 0.33, Insol. 5.82	Pilot Knob, Mo.
202 Case 24	Magnetite	Iron Springs, _____ Co., Utah.
202	Rhyolite with feldspars enlarged by contact of Syenite.	Wausau, Wisconsin
203 Case 15	Manganiferous Ore, Mn 50.50 Si. 2.86, P .09, H_2O 5.50	Minas Geraes (Piquiry) Brazil.
204 Case 21	Magnetite and martite (disposed)	Arnold Mng.Co., Clinton Co., N.Y.
205 E1	Limonite, Preble grade	Mountain Iron, Mesabi Range, Minn
206 E1	Psilomelane	Independence Co., Ark.
D-34-1 207 U131	Limonite	Milwaukee Co., Wis.
~~208 Case 21~~	~~Limonite~~ Disposed 5/1/34	~~Near Palestine, Anderson Co., N. Mex. (?)~~
~~209 Case 21~~	~~Iron Carbonate Fe 53.897, SiO_2 6.653, P 0 .010~~	~~Needle (?), Tenn.~~ disposed 5/1/34
210 Case 16	Limonite	Burra Burra Mine, Tenn.
ES 35 210	Gossan Ore	Burra-Banca Mine. Ducktown, Tenn.
~~211 Case 21~~	~~Iron Ore, Fe 53.84, SiO_2 6.63, P 0.42~~ — Disposed 5/1/34	~~Middle Tenn. Iron Co.~~
212 Case 24	Limonite Brown Hematite, ~~Cambrian~~	Frederick Co., Md.
~~213~~	Iron Ore	Bent (or Berdi) Co., N.Y.

U.W.No.	Name.	Locality.
{214 Case 21 {214	Red Hematite Feldspar (?Albite?)---- ---	Winkler Iron Bank, Phelps Co., Mo. Loc. unknown
215 Case 24	Iron Ore (Limonite)	Rock Island Group, Lincoln Co., N. Mex.
216 E1	Iron Ore. Fe 62.40, P 0.10, Mn 0.14, S 0.20, SiO_2 3.60	Iron Co., Utah.
217 Case 24	Hematite	Green River Mine, Green R., Utah.
218 E1	Iron ore.	Minas Geraes, Brazil.
{219 {219	Residual sand from diorite Magnetite (crushed)	California Minneville, Essex Co., N.Y.
220 Fe Case	Iron Carbonate	Hemlock Mine, Amasa, Mich. (Crystal Falls Dist., from C. K. Leith, 1911)
221 Case 24 Case 21	Brown Hematite (Limonite)	Gilman Mine, Spring Valley, Wis.
222 Case 24	Hard Clinton Hematite	Birmingham Dist., Ala.
223 Fe Case O/9412	Greenalite	Mesabi Dist., Minn.
224	Fossil ore, Clinton	Birmingham Dist. (?), Ala.
225	Specular Hematite	Lake Superior Region.
226 Fe Case	Specular Hematite	" " "
227	Chandler Mine, 1st grade	Vermilion Dist., Minn. (2 spec
228	" " 2nd "	" " "
229	Minnesota Mine, 1st grade	
230	Cliffs Shaft Mine, block ore	Marquette Dist., Mich.
231	Clinton Ore	Winters Nat. Pt. Co., Mayville, Wis.
232-309	Set of Analyzed iron ores taken by W. O. Hotchkiss at St. Louis Exposition, 1904. (see book)	
310	Iron ore	Gold Hill, Tooele Co., Nev.

232

					Analysis.			
U.W.No.		Mine.	Grade.	Owner.	Fe.	P.	Si	Moist.
232	1	Leonard	Leonard	Leonard I.M. Co.	61.00	.080	2.30	10.0
232		Hematite	from	Hudson. New York				
ES 51 233	2	Mt. Iron	Oliver	U. S. Steel Cor.	62.39	.049	5.11	13.26
234	3	Stephens	Stephens	U. S. Steel Cor.	59.45	.062	4.00	14.80
235	4	Soudan	Red Lake	U. S. Steel Cor.	61.24	.111	9.14	0.82
236	5	Albany	Albany	Pickands Mather Co.	58.50	.073	6.10	11.00
237	6	St.Clair	St.Clair	U. S. Steel Cor.	57.91	.078	6.86	11.06
238	7	Cyprus	Cyprus	Cyprus Min. Co.	61.04	.060	2.91	10.86
239	8	Spruce	Spruce #2	Spruce Min. Co.	58.44	.069	4.35	17.03
240	9	Minorca	Minorca	Pickands Mather Co.	60.00	.035	8.12	8.11
241	10	Utica	Albany	Pickands Mather Co.	60.10	.074	4.60	10.64
242	11	Fayal	Fayal	U. S. Steel Cor.	63.04	.033	3.99	8.59
243	12	Cyprus	Pilot	U. S. Steel Cor.	67.13	.030	2.12	2.30
244	13	Kanawha	Kanawha	Colonial Min. Co.	54.77	.083	8.78	12.23
245	14	Biwabik	Butter	Biwabik Min. Co.	61.20	.054	no rept.	9.45
246	15	Troy	Troy	Pickands Mather Co.	56.	.035	10.68	12.00
247	16	Spruce	Thompson	U. S. Steel Cor.	62.45	.036	3.42	10.16
248	17	Pearce	Pearce	Bradford Min. Co.	59.95	.048	4.03	10.03
249	18	Morrow	Morrow	Bradford Min. Co.	59.45	.057	6.95	9.01
250	19	Laura	Laura	Winifred Min. Co.	60.78	.055	no rept.	11.65
251	20	Biwabik	Steese	Biwabik Min. Co.	62.91	.045	" "	6.66
252	21	Pioneer	Pioneer	U. S. Steel Cor.	63.87	.036	5.14	5.61
253	22	Soudan	Verm. Linn	U. S. Steel Cor.	66.79	.102	3.22	.43
254	23	Sparta	Top Brown	Pickands Mather Co.	60.	.060	7.34	9.99
255	24	Hull	Pillsbury	U. S. Steel Cor.	62.29	.044	4.47	12.28
256	25	LaBelle	LaBelle	Pitt. I. M. Co.	59.74	.041	no rept.	no rep
257	26	Duluth	Duluth	U. S. Steel Cor.	60.78	.045	5.	10.14

U.W.No.		Mine.	Grade.	Owner.	Analysis. Fe.	P.	Si.	Moisture.
258	27	Chandler	Chandler	U. S. Steel Cor.	63.93	.044	4.73	5.13
259	28	Biwabik	Biwabik	Biwabik Min. Co.	61.93	.044	no rept.	8.77
260	29	Adams	Adams #2	U. S. Steel Cor.	57.72	.076	5.27	14.83
260		Gypsum (Satin spar)	from New York					
261	30	Zenith	Zenith	" " "	65.59	.039	3.49	5.58
262.5		Phonolite from Summit Bull Cliff, Cripple Creek, Colorado. - Specimen donated to Norris Johnes, Oshkosh, 1910						
262	31	Glen	Pillsbury	" " "	60.56	.047	4.11	11.08
262.8		Phonolite from Rhyolite Peak, Cripple Creek, Colorado. — Specimen donated to Norris Johnes, Oshkosh, 1910						
263	32	- & Alpina	Pillsbury	" " "				
264	33	Genoa	Genoa	" " "	62.66	.030	4.16	8.95
265	34	Cais	Cais	Cais Min. Co.	58.67	.040	8.01	8.86
266	35	Fayal	Island	U. S. Steel Cor.	61.58	.061	3.89	10.94
267	36	Savoy	Jura	" " "	62.33	.068	4.10	6.07
268	37	Stevenson	Wallace					
269	38	Savoy	Savoy	U. S. Steel Cor.	64.07	.054	3.60	5.76
270	39	Alpena			62.63	.039		
271	40	Pettit	Pettit	Rep. I. & S.	61.70	.042	4.35	6.55
272	41	Grant	Grant	Interstate M. Co.				
273	42	Victoria	Victoria	Rep. I. & S.	62.	.044	5.44	6.11
274	43	LaRue	LaRue	LaRue M. Co.	60.29	.041	7.51	7.83
275	44	Croxton	Croxton	Croxton M. Co.	58.94	.057	3.17	9.60
275		Smithsonite from Linden Mine, Wisconsin						
276	45	Mahoning	Beaver					
277	46	Mt. Iron	Juniata	U. S. Steel Cor.	61.11	.049	6.18	13.54
278	47	Lincoln	Lincoln	Interstate M. Co.				
279	48	Sibley	Sibley	U. S. Steel Cor.	65.03	.032	3.45	5.29
280	49	Adams	Adams	" " "	61.04	.036	4.59	10.45
281	50	Sharon	Sharon	" " "	57.42	.060	7.66	12.53
282	51	Auburn	Auburn	" " "	64.10	.049	2.86	no rept.
283	52	Soudan	Siliceous	" " "	58.97	.057	14.21	.89

U.W.No.		Mine.	Grade.	Owner.	Fe.	P.	Si.	Moisture.
284	53	Sellers	Pillsbury	U. S. Steel Cor.	52.37	.040	5.71	8.89
285	54	Burnt-Pool	Pillsbury	" " "	63.95	.037	3.23	9.69
286	55	Malta	Malta	Pickands Mather Co.	62.63	.027	5.60	9.02
287	56	Roberts	Roberts	--	58.20	.025	13.95	8.75
288								
289	57	Elba	Elba	Pickands Mather Co.	61.67	.036	4.13	8.72
290	58	Virginia	Juniata	U. S. Steel Cor.	61.59	.047	6.18	7.73
291	59	Hawkins	Hawkins	--	58.00	.045	--	--
292	60	Penobscot	Penobscot	U. S. Steel Cor.	59.88	.054	6.66	9.16
293	61	Clark	Clark	" " "	62.73	.032	3.58	9.58
294	62	Chisholm	Chisholm	" " "	61.24	.046	4.95	10.12
295	63	Burnt-Pool	Lubal	" " "	59.34	.083	4.74	12.06
296	64	Mt.Iron	Mountain	" " "	63.45	.042	4.34	13.43
297	65	Hull	Tubal	" " "	59.75	.053	5.61	13.44
298	66	Rust	Tubal	" " "	59.74	.058	5.52	13.80
299	67	Longyear	Longyear	Longyear M. Co.	59.84	.061	7.02	11.90
300	68	Franklin	Franklin	Rep. I. & S.	63.80	.039	4.95	5.87
301	69	Rust	Pillsbury	U. S. Steel Cor.	60.37	.063	4.99	12.32
302	70	Pillsbury	"	" " "	61.41	.043	3.69	10.60
303	71	Day	"	" " "	61.56	.048	6.36	9.28
304	72	Biwabik	Shilling	Biwabik M. Co.	60.82	.066	2.33	10.20
305	73	Mt.Iron	Preble	U. S. Steel Cor.	60.33	.050	6.64	12.84
306	74	Stevenson	Stevenson	--	64.65	.039	3.25	8.20
307	75	Union	Union	Rep. I. & S.	61.30	.043	6.05	7.78
308	76	Leetonia	Leetonia	Leetonia I. M. Co.	61.04	.060	2.91	10.86
309	77	Jordan	Jordan	--	62.10	.059	4.61	10.00

U.W. No.			
310	E1	Iron ore	Gold Hill, Storey Co., Nev.
311	Case 21	Brown hematite	Speedwell, Wythe Co., Va.
312	E1 - case 24	Clinton ore (Hematite) type of	Mayville, Wis
312	(ES 50)	Adipocira from Cedarburg, Wisconsin.	
313	Fe Case	Jasper and chert	Davis m. #1, Lake Superior Region
314	?	Limonite	Cumberland, R.I.
315		Slaty hematite	Ishpeming, Mich.
315	ES 2	Rutile TiO_2	Graves Mtn., Georgia
316		Hematite	Africa

322 Hematite. Cleveland Mine (ES 50)

324 #2 Ore. Cleveland Mine (ES50)

326 Hematite Angeline Mine, Lake Superior Disrict. (232)

328 Hematite Michigammie, Mich. (6D5) (232)
329 Ore Champion Mine (ES4)

335 Iron Ore Colby (ES50)
336 Iron Ore Norrie (Bottle of soft iron ore, (ES4)
Gogebic Range, Mich) (ML15)

342 Blast furnace slag -- Acid

345 Hematite, Lake Superior District. (6D5) (232)

348 Iron Ore Colby (ES4A)
349 Iron Ore Ludington (ES4A)
350 Iron Ore Cambria (ES50)
351 Iron Ore Pilot Knob
352 Iron Ore Pilot Knob (ES54)

354 Hematite (Hard Ore) Lake Superior Region (ES4)
(Minnesota) (ML15)

365 Specular hematite Penokee - Gogebic Dist. (ES50)

378 Hibernia Iron Ore Bethlehem Iron Co.
Norris Co., New York. (ES51)

385 Rhodocrosite and quartz Kipnik, Hungary

405 Pyrite Isle Elba
406 Bornite, $Co_5 FeS_4$

411 Prehnite Keweenaw Dist., Mich.

432 Stained shell limestone (ML14)

440 Hematite Montana (6D5) (232)
441 Hematite 8 miles from Galena, Ill. (6D5) (232)

Dana 460 Lepidolite & Muscovite Auburn Maine
(Ward's Natural Science Estab., Rochester, N.Y.)

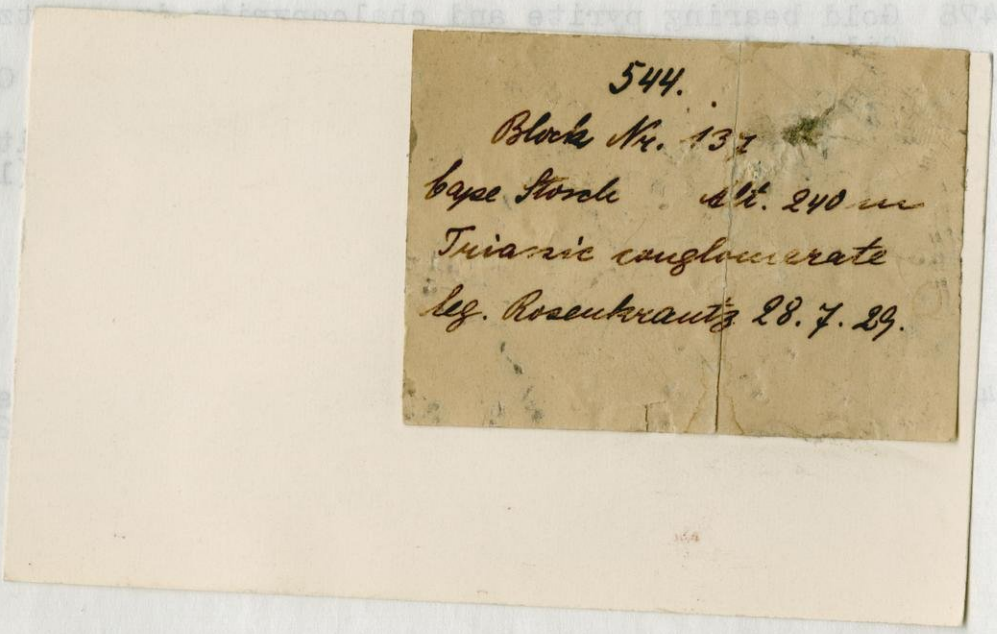
Dana 460 Lepidolite $KLi(Al(OH,F)_2)Al(SiO_3)_3$ Monoclinic
12 miles south of Coolgardie, Western Australia
(Ward's Natural Sciences Estab., Rochester, N.Y.)

474 Gold bearing galena and chalcopyrite encrusting a boulder. Bassick Mine, Colorado

478 Gold bearing pyrite and chalcopyrite in quartz. Gilpin Co., Colorado
479 Silver bearing galena carrying 4000 to 5000 Ozs/ton Ag. Cariboh Mine, Boulder Co., Colorado.
480 Tetrahedrite (with enargite, chalcocite, pyrite) Robinson Mine, Montana (MS) (148)

488 Conichalcite American Eagle Mine, Tintic Dist., Utah
Source: O.S. Frost (MX) (628)

495 Gold Colorado (MX) (13) (26)



544.

Block Nr. 137

Cape Storch Alt. 240 m

Triassic conglomerate

leg. Rosenkrantz 28.7.29.

#561 Olivinite. Tintic Dist., Utah (=973 red number on blue background)

* 567 Argentiferous Galena Boulder Co., Colorado

COLLECTION OF ROCKS FOR PETROGRAPHY, From B. Sturtz, Bonn.

petrographic coll.

Ros.No.		Rosenbusch Coll	
496	R 387 Muscovit Granit (Aplit)	676	Eisenbach, Schemmitz, Ungarn, (Hung.)
497	R 511 Muscovit Granit (Pegmatite)	677	Hansdorf, Schlesein, (Ger.) spec. to Dr. Ray, 1970
498	R 463 Granit	678	Altweiler am Bressoir Vogesen (Ger.)
499	R 223 "	679	vonder Reut bei Gefrees Fitchelgeberg,(Ger.)
500	R 595 "	680	Greifenstein Erzgebirge, (Ger.)
501	R 5 "	681	vom Ochsenkopf Fitchetlgeburge,(Ger.)
502	R 594 "	682	(mit Lithion-Eisenglimmer) von Stockschneider-Erzgebirge, (Ger)
503	R 320 "	683	Georgtown, Clear Creek, Colorado, U.S.A.
504	R 143	684	(Turmalin fuhrend) Canton Haag Hohwald Vogesen, (Ger.)
505	R 371 Turmalin granit (Luxullianit)	685	von Luxullion, Cornwall, Eng.
506	R 145 Greisen	686	Zinnwald Sachsen, Ger.
507	R 600 " (mit Topas)	687	Gryer Sachsen, Ger.
508	101 Granitite	688	Friberg Schwarzwald, Ger.
509	R 424 "	689	Kirneckthal Vogesen, Ger.
{510	R 105 " (zum Theil granophyrisch)		
{510	Xanthitane.- Green River, N.C.	690	Ockerthal Harz, Ger.
511	389 B "	691	Lehren Sachsen, Ger.
512	R 464 " (Miarolit)	692	Baveno Lago Maggiore, Italy
513	473 "	693	St. Fedelino, Lago Maggiore, Italy
514	R 455 "	694	Peterhead, Schottland, G. B.
515	R 571 "	695	Kleesberg, Sachsen, Ger.
516	R 572 "	696	Ane,Sachsen, Ger.
517	519 " Sphaeroide	697	Fonni, Sardinien
518	R 159 Amphibol-Biotit-Granit	698	Andlanthal, Vogesen, Ger.
519	R 66 " " "	699	Sudlich Hohwald Vogesen, Ger.
520	R 421 " " "	700	Fontaine Laquiante Kirneckthal, Vogesen, Ger.
521	R 347 " " "	701	Haut du Faite Markirch Vogesen, Ger.
522	R 98 " " "	702	Knorre bei Meissen Sachsen, Ger.
523	R 395 B " " "	703	Perranporth Cornwall, Eng.
524	R 451 " " "	704	Mount Sorrel,Leicistersh(Leicestershire) Eng.
525	R 211 " " "	705	Buffalo Creek, Platte Canon, Colorado, U. S. A.
526	R 359 Amphibol granite		Upsala, Schweden (Sweden)
527	R 362 " "	707	Gastwarf Elfvedalen, Schweden, 61°n. Br.
528	R 460 " "	708	Groby, Leicestershire, Eng.
529	R 329 " "	709	Reichenberg, Sachsen, Ger. (1 disposed)
530	R 162 Contact bildung Granit	710	
	156 Normaler Thonschiefer (Steiger-Schiefer)		(ausserhall des Contactes) Gosbornthal, Vogesen, Ger.
531	179 " " Veranderter "	"	
		711	Breitenbach, Vogesen, Ger.
532	R 137 Contact am Granit Knotenthonschiefer der		(Steiger-Scheifer)
		712	Chanssee, Andlan-Hohwald, Ger.
533	R 437 " " " " "	713	" " " Vogesen, Ger.
534	R 434 " " " " "	714	Andlan-Hohwald, Vogesen, Ger.
535	R 435 " " " " "	715	Andlanthal Hohwald, Vogesen, Ger.
{?535	Jasper from Marquette, Michigan		
536	R 17 " " " Andalusit hornfels,	716	Andlan Vogesen, Ger.
537	R 32 " " " " "	717	Steinbruch Andlan, Ger.
538	R 34 " " " " "	718	hinter Andlan, Vogesen, Ger.
539	R 235 " " " Chiastolithschiefer		
		719	Gefrees Fichtelgebirge, Ger.
540	R 88 " " " Knotenglimmer schiefer		
		720	Tirpersdorf Sachsen, Ger.
541	R 564 " " " Fruchtschiefer	721	von Gube Sanschwart, Schneeberg, Sachsen, Ger.

→ (719 Barite Lucy Mine, Negaunee, Mich. Michigan)

See old register for remainder

752 Diabase porophyry (Uralite porphry) Mulat Tirol, Italy PORPHRY SUITE

752 Var. Uralite Porphyry Mulat Tirol, Italy DOLERITE SUITE

791 Columnar jointed sandstone near basalt Germany (ML 11)

797 Gabbro Porophyry Fichtelgebirge, Germany

810 Wulfenite $PbMoO_4$ Colorado (D818) ES2)

855 Limburgite Hasenberg, Austria

865 Dolerite Scoria Pompeii, Italy

928 Staurolite Loc: ? Box 4

937 Topaz 397 Loc: Schnekenstein, Saxony, Germany (MS)

947 Miargyrite Monparallel Mine, East Calico, Calif. (ES6)

951 Ore from Palmyra West Calico, Calif. (ES39)

967 (red on black) Azurite 289 Mammoth Mine, Tintic Dist., Utah (MS)

968 Olivenite altering to Erinite 561 Mammoth Mine, Tintic District, Utah U.W. Presented by S. Lanyon between 1885-1890 from coll. dept Metallurgy

970 Clinoclasite 571 Mammoth Mine, Tintic District, Utah H_2O 7.31%, As_2O_5 29.36%, CuO 61.68%, Ee and Al traces.

971 Conichalcite 628 Tintic Dist., Mammoth Mine, Utah (MS)

972 Arsenical Copper American Eagle Mine, Tintic District, Utah. (ES40)

973 Olivinite. Tintic District, Utah (= #561)

10

976 Pharmacosiderite Mammoth Mine, Tintic District, Utah

983 Base Bullion Silverton, Colorado

996 Ore of Cu containing Chalcocite 54, bornite, pyrite and tetrahedrite. Parrott Mining Co. Butte, Montana (MS) (ES5)

998 First class Ore Parrot Company Butte, Montana. (ES25)
999 Second Class Ore Parrot Company Butte, Montana (ES25)

1040 Ore carrying Bornite, Chalcopysite, pyrites and quartz. Parrot Mine, Butte, Montana. (ES25)

1042 Bornite, pyrite and quartz Parrot Mine, Mont. (MX)

1045 Sulphur (MS)

1047 Silver-bearing Cerussite Little Darling Mine, Butte, Montana

1049 Gold and Silver- bearing Pyrite and Galena Silver Bow Mill, Butte, Montana discarded

1061 Copper glance Lergiradator Mine and Mill, Butte, Montana. (ES25)

1073 Blast furnace slag Idaho discarded (ML 15)
1074 Gossan Mountain View Mine, Colorado

1078 Ore from south ledge Mountain View Mine, Butte, Montana (ES25)
1079 Silver Suite Ore with country rock, rhodochrosite, zinc blende, purite, Ag 30 ozs. Lexington Mine, Butte, Montana (one of two)

1079 Manganese Suite Ore with country rock Rhodocrosite Lexington Mine and Mill. (two of two) (ES76)

1087 Copper glance from dump, first class ore. Anaconda Mine, Butte, Montana (ES5 & 25)
1088 St. Lawrence Mine Ore Wild Bill Mine, Butte, Montana. (ES25)

1093 Zinc, Copper, Lead Suite Lackanana Colorado (ES76)

1105 Sylvite, Stassfurt, Saxony, Germany

1108 Bog Iron Ore (ES4)

1119 (red on black) Blue-green Fluorite. Aspen [illegible] Mine, Silverton, Colorado
Donor: E.T. SWEET (his no. 30)

1131 Lead Ore-Galena Colorado Lead Galena Mine, Colorado. (MS) (ES7)
1132 Galena Aspen Mine, Colorado (MS)

1153 ? Silver Ore Mineral King, Colorado

1154 Galena Round Mountain Mine, Colo. (MS)

1163 Silver ? Grey Eagle, Colorado (ES76)
1164 Alaskaite Alaska Mine (red on black) 27
1164 Galenobismutic Colorado (black on white) (MS)

1173 Silver-bearing iron mine sand Leadville, Colorado

1192 Silver-bearing Cerussite with Malachite Clinton Gulch, Kokomo, Colorado

1198 Silver-bearing Cerussite with Azurite Clinton Gultch, Kokomo, Colorado

1202 Silver-bearing Cerussite Wheel of Fortune Mine Kokomo, Colorado

1207 Argentiferous quartzite Carbonate Mine, Leadville, Colorado (ES6)

1211 Cerrussite Morningstar Mine, Leadville, Colo. (MS)

1214 Yellow carbonate (Silver and Lead) $400.00 per ton. Little Fitsburg Mine, Leadville, Colorado
1215 Silver-bearing Cerussite (yellow) Loc: White Quail Mine Kokomo, Colorado (3130) (1401)

1225 Silver-bearing cerussite White Quail Mine, Colo. Kokomo, Colo.

1226 Silver-bearing Pyrite with Quartz stained by limeonite Location: Wheel of Fortune Mine Kokomo, Colo.

1228 Copper Native or Pocket Copper from Copper Falls Mine Lake Superior (ES23)

1230 Native Copper with Calcite Calumet and Hecla Mine Lake Superior (ES2)

1231 Laumonite and Calcite Quincy Mine, Lake Superior, Mich. Hernry Coll. (

1231 Copper Native Copper Quincy Mine, Lake Superior (ES23)

1232 Native Copper with calcite Calumet Mine and Helca Mine, Lake Superior (ES21)

1234 Native Copper, Calcite and Trap Rocks. Hecla Mines, Lake Superior (ES21)

1235 Conglomerate with Native Copper Calumet and Hecla Mines, Lake Superior (ES21)

1236 Native Copper in sandstone Ontonagon Mine, Lake Superior (ES8)

1237 Native Copper Conglomerate Ontonagon Mine, Lake Superior (ES23)

1239 Native Copper and Calcite Hancock, Mich. (ES21)

1240 Ashbed Rock Copper Falls Mine, Lake Superior (ES21)

1241 Copper Conglomerate Calumet mine, Mich. (ES8)

1251 Azurite Bisbee, Arizona

1252 "Blende" (black on gray) =Sphalerite Bonford Mine near Lancaster, Pa. Henry Coll.

1263 Argentiferous Pyrites, Bob-tail Mine, Cal. (ES41)

1273 Silver-bearing Galena and Marcasite with Quartz
Location: Kokomo Gaint Mine, Kokomo, Colo.

1276 Silver-bearing Galene, Cerussite, and Quartz
Location: Clinton Gulch, Kokomo, Colo.

Concretions

Pleistocene, Champlain formation

Woodville, New Hampshire

DUPLICATION OF NUMBERS!

1286-88
1290-94
1297-98
1300
1303
1304

1291 Silver-bearing Galena location: Robinson Mine, Kokomo, Colo.

1295 Limonite geode Mine Hills, Penna. (259)
(red on black)

1296 Iron Limonite Ballinger Co., Mo. (ES 53)

1297 " Limonite Cumberland, R.I. (ES 55)

1298 " Botyoidal Limonite Cumberland, R.I. (ES 55)

1300 " Brown Hematite, Ambersons Station, Ala. (ES 53)

1307 Hematite (granular iron ore) Cumberland, R.I.
Henry Coll. (red on black) (232) (6D5)

1310 Hematite Crawford, Mo. (232) (6D5)

1315 Iron Specular Iron Sheppard Mt., MO. (ES 54)

1317 " Piolet Knob, Mo. (232) (6D5)

1321 Hematite Hawley, Mass. (232) (6D5)

1325 Hematite, Oolitic Iron Ore

1342 Gold- and Silver-bearing Pyrite in Quartzose rock (gold 7 ozs., siler 38 ozs.) location: Kokomo Giand Mine Kokomo, Colo.

1344 Copper - Copper Ore Dolcoath Mine, Cornwall (ES29)

1352 Copper-Ore and Gypsum in Lignite Archer Co. Texas (ES 40)

1354 Copper - Silver Ore Thoms. Grudry8s Mine, Silver Cloud (ES 29)

1357 Copper- Green Copper Jackson Co, N.C. (ES 29)

1362 ~~Chalcopyrite Mineral Point, Wis.~~ Disintegrated disposed of, 2001 KW

1378 Iron Limonite Cumberland, R.I. (ES 55)

1379 Copper- Crystallized Native Copper Calumet and Hecla Mine, Lake Superior (ES 21)

1397 Calamine Near Leadville, Colo. Ward's (423)

1399 Silver-bearing Galena and Sphalerite location: Spanish Peak, Colo.

1407 Gold-bearing Quartz location: Lake City, Colo.

1411 Gold-bearing Pyrite in Quartz. Briggs Mine, Central City, Colo. (ES 5)

1423 Gold- and Silver-bearing Pyrite, Galena, Sphalerite and Quartz Gr. Britain Mine, Buckskin Mt., Alma, Colo.

1429 Native Gold in Quartz location: Ten miles below Kokomo, Colo

1432 Gold-bearing Galena and pyrite in Quartzose rock Cash Mine, Colo.

1433 Copper Native Copper Lake Superior (ES"23)

Michigan - Brooks, T.B. - ROCKS 1500-1658)

Boxes 79, 80, 81, 82, 83, 84 (no sections)

1645 Tourmaline in granite

1664 Obsidian Morovatio, Mexico

1665 " (Mauckanite) Morov tio, Mexico

1667 " New Zealand

1680 Travertine (siliceous) Cody Hot Spring, Cody, Wyo.

168=

1681 Wood Opal (Replacement of Travertine) Contact metamorphic location: Commercial Quarry, Riverside, Calif.
reference: Calif. journal ofMines & Geology. Vol. 39, 1943
specimen from station 13, 14,&116 (see page342)
donated by: Mrs. M. Gilmartin, Upland Calif., 1950

1694 Chrysolite dunite Macon Co., N.C. (376)

1699 Obsidian Lake Co., Calif.

1741 Martite (coarse) La Baulla area, Venzuela

1755 Buhr stone, Eocene Paris, France (210) (U.W.)

1756 Tuff Hot Springs, Arkansas (270) (U.W.)

Haworth, Missouri, Collection.

Obtained from Erasmus Haworth of Kansas State University. Consists mainly of rocks (largely porphyries) from vicinity of Pilot Knob, the Missouri Pre-Cambrian area, and a few cherts from Cherokee County. Is accompanied by manuscript maps showing location of specimens. Identification of specimens is often erroneous. Specimens are large and accompanied with chips, but no thin sections exist. The collection is boxed (Boxes 38-48 inclusive) 1790-2019

~~3684-3698~~

MISSOURI 1790-2014 Rocks HAWORTH, E. box 38-48.

1802 Iron Quartz-porphyry Iron ore Ledge by shops S.W side of Pilot Knob

1803 Quartz-ironstone North side of Pilot Knob from cut C (ES 54)

2006 Sulphur

2056 Apatite 549 Bamle, Norway (MS)

2061 Bytownite 319 6G1 (=0/4578) Naevodal, Norway

2063 Apatite 549

2064 Apatite in Mica 549 Bamle, Norway

2065 Kjerslfine (Wagnerite) 553 Balme, Norway

2066 Hiortahlite 334 Mt. Willard, N.H.

2074.1 Actinolite in talc 338 Belts Bridge Iredell Co., N. Carolina

New England - Mass., Md., Vt., N.Y.
Hobbs, W.H.
Collection of Typical Rocks 2084-2270

University Rock Col., Petrog. Lab.
Metamorphic Lab. Col., R210
Boxed 130,131

2104 Sparry limestone New York (N 1)



2128 Potosi dolomite. Type from Potosi City Well, depth 270 feet

2130 Gasconade Dolomite. Mansfield City Well, depth 600- 605 feet

2130 Micaceous limestone Mount Greylock, Mass. (N 5)

2136 Chlorite slate U.S.G.S. No. 1030 Loc: N. of Ball Mtn. Greylock Specimen to Pray

2140 Sericite schist Greylock, Mass. (J 14)

2148 Corundum Buck Creek, North Carolina (MS)

2164 Taconic slate Petersburg, New York (ML 15)

2166 Green slate New York (J 7)

2168 Graywacke East Grafton, New Hampshire.

2175 Greywacke New Hampshire (ML 10)

2182 Pyritic slate Vermont (K 5)

2188 Conglomerate (white) gneiss (blue quartz)
U.S.G.S. No. 2071a south branch of Broad Brook
near top of Bald Mountain, Clarksburg, Vt.
Specimen donated to John Tinker, Fond du Lac, 1970
(M 11)

2190 Bonneterre dolomite
Hand Sample from Des Arc. Iron Co., Mo.
Drill Hole near Black, Reynolds Co.



2210 Microcline and Quartz from a Pegmatite Jones
Falls, Baltimore, Md.

2215 Gabbro diorite Maryland Blue Cut Mt. Hope, Md. (ML 7)

Missouri

2236 Cotter Dolomite. Ozark City Well, depth 165 feet Mo.

2244 Eminence dolomite. Diamond drill hole, Western Perry Co., depth. 280-290 feet. Mo.

2246 Davis Formation. Basal Davis sand, depth 1165 feet Mo.

2246 Lower Davis sand, Davis Formation. depth 1075 feet Mo.



2247 Elaeolite Syenite Naugus Head, Marblehead, Massachussetts.

Several specimens #2257

2257 → card catalogue # 0/9343

2257 van Buren dolomite. N.W. Crawford County, Missouri, depth 120 feet



2257.6 (red on blue) Calcite on marcasite (?) Upper Missippi Valley Lead - Zinc Dist.

2257.15 (270) Calcite Galena, Illinois

2257.40 (red on blue) Calcite (dog tooth spar) on sphalerite ("blende") Linden, Wisconsin

2258 Mica diabase 210 Howard St. Medford, Mass. Specimen donated to Norris Johnes, Oshkosh, 1970

2261 Var. Mica Diabase North of Brooks and High Streets, Medford, Mass.

MISCELLANEOUS 2270-2285 HOBBS, WILLIAM HERBERT

Miscellaneous rocks mostly igneous from various parts of the world. University Rock Coll. Petrog. Lab

2271 Manganese Rhodochrosite $MnCO_3$ Nagyag, Transylvania (ES 3)

2274 Argonite $CaCO_3$ La Catolica, Sicily

2283 Kimmswick limestone. Deep test, St. Louis County. Missouri, depth 1084 feet.



MARYLAND - ILCHESTER 2287-2323 HOBBS WILLIAM HERBERT

Igneous rocks. University Rock Coll. Petrog. Lab Metamorphic Coll., Rm. 210 boxed

From same series ?

2301. Serpentine, $(Mg, Fe)_3 Si_2O_5 (OH)_4$

2303 Epidote in granite vein Ilchester, Md. 407 (6H4)
Presented William H Hobbs 1897

2304 Epidote Ilchester, Md. 407 (MS)

2306 Talc after cortlandite Ilchester, Md. (ML 5)

2372 Calcite Blybjerget near Trondhjem, Norway 270 (MS)

2375 Lava Basaltic Lava Sandwich Islands

2381 Calcite Neues Hohle, Harz, Germany 270

2382 Stalactite, Calcite Neues Hohle, Rubeland, Harz, Germany 270 (UW)

2400 Pentandite in Pyrrhotite

2418 Labradorite Loc: Unknown (Labrador ?) (red on blue)

2421 Feldspar Caruss Lake, Jefferson Co., N.Y. (D 313)

2450 Nickeltite, Cobaltite possibly from Cobalt, Onterio, Canada

MARYLAND - ILCHESTER 2453-2455 HOBBS, W.H.
Igneous rocks University Rock Coll. Petrog. Lab Metamorphic Coll., Rm. 210 boxed

2456 Diorite Mica Diorite

2464 Inclusions in Mica Diorite, Group 3 in Section 3. Crugers Station, N.Y.

2465 Inclusions in Mica Diorite, Crugers Station, N.Y.

2473 Manganite Loc: Lucy Mine, Negaunee, Mich (258) (MX)

2476 Phosphate Rock Phosphates from Florida (ES 71)

2477 Phosphates from Florida (ES 71)

2488 Spodumene Huntington, Mass. 327 (MS)

2492 Spodume Huntington, Mass. 327 (MS)

2496 Spodume Branchville, Conn. 327 6G2

2500 Apatite

2502 Molybdenite (Bagotite) Loc: Bagot, Renfrew, Canada 34 6A5 (MS)
(red on black) (red on yellow and tourm. and calcite)

2508 Triplite Loc: Dapres, South Africa 555

2509 Iron Limonite Sparta, N.Y. (ES 53)

2510 Arfvedsonite El Paso, Calif. (El Paso Co.,Colo???)(MS)

2511 Jeffersonite Franklin Furnace,N.J. 325 (MS)

2514 Elroquite Elroque, West Indies (UW)(MS)
(red)

2515 Variscite Loc: Garland Co., Ark. 611

2522 Columbite Portland, Conn. Lec. Coll. II 747 525

2523 Diaspore Schemnitz, Hungary 256 (MX)

2524 Iron Limeonite Sparta,N.Y. (ES 53)

2525 Spinel Monte Somme, Italy 234 6D7 MS

2526 Molybdenite Loc: Ducktown, Tenn. 34

2527 Troosite Sparta,N.Y. 381

2531 Garnet Hull, Canada var grossularite
(red on blue) 370 EMC

2533 Pyroidesine Sombrero Island, Caribbean Sea 547 with tortoise bones
received from Ben K. Emerson, 1892

2537 Enstatie Pelham,Mass. 323
(red on black)

2542 Actinolite Pelham, Mass 338 (MS)
Exchange from Prof. Ben K. Emerson 4/28/92

2544 Vanuxenite Sterling, N.J. 423

2545 Tourmaline Loc: Pierreport, N.Y. 426
(red on black)

2547 Rutile Loc: Grave Mt., Georgia (? Graves?
250 MX

2552 Alandine Hanover, N.H. 370 6G7
(red on black) amphibole

NOTE { 2554 Spinel Orange Co., NY. 234 MS

2554 Tourmaline Loc: Chesterfield, Mass. 426
(red on black) EMC

2555 Biotite Pelham, Mass. 462 MS

2558 Garnet Amherst, N.H. 370 6G7 MS

2563 Spinel Smithfield, Orange Co., N.Y. 234

2564 Topaz Loc: Scheneckenstein, Saxony 397
(red on blue)

2565 Spinel Amity, NY. 234 Coll. of Prof.
Ben K. Emerson donated on April 28, 1892
(red on black)

2566 Albite Greensfield, Mass 316 MS
(red on black)

2567 Toumaline Loc: Pierrepont, N.Y. 426 MS

See also (red on black...)

MASSACHUSETTS 2582-2610 EMERSON, B.K.

Sedimentary, metamorphic and igneous rocks from the United States & Canada. University Rock Coll. Petrog. Lab

2582 Beryl Yancay Co., N.C. 344 EMC UW
(red on blue)

2596.1 Vesuvianite (Xanrhite) 393 Loc: Tellemark
(red on blue) Norway EMC

2600 Serpentine Roxbury, Vt. 481 MX

2652 Galena Yellow Stone, Wis (17115) (red on blue)

2671 Galena with Marcasite Galena, Ill. (red on blue) (17120)

2684 (red on blue) see O/9318
2686 see 17092
(red on blue)

2689 Smithstonite (with casts of barite crystals that were dissolved) Most likely from Lead-Zinc District S.W. Wis.-Ill. (17092) (red=on blue)

2697 (red on blue) see 17094 and O/9322

2698 Titanite Loc: Switzerland (510) (MS)

2706 Smithsonite after Calcite

2730 Argonite Hungary (277) (MS)

2714 (red on blue) see O/9312

2740 Actinolite Bolton, Mass. (338) (MS)

2744 Actinolite and Tremolite Bolton, Mass. (338) (MS)

2755 Sphalerite Shullsburg, Wis. (58) (MS)
2756 " " " " "
2757 " " " " "

2760 Sphalerite Shullsburg, Wis. (58) (MS)

2762 Sphalerite Shullsburg, Wis. (58) (MS)

2768 Sphalerite Joplin, Mo. (58) (MS)

2769 Rose Quartz Loc: unknown (old specimen) found in stroage in 1971

2770 Hematite Cherry Valley, Crawford Co. Mo. (423)(MS)

2773 Calamine Auroa, Lawrence Co., Mo. (423) (MS)

2777 Calamine Newton Co., Mo. (423) (MS)

2778 Sphalerite Lehigh, Mo. (58) (MS)

2779 Iron Hematite Irridesent, Specular Cherry Valley, Crawford Co., Mo. (ES4)

NEW JERSY 2780-2806 NASON, F. L.

Minerals, ores and rocks mostly from Franklin Furnace Boxed 132,138 University Rock Coll. Petrog. Lab. Metamorphic Coll. Rm.210

2780 Graphic Limestome New Jersy near Meafee

2786 Calcite (red) Sterling, N.J. (270)

2846 Graphite Chilson Hill, Ticonderoga, (MX) N.Y.

2870 Calcite Maxen, Saxony, Germany (270) (6E3) (MS)

2900 Sassolite Newest crater of Vulcanello Volcano, Lipari Ils. W. H. Hobbs (WHH) (U.W.)

2905 Actinolite and chlorite in serpentine
Zoblitz, Saxony, Germany (338

2918 Chalcopyrite ($CuS\ FeS_2$)
Pyrite (FeS_2)
Magnetite (Fe_2O_3)
Amphibole (var. Byssolite)
location: French Creek Mines Chester Co.
Penna.
Source: A.E. Foote, MD 123...Ave, Phila.,PA.

2923 Axinite and Rhodonite Franklin,N.J. (Foote)

Pennsylvania--Williams, G. H. (2969-2997)
Mostly igneous rocks University Rock Coll.,
Petrog. Lab. Igneoustexture, metamorphic Coll.
R 210 Boxed 132

2971 Felsite Red Felsite East ofBighorn Copper
Mine, S. Mt., Franklin Co., Pa.

2980 Sheared felsite Penna. (ML 4)

2983 Sheared amydaloidal greenstone Pa. (ML 7)

2985 Rhyolite Red Quartz Porphry Tom's Creek,
Franklin Co, Pa.

North Carolina-Pittsboro Holmes, J.A. (2998-3006)
Breccias, greenstones, felsites University Rock Coll.
Petrog. Lab. Boxed 132

3029 - Roubidoux formation. Deep Well, Perryville, Missouri. depth 1240 feet
(map see listing # specimen
2244 in this catalogue

3036 ~iderite Champion Mine, Mich. (273)

3037 Martite rock Ishpeming, Mich. (ML 15)

3039 Masonite Location: Michigamme, Mich. (466)(7A6)

3041 Rose garnet $Fe_3Al_2(SiO_4)_3$ Xalostoe, Moreles, Mexico

3043 Calcite (and sphalerite?) Madison, Wisconsin (270)

3067 Tin Cassiterite (SnO_2) Also Muscovite, Quartz, Orthoclase, and Tourmaline. Custer City, Black Hills, South Dakota. (ES2)

WISCONSIN - BARABOO NARROWS S. WEIMAN (3068-3096)

Specimens of quartz, keratophyre, and schist (Thesis)
Boxed 49,76 University Rock Col., Petrog. Lab

AUSTRALIA - NEW SOUTH WALES (3097-3170)

Ores eta., from Worlds Fair (1894) Catalogue of N. S. W. exhibits, Sept. E Charles Potter, Gov't Printer, Sydney (Historical Library)

3099 Iron Brown Iron Ore 4 miles from Myalla Railway N. South Wales

3100 Brown Iron Ore Parish of Calvert County Bathhurst, New S. Wales (ES55)

3104 Gold Ore loc: Cobar, New South Wales (discarded)

3113 Gold-bearing Quartz source : T. Edwards and party's claim near Sodksley, New S. Wales

3117 Silver Lead Ore Wallah Wallah Silver Mine, Pudman's Creek, N.S.W.

3124 " " "

3126 Gold Quarzt Loc: Balmoral Mine, New S. Wales

3129 Iron Magnetic Iron Ore Parish of Errol County Bathhurst, New S. Wales ES55)

3130 Gold and silver ore Loc: Mt. Billagoe, New S. Wales

3132 Copper Yellow Sulphide Ore Cobar Copper Mine New S. Wales (ES36)

3139 Copper Ore Geilambone Copper Mine, West Bogan, New S. Wales (ES36)

3145 Magnetic Iron Ore Broula Range, 11 mi. from Cowra R.R. Station, New S. Wales

3148 Chrome Iron Ore Bowling Alley Point near Nundle, New S. Wales (ES55)

3149 Gold Quartz Loc: Peak Hill, New S. Wales

3153 Gold-bearing Pyrite Loc: Glen Elgin, New S. Wales

3164 Pyritous Quartz Barber and Party's claim, Donkey Hill, decayed (fallen apart) delony, New S.Wales specimen obtained from the Worlds Fair exhibit of New S. Wales, 1894

3165 Gold Ore Loc: Grove Creek, New S Wales

3169 Copper Yellow Sulphide Ore Cobar Copper Mine, New S..Wales (ES36)

Sweden - Lundbohm Collection (3170-3202)
Iron Ores exhibited at World Fair

3171 Maganetite, Striberg Ore Sweden (ES48)

3173 Hematite, Dalkarlsberg Sweden (ES48)

3174 Magnetite, Dalkarlsberg Sweden (ES48)

3176 Ore, Hammarin--Ramhall near Dannemora Sweden (ES48)

3177 Iron Ore, Ostanmass Sweden (ES48)

3183 Magnetic Manganiferrus Iron Ore Jonoik Sweden (ES48)

3185 Ore, Orleng Sweden

3189 Ore, Hammarin--Ramhall, Sweden (ES48)

3193 Iron Ore, Hammarin-Rawhall (ES48)

3194 Hematite, Stortagt Sweden (ES48)

3199 Magnetite, Hagsnfoan Sweden

3200 Ore, Hammarin--Ramhall Sweden (ES48)

3201 Ore, Hammarin--Ramhall Sweden (ES48)

3202 Iron Ore, Rylshytte Sweden (ES48)

Oregon Minerals and ores exhibited at World Fair (3204-3219)

3204 Copper Chalcopyrite Josephine Co., Oregon (ES39)

3209 Hematite Jackson, Oregon

3210 Gold-bearing Pyrite Baker Co., Oregon

3213 Hematite Lime Co., Oregon

3214 Hematite Tillimack Co., Oregon

3216 Asbestos Jackson Co., Oregon

3219 Arsenic minerals : AsS (Realgar) and As_2S_3
Douglass Co., Oregon (ES1)

WASHINGTON 3220-3237

Ores exhibited at Worlds Fair

3220 Silver-bearing Ores Loc: Ruby District, Washington

3223 Silver-bearing Galena Dead Medium (medicine?) Mine
(blackongray) Colville Dist., Stevens Co., Washington (6A6)

3232 Comeous No. 1 Iron Ore Hamilton, Wash. (ES54)

3235 Copper Gray Copper, Copper glance, etc., Cle Elum Dist., Kittitas Dist. Co., Wash (ES39)

3236 High grade Hematite ore Yankee Mine, Wash. (ES83)

3249 Ash bed Copper Ore Arnold Mine, Copper Falls, Mich. (ES21)

3252 Gypsum Haldemand Co., Ontario, Canada 8746

3267 Gold-bearing Galena in Quartz Promontory Mine, Custer City, South Dakota

3269 Gold and Silver Ores Pyrite in Hornblende Schist Loc: Zimmer Mine Hill City, S. Dakota

3270 Apatite City Lake Mine Burgess, Onterio, Canada 54G

3276 Galena and Anglesite Idahoan Mine, Bullion Dist. Altemas Co., Idaho 45 6A6

3279 Copper Ore Danial O'Connell Mine, Yawkee Fork Dist., Custer Co., Idaho (ES39)

3280 Silver, native and Cerrussite Mammoth Mine, Coer d'Alene Dist., Idaho D14 MS

3286 Cerargyrite Loc: Chloride Mine Sawtooth Dist., Idaho (discarded)

3304 Epsom Salts Rock Creek, Albany Co., Wyo. 748

3304 2/3 Gold-bearing Granite Crook Co., Wyo.

3309 Malachite and Red Oxide Old Dominion Mine Globe Dis t Gila Co., Arizona (ES8)

3374 Iron Limeonite Salsbury, Ct. (ES53)

3376 Ochrenstock, Ilmenan, Thuringia

3377 Limonite Bog Ore, Canada (ES53)

3387 Opal (geyserite) Yellowstone National Park, Wyoming (red on black)

3390-3467 Rocks from lower Quinnesec Falls, (See thesis by Lincoln, A.T. "The Greenstone area of the vicinity of Lower Quinnesec Falls" (1894)

3390-3467 Rocks from lower Quinnesec Falls, (See thesis by Lincoln, A.T. "The Greenstone area of the vicinity of Lower Quinnesec Falls" (1894)

source: HOBBS, William H. and others

Michigan-Menominie Range

3495-3504 Diabase and Granite

source: HOBBS, William H.

Montello, Wisconsin

3505-3548 Igneous rocks
source: HOBBS, William H.
Wisconsin-Marquette

3574 Leucite with Melanite, Kaiserstuhl, Baden, S. Germany

3583 Magnetite & Anthophyllite, Bare Hill, Baltimore, Md.

3584 Faujasite, Limburg, Kaiserstuhl, Germany

3586 Opal (hyalite), Limburg, Kaiserstuhl, Baden, SW. Germ

3587 Chondrodite, Tilly Foster Mine, Brewster, New York

3590 Talc, Canaan, Conn.

3591 Prismatine (kornerupine), Waldheim, Saxony E. Germany

3592 Garnet, variety Almandine, (with alteration rim of biotite and serpentine with prismatine) WHH
Waldheim, Granulitgebiet, Saxony, E. Germany

3675

3684 - 3698

Haworth, Missouri, Collection.

Obtained from Erasmus Haworth of Kansas State University. Consists mainly of rocks (largely porphyries) from vicinity of Pilot Knob, the Missouri Pre-Cambrian area, and a few cherts from Cherokee County. Is accompanied by manuscript maps showing location of specimens. Identification of specimens is often erroneous. Specimens are large and accompanied with chips, but no thin sections exist. The collection is boxed (Boxes 38-48 inclusive) ..... ~~1790-2019~~

3684-3698

543 3270 Apatite. City Lake Mine, Burgess, Ontario, Canada

3675 Hematite, Iron King Mine, Lake Superior Dist. 6D5

3675 Hematite, Iron King Mine, Lake Super. Dist. 6D5

3702 Galena, Highland, Wisconsine

3709 Malachite with chalcopyrite and hematite
Soldier's Grove, Wisconsin

3710 Galena, Highland, Wisconsin

3750-3755 Igneous Rocks

source: HOBBS, William H.
Wisconsin, Marquette

3772 Vanadinite $(PbCl)Pb_4(VO_4)_3$
Clara Mine, Silver District, Arizona (ES 3)

3777 Crocidolite. South Africa (MX) (6)

3779 Gold bearing Quartz
Treadwell Mine, Douglas Island, Alaska (MX) (6A3)

3782 Cerussite. Organ Mts., New Mexico (MS)

3789 Calcite geode. Platteville, Wisconsin (MS)

3796 Calcite (?and sphalerite?). Madison, Wis. (MS)

3799 Sphalerite. Platteville, Wisconsin
in Trenton limestone.

3807 Marcasite (stalactite). Galena, Illinois (MS

3808 - 3821 Rhyolite gneiss. Berlin, Wisconsin.
Source : S. WEIDMAN (Boxed 74 (case6)

3822-3828 Granite and greenstone. Waushara Co., Wisconsin. Source S.WEIDMAN
Boxed 76, University Rock Col., Petrog. Lab.

3830-3850 Greenstone, meta-rhyolite, limestone.
Utley, Wisconsin. Source : S.WEIDMAN
Boxed 74, 76, 133. University Rock Col., Petrog. Lab.
Case 6
==========

3851 Leyden phyllite showing plications.
Massachusetts, Bernardston.

3852-3872 d Sedimentary and metamorphic rocks,
from Western Massachusetts to illustrate maps of
B.K.EMERSON.
Boxes 132, 133, 138. University Rock Collection,
Petrog. Lab. Metamorphic Col. R.210
~~Pet~~==========

3852a Devonian Marble. Massachusetts, Bernardston (M4

3854 Fossiliferous micaceous sandstone. Mass. (ML 10

3856 Worms boring in sandstone. Madison sandstone.
Madison

3858 Feldspathic quartz gneiss
Massachusetts, Bernardston (F4)
Specimen given to JOHN TINKER, Fond du Lac, Wis
1970

3859 Hexagonite with tremolite.
Edwards, New York (6 G4)

3873 Thenardite. Mojave, California (MS) (7 d)

3896 Spodumene. Rumford, Maine. (MS)
containing quartz in pegmatite structure
source: Prof S.E. Penfield of New Haven through
Wm. Hobbs (?1895)

3915 Fasciculite. Chester, Massachusetts U.W.
~~(6G4)~~

MASSACHUSETTS 3918-3923 HOBBS, W. H.

Metamorfic rocks from Western Mass. University Coll. Petrog. Lab Box 133

3918 Archean Limestone (marble) Mass.

3922 Gneiss Streched Conglomrate Gneiss Dalton, Mass

WISCONSIN - WAUPACA 3924-3932½ HOBBS, W. H.

Diorite, granites, etc. University Rock Coll. Petrog. Lab Igneous Texture Coll.

3926 Granite porphyry with Epidote Granite Quarries 5½ mi. North of Waupaca, Wis.

3934 Marcasite Loc: Eau Claire, Wis. (96)

3935 Chalcopyrite Eau Claire, Wis. (83)

3936 Mascasite Eau Claire, Wis. (96)

3949B Perthite

4101 Contact altered quartite Pigeon Pt., Minn.(ML 11)

4123 Syenite Elaeolite Syenite Litchfield, Maine
4124 Biotite Brunswick, Maine (462) (MS)

4126 Cyanite Windham, Maine (400) (MS)
4127 Quartz crystals Maine (210) (MS)

4130 Garnet Raymond, Maine (370) (MS) (6G7)
4131 Florite Chatham Mine, Maine (175) (MS) (6C1)

4139 Acadialite (Chabazite) Five Islands, Nova S Scotia (MX) ($$&)

4142 Acadialite (Chabazite) Five Islands, Nova Scotia (MS) (447)

WISCONSIN - FOX RIVER VALLEY - MARCELLON 4408-4432

Hobbs, W. H. Rhyolite of various types.
Boxed 75 University Rock Coll., Petrog. Lab

WISCONSIN - ENDEAVOR 4437-4441

Hobbs, W. H. Aporhyolite Petrog. Lab. Boxed

4457 Garnet Hanover Mine, New Mexico (370)
with ilvaite and quartz

4490 Calcite Joplin, Mo. (270) (MX)

4496 Base Bullion (300 ozs. Ag) Loc: Senate
Smelter

LAKE SUPERIOR REGION ROHN, O. 4601-4686

Collection to illustrate Lake Superior Geology Collected under the direction of Van Hise. See special catalogue for location and publications on indivedual specimens Petrog. Lab.

4607 Barite. Montreal, Iron County, Wisconsin

4611 Amygdaloid From north shore of Lake S Superior at a point half mile below the mouth of Split Rock River.

4617 Course Sandstone, Keweenawan Mouth of Eahle River, Keweenaaw Pt., Mich. Mon. V. U. S. G. S. p 167, spec. 1857, pl36 Geol. Sur, Mich. Vol. I , Part II, pp117-118 Donated by John Tinker, Fond du Lac 1970

4619 Eastern Sandstone (Cambrian) Houghton, Michigan Mon. V. U. S. G. S. pp 351-356 Geol. Sur. Mich., Vol. I, Part II, pp 1-6.

4639 Arkose cemented by iron and silica Bess Bessemer, Michigan Specimen donated to John Tinker (H 12)

4685 Gypsum Zermatt-Gornergfat, Winklmatten (746) (MS)

4686 Calcareous Sandstone Marquette, Michigan Lake Superior Sansstone (Cambrian) Specimen donated by R. A. Paull Dept. of Geol. U.W. of Milwaukee (E 6)

WYOMING KNIGHT, W. C. 4901-4948

Sediments and igneous rocks. University Rock Coll., Petrog. Lab. Structural Coll.

4910 Talc(fiberous) Loc: Laramine Co., Wyoming (MX) (484)

4912 Laramie Peak, Wyoming (MS) (341) Crocidolite

4918 Phonolite Phonolite Scoria Wyoming

4920 Phonolite Wyoming

4938 Iron Magnetite Wyoming (ES 54)

4941 Gypsum (satin spar) Uinta Co., Wyoming (MS) (746)

4942 Gypsum Crook Co., Wyoming (746) (MS)(705)

4946 Asbestos Albany Co., Wyoming (338) (MS)

4947 Aragonite Albany Co., Wyoming (277) (MS)

4948 Soda niter Wyoming (MS) (683)

IDAHO & COLORADO PATTON, H. B. 4949-4991

Igneous rocks and minerals. University Rock Coll., Petrog. Lab., University Mineral Coll., Museum Igneous texture Coll., Hall

4954 Tourmaline Loc: Belcher Hill, Jefferson Co., Colorado (426) (MS)

4955 Greywacke deoxidized along joints Aspen, Colorado (ML 10)

4957 Schist Belcher Hill, jefferson Co., Colo. (tourmalie schist)

4964 Rhyolite Spherulites (Compound) Silver Cliff, Colorado Specimen donated by Norris Johnes Oshkosh, 1970

4965 (red on black) Spherulites Silver Cliff, Colorado from H. B. Patton, 1899

4974 Phonolite Beacon Hill, Colorado

4976 Phonolite South slope of Bull Cliff, Co Colorado Specimen donated by Norris Johnes Oshkosh 1970

4979 Phonolite Summit of Bull Cliff, Colorado (Norris Johnes-1970)

4992 Hubnerite Gladstone, Colorado (706) (813)

4993 Hubnerite Gladstone, Colorado (813)

MISCELLANEOUS KRANTZ 5001-5161

Collections of ores and rocks from many parts of the world Petrog. Lab.

Duplication

see next page !

Collection of Wisconsin Geological Survey - 5000-9999

(? duplication ? see preceding page, nos. 5001-5161)

Collection of Iron Ores and Associated Rocks,

from Moa District, N. E. coast of Cuba, by C.K.Leith and W.J.Mead, 1910.

5162 - 5267 All in Metamorphic Lab.

red on black

Red No.	Mead's No.	
5162 Extra E1	101	Altered serpentine rock.
5163 E1	102	Hard dark colored rock, less altered than ore.
5164 E1	103	Altered phase of last (?)
5165 M1 E1	104	Freshest phase of rocks showing large crystals.
5166 M1	105	Somewhat more altered than last.
5167 M1	106	Less altered than last.
5168	107	Like 5166 and 5167.
5169	108	Same as last.
5170 E1	109	Slightly altered, shows abundant crystals.
5171	110	Specimen showing alteration of rock to ore.
5172 E1	111	Altered material in contact with most altered side of 5171.
5173 Extra E1	112	Ore in contact with 5172.
5174 M1 E1	113	Altered serpentine rock in contact with 5175.
5175 Extra E1	114	Ore in contact with 5174.
5176 M1	115	Specimen showing alteration from much altered rock to lean ore.
5177 E1	116	Hard dense finely crystalline rock, almost black.
5178 E1	117	Same as last, one side having larger crystals.
5179 E1	118	Specimen showing alteration toward lighter surface.
5180 M1	119	Like 5177 from other side of incline.
5181 E1	120	Shows large crystals.
5182 M1 E1	121	Serpentine rock.
5183 E1	122	"Mottled" serpentine rock, apparently more altered than foregoing.

Red No.	Mead's No.	
5184	123	Comparatively fresh serpentine, with large crystals.
5185	124	Specimen showing films of serpentine.
		Specimens from large pit.
5186	125	Altered rock in contact with ore.
5187	126	Ore just above 5186.
5188	127	Specimen showing pitted surface in contact with ore.
5189	128	Rock.
5190	129	Rock.
5191	130	Peculiar boulder from an exploration trench. Differs from ordinary serpentine rock.
5192	131	Ore from cut near laboratory. Shows residual nature.
{5192		Olivine. Locality unknown
5193	132	Washed shot ore.
5194	133	Plancha ore (3 specimens).

Series showing alteration from serpentine to ore. Cuba,..(as above)

5195	134	Soft lean ore.
5196	135	Soft altered rock next to last.
5197	136	Harder, but much altered rock.
5198	137	Hard serpentine rock.
5199	138	Much like last.
5200	139	Spotted serpentine rock, amygdaloid (?).
5201	140	Hard dense basaltic rock associated with last.
5202	141	Hard, least altered serpentine rock.
5203	142	Fibrous serpentine.
5204	143	Green clayey material apparently an alteration of serpentine rock (a more granitic rock was also noted in the vicinity), 2 ft below surface on road at a creek crossing. Grades above to yellow clay and residual soil containing much chert and ore granules.
5205	144	Ore from boulder in a 5-foot pit.

Red No.	Mead's No.		
5206 E1	145	Specimen showing association of residual chert and ore.	
5207 E1	146	Apparently a residual kernel.	
5208 E1	147	Residual cherty material from a carbonate rock.	
5209 E1	148	Serpentine rock below ore. Shows weathered surface and quartz seams.	
5210 E1	149	Serpentine rock, less weathered.	
5211 E1	150	Hard acid igneous rock associated with serpentine rock.	
5212	151	Altered serpentine rock, softer and more hydrated.	
5213 E1	152	Washed shot ore collected from surface, only a few inches deep.	
5214 E1	153	Chert at bottom, depth 10 ft.	Samples from pit 12T.
5215 Cuba E1	154	Fine ore at contact with chert.	
5216 " E1	155	Coarse texture, half way up pit.	
5217 " E1	156	Fine textured ore at surface.	
5218 " E1	157	Fine grained and richest ore from near surface.	X-Ray Film # 1187
5219 E1	158	Altered serpentine rock.	From gullies at S. end of hill.
5220 M1	159	Residual vesicular ore from serpentine boulder.	
5221 E1	160	Freshest phase of serpentine (?) rock.	
5222 Cuba	M	Typical granules from Ideal Claim.	
5223 M1	M2	Phases of hard or plancha ores showing tubes, etc.	
5224	M3	from Moa District.	
5225 M1	M4		
5226	M5		
5227 Cuba	161	Roasted ore from furnace at Felton.	
5228		Missing.	
5229 E1	162		Formisa.
5230 E1	166	Ore.	Daiquiri Mine. X-Ray Film # 1193
5231 E1	163		Formisa.
5232	---	Missing.	"

Red No.	Mead's No.		
5233	E1 164	--	Formisa.
5234	E1 165	--	"
5235	E1 167	Limestone.	Lower Incline, Magiri Mine.
5236	E1 168	Basalt.	Upper Incline, "
5237	--	Missing.	
5238	Extra E1 169	Shot ore.	Magiri Mine.
5239	Extra E1 170	Lower limonitic ore.	
5240	Extra E1 171	Upper ore containing shot ore.	
5241 to 5267	E1 172 to 197.	Series of 26 samples taken at intervals of one foot, representing vertical sections from the surface downward.	

Extras in Box 631

5244-49 E1
5254-64 E1
5267 E1

See notes on slides → 4 pages over →

SPECIMENS COLLECTED BY C.K. LEITH AND E.C. HARDER IN MINAS GERRAES PROVINCE. BRAZIL, DURING 1910-1911. 1373 1373
(~~5268-5336~~) Recat. 9432 - 9500

Drawers in Metallographic Lab.

U.W. Red No.	E.C.H. No.		
5268	B.1	~~Iron ore, Gaya deposit.~~	1373 9432
5269	B.2	~~High grade fine grained specular ore, Conceicao Peak.~~	1373 9433
5270	B.3	~~Medium fine grained specular ore, Conceicao Peak.~~	1373 9434
5271	B.4	~~Fine and coarse specular ore mixed, " " "~~	1373 9435
5272	B.5	~~Fine grained ore with lenses of coarse specularite and talc.~~ Conceicao Peak.	1373 9436
5273	B.6	~~Porous surface ore (leached itabirite) Conceicao Peak.~~	1373 9437
5274	B.7	~~Itabirite, Conceicao Peak.~~	1373 9438
5275	B.8	~~Canga, Conceicao Peak.~~	1373 9439
5276	B.9	~~Rich fine grained specular ore, lower iron ore wall, Conceicao Peak.~~	1373 9440
5277	B.10	~~Surface ore showing weathering of quartz bands, Conceicao Peak.~~	1373 9441
5278	B.11 missing	~~Hematite with little magnetite and talc (?) (Hard jacutinga), lower cut, Monlevade.~~	1373 9442
E-24-3 5279	B.12 part U.157	~~Itabirite (jacutinga-quartzose), lower cut, Monlevade.~~	1373 9443
5280	B.13	~~Porous itabirite with chalcedony. Surface fragment, Monlevade.~~	1373 9444
5281	B.14	~~Itabirite with magnetite. Surface fragment, Monlevade.~~	1373 9445
5282	B.15	~~Ore (hard jacutinga) showing cavities on surface from which amphibole has been leached.~~ Monlevade	1373 9446
5283	B.16	~~Folded~~ schistose ore, Andrade.	1373 9447
5284	B.17	~~Quartz vein cutting itabirite, Andrade.~~	1373 9448
5285	B.18	~~Amphibole schist interlayered with quartzite and itabirite, Andrade.~~	1373 9449
5286	B.19 Sm 157	~~Itabirite with both specularite and magnetite abundant, Andrade.~~	1373 9450
5287	B.20 Sm 157	~~Amphibole-epidote-quartz rock. Metamorphosed itabirite (?) Contains layers of quartz, iron oxides (hematite and magnetite), epidote and amphibole. Macacos.~~	1373 9451
5288	B.21	~~Itabirite~~ and ore from Pitanguy. ~~Shows contact of ore and itabirite and leaching of quartz from latter.~~	1373 9452
5289	B.22	~~Specularite developed along fine-grained ore lens. Pitanguy.~~	1373 9453
5290	B.23	~~Weathered~~ itabirite. ~~Pitanguy.~~	1373 9454
5291	B.24	~~Fine specular hematite.~~	1373 9055

See notes on slides (3 pages over)

5292	B.25	E1 5 in 157	~~Itabirite. Boa Vista.~~	373/9456
5293	B.26	E1	~~Talcose schist. Boa Vista.~~	373/9457
5294	B.27	E1	~~Recrystallized arkose (gneiss ?). Boa Vista.~~	373/9458
5295	B.28	E1	~~Clayey canga. Between Cattas Atlas and Santa Rita.~~	373/9459
5296	B.29	E1	~~Types of itabirite from San Luiz. (4 samples).~~	373/9460
5297	B.30	E1	~~Siliceous ore. San Luiz Peak.~~	373/9461
5298	B.31	E1	~~Surface porous ore (leached itabirite) San Luiz Peak.~~	373/9462
5299	B.32	E1 5 in 157	~~Itabirite interbedded with feruginous and manganiferous limestone. Near Antonio Pereira.~~ Perriero	373/9463
5300	B.33	E1	~~Limestone from Catto Preto.~~	373/9464
5301	B.34	E1	~~Amphibole rock interlayered with above limestone. Catto Preto~~	373/9465
5302	B.35	E1 5 in 159	~~Impure limestone with amphibole and iron oxide, perhaps also manganese oxide. Catto Preto.~~	373/9466
5303	B.36	E1 5 in 159	~~Impure limestone with mica, chorlite, and iron oxides, perhaps manganese carbonate or silicates. Catto Preto.~~	373/9467
5304	B.37	E1	~~Impure limestone with amphibole -- weathered to iron and manganese oxides. Catto Preto.~~	373/9468
5305	B.38	E1 5 in 159	~~Quartzite schist from Ouro Branco.~~	373/9469
5306		E1	~~" Rio de Janeiro (with monazite).~~	373/9470
5307		E1	~~" " " " (without monazite).~~	373/9471
5308	E-21-4 case 24 U1578 12 missing	Ei (part)	~~Typical massive ore (2 spec.)~~	373/9472
5309	3	E1	~~Splintery ore~~ — ~~S. slope of the "Grotto" a deep ravine in the middle of Esmeril property.~~	373/9473
5310	4	E1	~~Ore~~ — ~~From walls of the "Grotto".~~	373/9474
5311	5	E1	~~Fine grained, hard specularite~~ — ~~Outlook Pt., highest point of Esmeril, S. of the "Grotto".~~	373/9475
5312	6	E1	~~Hard specularite~~ — ~~Crest of Esmeril 250 ft. E. of Outlook Pt.~~	373/9476
5313	7	E1	~~Ore~~ — ~~Cross line near the upper end of the outcrop near the N. boundary of Esmeril.~~	373/9477
5314	8	E1	~~Ore~~ — ~~Near middle of the long outcrop near the north boundary of Esmeril 500 ft. from #7.~~	373/9478
5315	9	E1	~~Ore~~ — ~~Lower end of the above, 500 ft. down slope from #8.~~	373/9479
5316	10	E1	~~Ore and itabirite~~ — ~~1st upper tunnel, Candonga, (E.C.Harder) Fe 64.06 P, 0.019 SiO_2 6.40~~	373/9480.

5317 E| B. ~~Typical soft Itabirite~~ ~~2nd upper tunnel, Candonga, Fe 44,32 P 0.025 SiO_2 34.27~~ 1373 9481

5318 E| ~~Ore~~ ~~Algeria dirt, Along line AA of Harder's map.~~ 1373 9482

5319 E| ~~Ore~~ ~~Along line B-B, same.~~ 1373 9483

5320 E| ~~Ore~~ ~~" " C-C "~~ 1373 9484

5321 E| ~~Ore~~ ~~Test Pit #1, Algeria. Vertical distance of 35'. Fe 65.56 P 0.066 Si O_2 3.12 H_2O 2.35~~ 1373 9485

5322 E| B. ~~Ore~~ ~~Mono Aguda Pk. - line running across the N. ridge 200 ft. below summit along slope.~~ 1373 9486

5323 E| B. ~~Ore~~ ~~Summit of Mono Aguda Pk.~~ 1373 9487

5324 E| B. ~~Ore~~ ~~Line crossing S. ridge 200 ft. from summit.~~ 1373 9488

5325 E| B. ~~Ore~~ ~~Same 400ft. down slope from summit.~~ 1373 9489

5326 E| B. ~~Ore~~ ~~Same 600 ft. down.~~ 1373 9490

5327 E| B. ~~Ore~~ ~~Same 800 ft. down~~ 1373 9491

5328 E| B. ~~Ore~~ ~~Same 1000 ft. down~~ 1373 9492

5329 E| B. ~~Ore~~ ~~Same 1200 ft. down~~ 1373 9493

5307 B.

Samples from tunnel of Itabira Iron Ore Company

on property of "Middle Penha",

Itabira iron ore district, Minas Geraes, Brazil".

R210 location?

U.W.No.				Iron	Phos.	Sil.	H_2O	
5330 E1	#1	0'-10'	Impure lumpy jacutinga	68.71	.026	.47	.67	1373 9494
5331 E1	#2	10'-20'	" " "	66.83	.056	1.63	1.68	1373 9495
5332 E1	#3	20 -25'	" " "	66.13	.047	2.30	1.63	1373 9496
5333 E1	#4	25 -33'	Itabirite	42.50	.029	36.69	.69	1373 9497
5334 E1	#5	33 -38'	Impure lumpy jacutinga	67.20	.020	1.71	.74	1373 9498
5335 E1	#6	38 -48'	Hard ore	67.62	.028	1.80	.98	1373 9499
5336 E1	#7	48 -58'	Hard ore	66.71	.017	1.98	.73	1373 9500

Collected by Harmon Lewis, Nov., 1914.

Analyses by Lerch Bros., Virginia, Minn.

See specimen descriptions on 4 previous pages

Microscopic Notes on Brazilian Slides.

5286 B.19 157 Itabirite with both specularite and magnetite abundant. Andrade.

Itabirite with magnetite and hematite completely recrystallized. No rounded outlines. Hematite and magnetite fine grained, showing their presence prior to recrystallization.

5287 B.20 157 Amphibole-epidote-quartz rock. Mteamorphosed itabirite(.). Contains layers of quartz, iron oxides (hematite and magnetite), epidote and amphibole. Macacos.

Coarse interlocked quartz completely recrystallized. No fragmental grains. Magnetite and hematite often within the quartz individuals.

5292 B.25 157 Itabirite. Boa Vista.

Recrystallized quartz in coarse polygonal grains. No strain effects. Magnetite both within and between the grains.

5299 B.32 157 Itabirite interbedded with ferruginous and manganiferous limestone. Near Antonio Pereira.

Finely granular recrystallized quartz. Magnetite enclosed in quartz. Polygonal blocks of carbonate in isolated grains. Carbonate and quartz obviously recrystallized at the same time.

5302 B.35 159 Impure limestone with amphibole and iron oxide, perhaps also manganese oxide. Catto Preto.

Very finely granular carbonate with abundant minute grains of quartz. Distinctly parallel and dimensional arrangement. Sugestive of fragmental quartz grains. Recrystallization not conspicuous. Distinctly finer grained than average. Colorless amphibole as phenocrysts. Iron oxide with yellowish tings in ill defined aggregates and patches.

5303 B.36 159 Impure limestone with mica, chlorite, and iron oxides, perhaps manganese carbonate or silicate. Catto Preto.

Carbonate completely recrystallized. Much recrystallized quartz. Texture very irregular.

5305 B.38 159 Quartzite schist from Ouro Branco.

Sericite quartz schist. Completely recrystallized. No rounded outlines.

	5920	...	Dixon, New Mexico
ML 12	6103	Tillite	Wisconsin

7056 – 7061 Crystalline Limestone.
Ramsey Township. Ontario.
Donor: W. MITCHELL

Specimens donated to John Tinker, Fond Du Lac, Wis. 1970

7056 = 100.1
7057 = 99.4
7058 =
7059 = 99.3
7060 = 104.2
7061 = 104.1

H 11	7073	Recomposed basic matrix of ?	Vermillion, Minnesota.
H 11	7073	Greywacke, hornblende enlargements.	Minnesota.
H 6	7093	Greywacke, hornblende enlargements.	Minnesota
	8167	Clinochlore, monoclinic. $H_8Mg_5Al_2Si_3O_8$	Tilly Foster, New York.
	8760	Vivianite monoclinic $Fe_3P_2O_8 \cdot 8H_2O$	Ashio Mine, Tochigi Provinca, Japan
	8982	Stromeyerite $(5Ag_2S \cdot Sb_2S_3)$	Ely, Nevada
	8982	Ferberite Loc. ?	
E 12	?9082	Sandstone with quartz enlargement.	Penokee
H 7	9109	Greywacke-slate, hornblende enlargements. (specimen to R. A. PAULL, Dept. of Geol., U.W. Milwaukee.)	Penokee, Wis.

8000-9133

Collection of rocks made by U.S.Grant and assistants in northwestern Wisconsin for Wisconsin Geol. Survey, 1897-99.

Lists in binder in Survey office. Collection all boxed except for some specimens in Petrographic collection.

All specimens have numbers painted in white on black background and may be distinguished from U.S.G.S. specimens by the larger figures. A few had the numbers changed to red. All but a few of the thin sections are still in possession of Grant at Evanston.

9082 M1
9109 M1
9118 M1

8458 E-6-18
9035 E-10-14
9027 E-40-7
9034 F-8-9
9026 A-6-10
8287 A-31-6
8571 A-31-7
8571 A-31-8
8576 A-31-9
8587 A-31-10
8624 A-31-11
8537 B-29-4
9033 B-29-5
8512 B-31-5
9106 B-31-6
8590 B-32-7
8591 B-32-8
8639 C-6-14
8640 C-6-15
8641 C-6-16
8641 C-6-17
8036 C-10-20
8078 C-10-21
8116 C-10-22
8118 C-10-23
8120 C-11-1
8176 C-11-2
8311 C-11-3
8413 C-11-4
8481 C-11-5
8540 C-11-6

8520 C-18-1
8524 C-18-2
8550 C-18-3
8603 C-18-4
8650 C-18-5
8661 C-18-6
8712 C-18-7
8727 C-18-8
8910 C-18-9
8952 C-18-10
8296 C-35-5
8606 C-35-6
8370 D-2-10
8344 D-2-11
8554 D-2-12
8565 D-2-13
8002 D-5-12
8960 D-5-13
8965 D-5-14
8811 D-8-22
8000 D-13-11
8962 D-13-12
8457 D-17-21
8460 D-18-1
8720 D-18-2
8928 D-25-8
8611 D-26-7
8001 D-28-8
8814 D-28-9

~~5001 - 5161 Krantz collection of ores.~~

9300A Bog Iron Ore West of Cloquet, Minn. (ES47)

9351 Basalt schist Lake Superior (ML7)
(Specimen donated to James Norris Oshkosh, 1970)

9442 Greywacke, hornblende enlargements: Penokee, Wisconsin (H4)
(Specimen donated to R,A. Paul, U.W. Milwaukee)

9461 Greywacke Penokee, Wisconsin (H1)
(Specimen donated to R.A. Paul, U.W. Milwaukee)

9523 Greywacke, hornblende enlargement Mich. (H8)
(Specimen donated to R.A. Paul, U.W. Milwaukee.)

9598 Greywacke Penokee, Wis. (H2)
(Specimen donated to R.A. Paul U.W. Milwaukee)

9613 Slate, hornblende enlargement Penokee, Wis. (H9)
(Specimen domated to R.A. Paul, U.W. Milwaukee)

9644 Slate, hornblende enlargement Penokee, Wis. (H10)
(Specimen donated to R.A. Paul, U.W. Milwaukee)

9686 Diabase Wisconsin (ML5)

9751 Bauxite: shale, oolitic Poshan Dist., China (Shantung) (ES71)

9755 Vanadium (Patronite) near Minesragra, Peru
9756 Vanadium Arivaca, Ariz.

CASSITERITE Lot990 Sp.# 9759 to 9789
Bolivia Lloyd J. Severson Coll.

Wood tin
Jamesonite
Native bismuth
Vivanite
Teallite
Marcasite
Vauxite

Zincenite
Dolomite
Zincenite

Wolframite?
Quartz
Placer
Cassiterite ore
Pegmatic
Milluni ore
Tetrahedrite
Stibnite
Enargite
Wolframite

9822 Vermiculite Crude ore Montana
(Donated by International Vermiculite Co.)
9823 Vermiculite Expanded vermiculite Montana
(Donated by International Vermiculite Co.
9824 Vermiculite vermiculite plaster Colorado
(Donated by International Vermiculite Co.)
9825 Vermiculite paint (University seal done in gold paint)
Paint made by mixing sized expanded vermiculite with shellac and acetone (difficult to work with)
9826 Vermiculite Crude ore No. Carolina
(Donated by International Vermiculite Co.)
9827 Vermiculite Expanded vermiculite No. Czrolina
(Donated by International Vermiculite Co.)
9828 Vermiculite Pressed insulating board
(Donated by International Vermiculite Co.)
9829 Vermiculite unpressed wall board
(Donated by International Vermiculite Co.
9830 Vermiculite Pressed wall board
(Donated by International Vermiculite Co.)
9831 Vermiculite pipe covering
(Donated by International Vermiculite Co.)
9832 Vermiculite expanded vermiculite Colorado
(Donated by International Va/rmiculite Co.)
9833 Vermiculite Crude ore Colorado
(Donated by International Vermiculite Co.)
9834 Vermiculite vermiculite in synthetic resin (Pontylite)
(Donated by Edward Erdman

9835 Vermiculite Raw vermiculite Colorado
(Donated by Ovrhaul Co.)
9836 Vermiculite Ovrhaul Motor Reconditioner
(Donated by Ovrhaul Co.)
9837 Vermiculite Raw vermiculite
(Donated by Ovrhaul Co.)
9838 Vermiculite Expanded vermiculite flakes
9839 Vermiculite Expanded vermiculite

9881 Hematite Africa (Paint made from this in Chicago)

9882 to 9890 Sand paper Made from Wausau Quartzite (ES71)
(Donated by 3M Co., St. Paul, Minn.

10011 Muscovite Sarasota, Wyo. Source: H.B. Patton (MS) (458)

10045 Gneiss Chlorite gneiss Laramie, Wyo.

10564 Dark mineralized granite Butte, Montana (ML3)

10564 Dark mineralized granite, much sericite, pyrite. N. wall of 1260 at N point of bend. #1075 Pittsmont Mine, Butte, Montana (ES24)

10565 Specimen on contact of porphyry and granite on 1201, #1081 Pittsmont Mine, Butte, Montana (ES24)

10567 Weathered granite, Porosity 22.4% Butte, Montana (ML3)

10568 Copper Suite Harder than surrounding specimens because of veins on both sides. Butte, Montana (ML3)

10571 Cupriferous pyrite veins. 1 set on 847. #1092 Pittsmont Mine, Butte, Montana (ES26)

10572 Siliceous vein matter, junction of 1230 and 1242. #1095 Pittsmont Mine, Butte, Montana (ES26)

10574 Disintegrated granite previously mineralized. Footwall of vein #1058 Motheral, Butte, Montana (ES26)

10576 (Slightly? weathered) disintegrated Butte granite. Butte, Montana (ML 1)

10577 Disintegrated granite ¼ mi. SE of Homestake. #1116 Butte, Montana (ES26)

10578 Quartz Gr. vein stuff 1100 level #1122 Mt. New, Butte, Montana (ES26)

10579 From 15" vein in quartz rhyolite Butte, Montana (ES26)

10580 Quartz, pyrite and some glance. Junction of stopes 22 and 23 near 815 Butte, Montana (ES26)

10581 Crystals of glance on enargite Junction of stopes 22 and 23 Butte, Montana. (ES26)

10582 Cu_2S, west end, quartz pyrite vein Butte, Montana (ES26)
10583 Glance, enargite, 14 stope, 12 floor west end. Butte, Montana (ES26)
10584 Quartz vein, 20 sets east of Rossell winze, clean cut 4" vein. Butte, Montana (ES26)
10585 Copper Suite Stope 20 Butte, Montana. (ES26)
10586 18 stope 5 floors from 1000 Quartz, pyrite, enargite vein. Butte, Montana (ES26)
10587 Gouge with sulfides, stope 24 Butte, Montana (ES26)
10588 Cu_2S vein, 18" from native copper in quartz. Butte, Montana (ES26)
10590 Decomposed granite from vein Butte, Montana (ES26)
10591 Quartz vein stuff, 20 N of NE of Blow Top hoist. Butte, Montana. (ES26)
10592 Granite showing fissures of pyrite more or less replaced. Butte, Montana (ES26)
10593 Native copper in quartz. 18" from 4" vein of Cu_2S. 19th floor Stope 4. Butte, Montana (ES26)
10594 Copper Suite. Butte, Montana (ES26)
10595 Copper Suite. 1216 (stope 10) 28" west end #M16 Butte, Montana (ES26)
10596 Copper Suite. Gouge Butte, Montana (ES26)
10597 Pegmatite, Timbered Butte Butte, Montana (ES26)
10598 Fragment adhering to wall outside of vein mass. Foot N. of Top hoist on Motheral. Butte, Montana. (ES26)

10600 Zinc capping, Reed Vein Butte, Montana
10600 Copper/Zinc suite. Zinc capping, Reed Vein. Butte, Montana (ES27)
10601 Catherine vein, Assay May 15/05 Cu 8.8%, Au .02 oz., Ag 14.1 ozs. Butte, Montana (ES27)
10602 Basic segregation, Boulder granite Butte, Montana (ES27)
10603 Stringer from 6" vein of pyrite and glance 70' east 850 on 800 Pittsmont Mine, Butte, Montana (ES27)
10604 Copper Suite. Motheral vein Butte, Montana (ES27)
10605 Copper Suite. 670 just below valley drift. Top of 18th raise. Butte, Montana (ES27)
10606 Oxidized zone crushed granite, quartz, Fe oxide. #1054. (ES27)
10607 Copper Suite. Butte, Montana (ES27)
10608 Hydrothermally altered granite Butte, Montana (X3)
10609 Copper Suite. Butte, Montana (ES27)

10611 Copper Suite. #1004 Butte, Montana (ES27)
10612 Copper Suite. #1112 Butte, Montana (ES27)
10613 Copper Suite. #1117 Butte, Montana (ES27)
10614 Copper Suite. #1118 Butte, Montana (ES27)
10615 Copper Suite. #1120 Butte, Montana (ES27)
10616 Copper Suite. #1121 Butte, Montana (ES27)
10617 Copper Suite. #1123 Butte, Montana (ES27)
10618 Copper Suite. #1114 Butte, Montana (ES27)
10619 Copper Suite. #1127 Butte, Montana (ES27)
10620 Copper Suite. #1127A Butte, Montana (ES27)
10621 Copper Suite. #1128 Butte, Montana (ES27)
10622 Copper Suite. #1125 Butte, Montana (ES28)
10623 Copper Suite. Deposit from mine waters Butte, Montana (ES28)

Samples of drillings from wells in Wisconsin and Illinois- collected by A.R. Schultz for the U.S. Geol. Survey in 1903. Part only were placed in bottles and correctly numbered by Schultz. The remainder, having stood in open boxes for about 9 years, were bottled in 1912. See well records of Wis. Geol. Survey.

(? Mich. ?)

all in well sample case F.T.T. Rm 224

10132-10133	Wm. Rahr Brewing Co.	Manitowoc, Wis.
10134-10171	St. ~~Rob~~ Nob erts Col.	West De Pere, Wis.
10172-10194	H. Giddings	Sheboygan Falls, Wis.
10195-10206	Forest Home Cemetry	Milwaukee, Wis.
10207-10218	West Allis	" "
10219-10232	Sanitarium	Prairie du Chien, Wis.
10233-10285	Elgin Watch Co.	Elgin, Ill.
10286-10334	City	Morrison, Ill.
10335-10341	City	Iron Mt., Mich.
10342-10344	Waukesha County Farm (in milk bottles)	Pewaukee, Wis. end drawer
10345-10352	C.& N.W. Ry. Co.	Edgar, Wis.

10353-10394 ↓ 10378 — Colorado - Cripple Creek — O. KUNZE

Basalt, granite, Phonolite, andesite, etc.
University Rock Collection, Petrogr. Lab.
Nepheline Syenite. Bull Hill, Cripple Creek, Colo.

Collection of Phosphate Rocks from Utah, by Eliot Blackwelder and J. M. Jessup, 1909.

Remainder in Non-Metallic Case

10400 case 17	Random sample from Pennsylvanian phosphate series.	
E-5-3 10401 U147 case 17	Same, (3 spec.)	Bear River Range.
10402 case 17	Nodular phosphate rock from one of the richest beds of the Preuss formation.	Robinson Ranch, Weber Canyon, Devil's Slide.
E-5-4 10403 U147 S	Same.	" " " "
10404	Phosphatic limestome, a characteristic member of the Preuss formation.	" " " "
E-5-5 10405 U147 S	Nodular phosphate, characteristic member of Preuss formation.	Tunnel Hollow, Weber Canyon, Devil's Slide.
10406 case 17	Same.	" " " "

Rocks collected by Eliot Blackwelder, 1910.

E-8-15 10407 U ~~105~~ 151	Mashed conglomerate, part of the Cambrian conglomerate. A few feet above a large overthrust fault beneath which are contorted Cambrian shale and limestone.	Ogden, Utah.
D-5-15 10408 U 105	Undeformed conglomerate 500 feet above the fault. Part of Cambrian quartzite.	" "
E-6-21 10409 U[illegible] S	Fault plane on quartzite, on the plane of a small normal fault in Weber quartzite on the high ridge north of Tunnel Hollow.	Morgan, Utah.
E-40-6 S 10410 U172	Folded gneiss found in debris from the Archean(?)	Hot Springs.

10501 - 37 GENEVIEVE MILLS collection
Madison, Wis.

	10504	Mineral from Colorado	Source: Miss G. Mills
ES 71 MS 6C1	10507	Fluorite - Rosi Claire,	Illinois
MX	10508	Smoky Quartz crystals.	Jefferson Co., Mont.
Lpc. coll. 1718	10509	Gypsum	Canon City, Colo Source: Miss G. Mills
ML 3	10510	Conglomerate marble	Colorado Source: Miss G. Mills, Madison, Wis.
MS	10511	Cancrinite	Litchfield, Maine
MX	10513	Cleavelandite	stoneham, Maine

10514 - 10536 Minerals, Colorado. Source: Miss Genev. Mills, Madison

MS	10514	Smoky quartz and Feldspar	Pikes Peak, Colo
MS	10515 Dogtooth	Calcite	Manitou, Colo Donor: Miss Geneviere Mills, Madison, Wis.
	10517	Amethyst	San Juan, Colo
MX 26	10520	Native Silver,	New Mexico (Source ?)
MS	10523	Celestite	Manitous, Colo. Donor: Miss GENEVIEVE MILLS, Madison, Wis.
	10525	Wood Jasper	Divide, Colo.
U.W.			
MX	10526	Moss Opal	Lake Co., Colo
MS	10527	Petrified "palm"	Green Mt., Colo.
ES 83	10529	Hematite	Locality ? source ?
E.S.S	10532	Azurite	San Juan, Colo.
	10533	Gold bearing Peacock Copper Ore.	Gilpin County, Colo.

10538 - 10629

COLLECTION OF BUTTE MONTANA ROCKS

Examined by Mr. Kirk, 1909-10.

Fresh and altered igneous rocks and copper matte ores. Acid igneous hydrothermal alteration.

Boxes 1, 2, 3
Metamorphic Coll. R. 210
Economic Lab. Coll. R. 210
U.R.C. Petrog. Lab.

Pittsmont Mine.

10538 M1 Fresh quartz Monzonite, end of N. crosscut. (Slide). #1001.

10539 Allerco quartz Monzonite, 1207 crosscut, meanes alter co, granite to 1001 (Slide) #1002.

10540 M1 Fresh phase of granite E. side of 1213 #1003.

10541 M1 Slightly alterco granite about 30' S. of #1005. #1006.

10542 Altered granite, So' S of Bulkhead location 1213. crosscut, #1008.

10543 E1 M1 ES-24 Relatived fresh granite 1215 crosscut, 75' N. of 1210 #1009. Pittsmont Mine, Butte, Montana

10544 E1 ES-24 Fresh granite with aplite dike from end of N. crosscut on 1200 #1011, Pittsmont Mine, Butte, Montana.

10545 M1 Leached silicified granite, Porosity 22%. #1016,

10546 Pittsmont 818 crosscut 808 survey dt. 25.6' N. of 812 0 ft. Altered granite typical productive country to S. # 1021.

10547 E1 ES-24 Pittsmont, Mine, Butte, Montana stope 4, 14th floor vein matter #1023 (2 spec.).

10548 E1 S. side 875 at junction with 818 1, set up Sec. enrichment with leaching. #1030. Pittsmont Mine, Butte, Montana

x2 10548 Metamorphosed Butte Granite. Introduction of pyrite. Butte, Mont.

10549 E1 ES-24 40 pieces from 1230 on 1236 (1) under stope 6(?) much sericite, pyrite especially in veinlets #1033. Pittsmont Mine, Butte, Montana.

10550 E1 ES-24 Has chute E. of Russel winze, N. wall. Strongly sericitized #1034. Pittsmont Mine, Butte, Montana

10551 E1 Shows more sericite # 1035. Pittsmont Mine, Butte, Montana

10552 M1 Under 822 Stope furtherest chute west S. wall # 1040.

10553 M1 822-25 paces beyond (W. of) with 836 S. wall adjacent to quartz pyrite vein much sericite. #1041.

10554 850 under 14-5 stope last chute last N. side vein well sericitized. pyrite, some bleaching #1044.

10555 E1 Face 850, beyond 14-5 stope S. side vein. Moderatly mineralized. Some bleached brotite. #1045. Pittsmont Mine, Butte, Montana

10556 E1 #1050. (Copper Suite), Pittsmont Mine, Butte, Montana

10557 M1 Quartz porphyry 800 crosscut, altered porphyry first of series across contact. #1063.

See old register

10562 Specimen from 1220, 19 sets from junction with 1230, # 1069 Pittsmont Mine, Butte, Montana (ES 24)

10563 Shows some gradiations, not far from 1070. #1070 Pittsmont Mine, Butte, Montana. (ES 24)

10624 Pyrite vein showing gradation through silicified granite to altered granite at survey Pt.903. #1015 Butte, Montana (ES28)

10626 Granite showing segregations Butte, Montana (ES28)
10627 Comparatively fresh Butte granite with aplite dike. North part of Pittsmont Mine. Butte, Montana (ES28)
10628 Copper Suite. Butte, Montana (ES28)

10632 MARCASITE after GALENA Loc. Southwest Wisconsin
10633 Sphalerite, calcite, marcasite Southwestern Wisconsin. (ES7)

10636 Enriched pyrite ore Butte, Montana (ES28)
10637 Gold, Native Goldfield, Nevada (MX) (26)

MONTANA - BUTTE 10640-10650 KIRK, C. T. (1910)

Fresh and altered igneous rocks and copper matte and ores. Acid igneous hydrothermal alteration.

Boxes 1,2,3, of the Metamorphic Coll. Rm. 210
Economic Lab. Rm. 210
U.R.C. Petrog. Lab

10640	Copper	Comparatively fresh phase of Butte granite North part of Pittsmont Mine Butte, Mont. ES 28
10642	Copper	Butte, Mont. ES 28
10643	"	Crystallized slag from Pittsmont Smelter Butte, Mont.
10644	"	Copper Matte showing "Moss Copper" squeezed out on cooling of Matte Butte, Mont. (ES 28)
10645	"	Ore, sulphide of iron and copper Pittsmont Mine, Butte, Mont.
10646	"	Ore Pittsmont Mine Butte, Mont.
10647	"	Ore, sulphide of iron and copper Pittsmont Mine Butte, Mont.
10648	"	Fragment from 2" pyrite vein Pyrit coated with secondary chalcocite. Pittsmont Mine Butte, Mont.
10649	"	"Nugget Copper" from concentrating mill. Material from oxide zone. Pittsmont Mine Butte, Mont.
10650	"	Somewhat mineralized granite Butte, Mont.

UTAH - PARK CITY 10651-10670 JESSUP, J. M. (1910)
Silver, Lead, and Copper Ores mostly silver

10653	Silver	Bigham, Utah
10654	"	Pb, Zn, Ag, etc. Silver King Mine Park City, Utah (ES 6)
10655	Tungsten	Altered limestone Silver King Mine, Park City, Utah (ES 6)
10668	Silver	High in silver Daly-West Mine, Park City, Utah (ES 6)

WISCONSIN - WAUSAU - RIB HILL 10671-10677

Mixed granite and quartzite Igneous Texture Coll. Metamorphic Coll. Rm. 210

10671 Quartzite with granite veins (?) Rib Hill Wausau, Wis.

10676 Quartzite at granite contact Wausau, Wis.

10677 Rib Hill quartzite-intrusive Breccia W Wausau, Wis.

10679 Chlorite schist + porphyritic garnet Michigamme Mine, Mich. (specimen donated by Norris Johnes 1970 (T 6)

10680 Chlorite schist Michigamme Mine, Michigamme, Mich. (specimen donated by Norris Johnes)

10681 Chlorite schist + porphyritic amphibole Michigamme Mine, Mich. Thin section-Pray (T 8)

10682 Chlorite schist with Porphite biotite Michigamme Mine, Mich. (specimen donated by Norris Johnes)(1970) (T 8)

10685 Touraline 426 Loc: Bluebird Mine, Wickes Mont.

10687 Copper (native) 15 Dan Creek, Mt. Wrangll Alaska MX

10691 - 10783 Iron Ores from all parts of the World. Economic Mineral Coll., Iron case, museum boxed

No.	Name.	Locality.
10691 Case 27 (-11000)	Mainly in Iron case or boxed as shown	
10692 El	2 spec. of veins	Cobalt Dist., Ontario.
10693 El	Vein, sulphides leached by acid artificially	" " "
10694 El	Calcite showing solution	(" " ")
10695 Cu Case	Amygdaloid copper	Osceola Mine, Mich.
10696 El	Copper-bearing conglomerate	C&H Michigan.
10697 Ei Fe Case	Quartz and iron oxide, determined by F.E.Wright as below 575° C. (4 spec.)	Mesabi Range, Mich.
10698 Se	Iron concretion ~~or flugerite~~ in sandstone.	Unknown.
10699 B26, 27	Limonite iron ores	Lake Superior region.
10700 B26	Botryoldal iron ores (cf.3683)	" " "
10701 El	Conglomerate ore showing ~~re-~~ action of silica	" " "
10702 B23 Fe Case	Iron ore showing leaching of bands of silica	" " "
10703 B22	Red iron ores	" " "
10704 B20	Martite and magnetite	" " "
10705 B18 Fe Case	Slate showing bedding and cleavage	" " "
C-37-5 10706 B12, 13, 14, 15, U93, 23, 24 Fe Case	Banded jaspers and iron formations	" " " mainly Marquette — Turned over to Dr. McKinstry 6/13/41 - M.J.
10707 B20	Hematite	Marquette District.
10708 B16, 17, 21	Black Hematites	Lake Superior region.
10709	Magnetite actinolite rock	" " "
10710	Manganese ore	" " "
10711 Case 21	Magnetite	Huntington, Pa.
~~10712~~	Siliceous hematite	Michigan

No.		Name.		Locality.
10713	E1	Magnetite	(old bed #21)	Mineville, N. Y.
10714	Case 24	"	(Harmony ore)	" "
10715	Case 24	"		" "
10716	Case 24	"		Lake Champlain, N.Y.
10717	case 21	"		Rogersville, Pa.
10718	Case 24	"		North shore Gunflint Lake, Canada.
10719	607	"	(porphyritic)	Cumberland, R. I. HENRY collection 237
10720	Case 21	"		15 mi. N.W. of Llano, Llano Co., Tex.
10721	Case 21	"	in chlorite-schist	Dublin, Hartford Co., Md. C.K. Leith X-ray analyzed J.W.J. MERD
10722	Case 24	"		Cranberry, Mitchell Co., N. C.
10723	case 24	"		Lola Mine, Raiquiri, Santiago, Cuba.
10724	Case 24	"		Jaragua Mine, Santiago, Cuba.
10725	Case 21	Rock associated with magnetite.		4th and 5th Level, Lola Mine, Raiquiri, Cuba.
10726	Case 21	"	" " "	Bottom shaft, 1st Level, Lola Mine, Raiquiri, Cuba.
10727		Magnetite		Iron Mine, Vas Vegas, Vera Cruz, Mexico.
~~10728~~	~~Case 24~~	~~"~~		~~Minas Geraes, Brazil.~~ 9601 9601
~~10729~~	~~605~~	~~Hematite~~ (Idaho)	OK	~~Bilboa, Spain.~~ 232
10730	606	"		Island of Elba. 232
10731	Case 21	"		Sabenius, Cuba.
10732	Case 24	"		Seguas Mine, Santiago, Cuba.

No.		Name.	Locality.	
10733	E1 Case 24	Limonite (earthy ore)	Lincoln Co., N. Mex.	
10734	Case 21 case 15	Gossan iron ore	Beechtown, Tenn.	
10735	Case 21	Manganiferous ore	Allentown, Pa.	
10736	Case 21	Hematite	Wythe Co., Va.	
10737	Case 24	Fe" Case (Clinton)	Westen, N. Y.	
10738	case 21	" with limonite	Mifflin Co., Pa.	
10739	Case 21	"	Hematite Iron Co., Utah.	
10740	Case 24	" (Clinton)	Rockwood, Tenn.	
10741	Case 24	~~" with magnetite~~	~~Minas Geraes, Brazil.~~	Recat. 1373 ~~9502~~ 9602
10742	case 24	"	Iron Mt., St. Francois Co., Mo.	
10743	~~E1 Case 24~~	~~"~~	~~Minas Geraes, Brazil.~~	Recat. 1373 ~~9503~~ 9603
10744	~~Case 24~~	~~"~~	~~" " "~~	" 1373 ~~9504~~ 9604
10745	case 21	"	Lancashire, England.	
10746	6B5	Pyrite	St. Lawrence Co., N.Y.	85
D-34-11 10747	Case 24	Limonite	Ironton, Sauk Co., Wis.	
10748	E1	Hematite, soft blue	Ishpeming, Mich.	
~~10749~~	~~E1~~	"	Cleveland Mine, Menominee Range, Mich.	
10750	E1	" (grape ore)	Newport Mine, Ironwood, Mich.	
~~10751~~		~~Martite schist~~ USGS specimen	~~Cleveland Mine, Marquette Range, Mich.~~	
10752	Case 24	Hematite, wad, siderite, chalcosiderite (Antwerp ore)	Antwerp, N. Y.	
10753	Case 24	Hematite	Mifflin Co., Pa.	
10754	6D6	" (1 disposed)	Antwerp, N. Y.	232
10755		" (impure)	Huntington, Pa.	232

No.		Name.		Locality.
10756	Case 24	Siderite (Cretaceous)		Prince George Co., Md.
10757		"		Allegheny Co., Md.
10758	Case 7	"		Chalybes, Ct. 273
10759	Case 24	Limonite		Smith Mine, Sauk Co., Wis.
10760	Case 21	"		Upshur Co., Tex.
10761	Case 21	"		Rover Furnace, Duchess Co., N. Y.
10762	Case 24	"		Salisbury, Ct.
10763	Case 7	"	shell around clay	Thebes, Ill. 259
10764	Case 24	"		Potomac formation, Station F., N. Y.
10765	Case 21	"		Curreta Hill, Casa Co., Tex.
10766	Case 21	"	(rusk ore)	Cherokee Co., Tex.
10767	Case 24	"		Green Ridge Ore Banks, Tex.
10768	Case 21	"	(stalactitic)	Marquette Co., Mich.
10769	Case 21	"	(radiated)	" " "
~~10770~~		~~"~~		~~Blue R., Middle Pk., Colo.~~
10771	Case 21	"	(siliceous)	Huntington, Pa.
10772	Case 24	"	(pipe ore)	Reynolds Co., Mo.
10773	Case 7	"	" "	Chilton Co., Mo. 259
10774	Case 24	"	and magnetite	Newport Mine, Ironwood, Mich
10775	Case 24	"		Rich Hill, Va.
10776	Case 24	Gossan iron ore		~~Perch~~ Dutch town, Tenn.
10777	Case 21	Limonite		Minas Geraes, Brazil.
10778	Case 21	Limonite		Center Co., Mo.
10779	Case 21	"	(org. (vol.) matter 30, Fe 23, Mn 19) Dep. by bacteria (Crenothix) in city water mains	Wausau, Wis.
10780	Case 24	" Götite		Royal Iron Mine, Cornwall, England.

No.	Name.	Locality.
C-37-6 10781 U93(1spec) 6D6 Ei case 24	Hematite (3 specimens) X-Ray# 1185	Town of Scott, Crawford Co., Wis. (sent by A.E.Lyth, Boscobel). 232
10782 E1(1spec) Ei case 24 case 21	Iron ore (limonite)	Town of Watterson, Grant Co., Wis. (sent by A. E. Lyth, Boscobel).
10783	Chromic iron ore	Napa Co., Calif.
10784	Cassiterite	Franklin Mts., El Paso, Tex.
10785 red on black Case 15	Decomposed pegmatite containing cassiterite, SnO_2	Old Jones Tin Mine, Gaston Co., N.C.
~~10786~~ Case 15	Cassiterite in pegmatite Recat: LO 9582 ~~Recat LO 9568~~	L. E. Gettys, Gaffney, S.C.
~~10787 E1 Case 15~~	~~Pyrolusite~~	~~Carthagena, Spain.~~
10788 Case 15	"	Nova Scotia.
~~10789 6D6 Case 15~~	~~Manganite~~	~~Algiers.~~ Recat. LO 9566 258
10790 Case 15	"	Brandon, Vt.
10791 Case 15	"	Chili.
~~10792 Case 15~~	~~Pyrolusite~~ LO 9571	~~Iron belt mine, Gogebic Range, Wis.~~
~~10793 Case 15~~	~~Manganese~~ LO 9567(2)	~~Manganese Mine, Cuba.~~
10794 Case 15	Wad -- cupriferous	Lowell Mine, 1000' level, Bisbee, Ariz. F.L.Ransome's No. 21.
10795 Case 7	"	Calumet & Arizona Mine, 750' level. Bisbee. (Ransome's No. 22.) 269
~~10796 Case 15~~	~~" Recat. LO 9569 to 15% Cu.~~ Occurs in natural cave in limestone.	~~Calumet & Arizona Mine, 850' level, (Ransome's No. 23).~~
10797 part mineral 7B1 case 15	Ganerite (1 disposed) LO 9597	New Caledonia, Australia. 483 A
10798 E1	Nickel ore LO 9750	Vermilion Mining Co., Sudbury, Ont.
10799 Case 15	" " (float?)	Sudbury, Ont.
10800 Case 15	Ganerite or genthite LO 9600	Jackson Co., N. C.

Tin-ores

Mn-ores

Co, Ni Ores

↓10810

No.		Name.	Locality.
10801	Case 27	Smaltite	New Ontario, Ont., Canada 87
10802	Case 15	Cobaltite crystals	Cobalt, Ont. (presented by R. C. Allen.) LO 9014
10803	Case 15	Smaltite- Chloanthite with stain of annabergite.(green) on niccolite	La Rose Mine, Cobalt, Ont., Canada
10804	& Case 15	Pyrrhotite and smaltite with gangue of rhodochroisite ?	" " " LO 9013
10805	& Case 14 Case 27	Smaltite	Standard Consolidated Mine, East Oregon. Presented by Dr. Riley, Madison.
10806	E4 Case 15 Tbb	Erythrite "Cobalt Bloom" as cement in conglomerate.	Cobalt Hill, Cobalt, Ont. Canada LO 9012 LO 9006 to LO 9008
10807	Case 15	Cobalt ore. Arsenopyrite gangue.	Standard Consolidated Mine, Oregon. (E.F.Riley). LO 9745
10808	E1 Case 15	Nickel-Cobalt ore. Ni 23.24%, Co 5.95%, As 58.40%	Benn Claim, Cobalt, Ont. Canada
10809	E1 Case 15	Nickel-Cobalt ore < Boxcard Niccolite ($NiAs$) and Chloanthite ($NiAs_2$)	La Rose Mine, Cobalt, Ont. Canada LO 9010
10810	Case 15	Smaltite	Cobalt, Ontario (presented by H. H. Nicholson). LO 9015
10811	Case 12	Argentite	Obrien Mine, Cobalt, Ont. Canada
10812		Stibnite with galena and calcite	Bones County Mine, Borneo.
10813		Orpiment with barite	Felsobanya, Hungary LO 9743
10814	Case 15	Native bismuth (3 specimens) in quartz	Cobalt, Ont. Canada
10815	Case 15	Realgar in calcareous shale	Douglas Co., Oregon.
10816	Case 15	Cinnabar	Terlingua, Tex.
10817	Case 15	" in siliceous sinter	Steamboat Springs, Nev.
10818	Case 15	" ore.	Sonoma Co., Calif. LO 3901
10819	Case 15	Chromite (2 specimens)	California. LO 9596
10820	Case 15	"	Shetland Isles.
10821	Case 15	"	Nelson, New Zealand. LO 9716
10822	Case 7	" with olivine	Webster, N. C.
10823	Case 15	" in serpentine	Pennsylvania.
10824	Case 15	" " "	Birds Eye, Cecil Co., Md. LO 9718

Ag - Sb, ... minerals

E.S.2
E.S.64

Collection of rare metal ores by Kirby Thomas.

No.		Name.	Locality.
10825	Case 15 1*	Vanadium Ore (Vanadinite)	Globe, Ariz.
10826	Case 15 2	" concentrates LO/9736	" "
10827	Case 15 3	Molybdenite	Parry Sound, Ont.
10828	Case 15 4	Uranium ore	Durango, Colo.
10829	Case 15 5	Wolframite (tungsten ore)	Osceola, Nev. LO/9734
10830	case 15 6	"	Colorado. LO/9733 small pieces from Arizona
10831	case 15. 6	"	Arizona. LO/9733
10832	Case 15 7	Tungsten concentrates and ore LO/9735	Boulder Co., Colo.
10833	8	Wad, high in phosphorus low grade	Arkansas
10834	Case 15 9	Rutile (titanium ore). LO/9716	
10835	Case 15 10	" " "	Minnesota.
10836	Case 15 11	Vanadium and uranium	Colorado.
10837	Case 15 12	Ore of vanadium and uranium (carnotite)	Colorado.
10838	13	Carnotite concentrates	"
10839	Case 15 14	" "	" DISPOSED

* These numbers are those used by Kirby Thomas.

Collection of ores and rocks from Cobalt Mining District,

Ontario, Canada.

by W. O. Hotchkiss and others.

All in drawers Room 210

10840 - 10900 also 10971 - 10984

No.	Name.	Locality.
10840 E case 15	Ore and wall rock, showing nickel and cobalt bloom.	Cobalt Hill. LO 9011
10841 E	Mineralized slate inclusion, including diabase.	Portage Bay.
10842 E	Bornite, tetrahedrite and chalcopyrite, in calcite vein.	Lot 4, Con. 1, Bucke.
10843 E	Cobalt bloom in mineralized wall rock	Cobalt Hill.
10844 E	Smaltite, showing dendritic manner of growth.	Temiscaming Cobalt Mine.
10845 E case 15	Smaltite showing dendritic structure	" " "
10846 E case 15	Wall rock showing white rimmed secondary mineral.	Cobalt Hill. LO 9017
10847 E	Brecciated wall rock mineralized with galena, sphalerite and chalcopyrite	"J. B. 6" claim.
10848 E	"Lower" Huronian slate showing white rimmed secondary mineral.	Temiscaming Cobalt Mine.
10849 E in Hall Structural case	Weathered "Lower" Huronian conglomerate showing white rimmed secondary mineral.	" " "
10850 E	Breccia cemented by chlorite	Devils Rock.
10851 E	Finely veined rock, probably Keewatin.	Cobalt Lake.
10852 E	Laurentian granite, the source of recomposed granite.	Kirk Lake.
10853 E case 15	Breccia, showing vein action with quartz, albite and native bismuth.	Cobalt Hill.
10854 E	Asbestos vein and wall rock	Lot 1, Con. 5, Bucke.

No.	Name.	Locality.
10855 E1	Quartzite immediately at contact with diabase	Devils Rock.
10856 E1	Slickensided ore	Cobalt Hill.
10857 E1	Normal phase of diabase	Portage Bay.
10858 E1	Huronian slate lying upon Devils Rock diabase	Devils Rock.
10859 E1	Contact phase of diabase and Huronian graywacke	Portage Bay
10860 E1 case 14	Epidote and asbestos from dike. (This is 10869 on specimen)	Lot 1, Con. 5, Bucke. (Dec 29, 1933)
10861 E1	Native silver, niccolite, and smaltite, chloanthite, in calcite gangue. (Spec. No. 10860 + 10861 are the same)	La Rose Mine.
10862 E case 12	Native silver in Nickel-Cobalt ore. Niccolite grains surrounded by smaltite-chloanthite.	La Rose Mine.
10863 E1	Slickensided wall rock	Cobalt Hill.
10864 E1	Native silver in diabase	Glendenning Mine.
10865 E1	Native silver from weathered vein.	O'Brien Mine.
10866 E1	Breccia showing unusually large white rimmed secondary mineral.	Cobalt Hill.
10867 E1	Epidote and asbestos vein and diabase wall rock, showing bloom.	Lot 1, Con. 5, Quebec.
10868 E1	Quartz and albite with native bismuth.	Cobalt Hill.
(10869) E1?	Ore, largely altered to bloom, encrusting fragments of wall rock.	"J. B. 6" claim.
10870 E1	Smaltite with calcite gangue	" "
10871 E1	Smaltite-chloanthite, chiefly chloanthite, as shown by oxidation product.	Hudson Bay mine, south of Cobalt.

Number.	Name.	Locality.
10872	Iron sulphide and bloom. Cobalt probably an impurity in iron sulphide.	Portage Bay.
10873	Granite, probably from Lower Huronian conglomerate, mineralized with smaltite.	Temiscaming Cobalt Mine.
10874	Granite, probably from Lower Huronian conglomerate, mineralized with chalcopyrite with dark minerals weathered out.	Temiscaming Cobalt Mine.
10875	Mineralized wall rock.	"J. B. 6"
10876	Barren portion of vein with calcite and galena.	"J. B. 6"
10877	Oxidized ore white from mixing of nickel bloom and cobalt bloom, complementary colors.	"J. B. 6"
10878	Native silver in somewhat oxidized nickel-cobalt ore.	La Rose Mine.
10879	Granite, probably from Lower Huronian conglomerate, showing solution, mineralization and oxidation of the mineral.	Temiscaming Cobalt Mine.
10880	Lower Huronian conglomerate, showing granite pebble mineralized with chalcopyrite.	Temiscaming Cobalt Mine.
10881	Wall rock.	La Rose Mine.
10882	Pyrrhotite	NE¼, S½, Lot 10, Con. 2, Bucke.
10883	Smaltite, and native silver.	"J. B. 6"
10884	Native silver from waste dump.	Trethewey Mine, "J.B.6
10885	Pieces of wall rock coated with smaltite and chalcopyrite.	"J. B. 6".
10886	Fragments from vein wall showing nickel bloom, annabergite.	"J. B. 6".
10887	Slickensided smaltite.	Hudson Bay Mine, S. of Cobalt.
10888	Mineralized wall rock.	"J. B. 6".

Number.	Name.	Locality.
10889 E\	Wall rock, showing asbolite.	Cobalt Hill.
10890 E\	Lower Huronian slate showing white rimmed secondary mineral segregated in bands.	Temiscaming Cobalt Mine.
10891 E\	Crystals of bloom and smaltite	Hudson Bay Mine, South of Cobalt.
10892 E\	Breccia cemented by smaltite	Temiscaming Cobalt Mine.
10893 E\	Smaltite-chloanthite with cavity filled with bloom crystals and a white mixture of nickel and cobalt arsenates.	Temiscaming Cobalt Mine.
10894 E\	Bloom crystals encrusting wall rock.	" " "
10895 E\	Small vein of iron sulphide.	Borrow pit just south of Cobalt.
10896 E\	Specimen showing crystals of bloom and smaltite.	Hudson Bay Mine.
10897 E\	Finely disseminated smaltite in otherwise barren vein.	Temiscaming Cobalt Mine.
10898 E\	Porous smaltite.	" " "
10899 E\	Granite, probably from Lower Huronian conglomerate, mineralized with chalcopyrite.	" " "
10900 E\	Barren and mineralized wall rock.	"J. B. 6".

(Continued at No. 10971).

Number.	Name.	Locality.

Illinois-Kentucky Fluorspar District. 10901 - 10906

W. J. Mead, 1911. Room 210

10901	E1 (MIS) Weathered fluorspar ore.	
10902	E1 Case 14 Fluorspar replacing limestone.	
10903	~~E1 Case 14 Fluorspar and sphalerite.~~	10 9351 Recat.
10904	E1 Case 14 Fluorspar and galena.	
10905	~~Case 14 Fluorspar and limestone wall rock showing replacement by sphalerite.~~	~~11 9348~~ ~~10 9349~~ Recat. 10 9350
10906	E1 Case 14 Miscellaneous specimens.	

C-35-11

10907	E1 U85 Altered dike rock.	Norrie Mine, Ironwood, Mich.
10908	E-6-20 ~~E1 U118~~ 121 S Quartzite of footwall.	" " "
10909	St Contorted schist from N. E. Alaska about 2 miles W. of 141st Mer. and about 30- miles N. of New Rampart House, which is at intersection of 141st Mer. and Porcupine River. From an outcrop 1- miles from a large granite intrusion.	J. M. Jessup, collector.
10910	Se Nodular graywacke, slate, Upper Huronian, probably. W. J. Mead, Collector, 1911.	Amasa, Mich.
10911	Irregularly iron stained quartz sandstone.	
10912	Case 15 ? Slates.	Montgomery Co., Ark.
10913	D-18-5 U ~~118~~ Bituminous sandstone.	Averill (?), Mo.
10914	D-3-12 St Quartzite breccia	Ableman, Wis.
10915	Pebble with clay pocket hole.	Sand Is., Bayfield Co., Wis.
10916	T Case 22 Pegmatite.	
10917	Tenorite in limestone con. native silver.	Rising Star Mine, S. slope Bully Hill, Cal.
10918	E Case 15 Asbolite, earthy cobalt, variety psilomelane	Cobalt, Ont., Canada

Number.		Name.	Locality.
10919		Copper.	Giant Ledge, Gold & Copper Co., Manvel, San Bernardino Co., Cal.
10920	Case 16	Average copper ore	Johnson Co., Wyo.
10921	Case 16	Foot wall	Andes Mine, Virginia City, Nev.
10922		Copper carbonates associated with leaves and stems of Permian plants in fine-ground sandstone from a small mine.	4 miles E, Morgan, Utah, Wasatch Mts. E. Blackwelder, 1910.
10923	Case 16	Copper ore, Cu 8%, Au $2.50, Ag 6 oz.	Omsby Co., Nev. To Wis. Hagle 2/27/42
10924	Case 16	Copper ore. Cu 10%, Zn 75%. Sphalerite, pyrite, & chalcopyrite	Philadelphia Mine, Hanover District, N. M.
10925	Case 16	Chalcopyrite	Ashboro, Randolph Co., N.C.
10926	case 27	Copper ore. (1 disposed)	Silver Crown Mine, Wyo. 15
10927	E1 Case 16	Copper ore, 20% - 300 ft. level	Copper Queen Mine, Bisbee, Ariz.
MX 10927		Copper — — — — —	Silver Crown Mine, Wyoming
10928	Case 16	Copper ore, 15% - 200 " "	" " " "
10929	Case 16	Copper ore, (milaconite) 66%, 240 foot level	" " " "
10930	Case 16	Copper ore, 8%, - 400 " "	" " " "
10931	Case 16	Copper ore, 7%, - 200 " "	" " " "
10932	Case 16	Copper ore, 10% - 300 " "	" " " "
10933	Case 16	Copper ore, 45% - 700 " "	" " " "
10934	Case 16	Copper ore, 4½% - 400 " "	" " " "
10935	Case 16	Copper ore, 16% - 800 " "	" " " "
10936	Case 16	Copper ore, 12% - Neptune shaft, No. 28.	" " " "
10937	Case 16	Copper 18%, Nickel 6%, Cobalt 4%	St. Francis Co., Mo.
10938	Case 16	Copper ore. chalcop. + wolsite	Isabelle, Tenn.
10939	Case 16	Copper ore, Lead 50%, 731 oz. Ag.	Aravaca District, Pinna Co. Ariz.
10940	Case 16	Covellite	Butte, Mont.

Number.	Name.	Locality.
10941 Case 16	Chalcocite and enargite	Butte, Mont.
10942 Case 16	Chrysocolla	Cornwall, Lebanon Co.Pa.
10943 Case 16	Azurite and malachite	Rising Star Mine, Bully Hill, Cal.
10944 Case 16	Copper ore, 22%, - 300' level.	Copper Queen Mine, Bisbee, Ariz.
10945 Case 16	Copper ore, 29%, - 300' level.	" " " "
10946 Case 16	Copper ore, 10%, - 400' "	" " " "
10947 Case 16	Copper ore, 9%, - 300' "	" " " "
10948 Case 16	Gold and copper ore. To Wis. High 2/28/42	Roosevelt Mine, Bagdad Dist. San Bernardino Co., Cal.
10949 Case 16	Bornite, Au $3, Ag $20, Cu 53%.	Cooney Mine, Mogollon Gold & Copper Co.
10950 Case 16	Chalcopyrite and malachite	Berks Co., Pa.
10951 Case 16	Chalcopyrite	Mineral Point, Wis.
10952 Case 16	Chalcopyrite and marcasite	S. side Wisconsin R., near Wausau, Wis.
10953 Case 16	Native copper	Bully Hill Mine, 212' from surface, Calif.
10954 El	Native copper in amygdaloid	Kearsarge Mine, Mich.
10955	Native copper and calcite.	Lake Superior District, Mich.
10956 Case 16	Native copper and hematite (4 spec.)	Montana Mine, London, Minn.
10957 Case 26	Native copper films in shale	Fredonia, Wilson Co., Kan.
10958 Case 16	Cupriferous pyrite (Cu 26%, Ag 3 oz.)	Patagonia Dist., Santa Cruz Co., Ariz.
10959 Case 16	Chalcopyrite	Bully Hill Mine, 342' level, Calif.
10960 Case 16	Copper ore (2 spec.) chalcopyrite & condlite	Battle L. Dist. (Grand Enc.) Wyo.
10961 Case 16	Copper ore	Mountain Copper Co., Shasta Co., Calif.

Number.	Name.	Locality.
10962 Case 16	Copper ore, Au $10, Cu 40% (3 spec.). (malachite)	Baby Mine, Agua Fria Dist., Yavapai Co., Ariz.
10963 Case 16	Copper-lead ore.	Minas Geraes (Ouro Preto), Brazil.
10964 Case 16	Copper ore.	Rio Grande de Sul, Carmaguana, Brazil.
10965 Case 16	Copper ore. (Norcom)	Ducktown Sulphur, Copper & Iron Co., Ducktown, Tenn.
10966 Case 16	Copper ore (sulphide ore).	Ducktown, Tenn.
10967 Case 16	Copper ore.	Redwood Copper Queen Mine, Mendocena Co., Cal.
10968 Case 16	Chalcopyrite altered to limonite.	Jones Mine, Pa.
10969 Cu Case	Chalcopyrite	412' level, Bully Hill Mine Cal.
10970 Case 16	Copper ore (Cu 40%, Au 42 oz.) (Copper)	Aetna Mine, Grand Encampment, Carbon Co., Wyo.
109	Cobalt District ores, continued from #10900.	
10971 E1	Smaltite, showing dendritic manner of growth.	Temiscaming Cobalt Mine.
10972 M1	Quartzite phase of Lower Huronian, showing white rimmed secondary mineral.	Temiscaming Cobalt Mine.
I1 10972	Greywacke showing white rimmed secondary minerals	Temiscaming, Ontario. — Thin section to L. PRAY
10973 E1	Lower Huronian conglomerate mineralized with pyrite and galena.	1 mile West of Devils Rock.
10974 E1	Smaltite coated with bloom.	Temiscaming Cobalt Mine.
10975 E1	Graywacke at contact of diabase.	Portage Bay.
D-7-14 10976 U 106 S	Spall from conglomerate.	
10977 Stand	Section of the cobalt vein at	Temiscaming Cobalt Mine.
10978 E1	Rock and smaltite showing cobalt bloom, breccia, etc.	Cobalt Lake (?).
10979 E1 Case 15	Cobaltite (?)	(Cobalt, Ontario, Canada ?)
10980 E1 Case 16	Vein showing native silver.	Jacobs vein, Kerr Lake. (?)

Number.		Name.	Locality.
10981	& Case 15	Cobalt bloom on calcite vein	Cobalt, Ont.
10982	El	" " " diabase wallrock	" "
10983	missing	Native silver in calcite	" "
10984	El	Residual chalcopyrite from calcite vein	" "
10985	Case 16	Copper ore	Minas Geraes, Brazil.
10986	Case 16	Copper ore	Goat Ranch Mine, Copperopolis, Calaveras Co., Cal.
10987	Case 16	Copper ore	Mountain Copper Co., Shasta Co., Cal.
10988	Case 16	Chalcocite	Cornwall, England.
~~10989~~	~~Case 16~~	~~Chalcopyrite~~ given mining department	~~Cid Mine, Davidson Co., N.C.~~
10990	El Case 16	Chalcocite in clay. 50' level.	Rising Star Mine, S. slope Bully Hill, Cal.
10991	Case 16	Chalcopyrite	Isabelle, Tenn. (F.B.Laney).
10992	Case 16	Chalcopyrite with garnets.	Ducktown, Tenn.
10993	Case 16	Native copper and calcite. Copper coated with malachite and oxide.	Franklin Mine, Mich.
10994	Cu Case	Mohawkite.	Mohawk Mine.
10995	Case 16	Copper ore, 15%.	Lyon Co., Nevada To Wis. High -1/28/42
10996	Case 16	Copper bearing conglomerate oxidized to malachite, etc.	Keweenaw Point.
10997		Quartz and malachite	" " (?)
10998	Case 16	Tenorite with limonite and clay ~~to spec.~~ 1 disposed	Rising Star Mine, Bully Hill, Cal.
10999	Case 16	Chalcopyrite with barite ~~to spec.~~ 1 disposed.	" " " " "

10
9005

11004 - Shale Houghton, Wis. (Sec.)

Thwaites - Lake Superior Sandstones. 11000 - 11418

Rocks collected for Wis. Geol. & Nat. Hist. Survey by F.T. Thwaites in 1910. Consists of sandstones, shales, and conglomerates of the Upper Keweenawan of Wisconsin from area described in Bull. 25, 1912, "The Sandstones of the Wis. Coast of Lake Superior." Specimens are small and only a few are thin sectioned. Most are boxed (boxes 29-37 incl.) Remainder in petrographic collection (See Note Book III)

11001-11418.

11017	D-18-6
11019 A	D-18-7
11036	D-18-8
11074	D-18-9
11076	D-18-10
11090	D-18-11
11198	D-18-12
11233	D-18-13
11235	D-18-14
11236	D-18-15
11240	D-18-16
11258 a9	D-18-17
11267	D-18-18
11270	D-18-19
11300	D-18-20
11306	D-18-21
11404	D-18-22
11085	D-26-8
11231	D-26-9
11052	D-28-10
11123	D-28-11
11144	D-28-12
11147	D-28-13
11151	D-28-14
11165	D-28-15
11317	D-28-16
11327	D-28-17
11400	D-28-18
11413	D-28-19
11271	E-13-17
~~11454~~	~~E-36-2~~

11464 MI

11058
11228
11229
11292
11316
11319
} SE

11167	D-6-1
11035A	D-6-2
11158	D-6-3
11287	D-6-4
11384	D-6-5
11157	D-10-8
11373	D-10-9
11117	D-13-13
11118	D-13-14
11124	D-13-15
11129	D-13-16
11146	D-13-17
11152	D-13-18
11160	D-13-19
11161	D-13-20
11232	D-14-1
11313	D-14-2
11315	D-14-3
11321	D-14-4
11326	D-14-5
11328	D-14-6
11369	D-14-7
11371	D-14-8
11397	D-14-9
11402	D-14-10
11409	D-14-11

F.T. Thwaites (1910) 11001-11418

Sandstones, shales and conglomerates of the Upper Keweenawan from an area described in Bull. 25, 1912, "The Sandstones of the Wisconsin Coast of Lake Superior" (See notebook III of the W. G. & N. H. S.)

11008 Diorite on Quinnesec [illegible] (ES80 & ML 8)

11010 Diorite in contact with wavy slate Quinnesec (ML 8 & ES80)

11011 Schist Quinnesec Donated to Norris Johnes Oshkosh, 1970 (ML 8 & ES80)

11014 Greenstone schist Quinnesec (Norris Johnes) (ML 8)

11021 Diorite Quinnesec (ML 8)

11054 Diorite Quinnesec (ML 8 & ES80)

11164 Schist Quinnesec (Norris Johnes) (ML 8) & ES

11166 Sericitc schist Quinnesec (ML 8 & ES80)

11170 Diorite Quinnesec (ML 8& ES80)

11171 Schist Quinnesec ML 8 & ES80)

11213 Altered quartzite at red eock contact Pigeon Point,Mich (G 6)

11222 Red syenite Pigeon Point, Mich (G 10)

Quartzite Pigeon Point, Mich (G 6)
11249

11323 Mottled red quartzite Pigeon Point, Mich (G 8)

11383 Spotted rock at contact with red rock Pigeon Point (G 7)

Collection of Rocks from Vicinity of Wausau, Wis.

by A. Jexander N. Winchell, April, 1912.

Part in museum Part in drawers of Case 9

A-37-2 11450 U18	Crocidolite and Agirite	Wausau, Wis.	
A-38-9 11451 U19	Nepheline	" "	—
A-31-12 11452 U12	Zircon Syenite	" "	
11453	Nepheline Syenite with Hedenbergite and Fayalite.	" "	—
E-36-2 11454 U171 S	Rhyolite with Feldspars enlarged by contact of Syenite.	" "	
~~11455~~ Recat. to 4524	~~Nepheline Syenite with Aegirite~~ like massive nepheleite	" "	— Marathon Co.
F-8-10 11456 U177 S	Cordierite Schist	1½ miles S east of Merrill.	
A-3-15 11457 U2 S	Granite.	Granite Heights.	
C-6-18 11458 U62 S	Troctolite	Wisconsin R., 2 miles west of Merrill.	
C-28-12 11459 U77	Dunite.	" " " "	
F-8-11 11460 U177 S	Staurolite Schist	1½ miles S east of Merrill.	
11461	Microperthite. Feldspar	Wausau, Wis.	
11462	Cordierite.	Merrill, Wis.	
11463	Agirite and quartz from quartz pegmatite.	Wausau, Wis.	
E-7-1 11464 U178 S	Quartzite.	Rib Hill, Wausau, Wis.	Specimen donated to John Tinker, Fond Du Lac, 1970
11465	Sodalite ? nepheline syenite	Wausau, Wis.	
11466			
11467	Syenite with quartzite inclusions.	Wausau, Wis.	
D-37-6 11468 Se S in 120	Ripple marked sandstone.	Devils Island, Wis.	
11469 Se	Oolitic chert	Basco, Wis.	
11470			
11471			
11472			
11473			
11474			

11475

11476 6G2 Quartz from nepheline syenite ~~inter~~ with radiating group of pyroxene. 325

11477

11500-15000Florence County and other collections from northern Wisconsin by W.O.Hotchkiss and E.F.Bean. Those sectioned are in Survey office with sections. A few are in petrographic collection. See Survey note books. Most are boxed.

11561 MI
14941 MI
14741 MI
14714 MI
12480 MI
12287 MI
11925 MI
12277 Case 15
12511 Case 22
13384 Case 9
14475 Case 9
U1 12405 A-5-23
U1 13148 A-6-1
U2 12419 A-9-9
12249 B-15-11
11703 C-11-7
13766 C-11-8
11899 D-7-10
11730 D-15-3
11651 D-18-23
13797 D-19-1
12322 D-34-3
12077 D-37-7
13466 D-37-8
13638 D-37-9
13756 E-2-14
13811 E-2-15
12298 E-7-2
12842 E-7-3
11866 E-9-1
11905 E-8-16
11646 E-10-15
12849 E-10-16
12850 E-10-17
12886 E-10-18 E-11-1
13509 E-11-2
13653 E-11-3
13662 E-11-4
13727 E-11-5

11659 E-13-18
11662 E-14-1
12035 E-14-2
12081 E-14-3
12085 E-14-4
12132 E-14-5
12285 E-14-6
12838 E-14-7
13556 E-14-8
13566 E-14-9
12263 E-21-5
12553 E-21-6
13039 E-21-7
12217 E-22-5
12315 E-22-6
140461 E-25-4
11757 E-28-16
11614 E-34-10
12402 E-34-11
11797 F-5-6
12414 F-10-13
12487 F-10-14
14099 F-10-15
13430 F-11-6
14182 F-11-7

11561 Slate Pigeon Point, Mich. (J 5)

11738 Diorite schist Mich. (ML 8)

11741 Greenstone Mich. (ML 8)

11741 Collections from Northern Wisconsin Florence County (ES80)

11797 Greenstone schist Mich. (ML 8)

11797 Collections from Northern Wisconsin Florence County (ES80)

11803 Greenstone schist Mich. (ML 8)

11803 Collections from Northern Wisconsin Florence County (ES80)

11925 Red Rock Pigeon Point, Mich (G 9)

12210 Quartz schist Mich. (ML 11)

12483 "Primal sandstone Penn. (ML 11)

12549 Actinolite-magnetite rock Florence, Wis. (ML 15)

12553 Greenstone Florence, Wis (ML 8)
12553 Collections from Northern Wis. Florence County (ES80

12878 Weathered diabase dike Penokee (ML 5)

12966 Altered dike Mich. (ML 5)

13798 Keweenawan sandstone in contact with diabase. (ML 11)

14508 Lepidolite location: Keystone, S.D. Milwaukee Museum

14714 Tremolite Marble (?) (O 4)

14741 Staurolite-garnet schist Minn. (K 8)

14896 Micaceous greywacke (I 8)

14941 Garnet schist Black Hills, S.D. (K 7)

[(15501 - 15594; 16552 - 17000)]

15501-17000 Well samples. Specimens bottled in office of F.T. Thwaites. Lists in binder in Survey office. See also blue print logs in Township file.

15995-16551 were presented by U.S.Geol. Survey in 1912. (in Thwaites' office?)

V6

15592 Laminated Phase of greenschist Medicine Bow Peak, Wyoming

15709 — (white/black) A fine pebbled phase of conglomerate showing the angularity characteristic of conglomerates, which have formed near their source.

contact of Archaean and Unita Series upon emerging from the Archaean core at the south side. From a gulch off Red Canyon, Wyoming. — From old U.S.G.S collection. Found in storage, 1972

15966 Conglomerate quartzite.
Wood Road Canyon, S.Boulder, Colorado.
Thin section no. 10,644.
From old U.S.G.S collection. Found in storage, 1972

16297 - 16302
16360 - 16365
16366 - 16368
} Wells near Larsen, Winnebago County, Wisconsin

Miscellaneous Specimens, 17001---18999

17001	Se	Pseudomorphs (moulds) of pyrite removed from quartz.	Wyerhauser, Barron Co., Wis.
17002	Case 20	Agates (3 polished spec.)	Brazil, S. A.
17003		Rock) for further study	Toldal M., Trondhjem, Norway.
17004		Rock)	" " "
17005	702	Pyrite showing rounded large crystals in matrix of finer.	" 85
17006	U137 S Case 17	Infusorial earth	Adams Co., Wash. H.H.Hunner. (Mine of Hunner Diatom Co.)
17007	Se	Calcite vein in rock.	Switzerland. Stanley Boyd, Madison, Wis.
~~17008~~	7C3	Barite or "Rose Barytes")	Probably from Oklahoma. 719
~~17009~~		" CaO crystals)	~~Artificial~~
17010		Sphalerite	Silver Kingloe Mines Co., Park City, Utah. (Pres.by Geo. D. Blood.)
17011	Case 15	Monazite	Minas Geraes, Brazil.
~~17012~~		Graphite	" " " scrapped
~~17013~~		"	Near Rockford, S.D. "
17014		Crude sulphur (__ spec.)	Humbolt, Humbolt Co., Nev.
17015		Asphaltum Rock	La Verken M., Washington Co., Utah.
17016	Case 17	Gypsum	Northampton Co., Pa.
17017	Case 7	Magnetite (2 spec.)	Western Carbonic Acid Gas Co., Porteville, Tulare Co., Cal. 237
17018	7B2	"Dead Talc"	North Carolina Talc.Mng.Co. 484
17019		Talc pencils, etc.	" " " " "
17020	Case 17	Mica schist used as abrasive.	New Hampshire.
D- ~~17021~~	STAT. Case 17	~~Abrasive Stone~~	~~---~~
17022		Bauxite	Bauxite, Ark.

No.	Specimen.	Locality.
17023	Bauxite	---
17024 Case 14 Case 7	"	Alabama. (? Wilcox ?)
17025 Case 17	Crystallized borax	Pacific Coast Borax Co., Death Valley, Inyo Co., Calif.
17026	Bituminous shale. The following are obtained on purification and distillation of 1000 kg.	
	Petroleum spirit (gasoline) 8.88 kg.	
	Illuminating oil 43.74	
	Oil for gas manufacture 40.80	
	Lubricating oil 60.90	
	Petroleum residue 74.80	
	Paraffine 5.68	
	Losses 97.00	Bahia, (Marahu)
17027 7A4	Mica (scrap) (1 disposed)	Big Ridge Mica M., Haywood, N.C.
17028 Case 17	~~Asbestos~~ OK	~~Penn.~~ (?). (G.K.Williams & Co., Easton, Pa.)
17029 Case 17	Talc rock	Wyoming.
D-26-10 17030 U126 S Case 17	Novaculite (whetstone)	Hot Springs, Ark.
17031 Case 17	Barite	St. Claire, Crawford Co., Mo.
E-5-6 17032 U147	Phosphate rock	Independence Co., Ark.
17033	~~Phosphate rocks~~	~~From southern districts.~~ Discarded.
~~17034~~	~~Graphite~~	~~Pikeland, Cumberland Co., Pa.~~ scrapped
17035 Case 17	Sodium sulphate.	Salt Lake, Utah.
17036 Case 17	Sodium nitrate. $NaNO_3$	Chile. (Pres. by Chas.S.Osborn)
17037 Case 17	Cement rocks (limestone)	Vulcanite, New Jersey.
~~17038~~	~~Graphite, slaty.~~	~~Hot Springs, Ark.~~ scrapped
17039 Case 17	Corundum Gravity Dr. Emmons for use in class work 1/10/40	Chester Co., Penn.
~~17040~~	~~Barite~~	~~Cheshire, Ct.~~
17041 7C3	Barite	Lucy M., Negaunee, Mich. 719
17042 7C3	"	Southwestern Wisconsin. 719
17043 Case 12	Silver-bearing galena	Wallace, Idaho. To wis. High 2/28/42
17044 Case 12	" " cerussite	De La Mars M., Colo.

No.		Specimen.	Locality.
17045	Case 12	Tetrahedrite in quartz	Wyoming M., Inyo Co., Calif.
17046	Case 12	Section of silver-bearing galena vein, Pb. 14%, Ag 60 oz. per ton	Bonita M.? New Mex.
17047	Case 12	Silver-bearing ore. Ag 1539 oz., Au $37, Cu 18%, Pb 20%	Worlds Fair M., Santa Cruz Co., Ariz.
17048	Case 27 6A3	Gold, copper-silver ore bearing Quartz	Standard Construction Co. Mines, Quartzburg Dist., Grant Co., Oregon. 13
17049	Case 12	Native silver with Nicolite	New Ontario, Ontario, Canada.
17050	Case 12	" " and proustite in quartzose gangue.	Boise Co., Idaho.
17051	Case 12	Native silver.	Cobalt, Ont.
17052	Case 12	Cerargyrite	Chloride M., Sawtooth Dist., Altmas Co., Idaho.
17053	Case 12	Proustite, Ag. 680 oz.	Columbia M., Sawtooth Dist., Elmore Co., Idaho.
17054	Case 12	Pyrargyrite and polybasite	
17055	Case 12	Native silver.	Longwells, Cobalt, Ont.
17056	Case 12	Polybasite	Yankee Bay M., Ouray, Colo.
17057	Case 12	~~Pyrargyrite~~	Guanajuata, Mex.
		Pb and ZN - Ores 17058 - 17131	Recat. LO 9352
17058	~~Case 14~~	~~Zinc ore~~	~~Minas Geraes, Brazil.~~
17059	Case 14	Galena	Yellowstone, Wis.
17060	Case 14	Franklinite, zincite and willemite	Franklin, N.J.
17061	Case 14	Willemite, Tephrite and franklinite	Sterling, N.J.
17062	Case 14	Franklinite in limestone.	Franklin, N.J.
17063	Case 14	Willemite and franklinite	" " Recent
ML II 17063		Ajikie quartzite	Goose Lake, Michigan. → specimen to L. PRAY
17064	Case 14	~~Crussite~~	~~Organ Mts., New Mex.~~ Recat LO 4183
LT 17064		Siliceous Dolomite.	Michigan — — (?U.S.G.S.?)
17065	Case 7	Smithsonite $ZnCO_3$	Cumberland, Eng. 275
17066	~~Case 14~~	~~Zinc blende, Ag 60 oz., Zn 15%~~	~~Big Spring Gulch, Quitman Mts., El Paso Co., Tex.~~ Reentered LO 9347

Pb and Zn - Ores 17058 - 17131 contd.

No.	Specimen.	Locality.	
17067 Case 7	Smithsonite. $ZnCO_3$	Laurium, Greece.	275
17068 Case 14	Franklinite	Trotter M., Franklin, N.J.	
17069 ~~Case 14~~	~~Galena~~	~~Highland, Wis.~~ Recat. LO 9330	
17070 Case 14	Franklinite	Franklin Furnace, N.J.	
17071 Case 14	Calamine and chert, stained by limonite.	Joplin, Mo.	
17072 Case 7	Smithsonite	Nelly M., New Mex.	275
17073 case 14	Zincite and franklinite.	Franklin, N.J.	
17074 Case 14	~~Calamine, galena and chert~~	~~Joplin, Mo.~~ Recat. LO 9303.	
17075 Case 14	~~Sphalerite, galena, bitumen and calcite.~~	Joplin, Mo. Recat. LO 9300	
17076 ~~Case 14~~	~~Joplin zinc ores showing black chert and disseminated mineral.~~	~~$, D 9/20/34~~	
17077 Case 14	Mimetite	Cumberland, Eng.	
17078 Case 14	Wulfenite	Eureka, Nev.	
17079 Case 14	~~Sphalerite "silver plume"~~	~~Colorado.~~ Recat. LO 3348	
17080 Case 14	Sphalerite	Picos de Europa, Santander, Spain.	
17081	~~Brangle ore~~	~~Wilkman M., S. W. Wis.~~ 9/19/34 D	
17082 Case 14	Sphalerite	Friedensville, Penn.	
17083 Case 14	Anglesite, cerussite, galena and marcasite	2 miles north of Fredericktown, Mo.	
17084 ~~Case 14~~	~~Galena, Sphalerite and Pyrite~~	~~Galena, Ill.~~ Recat. LO 9339	
17085 ~~Case 14~~	~~Galena on Sphalerite~~	~~Highland, Wis.~~ D 9/19/34	
17086	Sphalerite "strawberry ore"	Mifflin, Wis.	
17087 Case 14	Smithsonite, Sphalerite and Limonite with Barite	Mineral Point, Wis.	
17088 Case 14	Smithsonite as casts of Calcite stained by Limonite.	" "	
17089 ~~Case 14~~	~~Smithsonite stained with Limonite~~	~~" " "~~ Recat. LO 9316.	

Pb and Zn Ores 17058 - 17131 contd.

No.		Specimen.	Locality.
17090	Case 14	~~Smithsonite pseudomorphs after Calcite~~	~~Mineral Point, Wis.~~ Recat. L 4181
17091	Case 14	Smithsonite imprinted by Calcite Crystals	Linden M., Wis.
17092	Case 14	Smithsonite as casts of Calcite stained by limonite.	Mineral Point, Wis.
17093	Case 14	Smithsonite on Sphalerite.	" " "
17094	~~Case 14~~	~~Smithsonite, "botryoidal" stained by limonite.~~	" " " Recat. L 9322.
~~17095~~	~~Case 14~~	~~Smithsonite as casts of calcite~~ replaced	~~Pecatonica, Wis.~~
17096	Case 14	Smithsonite on calcite.	
17097	Case 14	Galena and zinc blende coated by marcasite.	Galena, Ill.
17098	Case 14	~~Sphalerite and marcasite showing lines of formation.~~	Recat. L 9238. ~~Peru Zinc Co., Galena, Ill.~~
17099	Case 14	Sphalerite.	Mifflin, Wis.
17100	~~Case 14~~	~~Oil rock with galena (3 spec.)~~	~~Shaft just N. of Linden Sta. Discovered 1906. (W.O.Hotchkiss.)~~ Reentered, L 9326, L 9325,
17101	~~Case 14~~	~~Zinc ore from "sheet ground"~~	~~Yellow Dog M., Webb City, Mo. (W. O. Hotchkiss.)~~ Recat. 9/20/34. L 3306.
17102	~~Case 14~~	~~Sphalerite in oil rock.~~	~~Southwestern Wisconsin.~~ D 9/19/34
17103	Case 14	Sphalerite cementing chert breccia.	Oronoco, Mo.
17104	(Missing)	Chalcopyrite on galena on sphalerite and dolomite on brecciated.	Joplin, Mo.
17105	~~Case 14~~ Mis.	~~Zinc and Lead Sulphides intimately intermingled~~ (2 spec.)	1 Recat. L 9331. Vinegar Hill, Ill. (Pres. by R. E. Davis).
17106	Case 14	~~Sphalerite in primary and secondary chert.~~	~~Joplin, Mo.~~ Recatalogued: L 9302
17107	Case 14	~~Sphalerite~~	~~Pully Hill M.,~~ Cal. Recat. L 9381.
17108	Case 14	Sphalerite with calcite.	Linden M., Wis.

Pb and Zn - Ores 17058 - 17131 contd.

No.	Specimen.	Locality.
17109 Case 14	Sphalerite and Galenite	Crow Branch M., Wis. (? HENRY coll. ?) no. 777
17110 ~~Case 14~~	~~Zinc Sulphide~~ in fine grained lenses in shaly limestone.	~~Joplin, Mo.~~ Wis. D 9/19/34
17111 Case 14	Reticulated galena	Mineral Point, Wis. (Pres. by W.O.Hotchkiss.)
17112 Case 27	Galena	Galena, Ill. 45
17113 Case 27	" , Marcasite and Calcite.	" " 45
17114 Case 14	" , coated with Marcasite	" "
17115 Case 14	"	.. Mine, Yellowstone, SW Wis.
17116 Case 14	"	Joplin, Wis.
17117 Case 27	"	Galena, Ill. 45
17118 ~~Case 14~~	~~Cerussite on galena.~~	~~Mineral Point, Wis.~~ Recat. LO 9324
17119 Case 14	Pyromorphite.	Phoenixville, Pa.
17120 Case 27	Marcasite on Galena on Sphalerite	Peru Zinc Co., Galena, Ill. 96
17121 Case 14	Galena from Lower Magnesian limestone.	Chas.Ohlerking M.,Highland,Wis.
17122 Case 14	Cerussite on galena on sphalerite.	Mineral Point, Wis.
~~17123 Case 14~~	~~Galena and Cerussite.~~ disposed	~~Hazel Green, Wis.~~
17124 Case 14	Marcasite on Galena on Sphalerite.	Galena, Ill.
17125	~~Cerussite on Galena.~~	~~Mineral Point, Wis.~~
17125.1	" "	Linden, Wis
17126 Case 14	Cerargyrite and Galena with Quartz.	Sawtooth, Idaho.
~~17127 Case 14~~	~~Galena and Cerussite.~~ disposed	~~Hazel Green, Wis.~~
17128 ~~Case 14~~	~~Galena on Smithsonite.~~	~~Benton, Wis.~~ Recat. 9/20/34 LO 9320
17129 Case 14	Galena on Sphalerite	Southwestern Wisconsin.
17130 Case 14	Smithsonite on Barit[illegible]	Mineral Point, Wis.
17131 Case 14	Galena	Southwestern Wisconsin.

No.	Specimen.	Locality.
17132 Case II	Cinnabar and Sulphur	Contra Costa Co., Calif.
	Gold ores 17133 - 17156	
17133 Case II	Gold ore.	Montezuma M., Nashville, El Dorado Co., Calif.
17134 Case II	Gold ore. Discarded 2/26/42	Golden Rule M., Julian, San Diego Co., Calif.
17135 Case II	Gold ore Discarded 2/26/42	El Dorado Co., Calif.
17136 Case II	" " Discarded 2/26/42	Houghton M., Mariposa Co., Calif.
17137 Case II	" "	Pennsylvania M., Tuolomne Co., Calif.
~~17138 Case II~~	~~" " Discarded 2/26/42~~	Desert Quartz, Red Cross M., Riverside Co., Calif.
17139 Case II	" " (2 spec.) Discarded 2/26/42	Desert Quartz, porphyry, Yellow Aster M., Randsburg, Co., Calif.
17140 Case II	" " Given to Dr. Emmons for classwork 1/10/40	Abona M., 5th Dist., Tuolomne Co., Calif.
17141 Case II	" " Discarded 2/26/42	Pain-killer M., San Bernardino Co., Calif.
17142 Case II	" "	Central Consolidated M., Grass Valley, Calif.
17143 Case II	" "	Wildman M., Omador Co., Calif.
17144 Case II	" "	McKune M., Siskiyon, Calif.
17145 Case II	Gold quartz.	Mt. Jefferson, Toulomne Co., Calif.
17146	Native gold in quartz.	Black Hills, S. D.
17147	" " nugget.	" " "
17148	" " in quartz stained by limonite.	Central City, S.D.
17149 Case II	Gold-bearing pyrite and chalcopyrite with quartz.	Briggs M.(?) Buggs M., Central City, Colo.
17150 Case II	Gold ore.	Caledonia M., Gold Hill, ____
17151 Case II	" " Discarded 2/26/42	Warwick and Del Norte M., Allegheny, Sierra Co., Calif

Gold ores 17133 - 17156 (contd.) discontinued 2/26/42

No.		Specimen.	Locality.
17152	Case 11	Gold ore (3 spec.) Given to Dr. Emmons for class 1/10/40	Owens Consolidated M., San Diego, Calif.
17153	Case 11	Gold bearing pyrite in quartz	Snobs Reef, Braidwood, N.S.Wales, Australia
17154	Case 11	Cement-gold Given to Dr. Emmons for class work 1/10/40	Dead Broke M., Deadwood, S.D.
17155	Case 11	Gold-bearing siliceous country rock.	Golden Reward M., Deadwood, S.D.
17156	Case 11	Gold quartz.	Nevada Co., Calif.
17157	Case 12	Silver-bearing "black rock"	Georgetown, Clear Cr. Co., Colo.
17158	Case 12	" " chalcopyrite	Butte, Mont.
17159	Case 11	Cinnabar and Marcasite	Napa Co., Colo.
17160	Case 11	Cinnabar in arkose.	Moschellandsberg, Palatinate Lake Co., Cal.
17162	Case 11	Cinnabar.	San Bernardino Co., Calif.
17163	Case 11	" and native mercury with quartz.	California.
17164	Case 11	Cinnabar and native mercury.	San Jose, Calif.
17165	Case 11	Native mercury and cinnabar with quartz.	California.
17166	Case 14	Fluorspar, Ca 51.35, F 48.60, associated with galena and ~~sphalerite~~.	Empire M., Pope Co., Ill. ~~Flourescent~~.

COPPER ORES, misc. 17167 - 17191

17167	Case 16	Pyritic ore enriched with chalcocite. (Copper ore)	Holbrook M. (Copper Queen Consol. M. Co.) 3rd level; Bisbee, Ariz. F.L.Ransome.
17168	On Case	Iron gossan of a copper vein.	
17169	Case 16	Tenorite with limonite and clay.	Rising Star M., S. slope, Bully Hill, Calif. Given to Dr. Emmons for use in class 1/10/40
17170	On Case	Mineralized limestone (2 spec.)	Bisbee, Ariz.
17171	On Case	Altered country rock.	Northeast Nevada.
17172	On Case	Granite porphyry. "	Butte, Mont.
17173	Case 16	Copper ore, 21%	Puma Co. (Anijoton Dist.) Ariz.
17174		Malachite and Cuprite.	Hanover M., Hanover Gulch, New Mexico.

COPPER ORES, misc. 17167 - 17191 contd.

No.	Specimen.	Locality.
17175 case 16	Copper and iron pyrite.	Patagonia Dist., Conneticutt M., Ariz.
17176 MI E	Enriched pyrite ore.	Butte, Mont.
17177	Azurite	Broken Hill M., N. S. Wales.
17178	Chalcocite	Butte, Mont.
17179 6C	Enargite	" "
17180	Covellite	" "
17181 Cu case	Bornite and Chalcopyrite	Bully Hill, Calif.
17182 Cu Case	Chalcocite and Chalcopyrite	" " "
17183 Cu Case	Covellite	Copper Queen M., 400' level, Bisbee, Ariz.
17184 Cu Case	Cuprite and native copper.	" "
17185 case 16	Cuprite and Malachite in limestone.	" "
17186 case 16	Chalcanthite deposited by oxidizing mine waters	Gagnon M., Butte, Mont.
17187 Cu Case	Amygdules in basalt replaced by native copper.	Quincy M., Mich.
~~17188~~ Cu Case	~~Matrix of conglomerate replaced by native copper.~~ wrong ident.	O.K ~~Keweenaw Pt., Mich.~~
17189 Cu Case	Enriched pyrite ore.	Bully Hill, Calif.
17190	Enriched " "	Butte, Mont.
17191 St ✓	Thin polished section of contorted green schist.	From a small outcrop in valley of Phenegamook L. just N.W. of Maine-Quebec boundary, near N. Brunswick, about 60° 15' W, 47° 30' N., Quebec. Presented by Prof. Riley MacLean, Univ. of Toronto, 1912 (see letter).
D-7-11 17192 U 106	Quartzite conglomerate.	Baraboo Bluffs, Wis.
17193 Se	Iron concretions	Potsdam sandstone, Durand, Pepin Co., Wis.
17194 Se	Lime concretions	From red clay, Oronto Bay, Iron Co., Wis.

No.	Specimen.	Locality.
E-25-5 17195 U159 S	Marble (~~2 spec.~~)	Foster City, Mich.
17196	Quartz Porphyry	From cut on C. M. & St.P.R.R. just N. of Menominee R.bridge.
17197	Greenstone.	Upper Quinnesee Falls, Mich.
17198	Quartz porphyry at contact	" " " "
17199	Same, middle of ____	" " " "
17200	Flexible sandstone (Itacolumite)	Vade Mecum, Rural Hall, N.C.
D-19-2 17201 U117\20	" "	Rutherford, N.C.
17202 Case 16	Oxides and carbonates of copper	Rising Star M., S. slope Bully Hill, Calif.
17203 Case 16	Clay bordering black oxide ore (?Tenorite)	Same location, just below 1st level.
17204 Case 16 Copper-ore	Ore rich in zinc in same ore body on chalcopyrite.	Same location, 80' level.
17205 Cu case	Tenorite (?)	" "
17206	Chalcopyrite and "malchopyrite"	Battle L. Dist., Encampment, Wyo. 83
17207 6A2	Chalcopyrite	Capelton, Quebec. 83
17208 Case 16 Cu case	Native copper in amygdaloid	Keweenaw Point.
17209 Cu case	Basalt, showing copper stains, zeolites, epidote, vesicles, etc.	" "
17210 Cu Case	Chalcocite	Bisbee, Ariz.
17211 Cu Case	Conglomerate	Keweenaw Point.
17212 Case 11	Copper, silver-gold ore. Low grade.	First National M., E. belt, Republic, Wash.
17213 Case 11	Copper, silver-gold ore.	Flag Hill, near point in ledge assaying $18917.19 (per ton).
17214 Case 11	"	East belt, Gold Ledge. Very rich. Upwards of $1200 per ton.
17215. Case 11	" -- oxidized.	Pan Caliph, Middle belt. Very rich. $500 per ton. Oxidized portion pass about $1. per __

No.	Specimen.	Locality.
17216 Case II	Gold ore.	5-20 ft. level. Republic, Wash.
17217 Case II	" "	Mountain Lion M. (2nd greatest) 50 ft. level. Republic, Wash.
17218 Case	Granite.	Butte, Mont.
17219 E	Pyrite and bornite (?)	" "
17220 Case	Section of a bornite vein	" "
17221 Case	Pyrite and enargite (?)	" "
17222	Pyrite and bornite (?)	" "
17223 Case	Quartz porphyry	" "
17224 Case	Pyrite and ~~bornite (?)~~ enargite.	" "
17225 Case	Oxidized vein from a western copper deposit, probably Bisbee.	

Given to Dr. Emmons for use in class work 1/10/40

Coals and Bitumens. 17226-17252

No.	Specimen.	Locality.
17226	Bituminous coal.	Morton Co., N. D.
~~17227~~	~~"~~ ~~"~~	~~33 miles west of Tacoma, Wash.~~
~~17229~~	~~"~~ ~~"~~	~~Jackson Co., Ohio.~~
17230 Case 17	" " (wood altered to coal)	La Salle, Ill.
17231 Case 17	Cannel coal	Great Hill Co., Ky.
~~17232~~	~~Anthracite coal~~	
D-38-1 17233	Peat	Germany.
17234	"	Pepin Co., Wis.
17235		
17236	Laterite	Utah.
17237 Case 17	Uintahite	Uintah Valley, Utah.
17238 Case 17	Asphaltum	Santa Barbara, Calif.
17239 Case 17	Pure Asphaltum. 99.3% Bitumen, Bitumen sol. in CS_2 99.3%; Organic matter .3; Ash .4. Of the bitumen Petrolene sol. in pet. ether 68.93%; Asphaltene sol. in CS_2 51.32	Assyrian Asphalt Co., Utah.
17240 Case 17	Gum asphaltum 99.9 Bitumen from a fissure vein (hade 70°) in horizontal strata. C, 80.88%; H, 9.76; N, 3.30; O, 6.05; Ash, 0.01; Asphaltene, 78.31%, Petrolene, 21.69.	Pariette, Utah.
17241 Case 17	Mineral rubber refined from Utah Asphaltum. Will vuncalize and work into india rubber. Melts at 220° F. 99% pure.	
17242 Case 17	Mineral Rubber Roofing (refined). C 81%, H 10%, N 3%, O 6%.	
17243 Case 17	Asphaltic limestone. Fixed asphalt not vol. at 447°F. 57%; Limestone $CaCO_3$, $MgCO_3$, SiO_2 43%. Of the bitumen: Asphaltene 23%, Petrolene 77%. Blanket vein 8 ft. thick, level at elevation of 8000 ft. A.T.	Wasatch Mts., Utah.

No.	Specimen.	Locality.
17244	Lignite	Eagle Pass, Raverick Co., Tex.
~~17245~~	~~Bituminous Coal (St. Bernard)~~	Hopkins Co., Ky.
17246	Cannel Coal (Prates')	Caney Cr., Morgan Co., Ky.
~~17247~~	~~Anthracite Coal~~	St. Louis & Big Muddy Coal Co.
17248	Crude Bermudez Asphalt	A. T. Barber Asphalt Co.
17249 Case 17	" " " , refined	
17250 Case 17	Asphalt Paint,	Assyrian Asphalt Co., Chicago.
17251 Case 17	Standard Sheet Paving Matrix.	" " "
17252 Case 17	Bitumenous Coal.	Pitman Sta., Laurel Co., Ky.

Collection of Cambrian Sediments ("Basal Series") from St. John, N.B.,

Collected by George F. Matthew. 17253-17274

No.	Specimen.	Locality.
D-32-12		
17253 U130	Gray slate, div. 1 b	St. John, N.B.
17254		
17255		
D-14-12		
17256 U117	Red arkose sandstone, div. 1c	St. Martins, N.B.
D-10-10		
17257 U114 S	Black " " div. 1 b	" " "
D-6-6		
17258 U105	Red grit, div. 2 a	" " "
17259		St. John, N.B.
D-32-13		
17260 U130	Black slate, div. 1 c'	St. John, N. B.
17261		
17262		
17263		
17264		
17265		
17266		
D-32-14		
17267 U130	Red shale, div. 2 b	St. Martins, N.B.
17268		
E-7-5		
17269 U114 S	Gray arkose sandstone, div. 1 a	St. John, N.B.
17270		
D-10-11		
17271 U114	Gray shale or sandstone, div. 2 c	
17272		
17273 U144	Coquina or shell limestone	St. Augustine, Fla. (Donated by W.H.Ellsworth)
17274 U144 S	"	Tomoka R., Fla. (Donated by W.H.Ellsworth).

Collection illustrating Concentration and Separation of Monazite Magnetic Sand from Shelby, Cleveland Co., N.C.

Presented by F.B.Laney.

In rare metal case

No.	Specimen.	Locality.
D-16-1 17275 same U119 case 15	A Crude Black Sand. magnetite, garnets, etc.	
17276 case 15	B Titaniferous magnetite, separated magnetically ~~(2 spec.)~~ from Black Sand	
17277	C Garnet sand after Magnetic Separation (2 spec.)	
17278 case 15	D Monazite separates.	
17279	E Monazite concentrates.	
17280 case 15	F Tailings, rutile, quartz, zircon and corundum. no magnetite	
17281 case 15	G Monazite, garnet and magnetite (concentrated).	
17282	Monazite sand.	

LO 9747

a b c d e f g

Extras in Box 10

No.	Specimen.	Locality.
17283 U144	Coquina	Tomoka R., Fla. W.H.Ellsworth, donor.

Rocks Collected in California by Bruce Martin, 1911. (from an oil field)

17284 U138 S	Diatom rock. Thin section.	Monterey (Miocene) formation SE of Monterey.
{17285	Coquina ——— ———	Tomalsa River, Florida — Source: ELLSWORTH
{17285 U138 S D-37-10 T11	Diatom shale.	Santa Maria oil fields.
17286 U139 3S	Radiolarian chert. Thin sections of specimens marked B,C,D.	Franciscan formation, Science Hall, U. of Calif., Berkeley.
17287 Case 27 Case 23	Arsenopyrite (no Ni or Co found) in a vein in granite)	Mountain, Oconto Co., Wis. W.O.Hotchkiss.
17288 case 11	Calaverite in granite.	Gold Coin M., Victor, Colo.
17289 Case 11	Telluride ores with fluorite and quartz in andesite tuff.	Moon Anchor M., Gold Hill, Colo.
17290 Case 11	Nagyagite, Sylvanite and Calcite in Quartz.	Boulder Co., Colo.
17291 Case 23	Smithsonite after Calcite.	Vinegar Hill M., Platteville, Wis. Sent by R.E.Ascham.
17292 Case 16	Chrysocolla deposited on, around, and replacing marble (2 spec.)	Coppereid, Churchill Co., Nev.
[redacted] Case 22 17293 U5 & T A-12-5 also 2 slides Case 20	Tourmaline pegmatite (thin section)	Juniper Mts., Nev. Source: BRUCE MARTIN 1911
17294 case 16	Smaltite, etc., gold and silver-bearing.	Custer Peak Mine, Black Hills, S. D. Presented by A.G.Bush, Davenport, Iowa. LO 9016

Collection of Hot Spring Deposits from Iceland,

by Samuel Weidman.

17295-1 Geyserite, siliceous sinter.

17296-2 Fossils Petrified twigs and leaves of the dwarf birch in siliceous sinter.

17297-3 Petrified tubes formed by microscopic plant living only in hot water. Geyserite, siliceous sinter, viandite.

D-36-3
17298-4 U138 Geyserite from old hot spring mound.

D-36-4
17299-5 U138 Same, pearl sinter.

17300-6 Min 6G2 Augite in basalt. 325

17301-7 Min Case 6 Hyalite (a form of opal). 212

Collection of Iron Ores from Moa Exploration,

Drawers - Box 210?
17302-322

N. E. Coast of Cuba. Presented by W. J. Mead. For exact locations see blue print in C. K. Leith's files. Series from D.H. 100 m. N., 300 m. E. of 2-20.

		Depth.
17302	Soil and hematite.	0 - 1½ feet.
17303	Brown hematite.	1½ - 7½
17304	Kaolin.	7½ - 25
17305	Serpentine.	25 - 45
17306	Serpentine.	45 - 48
	300 m. N., 200 m. E. of G - 17.	
17307	Hematite.	0 - 17
17308	Hematite (brown)	17 - 22½
17309	Hematite (brown)	22½ - 27½
	150 m. N., 0 m. E. of J-12.	
17310	Hematite.	0 - 3
17311	Hematite.	3 - 12
17312	Hematite.	12 - 18½
17313	Brown hematite.	24 - 32½
17314	Brown hematite.	32½ - 35½

Extra Box 631

400 m. N., 300 m. E. of 0-16.

			Depth.
C-35-12	17315	U82 S Hematite.	0 - 10 feet.
	17316	Hematite.	10 - 20
C-35-13	17317	U82 Hematite (brown).	20 - 28
C-35-14	17318	U82 S Altered serpentine.	28 - 36
C-34-5	17319	U81 Altered serpentine	36 - 40
C-34-6	17320	U81 Serpentine.	40-- 45
	17321	Red hematite.	not stated.
	17322	Brown hematite.	not stated.

17323 Ei Fe Case Vein of manganiferous hematite in kaolinized dike, showing fault. From Cary Mine, Mich.

Specimens from northwest highlands of Scotland, (Torridonian, Lewisian, and Cambrian)

collected by C. K. Leith, Sept. 11-18th, 1912. Room 210

17324 U153 S Banded graywacke from Moine Schists from road from Lairg to Inchnadamff.

17325 153 S Fine grained phase of same.

17326 97 Epidotized phase of the Lewisian gneiss just below the contact with the Torridonian Sandstone.

17327 117 S Coarse phase of the Torridonian sandstone near its base. Algonkian, Late Precambrian

17328 117 Finer phase of the same, higher up.

17329 105 Pebbles of quartz from the basal conglomerate of the Torridonian sandstone showing triangular facets and wind grooving. Algonkian, Late Precambrian These were first found by Vaultner and are regarded as evidences of desert conditions.

17330 118 S Highly indurated phase of the Cambrian quartzite.

17331-) 154 Cambrian quartzite changed to talcous and serpulite schists
17332-) " along the Clencoul thrust plane where overridden by the
17333-) " S Moine schists.

17334 154 S Moine Schist immediately above the Clencoul thrust plane on the ~~stack~~ strike? of the Clencoul.

17335 153 S Schistose Torridonian sandstone beneath the Ben More thrust plane.

17336 161 S Cambrian limestone breccia at contact of neck of basic igneous rock, -- explained by the Scottish geologists as caused by a volcanic explosion, the fragments falling back into the crater and subsequently being metamorphosed by the hot lava.

Typical Phases of the Minette ores of Germany, → Now: FRANCE! all in Jron Case

Collected by C. K. Leith, Aug. 1912, from open pits in north end of Minette district. The ores are classified by the miners by slight differences in colors. Spec. in Ei.

17337 Case 24 in 132 Redingen Greenish Lime 20%

17338 Case 24 Brown No. 3.

17339 Case 24 Red.

17340 Case 24 in 132 Gray.

17341 Case 24 Black.

Collection of Ores and Associated Rocks from Broken Hill Field,

New South Wales, Australia. 17343-17375

Sent by E. C. Andrews, Dept. of Mines, Sydney,

July 23, 1912, by request of C. R. Van Hise.

These are all big specimens & are in drawers of Case 8

~~17343~~	~~Country rock,- garnets and quartz.~~	~~Broken Hill Field.~~ Discarded
17344	" " mica schist	" " "
17345	" " pegmatite from outcrop.	" " "
17346	Schist.	1000 ft. level, North M.
17347	Garnetiferous gneiss.	North Mine.
17348	Schist replaced by ore (galena)	" "
17349	Lode Material.	" "
17350	Country rock.	S. Extended M.
17351	" "	N. " "
17352	" "	Hanging wall, 1800 ft. level, Block 10.
17353	" "	Footwall, 1800 ft. level, Block 10.
17354	" "	Footwall, 1800 ft. level, Block 10.
17355	" "	" " "
17356	Lode matter - replacement of schist by ore.	1700 ft. level, Block 10.
17357	Galena in sandstone.	Top levels, Block 10.
~~17358~~	~~Friable ore - garnet in galena.~~	------- " " Discarded
17359	Ore.	1700 ft. level, Block 10.
17360	Massive rhodonite.	" "
17361 681 Case 27	Garnet in galena (2 spec.)	Junction North mine.
17362	" s in lode (3 spec.)	" " "
17363 Case 8	" " " -----	" " "

45

17363 Chrysolite $(Mg,Fe)_2SiO_4$ Montville, New Jersey

17364	Lode material (3 spec.)	Junction North Mine.	1 spec. Discarded
17365	Amphibolite (country rock).	Console M.	
17366	Vein matter.	E. of Mainlode, Console M.	
17367	Schist (country rock)	S. Extended claim.	
17368	"Garnet sandstone".	Footwall of western ore body.	
17369 case 27	Sphalerite.	Western Ore body, Broken Hill, South.	58
17370	Massive galena.	" " " "	
17371 case 8	Rhodonite with sulphides.	" " " "	335
17372 6G3	Crystallized rhodonite. (1 destroyed)	" " " "	335
17373	Sericite - unmineralized schist within ore body.	Broken Hill, South.	
17374	Calcite and galena.	Western Ore body, Broken Hill, South.	
17375	Gneissic schist	Hanging wall, Broken Hill, South.	
D-19-3 17376 U#7120 Se	Sandstone. (3 spec in Box 135 also)	Hinkley, Minn. W.O.Hotchkiss	
A27-7 17377 U9	Obsidian and perlite.	Yellowstone National Park, L.Martin, col. 1912.	
~~17378~~	~~Iron concretion.~~	~~Sturgeon Bay, Wis. Sent by C. L. Nelson.~~	
17379	Sandstone cast of mud cracks, Cambrian.	Bland, Mo.	
D-37-12 17380 U139 Se	Oolitic chert.	City quarry, Madison, Wis.	
17381 U143	Marl.	Marinette, Wis.	
17382 U143	Marl.	Portage, Wis. (?)	
E-2-16 17383 U144 S	Oolitic limestone.	Bedford, Ind.	
D-12-4 17384 U#7120	Sandstone ("Keuper").	Wurtemberg, Germany.	
	Specimens sent by C.N.Eding? Denham, Wis., 1911.		
D-34-12 17385 U132	Bog ore (limonite)	Sec. 32, T. 46, R.15 W., Douglas Co., Wis.	Source: C.N. EDING 1911
U.R.C. (=Univ. Rock Coll.) D-34-4 17386 U131	" " "	Sec. 10, T. 44, R.15 W., Douglas Co., Wis.	

Specimens Collected by W. O. Hotchkiss, 1908-1912. University Rock Collection (U. R. C.) Petrog. Lab.

D-32-15 17387 V130 S	Graphite shale.	Junction City, Wis.
D-37-13 17388 139 S	Oolitic chert (Lower Magnesian)	Pecatee Bluff, North of Prairie du Chien, Crawford Co., Wis.
E-25-6 17389 144 S	Crystalline dolomite.	Sturgeon Bay, Door Co., Wis.
E-2-17 17390 144 S	Trenton limestone with glaciated surface.	Waupun, Wis.
E-2-18 17391 144 S	Mendota limestone.	NE-NE, Sec. 34, T.9, R. 4 E., Sauk Co., Wis.
D-26-1 17392 125	Fine sand "quicksand".	Three Lakes, Wis. Sent by E. F. Lapham.
C-38-1 17393 94	Limestone residual soil.	Near Le Island, Sauk Co., Wis.
D-16-2 17394 ~~116~~ 119	River sand.	" " " " "
E-2-19 17395 143	Sandy marl.	Lake Winnebago, near Oshkosh, Wis.
D-2-16 17396 101	Volcanic ash.	Pompei, Italy.
17397 72	Scoria.	Kilauea, Hawaii.
D-19-5 17398 ~~117~~ 120	Ferruginous Cretaceous sandstone.	Ilchester, Md.
D-27-1 17399 128	Variegated clay.	Martha's Vineyard, Mass.
A-27-8 17400 9	Obsidian (extremely acid).	Washington (state).
17401 T Case 33	Dike in schist showing variation in grain.	Sherman Hill, Buford, Wyo.
C-11-9 17402 69 S	Basalt with olivine.	Linagambia, Gambia
C-11-10 17403 69	Basalt with cavity.	"
17404 E1 Case 24	Magnetite (2 spec.)	Cranberry, Mitchell Co., N.C.
D-6-7 ~~8~~ 8 17405 102 S Se	Limestone ~~breccia~~ conglomerate base Oneota (2 spec.)	City quarry, Madison, Wis.

Collection showing grain and texture of igneous rocks.

Presented by A. C. Lane,

Former State Geologist of Michigan.

All in Texture case in hall

17406 T Case 22 Set of chips from dike in Mona Schist, Light House Pt., Marquette, Mich.

T 17407 T Case 22 Weathered greenstone, showing coarse ophitic texture.

T 17408 T Case 22 Gabbro-aplite. ("Red rock") Mt. Bohemia, Mich.

Set of Drill Cores.

17409 T Case 22 Tecumseh Mine #1, at 309

17410 T Case 22 " " #1, at 318 whole flow 226-407.

17411 T Case 22 " " #3, at 350 in Kearsarge lode foot.

17412 T Case 22 Franklin Junior M., #4, at 170. Base of flow at 200. Feldspathic melaphyre.

17413 T Case 22 Same at 298. Base at 338, main base at 373. Kearsarge foot.

17414. T Case 22 Same at 304.

17415. one T Case 22 3 photographs at Delaware Mine, Mich. August 1907, showing weathering of an ophitic texture. 6 in. rules as scale.

17416 Photograph of reptile after which ophitic texture is named. (Filed under Lane).

17417 Blue print showing Lane's theories as to temperature of consolidation and size of grain (Filed under Lane).

Rocks and Minerals, with thin sections, furnished by

A. N. Winchell, Nov. 1912.

E-28-17 17418 U163	Hornstone with black spots caused by carbonaceous material. Quartz, calcite, and argillaceous matter.	Juniper Mts., Nev.	
17419 6H2	Vesuvianite (identification of specimen doubtful).	" " "	UM 393
~~D-25-5~~ B-26-9 Latite 17420 U43 4	~~Andesite~~ from dike, fresh.	" " "	
~~B-25-6~~ B-26-9 Latite 17421 U43 4	~~Andesite~~ from dike, altered.	" " "	
A-40-18 17422 U20	Trachyte.	" " "	
17423 26	Alkali granodiorite (section only).	" " "	
A-40-19 17424 U20	Altered trachyte.	" " "	
17425 6C3	Quartz vein("azurite vein") (1 duplicated)	" " "	216
A-40-20 17426 U20	Trachyte dike.	Coppereid, Nev.	
B-1-17 17427 U21	Bostonitic trachyte.	Juniper or Sahware Mts., Humbolt Co., Nev.	
B-15-12 17428 ~~U34~~	Country rock near iron ore.	Buena Vista valley, Churchill Co., Nev.	
17429 M6H5	Chalcopyrite - tourmaline vein.	Blue Bird M., Wickes, Mont.	83
D-16-3 17430 U H6 119	Pure quartz sand (glacial)	North of Middleton, Wis.	
D-16-4 17431 H6 119	Oxidized sand (glacial)	" " "	
D-4-1 17432 104	Oxidized sandy till.	Lutheran Hill, Dane Co., Wis.	
D-27-2 17433 128	Clay loam (loess?) from alluvial fan.	S. Range, Baraboo Bluffs, Wis.	
D-16-5 17434 H6 119	Glacial sand.	Wisconsin.	
D-4-2 17435 104	Glacial gravel.	"	
C-37-7 17436 93	Residual iron ore.	Mesabi Dist., Minn.	
C-35-15 17437 85 Dup in 141	Weathered granite. (? Disintegrated monzonite ?)	Butte, Mont.	
17438 135	Greenalite rock.	Mesabi Dist., Minn.	

C-37-9 17439 193	Cherty iron formation.	Lake Superior Region.
A-33-13 17440 13	Pulaskite.	Fourche Mt., Ark.
B-8-2 17441 26 S	Quartz monzonite.	Butte, Mont.
E-25-7 17442 159 S	Marble	Georgia Marble Co., Creole Quarry, Near Bear Creek Canyon.
A-19-12 17443 7	Selvage of rhyolite dike.	Needle Mt. Quad., Colo.
A-19-13 17444 7	Rhyolite.	N.E. of Engineer Mt., Silverton Quad,, Colo. 13000 ft. alt.
B-26-2 17445 44	Latite.	Engineer Mt., Silverton, Colo.
D-26-18 17446 127 S	Novaculite quartzite.	Dannemora, Sweden.
A-19-14 17447 7	Felsitic rhyolite dike.	Extreme NE corner of Needle Mt. Quad., near Bear Cr. Canyon, Colo.
A-27-9 17448 9	Obsidian.	Same locality as 17444. MISSING
17449 159 S	Marble.	Brenner, Tyrol, Austria.
A-19-15 17450 7	Rhyolite.	N. side N. Henson Creek Lake City Quad.
17451 ~~M1 157~~ S	Chloritic Marble (Campan)	Payole, Hautes Pyrenees, France.
17452 7	Rhyolite (Leopard Rock) from dike 15 to 20 feet wide.	Belmont Springs, Mont.
17453 134	Glauconite sand.	City Quarry, Madison, Wis.

Specimens presented by W. L. Uglow, 1912.

D-3-13 17454 103 S	Limestone breccia (5 spec.)	Steep Rock Lake, Ont.
F-10-16 17455 179 S	Graywacke metamorphosed at contact and folded.	Tordan R., Vancouver Id., B. C.
D-24-4 17456 123 S	Volcanic tuff.	Vancouver Id., B. C.
B-29-6 17457 49 S	Saussuritized gabbro.	Rainy L., Ont.
E-25-8 17458 159 S	Marble with concretion.	Steep Rock L., Ont.

E-25-9

17459 U 159	Marble.	Steep Rock L., Ont.
17460 St	[Structure case] specimens showing shearing.	Seine R. series, Antikokem, Ont.
17461	Spheroidal weathering of diabase.	Vancouver Id., B.C.

17462 177 S	Cordierite gneiss (section only)	Penig, Saxony, Germany
17463) 177 S 17464)	Scapolite schist (2 sections only)	Zschoralau, Saxony, Germany
17465 G	Glaciated surface of Trenton limestone showing also artificial scratches.	Aztalan, Wis. (E.Steidtmann,1912)
17466 St Structural	Quartzite showing cemented joints	Waterloo, Wis. (E.Steidtmann,1912)
A-8-16 17467 1 S	White granite (~~4 spec.~~) of which State Capitol is built. ~~Barney Marble Co., Swanton, Vt.~~	Hardwick, Vt.

Specimens of Decorative marble from Barney Marble Co., Swanton, Vt., presented by S. Weidman, 1912.

17468	Case 20	Ophicalcite ("Verke Antique" marble)
17469	Case 20	"Lyonaise" marble.
17470	Case 20	"Jasper" marble.
17471	Case 20	"Oriental" marble.
17472	Case 20	"Swanton Black" marble.

17473	138	Geyserite.	Yellowstone National Park, Wyo.
17474	W M Case 23	Alkali rhyolite with veins of quartz, feldspar, fluorite, and galena (4 spec.)	Utley, Wis. (S. Weidman).
17475	104 Sed. Str. Case	Wind-sand worn pebbles.	Green River Desert, 40-50 m. E. of Kemmerer, Wyo. (J.M.Jessup).
17476	Cu Case	Revett quartzite.	Wallace, Idaho.
17477	Cu Case	Same, mineralized with bornite.	" "

Set of Rocks purchased from Foote Mineral Company.

17478 9(dup)	Obsidian.	Yellowstone National Park, Wyo.
E-25-10 S 17479 145	Limestone or marble.	Knoxville, Tenn.
A-31-13 17480 12	Syenite (Nordmarkite)	Windsor, Vt.
D-2-17 17481 102 S	Quartz breccia.	Buffalo Gap, S. D.
D-14-13 17482 117	Arkose.	Portland, Ct.
C-11-11 17483 69 S	Basalt.	Watchurg Mt., Orange, N.J.
C-28-13 17484 77	Peridotite.	San Jose, Santa Clara Co., Calif.
17485	Seeley slate, Diamond drill core.	Hole 101, Sec. 16, T. 11, R. 5 E., 1120'-1130', Baraboo Dist., Wis. (S. Weidman).
E-2-20 17486 143 S	Fossiliferous marl.	Woods Bluff, Clarke, Co., Ala.
D-16-6 17487 119 S	Claiborne ferruginous, fossiliferous sand.	Bakers Bluff, Tombigbee R., Washington Co., Ala.
D-27-3 17488 128	Clay loam subsoil.	S. W. ¼, Sec. 35, T. 13, R. 12 E., Columbia Co., near Randolph, Wis.
D-4-3 17489 104 S	Sandy till.	Same.
D-4-4 17490 105	Cemented sandy till.	Same.

Specimens presented by W. J. Mead, Feb. 1913.

17491-17502 Minnesota/Michigan

recat. to 50086 11/22/38 ~~17491 Fe Carb~~	~~Greenstone and jasper (2 spec.)~~	~~Vermilion Range, Minn.~~
17492 Case 7	Bog ore.	Western Marquette Dist., Mich
17493 no Se, other ST	Pseudo-mud-cracks. (cemented joints in shale) (2 spec.)	Crystal Falls Dist., Mich.
17494 Fe Carb	Secondary iron carbonate.	Vermilion Dist., Minn.
[illegible]	Series of drill cores showing katamorphism of a diabase dike.	Hole 118, Sec. 29, T. 47, R. 26 W., Marquette Co., Mich.
17495 Mt. Bik	Depth 767 feet.	
17496 " "	" 770 " (2 spec.)	
17497 " "	" 774 "	

} 1 roll

See also B 364-74

17498	BIK	Depth, 778 feet.	Hall
17500	"	" 782 "	Hall
17501	"	" 787 "	
17502	"	Freshest part of the dike.	

C-35-16

17503	U85	Rhyolite soil.	North Leigh Creek, W. slope Teton Range, Wyo. (E. Blackwelder).

Extra Box 631

17504	BIK	Dike rock (above)	depth 38 feet.
17505	"	? Gabbro ?	" 128 "
17506	"		" 442 "

Hall

M1

Collection of Clays from Wisconsin. (clays from schist, granite, etc., Lacustrine & glacial clays)
Collected, analyzed and described by E. R. Buckley,
Bull. VII, Wis. Geol. & Nat. Hist. Survey, 1901.
17507-17530

Top of case in basement

			Description.	Locality.
C-39-9				
17507	98		Decomposed schist.	Halcyon, Jackson Co.
C-39-10				
17508	98	S	" "	" " "
17509			" "	" " "
C-35-17				
17510	85	81,83	Decomposed granite.	Ringle, Marathon Co.
D-22-4				
17511	128	50,51	Glacial (?) clay.	Horicon, Dodge Co.
17512		81-83	Decomposed schist.	Ringle, Marathon Co.
17513	128	S 55,56	Lacustrine red clay (2 spec.)	Kaukauna, Outagamie Co.
D-26-2				
17514	125		Calcareous sand.	" "
17515		Bottle of	Glacial clay "top "	Tramway, Dunn Co.
17516		" "	" " "bottom	" " "
D-27-5				
17517	128		" " "blue-banded"	" " "
17518			Lacustrine clay, red	Green Bay, Brick Co., Duck Creek, Brown Co.
17519		43-46	Same, blue	
17520			Same, gray. Maybe Ft. Atkinson Wis	H. A. Kingston, Duck Creek, Brown Co.
17521		35	Lacustrine clay.	Fredonia, Ozaukee Co.

17522			Clay bank 1, Eau Claire
C-39-11 17523 98	27-31	Residual clay from schist.	" " 1a.
17524			" " 5.
C-39-12 17525 98	40	Residual clay.	Centralia #5, Grand Rapids, Wood Co.
17526	41	" "	Centralia #4, " "
C-39-13 17527 98	42	" " (refractory)	Grand Rapids, Wood Co.
17527½		Lacustrine Clay	Racine
17528		Glacial clay.	Denoon, Waukesha Co.
D-29-1 17529 129 S Se		Blue Cincinnati shale.	Lake Winnebago region.
D-29-2 17530 129		Brownish Cincinnati shale.	Oakfield, Fond du Lac Co.

(Note: Locations of eight other samples could not be determined in 1913).

17531 Se			
D-32-14 17532 139 S		Oolitic chert.	City quarry, Madison, Wis.
E-3-1 17533 144		Oolitic dolomite and chert.	" " " "
D-19-6&7 17534 120 S		Calcareous Madison sandstone.	Paunack's quarry, Madison.
A-19-16 17535 7		Rhyolite flow-breccia	N. side of Henson Canyon, opposite Horseshoe Basin, Silverton Quad., Colo.
C-36-10 17536 88		Rhyolite altered by hot springs.	Yellowstone Canyon, Wyo. (R. H. Whitbeck)
17537 Se		Fault breccia.	Ablemans, Wis. (R. H. Whitbeck)
D-19-8 17538 120		Sandstone. (between Upper Mercer and Tronesta coals)	Union Furnace, Ohio.
E-3-2 17539 144		Hot spring deposit.	S. end of Salt Lake Co., Utah. (S. D. Rideont, Draper, Utah.)
17540 Case 7		Limonite. X-Ray # 1181	Sauk Co., Wis. (A. W. McConnell)
17541 Case 16		Limonite. 1000' level.	Lowell M., Bisbee, Ariz. (F. L. Ransome)
C-37-8 17542 93 RE i Fe Case		Limonite and hematite.	Florence M., Wis. (W. O. Hotchkiss)

Collection from Bisbee, Arizona. Cu and Ag - ores
S. L. Houghton, 1913.

17543 Case 16 Copper ores from outcrops near Old Copper Queen incline. (4 specimens)

17544 Case 12 Silver ores, Holbrook M., above 300' level. Given to Dr. Emmons for class work 1/10/41

17545 Cu Case Copper ores, " " " " " stope 14-3

Collection made by C. T. Kirk.

E-31-16 17546 U166 S	Contact metamorphosed marble.	Hastings Co., Ont.
C-36-11 17547 U87 S	Rhyolite altered by hot springs.	Yellowstone Canyon, Wyo.
17548 T Case 22	Obsidian.	Obsidian Cliff, Wyo.
A-12-6 17549 5	Pegmatite (contact phase of aplite).	Butte, Mont.

Collection made by students on Lake Superior excursion of 1911.

a) From Biwabic Mine, Mesabi Range, Minnesota.

D-15-4 17550 118 S	Graywacke
17551 135 S	Greenalite.
D-32-16 17552 130	Ferruginous meta-shale.
E-7-6 17553 121	Pokegema quartzite.
C-11-12 17554 69	Basalt.
C-37-10 17555 93	Oxidized greenalite.
C-37-11 17556 93	Oxidized iron formation or paint rock.
C-37-12 17557 93	Brown iron ore.

b) From Soudan Mine, Vermilion Range, Minn.

F-8-12 17558 177 S	Schist.
17559 177 S M1	Schist.
F-8-13 17560 177	Schist.
F-11-8 17561 180	Hard ore.

Wyoming & Panama ...
Rest in Basin in Basement

Collection made by R. G. Thwaites, 1913.

E-3-3 17562 144 S	Coral rocks (2 spec.)	Barbados, W. I.
D-14-14 17563 117 S	Arkose	Culebra Cut, C. Z.
C-35-18 17564 85 S	Decomposed basalt dike	" " "
C-37-1 17565 90	Surface red clay.	" " "
C-37-2 17566 90	Yellow clay (residual arkose)	" " "
D-29-3 17567 129	Arkose shale.	" " "
17568	Black shale ("sliding layer")	" " "
17569	Decomposed andesite (?)	" " "
17570	Fine yellowish shaly sandstone.	Hodge's Hill, C. Z.
17571 Se	Calcium carbonate concretions.	Middleton, Ct.
B-29-7 17572 49 S	Anorthite.	N. E. of Laramie, Wyo.
A-6-3 17573 1	Granite.	8 miles E.N.E. of Laramie, Wyo.

Box 631

Collection by F. T. Thwaites, April 19, 1913, At Iron Mountain, Dodge Co., Wis.

Upper Ordovician, — Neda Formation.

17574 S in 132 case 24	Typical oolitic iron ore.	Oliver mine.
17575 S in 132	Lean ore near edge of bed.	" "
17576 Se	Ripple marks on ore.	" " (presented by the captain)
17577 132 S	"Pebble" ore ((Oolitic Iron Ore)	Old Northwestern Mine.
17578 case 21 S in 133	Black ore (top layer)	" "
17579 case 21	" " " " showing slickensides.	" "
17580 case 21	Black ore showing weathering of oolites.	" "
E-3-4 17581 144	Ferruginous limestone at edge of bed (2 specimens)	" "
D-29-4 17582 129	Blue clay (Cincinnati shale)	Oliver Mine.
D-29-5 17583 129 S	Shale. (Bottle)	Northwestern Mine. (2 Mayville, (Dis?)

17584	Cut cubes of sandstone.	Chippewa Falls Cons. Co. Colfax, Wis.
17585	Cut cube, granite.	Pike River Gr. Co., Amberg, Wis.
17586	" " " (Barre granite)	Barre, Vt.
17587	" " "	Winnsboro, S. C. (used in Wis. monument at Vicksburg)
17588 Se	Agates from amygdaloid	N. shore, Lake Superior.
D-6-9 17589 105	Conglomerate.	Seneca, Crawford Co., Wis.
17590 Se	Manganese concretions in St. Claire limestone overlying manganiferous ore in Cason shale. See Harder, Bull. 427, U.S.G. S.	Cason M., Independence Co., Ark. (C. K. Leith.)
E-14-10 17591 156	Red slate.	Hot Springs, Ark.

Collection received in exchange with college at Athens, Ga. 1913.

E-3-5 17592 144	Lithographic limestone.	Jackson Co., Ala.
17593 Case 21	~~Limonite~~ (3 spec.) (2 destroyed)	Rickey, Tuscaloosa Co., Ala.
D-29-6 Case 24 17594 129	Shale or "fire clay"	Jefferson Co., Ala.
D-29-7 17595 129	Shale (used for brick)	" " "
D-37-15 17596 139	Oolitic chert.	Birmingham, Jefferson Co., Ala.
E-25-11 17597 159	Marble.	Grant's quarry, Talladega Co., Ala.
E-31-17 17598 166	Contact marble.	Hastings, Ont. (W.L.Uglow)
D-19-9 17599 120	Potsdam sandstone.	Peshtigo R., Wis. (T.C. Chamberlin)

Collection from Steamboat Springs, Nevada.
A. N. Winchell.

all in pet. col.

F-10-17
17600 178 Inclusion in granodiorite.

D-36-5
17601 138 Deposit of springs.

D-36-5
17602 138 " " " showing red mineral.

B-8-3
17603 26 Granodiorite.

Collection from Kittells Falls, NE Sec. 32, T. 23, R. 21 E., Brown Co., Wis., by F. T. Thwaites, June 14, 1913.

E-3-6
17604 144 Niagara limestone, 20 feet above ore.

17605 E Case 21 Limestone with oolites just above ore.

17606 " Case 21 Pyritiferous limestone " " "

17607 " Case 21 Black oolitic ore, top band 6" thick.

D-34-13
17608 132 Case 21 Run of ore, about 2 ft. thick (2 spec.)

17609 E Case 21 Ore and clay.

17610 " Case 21 Shale interbedded with ore.

17611 " Case 21 Pebbly and shaly ore near base of bed.

D-29-8
17612 129 Cincinnati shale 6 feet below ore.

E-3-7
17613 144 Travertine and shale breccia.

17614 - 17620 Wisconsin F. T. THWAITES, 1913

E-3-8
17614 144 Limestone. Lutz quarry, Oshkosh, Wis.

E-3-9
17615 144 Limestone and pyrite. " " " "

E-3-10
17616 144 Limestone, chert, pyrite and calcite. " " " "

Collection from old Northwestern Pit, Iron Mountain, Wis.
F. T. Thwaites, June 15, 1913.

17617 132 Case 21 Low grade limey ore (2 spec.)

17618 E1 Case 21 "Pebble" ore (2 spec.)

17619 E1 Case 21 Ore with limestone band.

17620 E1 Case 21 Collection of "pebbles".

Collection of Rocks and Sections from Siskiyou Co., Calif.,
presented by A. N. Winchell, June, 1913. 1762/-1764/

From Lower Down Mine.

17621	1 W	V 174	Mineralized actinolite schist.
17622	2 W	V 88	Hydrothermal altered igneous rock (no spec.)

From Diamond Mine.

C-38-8 17623	1 W	96	Hydrothermal altered sediment.
17624	2 W	163	Contact altered shale (no spec.)
17625	3W	5	Aplite and andesite (no spec.)

From Highland Mine.

17626	100 W	174	Horn blende schist (no spec.)
A-12-7 17627	101 W	5	Aplite.
17628	102 W	31	Dacite (no spec.)
17630	104 W	43	Altered andesite (no spec.) 1st dike in #4 tunnel.
17631	105 W	43	Altered andesite (no spec.) dike in hanging wall, 4th level.
F-6-15 17632	106 W	176	Chlorite schist. Overlies ore in stope #2.
17633	107 W	178	Contact rock (no spec.) #4 tunnel near granite.
17634	108 W	178	" " " " " " crosscut.
17635	109 W	31	Dacite (no spec.) #4 level south.

From Elko Prince Mine.

A-37-3 17636	201 W	18	Bostonite.
17637	202 W	5	Mineralized aplite (no spec.)
17638	203 W	18	Bostonite (no spec.)
D-3-14 17639	204 W	103	Breccia of hanging wall.
17640	205 W	18	Bostonite (no spec.)
17641	206 W	124	Rhyolite tuff of hanging wall (no spec.)

Collection of Rutile Rocks and Minerals from Nelson Co., Va.

~~A. N. Winchell~~. purchased In drawer? location?

B-29-8 17642 49	Gabbro	Roseland.	
A-12-8 17643 5	Pegmatite.	American Rutile Co. Mine, Roseland.	
17644 Case 15	Massive rutile.	Claypool.	
17645 Case 15	Rutile in blue quartz.	American Rutile Co. Mine, Roseland.	LO 9724
17646 Case 15	Rutile in hornblende.	" " " "	LO 9723 Ti-ores
17647 Case 15	Rutile in feldspar.	" " " "	
17648 Case 15	Rutile and apatite.	Roseland.	
17649 Case 15	Ilmenite and apatite.	"	

Collection by F. T. Thwaites, June 28, 1913.

D-4-5 17650 104	Limestone till.	Crystal Creek, east of Beaver Dam, Wis.	
17651 G 107	Limestone pebbles with black coating of manganese oxide.	Beaver Dam, Wis.	
~~17652~~	~~Older (?) disintegrated drift.~~	~~Horicon, Wis.~~	Discarded
D-26-3 17653 125 M1	Calcareous silt.	" "	
17654 E 1 Case 21	Clinton oolite with calcite vein.	New Northwestern Mine, Iron Mountain, Wis.	
17655 E 1 Case 21	Clinton ore from near base.	Old Northwestern Pit, Iron Mt., Wis	
17656 E 1 Case 21	Clay or bauxite (?) above ore.	New Northwestern Mine.	
~~17657~~ E 1 Case 21	~~Clay or bauxite (?) near edge of bed.~~	~~Old Northwestern Pit.~~	Discarded

Collection made by C. K. Leith, 1913. 17658-17675 210
except where noted are all in a drawer of case on

17658 M1 1. met. col. Goodrich quartzite grading into staurolite schist. Specimens collected by R. C. Allen, State Geologist of Michigan, from Republic Mine, Mich. (3 spec.)

17659 M1 2. 158 Graphitic schist from graphite mine on west shore of Lake George, Adirondack Mountains, N. Y.

17660 M1 3. Wall rocks of graphite schist from same locality. These are part of the Grenville series, origin unknown. Well bedded and dipping at low angles like sediments.

17661 E1 3a. Tailings from concentrates of graphite mine.

C-39-7
17662 E1 4. 97 Ophicalcite from type locality near Port Henry, Adirondack Mountains. Belongs with Grenville limestone.

17663 E1 5. Magnetite and Grenville limestone, Mineville, New York.

A-12-9
17664 6. 5 Pegmatite associated with magnetite, Mineville, New York. Shows good rutile crystal.

17665 E1 7. Pegmatite associated with magnetite, Mineville, New York. The pegmatites carry magnetite but according to Kemp are distinctly later and intrusive into the main magnetite ore bodies.

17666 E1 8. Same as No. 7.

17667 E1 11. Pegmatite containing titanite (?).

17668 E1 13. Same as No. 7. Containing allanite crystals.

17669 E1 14. Same as No. 7. Showing titanite.

17670 E1 12. Pegmatite. (Mineville, N.Y.)

17671 E1 15. Pegmatite. (" ")

17672 16. ~~172~~ Footwall hornblende gneiss of Mineville magnetite deposits.

17673 E1 17. Allanite crystals from pegmatite dikes, Mineville, N.Y.

17674 18. M1 ~~175~~ Talc schist from talc mine near Madoc, Ontario. The source of most of the talcum powder. Talc occurs in shear zones crossing bed of Grenville limestone. Talc said to be secondary to tremolite which in turn results from silication of dolomite. Local theory is that waters have brought in necessary silica. Hypothesis of dynamic metamorphism not considered.

E-8-17
17675 19. 151 Sedimentary gneiss. Fordham gneiss, Grenville. From D. D. hole 300 below tide, Lower E. Side, New York City. Presented by C. P. Berkey.

Collection of Rocks purchased from Foote Mineral Company,

October, 1913. 17676-17700

A-34-9 17676	U14	Syenite porphyry.	Red Mountain, Colo.
D-17-1 17677	35	Monzonite.	San Juan Co., Colo.
~~B-11-2~~ B-9-21 17678	~~35~~ 28	Monzonite dike.	Cold Springs, Okla.
B-31-7 17679	50	Orthoclase-quartz-gabbro.	Twin Mts., Mountain Park, Okla.
C-28-14 17680	77	Peridotite (Kimberlite)	Arkansas Diamond Co., Pike Co., Ark.
D-2-18 17681	102	Limestone talus breccia.	Lewisburg, Pa.
E-3-11 17682	144	Oolitic limestone (Keokuk)	Joplin, Mo.
E-3-12 17683	144	Travertine.	Pomona, Calif.
C-39-14 17684	98	Residual kaolinitic clay from anamorphic rocks. Shows concretionary structure.	Morton, Renville Co., Minn.
D-38-6 17685	142	Cannel coal.	Riverton, Boyd Co., Ky.
D-38-3 17686	141	Lignite.	Rockdale, Tex.
17687	142	Bituminous coal.	Clarksburg, Harrison Co., W.Va.
D-27-6 17688	128	Brick clay. (Bottle)	Philadelphia, Pa.
E-3-13 17689	144	Cement rock.	Northampton Co., Pa.
D-8-23 17690	108	Tuffaceous sandstone.	Tesla, Alameda Co., Calif.
D-15-5 17691	118	Graywacke.	Thomson, Minn.
17692	150	Rock salt.	Livingston Co., N. Y.
D-27-7 17693	128	Clay (Lower Cretaceous)	Christiana Co., Dela.
D-16-7 17694	119	Dune sand.	Golden Gate Park, Calif. (S. Francisco)
D-10-2 17695	113	Black sand.	Redondo Beach, Calif.
D-35-2 17696	134	Glauconitic marl. (Cretaceous	Farmingdale, N. J. Foote, Philadelphia
D-16-8 17697	119	Beach sand.	Sullivan Id., S. C.
17698	104	Beach gravel (quartz).	Long Id., N. Y.
D-3-15 17699	103	Quartz breccia.	Brewster Co., Tex.
D-26-11 17700	126	Novaculite.	Hot Springs, Ark.

Rocks and Ores from the Dillon Quadrangle and Regions in Montana.

17701-17929

A. N. Winchell, 1910.

(All sectioned except where noted. N.S. = no specimen.)

A-19-17 17701	U7	Rhyolite.	Dike in "Bozeman Lake Beds" about 1 mile north of Pipestone Springs.
B-38-18 17702	57	Auganite.	Dike in "Bozeman Lake Beds" about 1 mile north of Pipestone Springs.
B-26-3 17703	44	Latitic phase of andesite.	North of Pipestone Springs.
B-4-10 17704	31	Dacite.	Gold Hill mine, Renova district.
B-4-11 17704a.	31	Dacite.	" " " " "
D-14-15 17705	117	Arkose.	Mary Ingabor claim, Point of Rocks district, near Whitehall.
17705a.	117	Arkose.	" " " " " "
17706	117	Arkose. N.S.	Colorado claim. Point of Rocks district, near Whitehall.
B-8-4 17707	26	Quartz monzonite close to a granodiorite.	Green Campbell mine, Silver Star district, Montana.
B-11-1 17708	30	Porphyritic quartz monzonite aplite.	Green Campbell mine, Silver Star district, Montana.
B-8-5 17709	26	Phase of quartz monzonite.	Green Campbell mine, Silver Star district, Montana.
F-9-12 17710	178	Mica schist (contact rock).	Green Campbell mine.
E-31-18 17711	166	Garnet contact rock.	American claim along granite-limestone contact of Silver Star district.
17711a	166	Garnet rock.	From same locality as #11.
17712			
17713			
17714	43	Andesite. ~~no section~~ section	Green Campbell mine, Silver Star district, Montana.

17715 43	Quartzose andesite. No spec. Section only.	S. E. of limestone about 1/2 mile. Silver Star district.
17716 43	Andesite. NS?	Dike on S. or E. slope of Table Mt.,
17717 43	Andesite, altered. NS?	Dike on Ella claim on Wet Georgia Gulch, Tidal Wave district.
E-14-11 17718 156	Slate.	Near top of Red Mt., 20 miles south of Butte, in Dillon Quadrangle.
B-28-9 17719 49	Gabbro.	Richmond claim, Highland district, Dillon Quadrangle.
17720 162	Quartzite (near contact) N.S.	North slope of Red Mt. near Highland, Dillon Quadrangle.
B-15-13 17721 34	Diorite.	Dike in limestone at head of Fish Creek from Gold Bug claim about 1/2 mile from granite-limestone contact. Highland district.
17722 26	Basic contact phase of quartz monzonite.N.S.	Highland, Montana.
D-7-12 17723 106	Quartzite conglomerate.	From head of Fish Creek, near Highland, Mont.
17724 166	Lime silicate rock. N.S.	From Montreal group on Gold Hill, Moose Creek district.
17725 121	Quartzite. N.S.	From Beal's property on German Gulch, Siberia district.
D-19-10 17726 121	Quartzite.	From Beal's mine, at head of German Gulch, Siberia District.
B-11-12 17727 31	Dacite.	From Beal's mine, at head of German Gulch, Siberia District.
B-11-13 17728 31	Biotite dacite.	From German Gulch, Montana.
~~B-12-3~~ B-13-10 17729 31	Dacite ~~Quartz latite~~.	Three forks of German Gulch, Siberia District, Montana.
17730 26	Quartz monzonite.N.S.	From Bear Gulch, Tidal Wave District, Montana.
17731 121	Quartzite. N.S.	Bear Gulch, Montana.
17732 166	Lime silicate rock. N.S.	" " "
E-31-19 17733 166	Garnet rock.	" " , Tidal Wave Dist.,Mont.
B-8-6 17734 26	Quartz monzonite at the contact.	" " " " " "

A-12-10 17735 6	Alkali-aplite. N.Section	1000' dike at the head of Goodrich Gulch, Mont.
A-37-4 17736 18	Quartz bostonite.	From head of Goodrich Gulch, Tidal Wave District, Mont.
17737 32	Quartz latite. N.S.	"Nigger Head" Hill 2 miles south of Rochester.
E-14-12 17738 156	Garnet slate.	1 mile south of Rochester, Mont.
17739 173	Mica schist. N.S.	Rochester, Mont.
17740		
17741 18	Bostonite. N.S.	From dike of pure mineral at Rochester, Mont.
17742 69	Basalt. N.S.	East of lower canyon of Big Hole river.
17743 43	Altered andesite. N.S	1/4 mile down Bridges canyon, which opens into Mill Creek.
B-15-14 17744 34	Granodiorite.	1/4 mile down Bridges Canyon, which opens into Mill Creek.
17745 43	Altered andesite. N.S.	Noble Mine, south fork of Wisconsin Creek.
17746 44	Latite (altered). N.S.	From above limestone at Noble mine.
E-7-7 17747 121	Quartzite.	Footwall of vein on Noble mine.
E-25-12 17748 159	Marble.	From Bedford mine, Ramshorn district.
F-5-7 17749 156	Hornblende schist.	About 400 feet above limestone. From Bedford mine, Ramshorn district.
E-10-19 17750 154	Garnet quartz schist.	About 600 feet above limestone, Bedford mine, Ramshorn district.
F-8-14 [redacted] 156	Garnet schist.	Bedford mine, Ramshorn district.
F-5-8 17752 156	Hornblende schist.	Bedford mine, Ramshorn district.
E-7-8 17753 121	Quartzite.	" " " "
17754 117	Arkose. N.S.	About 1/2 mile north of Ruby, Mont.
D-14-16 17755 117	Arkose.	About 1 mile N.E. of Ruby, Mont.
E-31-20 17756 166	Lime-silicate. hornfels (amphibole-pytoxene)	Hecla mines, Hecla, Mont.
17757 69	Basalt. N.S.	Dike No. 1, 1000 feet from mouth of main tunnel, Hecla mines, Hecla, Mont.
A-36-17 17758 47	Minette.	Hecla mines. Main tunnel, 1900 feet from mouth, dike No. 3.

17759 69	Basalt. N.S	Main tunnel dump, Hecla, Mont.
B-8-7		
17760 26	Quartz monzonite.	Hecla, Mont.
A-6-4		
17761 1	Granite.	Hecla, Mont.
E-3-14		
17762 144	Siliceous limestone.	" "
E-14-13		
17763 156	Slate, metamorphosed.	Beneath the limestone at Hecla, Mont.
E-7-9		
17764 121	Quartzite.	Harry White's claim near top of McCartney Mt.
E-7-9		
17765 121	Quartzite.	Denny Logie's claim near top of McCartney Mt.
17766 121	Quartzite. N.S.	Denny Logie's claim near top of McCartney Mt.
17767 178	Contact rock. N.S.	Near top of McCartney Mt.
B-8-8		
17768 26	Quartz monzonite.	From peak of McCartney Mt.
B-8-9		
17769 26	Marginal phase of quartz monzonite.	" " " " "
C-29-6		
17770 79	Picrite.	Head of Nez Perce Creek, Mont.
E-3-15		
17771 144	Limestone.	Kent mine, Blue Wing district, Mont.
A-19-18		
17772 7	Rhyolite, bordering on trachyte.	1/2 mile east of Kent mine, Blue Wing district, Mont.
17773 7	Rhyolite. N.S.	About 2 miles S. S.W. of Argenta, Mont.
17774 7	Rhyolite. N.S.	About 1/2 mile east of Kent mine, Blue Wing, Mont.
17775	Andesite. N.Section	Blue Wing district, Mont.
17776 31	Dacite. N.S	From Del Monte mine, Blue Wing district, Mont.
E-26-17		
17777 162	Quartzite.	Near contact with porphyry from Gold Dollar mine, Blue Wing district, Mont.
17778 43	Andesite porphyry. N.S.	From outcrop south of Dillon-Bannack road about 3/4 mile north of New Departure mine, Blue Wing district, Mont.
17779 7	Rhyolite. N.S.	Dike about 500 feet east of #78, about 3/4 mile north of New Departure mine, Blue Wing district, Mont.

A-19-19 17780 7	Rhyolite.	Bluffs of Beaverhead River, 1/2 mile above Dillon, Mont.
17780a 7	Rhyolite.	Bluffs of Beaverhead River, 1/2 mile above Dillon, Mont.
17781 7	Rhyolite. NS	From quarry of Mrs. Fitzharris, 7 miles N.W. of Dillon, Mont.
17781a 7	Rhyolite. NS	From quarry of Mrs. Fitzharris, 7 miles N.W.of Dillon, Mont.
D-19-11 17782 120	Sandstone.	From quarry of Ed. Stack, 6 miles west of Dillon.
D-19-12 17782a 120	Sandstone.	From quarry of Ed. Stack, 6 miles west of Dillon.
D-19-12 17782b 120	Sandstone.	From quarry of Ed. Stack, 6 miles west of Dillon.
C-28-15 17783 77	Peridotite.	From mines of Crystal Graphite Co., Ruby Mts., Mont.
17784	Graphite feldspar rock.	From Crystal Graphite Co., Ruby Mts.
E-31-21 17785 166	Lime silicate rock.	From Crystal Graphite Co., Ruby Mts.
E-7-10 17786 121	Quartzite.	About 1 mile N.W. of Indian Queen mine, Birch Creek, Utopia District, Mont.
E-7-11 17787 121	Quartzite.	Fairview claim, north side of Barber gulch about 1½ miles north of Greenstone mine, Birch Creek, Utopia district, Mont.
E-7-12 17788 121	Quartzite.	Fairview claim, north side of Barber gulch, about 1½ miles north of Greenstone mine, Birch Creek, Utopia district, Mont.
D-7-16 17789 25	Tonalite.	1/8 mile southeast of Dewey, Mont.
17789a 25	Tonalite.	1/8 " " " " "
17790	N.S.	
B-38-20 17791 43	Bronzite andesite. N.S.	1 mile S.W. of Divide, Mont.
B-38-19 17791a 57	Auganite.	1 mile S.W. of Divide, Mont.
17792 Mia 667	Graphite and garnet.	Crystal Graphite Co., Ruby Mts., Mont.

17793 172	Graphite gneiss. N.S.	Crystal Graphite Co., Ruby Mts.,Mont.
17794 69	Basalt. N.S.	From dike on French Bar, 2 miles from Canyon Ferry, Mont.
17795 178	Contact rock. N.S.	Ajax mine, Silver Star, Mont.
17796	Diopside (?)	Hecla, Mont.
17797		
17798		
17799		
17800 6D3	Corundum.	Bear Gulch, Mont. dispersed
B-25-7 17801 43	Augite andesite.	1200 W. Granite St., Butte, Mont.
C-11-13 17802 69	Basalt.	1/4 mile west of Divide, Mont.
~~B-8-10~~ B-9-10 17803 26	Quartz monzonite.	Cayuga shaft near Divide, Mont.
E-7-13 17804 121	Quartzite.	" " " " "
E-7-14 17805 121	Quartzite.	Feely-Moose Creek road at 6700 foot elevation.
D-2-19 17806 102	Limestone breccia.	From near base of "grade" into Canyon Creek from Vipond.
E-3-16 17807 144	Limestone.	From Canyon Creek about 2 miles from Maiden Rock.
A-40-21 17808 20	Trachyte.	1 mile west of Dillon on road to Bannack.
17809		
17810 7	Rhyolite. N.S.	18 miles west of Dillon on road to Bannack at base of grade over divide.
B-25-8 17811 43	Andesite.	At elevation of 7200' near divide on road from Dillon to Bannack.
17812 26	Granodiorite. N.S.	Bannack, Mont.
17813		
D-27-8 17814 128	Clay.	From "lake beds" 1/2 mile south of Bannack.
E-3-17 17815 145	Siliceous limestone.	From ledge 1/4 mile south of Bannack.

C-11-17		
17816 69	Normal basalt.	About 5 miles south of Bannack on road to Grant.
17817	Sandstone. N.S.	Horse Plains.
17818 120	Sandy slate or argillaceous sandstone. N.S.	Dark Horse mine, Beaverhead County.
17819		
17820 26	Quartz monzonite, altered. N.S.	From Jahnke mine, Beaverhead County.
E-7-15		
17821 120	Slaty sandstone.	" " ", " "
17822 26	Quartz monzonite. N.S.	From McConnell group (W.M.S. claim), Elkhorn District, Beaverhead Co.
17823	Gray copper ore. N.Sec	Elkhorn district, Beaverhead Co.
17824	Ore. N.Sec.	" " " "
17825	Gray copper ore. N.Sec	" " " "
17826		
A-12-11		
17827 5	Aplite. +Section	Park group, Elkhorn district, Beaverhead County.
B-8-11		
17828 26	Quartz monzonite.	From Central Group. Elkhorn district. Beaverhead County.
17829 43	Andesite porphyry. N.S.	New Dillon-Bannack road, 3 miles east of the divide.
17830	Rhyolite. N.Sec	Blue Wing, Mont.
F-8-15		
17831 177	Garnet schist.	From Crystal Graphite Co. claims near Dillon, Mont.
A-12-12		
17832 5	Garnet pegmatite. N.Sec	From Crystal Graphite Co.'s claims near Dillon.
17833	Tourmaline (?). N.Sec	From Crystal Graphite Co.'s claims near Dillon, Mont.
E-32-1		
17834	Graphite.	Cfystal Graphite Co., near Dillon, Mont.
E-32-2		
17834a 166	Lime-silicate contact rock.	Crystal Graphite Co., near Dillon.
E-5-7		
17835 147	Phosphate rock.	From hill N.W. of Melrose, Mont.
17836 Fossil Col	Fossils. N.Sec	Melrose, Mont.

C-11-15			
17837 69		Basalt.	S.W. and S. of Melrose, Mont.
17838 69		Basalt. N.S.	From Pipestone station.
3-38-21			
17839 57		Auganite.	8 miles N. of Whitehall, Mont.
3-38-22			
17839a 57		Auganite.	8 " " " " "
17839b 57		Auganite. N.S.	8 " " " " "
17840 57		Auganite. N.S.	8 " " and 1½ miles E. of Whitehall, Mont.
D-39-23			
17840a 57		"	8 miles N. and 1½ " " " "
A-6-5			
17841 1		Granite.	8 " " " " " " " "
~~B-7-17~~ B-13-2			
17842 ~~253~~ 1		Contact rock. ~~Quartz diorite porphyry.~~ dacite	So. Boulder Creek about 2 miles N. of Mammoth, Mont.
A-9-10			
17843 3		Granite porphyry.	So. Boulder Creek about 5 miles S. of Mammoth near Sultana mine.
A-12-13			
17844 5		Aplite porphyry or pegmatite. + section	Bismark mine of Mont.-Ill.Cu.Mfg. Co. on So. Boulder Creek above Mammoth.
17845 Min6A5		Molybdenite and blende. N.S. (sphalerite)	So. Boulder Creek. Colo or Mont Source: A.N. Winchell, 1910
17846 "6D6		Hematite. N.S.	" " "
17847 "		"Hübnerite. N.S.	Potosi district near Pony, Mont.
17848 "6C1		Fluorite.	From contact between Granite and gneiss, Potosi District, Mont. A.N. Winchell, 1910
D-8-12			
17849 26		Acid quartz monzonite.	Potosi District near Pony, Mont.
A-12-14			
17850 5		Pegmatite (?) + section	" " " " "
A-12-15			
17850a 5		Aplite (?) + section	" " " " "
17851 28		Quartz monzonite porphyry. N.S.	" " " " "
17852 26		Granodiorite. N.S.	" " " " "
17853 Min7C6		"Hübnerite, $MnWO_4$	" " " " "
17854			
17855 "7C6		"Hübnerite. $MnWO_4$ → Red-brown crystals - visible only on broken surface. - x-rayed: fall of 1913 Film enclosed in card file	Potosi District, Mont.
17856		Fluorite (?) N.S.	" " "
17857		Quartz and pyrolusite (?)	" " "

34
232
175
813
813

→ Sperrylite ($PtAs_2$) Sudbury Ont. Canada

17858	Min 6C1	Black fluorite (?) N.See	Potosi District, Mont.	175
17859		Black mineral. N.See	" " "	
17860	A-12-16 S	Pegmatite. N.S.	Strawberry mine, Pony, Mont.	
17861		Gneiss and ore.	Clipper mine, Pony, Mont.	
17862	172	Gneiss. N.S.	Boss Tweed mine, Pony, Mont.	
17863	172	Gneiss. N.S.	" " " " "	
17864	E-40-8 172	Gneiss.	" " " " "	
17865	172	Gneiss. N.S.	" " " " "	
17866	Eg Carell	Pyrite gold ore. N.See Economic set.	Pony, Mont. discarded	
17867	B-10-1 28	Biotite muscovite quartz monzonite porphyry.	Revenue mine, Norris, Mont.	
17868	B-11-2 30	Quartz monzonite aplite.	" " " "	
17869	Eg Carell	Gold ore. N.S.	Norris, Mont. (Economic set) discarded	
17870	Min 6C3	Amethyst, N.S.	" "	210
17871	B-10-2 28	Biotite quartz monzonite porphyry.	Revenue mine, Norris, Mont.	
17872	B-11-1 29	~~Quartz monzonite aplite.~~ Plagiaplite	Boaz mine, Lower Hot Springs District, Norris, Mont.	
17873	9	Rhyolitic obsidian. N.S.	Near Birdie mine, Norris, Mont.	
17873a	A-27-10 9	Rhyolitic obsidian.	" " " " "	
17874	102	Rhyolitic breccia. N.S.	" " " " "	
17875	B-10-4 29	Plagiaplite. Rare muscovite.	Lehigh mine, Washington district, near Norris, Mont.	
17876	F-5-9 43	Andesite. N.S.	McKee Group, Washington district, Norris, Mont.	
17877	B-10-3 28	Biotite quartz monzonite porphyry. N.S.	Madisonian mine, Norris, Mont.	
17878	Eg Carell	Ore in quartz porphyry. N.See	Norris, Mont. Given to Dr. Emmons for class work 1910	
17879	F-5-10 174	Hornblende schist.	Hecla Mfg. Co., Lower Hot Springs District, Norris, Mont.	
17880		Black mineral. N.See	Virginia City, Mont.	

B-11-4		
17881 30	Quartz monzonite aplite.	Easton mine, Virginia City, Mont.
17882	Limestone. N.Sec	Virginia City, Mont.
17883 69	Basalt. N.S.	" " "
17884 43	Biotite andesite porphyry. N.S	" " "
17885 B87	Mineralized vein.	" " "
17886	Gold ore. N.Sec	Easton, Brown's Gulch, Mont.
F-5-11		
17887 174	Hornblende schist.	Lake Shore or Gladstone mine, Sheridan, Wisconsin Creek.
A-19-20		
17888 7	Rhyolite.	Cornelia Mg. Co., Sheridan, Mont.
E-7-4		
17888a 121	Quartzite.	Face of tunnel No. 1, Ohio claim, Golden Sunlight mine, Cardwell Dist., near Whitehall, Mont.
17889 121	Quartzite. N.S.	Tunnel No. 1, Ohio claim, Whitehall, Mont.
17890 7	Rhyolite porphyry. N.S.	Tunnel No. 2, Ohio claim, Whitehall, Mont.
17891 7	Rhyolite porphyry. N.S.	Tunnel No. 2, Ohio claim, Whitehall, Mont.
17892 7	Rhyolite porphyry. N.S.	Tunnel No. 2, Ohio claim, Whitehall, Mont.
17893	Epidosite. N.Sec Section	Tunnel No. 2, Ohio claim, Whitehall, Mont.
B-25-9		
17894 43	Augite andesite.	Intrusive near Mayflower mine, Whitehall, Mont.
D-6-10		
17895 105	Conglomerate with glauconite.	Mayflower mine, Whitehall, Mont.
B-11-14		
17896 31	Dacite.	Minah mine, Wickes, Mont. (Bluebird mine ?)
17897	Granite. N.Sec 400' from portal of tunnel.	Bluebird mine, Wickes, Mont.
17898 Min 6H5	Quartz and tourmaline. (Disposed) Minerals.	Blue Bird mine, Wickes, Mont. 426
B-11-15		
17899 31	Dacite, considerably altered.	120' fevel of old Blue Bird shaft, Wickes, Mont.
17900 ~~Min 6H5~~	Quartz and tourmaline. (Missing) Minerals.	Blue Bird mine, Wickes, Mont. 426

Disposed.

17901	Eg	Quartz and tourmaline. Economic Set.	Blue Bird mine, Wickes, Mont.
~~17902~~	~~Min 6H5~~	~~Tourmaline-sulphide ore. N. S.~~ disposed (Missing)	~~" " " " "~~
~~B-25-10~~ B-13-23 17903	~~43~~ 32	Quartz Latite ~~Andesite porphyry.~~	" " " " "
D-2-20 17904	102	Slate breccia. Float at	" " " " "
B-25-11 17905	43	Andesite porphyry. N.S.	Delome Gold Mg. Co., Radersburg, Mont.
B-25-12 17905a	43	Andesite porphyry. N.S.	Delome Gold Mg. Co., Radersburg, Mont.
17905b	43	" " N.S.	" " " " " "
17906	43 case 11	" "	Rena Gold Mg. Co., Given to Dr. Emmons for class work 1/18/40
17906a	43	" " N.S.	" " " " " "
17906b	43	" " N.S.	" " " " " "
17907	43	Andesite, altered. NS.	" " " " " "
17908	43	Andesite porphyry. N.S.	" " " " " "
17909	Ei case 24	Iron ore. N.S.	Radersburg, Mont. Economic Set.
B-25-13 17910	43	Andesite porphyry.	" "
D-2-21 17911	102	" breccia.	" "
17912	43	Andesite porphyry. N.S.	Keating Gold Mg. Co., Radersburg, Mont.
17913	43	" " N.S.	" " " " " "
17914	43	Andesite, highly altered. N.S.	Republican Mine, Radersburg, Mont.
17915	~~E12 case 14~~	~~Lead ore. Economic Set.~~	~~Radersburg, Mont.~~ Recat.
B-25-14 17916	43	Andesite, altered.	Easterly mine, Radersburg, Mont.
17917	Eg case 11	Gold in silicified andesite.	Radersburg, Mont. N.S.
17918		Andesite. N.S.	Radersburg, Mont.
~~B-25-15~~ B-13-24 17919	~~43~~ 32	Quartz Latite ~~Andesite porphyry.~~	Rothfuss mine, Radersburg, Mont.
17920, 17920a, 17920b, 17920c.	43	Andesite porphyry. N.S.	Near Radersburg, Mont.
17921	1	Hornblende granite. ~~No sec.~~	Lont Mt., 4 miles south of Radersburg, Mont.
17922	26	Quartz monzonite granodiorite.	About 2 miles east of Lone Mt., Radersburg, Mont.

B-13-12 ~~B-25-10~~ 17923 ~~43~~ 31	~~Andesite porphyry.~~ Dacite	Parker group, 8 miles west of Radersburg, Mont.
17924 D-29-9 17925 129	Shale. From quarry.	Three Forks Portland Cement Co., Mont.
D-19-13 17926 120	Calcareous sandstone. From quarry.	Three Forks Portland Cement Co., Mont.
E-3-18 17927 144	Limestone. From quarry.	Three Forks Portland Cement Co.
17928 26	Biotite quartz monzonite with hornblende.	Gagnon mine, Butte, Mont.
B-8-13 17928a 26	Hornblende biotite quartz monzonite. N.S.	" " " "
17929 120	Sandstone N.S.	Dodge, Trempedeau Co., Wis.

Foote Rocks - Continued

17930	149	Gypsum.	New Brunswick.
D-29-10			
17931	129	Clay-shale.	St. Paul, Minn.
D-19-14			
17932	120	Sandstone.	Jordan, Minn.
D-29-11			
17933	129	Shale, bituminous.	Luzerne Co., Pa.
D-29-12			
17934	129	" "	Redondo Beach, Calif.
17935	144	Limestone.	Dayton, Ohio.
E-4-1			
17936	144	Glauconitic dolomite.	St. Lawrence, Minn.
17937	132	HEMATITE Clinton ore.	Sil. Clinton fm. Clinton, N. Y. source: Foote, Philadelphia
D-19-15			
17938	120	Argillaceous sandstone.	Radersburg, W. Va.
D-19-16			
17939	120	Sandstone (Cambrian)	Wind River Mts., Wyo.
D-37-16			
17940	139	Wielandite (oolitic chert)	Center Co., Pa.
E-25-13			
17941	145	Dolomite (metamorphosed)	Ossining, N. Y.
D-32-17			
17942	130	Slate or argillite.	Santa Clara Co., Calif.
C-39-8			
17943	97	Ophicalcite.	Spokane, Wash.
F-11-9			
17944	136	Taconite.	Biwabik, Minn.
E-14-14			
17945	156	Red argillite or slate.	Middle, Granville, N Y.
F-6-2			
17946	175	Talc schist.	Dalton, York Co., Pa.
E-14-15			
17947	156	Slate.	Thomson, Minn.
D-7-13			
17948	106	Meta-conglomerate.	Fluorite Dist., Nye Co., Nev.
D-32-18			
17949	130	Argillite.	Madison Co., Mont.

C-37-13			
17950	93	Oxidized iron carbonate.	Cahoon Mine, Baraboo, Wis.
D-32-19			
17951	130	Argillite.	" " " "
E-8-18			
17952	151	Fordham gneiss of Greenville series.	Jerome Pk. Res., N.Y. City.
F-8-16			
17953	177	Garnet sillimanite rock.	Hague, L. George, N. Y.

17954 & MI D-37-17	Sheared contact slate.	Crystal Falls. Mastodon Mine, Mich.
17955 139	Chert of Lower Magnesian.	E. Middleton, Wis.
17956 150	Chemical shore deposit.	2 miles S. W. Adair Bay, Sonora, Mex.

Analyzed by Prof. Sherman, Columbia University.

	Crude.	Clean (minus insoluble matter)
NaCl	16.83	26.85
$NaSO_4$	13.81	22.06
Na_2CO_3	18.43	29.48
$NaHCO_3$	6.94	11.08
Al_2O_3- Fe_2O_3	0.12	0.19
H_2O @ 110° C.	6.26	10.00
Total Insol.	37.40	0.00
	106.79 !	100.00

17957 case 16	3 Spec. of sulphide copper ores	Burra-Burra Mine, Ducktown, Tenn.

Collection made by F. T. Thwaites on 12th International Geological Congress Excursions C2 & C8, Aug.-Sept., 1913.

17958 Se	Concretion of iron carbonate	Blainmore, Alta.
17959	" " " " .	Fernie, B.C.
17960 Se	" " limonite .	Coal Creek, Fernie, B.C
17961 Se	" from graywache	Haenke Id., Disenchantment Bay, Alaska
17962 case 16	Hematite replacing limestone	Phoenix, B.C.
B-15-15 17963 V 34	Grano-diorite	Greenwood, B.C.
E-35-17 17964 170	Greenstone schist	Hanging wall, Treadwell Mine, Juneau, Alaska.
B-18-1 17965 38	Monzonite porphyry	Rossland, B.C.
D-19-17 17966 120	Sandstone (cretaceous)	Coal Creek, Fernie, B.C
B-17-18 17967 35	Monzonite	Rossland, B.C.
A-36-18 17968 17	Minette	" " "
17969		Kamloops, " "
B-29-18 17970 49	Gabbro-diorite	Kitchener, " "
A-9-11 17971 3	Granite porphyry	Rossland, " "
17972		Grand Pacific Glacier, Glacier Bay, Alaska.
17973	Dike rock	Rendu Glacier, Glacier Bay, Alaska.
E-32-3 17974 166	Contact marble	Rendu Glacier
~~B-15-16~~ B-9-19 17975 ~~37~~ 26	~~Diorite with apatite vein~~ Quartz Monzonite	Muir Inlet, Glacier Bay, Alaska.
D-32-20 17976 130	Argillite	Tidal Inlet, Glacier Bay,
E-25-14 17977 159	Marble	Rendu Glacier, Glacier Bay. Alaska
D-3-16 17978 103	Marble breccia	Tidal Inlet
B-29-11 17979 49	Epidotized gabbro	Kamloops, B.C.
E-11-16 17980 69	Olivine basalt	" " "
D-29-13 17981 139	Shale (Jura-trias	Coal Cr., Fernie, B.C.
E-32-4 17982 66	Contact alterid limestone	Phoenix, B.C.
E-26-18 17983 16	" " quartzite	Kitchener, B.C.

D-33-4			
17984	54	gabbro-aplite	Kamloops, B.C.
E-26-19			
17985	162	Contact altered tuff	" " "
D-3-17			
17986	103	Limestone breccia	Stemwinder Mine, Phoenix, B.C.
17987			Crowsnest volcanic series, Coleman, Alta.
D-24-5			
17988	123	Volcanic Tuff	Kamloops, B.C.
A-31-14			
17989	12	Pulaskite	Phoenix, B.C.
A-6-6			
17990	1	Biotite granite	Kitchener, B.C.
D-19-18			
17991	120	Sandstone	Dakota form, Cretaeous, Coleman, Alta.
B-15-17			
17992	34	Grano-diorite	Tertiary, Kamloop, B.C.
D-29-14			
17993	129	Shale	Jurassic, Blainmore, Alta.
17994		dike rock	Rossland, B.C.
17995		" "	" " "
17996		" "	" " "
C-39-15			
17997	98	Weathered contact rock	Kitchener, B.C.
A-31-16			
17998	12	Pulaskite	Rossland, B.C.
D-26-12			
17999	126	Fine sandstone	Stonewall, Mass.
E-7-16			
18000	121	Quartzite	Kitchener, B.C.
F-3-5			
18001	173	Mica schist	Haleyon Hot Springs, B.C.
B-31-8			
18002	50	Orthoclase Gabbro	Kamloops, B.C.
E-32-5			
18003	166	Contact altered limestone	Phoenix, B.C.
D-6-11			
18004	105	Conglomerate	Dakota formation, Cretaeous, Frank, Alta.
D-29-15			
18005	129	Shale	Stonewall, Mass.
B-29-12			
18006	49	Gabbro	Kamloops, B.C.
D-29-17			
18007	129	Shale	Jura Trias, Blainmore, Alta.
A-34-10			
18008	15	Pulaskite porphyry	Phoenix, B.C.
18009			Crowsnest volcanic series, Cretaeous, Coleman, Alta.
D-26-19			
18010	127	Fine Quartzite	Seal Bay, Alaska.
18011			Muir Glacier, Glacier Bay, Alaska.
E-14-16			
18012	15	Slate	Brittonia Mine, Howe Sound, B.C.
18013		dike rock	Skagway, Alaska
18014		intrusive rock	Coleman, Alta.

D-7-18			
18015	25	Quartzite diorite	Skagway, Alaska.
D-32-21			
18016	130	Argillite	Haenke Id., Disenchantment Bay, Alaska.
D-6-12			
18017	105	Conglomerate	" " " "
F-9-13			
18018	178	Contact Rock	Phoenix, B.C.
D-29-17			
18019	129	Shale	Coal Creek, Fernie, B.C.
D-29-18			
18020	129	Shale	Cretaceous, Coleman, Alta.
18021			Crowsnest volcanics, Coleman, Alta.
D-38-7			
18022	142	Coal	Corbin C & C Co., Corbin, B.C.
D-29-19			
18023	129	Shale with concretions	Jura-Trias, Fernie, B.C.
18024	Ecl	Coke Case 17	Fernie, B.C.
D-38-8			
18025	142	Coal	Michel, B.C.
D-38-24			
18026	57	Augite Andesite	D.D. core, Rossland, B.C.
E-34-12			
18027	168	Granite gneiss	Halcyon Hot Springs, B.C.
D-24-6			
18028	123	Fine tuff	Tranquille Beds, Kamloops, B.C.
B-7-19			
18029	25	Quartz Diorite	Muir Glacier, Glacier Bay, Alaska
18030		Hornblende diabase porphyry	Rendu Glacier " " "
D-24-7			
18031	123	Fine Tuff	Tranquille Beds, Kamloops, B.C.
C-25-12			
18032	73	Pyroxenite	Grand Pacific Glacier, Glacier Bay, Alaska.
D-24-8			
18033	123	Fine Tuff	Tranquille Beds, Kamloops, B.C.
E-32-6			
18034	166	Contact Marble	Victoria, British Columbia, Canada
E-32-7			
18035	166	" "	" " "
B-7-20			
18036	25	Quartz diorite with segregations	Muir Glacier, Glacier Bay, Alaska
D-29-20			
18037	129	Shale	Stony Mt., Mass.
B-10-5			
18038	29	Plagioplite	Skagway, Alaska
D-32-22			
18039	130	Argillite	Granby Bay, B.C.
F-8-17			
18040	177	Schist	Nunatak Glacier, Alaska
D-15-6			
18041	118	Graywacke	Seal Bay, Alaska
E-32-8			
18042	166	Contact altered limestone	Phoenix, B.C.
F-9-14			
18043	178	Contact Rock	Kitchener, B.C.
A-34-11			
18044	15	Pulaskite Porphyry	Rossland, B.C.
D-30-1			
18045	129	Shale	Benton formation, Cretaceous, Coleman, Alta.

E-36-3			
18046	171	Contact altered Grano-diorite	Phoenix, B.C.
D-25-17			
18047	43	Anderite	D.D. core, Rossland, B.C.
F-10-18			
18048	179	Injection gneiss	Victoria, B.C.
A-6-7			
18049	1	Granite	Meyers Mill, Sauk Co., Wis.
C-35-19			
18050	85	Disentegrated Granite	Washington, D.C.
C-39-16			
18051	98	Weathered rocks, mainly igneous anamorphic	Eau Claire R., Fall Creek, Wis. (S. Weidman)
18052	Carl 21	Manganiferous brown ore	Sweetwater Co., Tenn.
18053	Sael. Stuntners Cave	Limestone conglomerate from drift	Sec. 35, Middleton, Wis.
D-34-23			
18054	56	Fourchite	Aurora, N.Y.
A-31-15			
18055	12	Alkali-syenite	Moccasin Cr., Sonora Quad., Calif.
D-19-17			
18056	120	Sandstone	Red Rock, Lafette Co., Wis.
A-37-5			
18057	18	Bostonite	Willisboro, Essex Co., N.Y.
A-37-6			
18058	18	"	Essex, " " " "
A-8-17			
18059	2	Alkali-granite	Moccasin Creek, Sonora Sheet, Calif.
D-30-2			
18060	129	Shale (carboniferous)	Union Furnace, O.
ES 18060		Franklinite $(Fe,Zn,Mn)O.(Fe,Mn)_2O_3$ + Zincite + Willemite	Franklin, New Jersey
C-11-17			
18061	69	Basalt	Knights Ferry, Stanislaus R. Tuolumne, Calif.
D-20-1			
18062	120	Sandstone (St.Peter, Ordovician)	Mt. Vernon, Wis.
18062B		Albitic Gneiss Massachusetts	— Specimen w 18062 B donated to John Tinker, Fond Du Lac, 1970
18063	104	Glacial Gravel	5 m s of Deer Lake, St.Croix Co., Wis.
C-38-3			
18064	94	Residual "sand" from Galena limestone	S.W. Wisconsin
C-38-2			
18065	94	Residual clay from cherty limestone	~~Sec.35, Middleton~~ Riley, Wis.
E-4-2			
18066	144	Dolomite (Niagara, Silurian)	Waukesha, Wis.
D-20-2			
18067	120	Sandstone (Cambrian)	Ableman, Wis.
E-25-15			
18068	159	Dolomite (Marble) (Kona form. Huronian)	
18069	Se	Iron concretion from St.Peter sandstone	Mt. Vernon, Wis.
18070	Se	Iron concretion in St.Peter sandstone	" " "
18071	Se?	Weathered cherty limestone	Sec.35, Middleton, Wis.
18072	E/Se	Veins with wall rock	Badger Exploration, Cobalt, Ont. (W.J.Meade)
18073	Carl 6	Marcarite stalactites on calcite &sphalerite	Crawhall M., New Diggings, Wis. W.L. Uglow, 1913
D-20-3			
18074		Bituminous sandstone	Bee Springs, Ky.

18075	En Case 17	Bitumen	Bee Springs, Ky.
18076	143	Oolitic sand (calcareous)	Great Salt L., Ogden, Utah
18077	62	Bowlder (1 m.W. Adolph, Minn. thin sections marked MB	Sp. Coll. Box 133
18078	62	same, 2 thin sections, MC, MD	
18079	62	" " " " ME, MF	4 m. S.W. Proctor, Minn.
18080	62	" " " " MG, MH	" " " " " "
18081	6F4	Copper stained sandstone (Malachite)	Colorado Springs, Col. Source: F. T. THWAITES 288
18082	E2 Case 14	~~Calamine~~	~~Yankee Consolidated Mine, Tintic, U.~~ Recat.
18083	Case 16	Copper-silver ore	Sonora State, Mexico (= Cananea District)
18084	Case 24	Hematite	2 m. N.E. Waukon, Iowa (Goldtra-Bana & Moffat)
F-3-6			
18085	173	Mica Schist	Foot wall, Burra-Burra M. Ducktown, Tenn.
F-6-3			
18086	175 (B B133)	Talc schist	Hanging wall, Ducktown, Tenn.
18087	ST	Hornblende-sencite-chlorite schist in pyrite	Claremont, Franklin Co., Mass.

COLLECTION RECEIVED IN EXCHANGE FROM F.B. EMERSON,

LOUISIANA STATE UNIVERSITY, MARCH 1914.

D-27-9			
18088 128	Loess	8 rods from Mississippi River, Baton Rouge, La.	
E-25-16			
18089 144	Winnfield "Marble"	Cretaceous, Winnfield, La.	
18090 141	Lignite	Jonesville, Texas.	
D-30-3			
18091 129	Shale	Parsons for., Pennsylvanian, Coffeyville, Kan.	
D-6-13			
18092 105	Conglomerate Ls.	Piqua ls., Pennsylvanian, Independence Folio, Kansas.	
E-4-3			
18093 144	Oolite limestone	Midway near Joplin, Mo.	
D-2-22			
18094 102	Breccia of residual cherts.	Joplin, Mo.	
18095 Se	Concretions in shales	Cherryvale, Kan.	
18096 Se?	Weathered limestone	"	Independence, Kan.
D-37-18			
18097 139	Fresh chert	Joplin, Mo.	
C-39-4			
18098 94	Weathered chert	" "	
18099 Se	Calcareous concretions in loess,	Baton Rouge, La.	
E-4-4			
18100 144	Nodular limestone	Parsons form., Coffeyville, Kan.	

NOTES ON THIN SECTIONS FROM PARK CITY, UTAH.

Received from H. V. Winchell, Sept.24, 1913.

18101 - 18168

18101.[121] Quartzite, rather coarse grained. The calcite is so abundant that I made measurements to determine the amount. The quartz makes 56% of the rock by weight. Rare zircon.

18102.[121] Quartzite of fine to medium grain. The quartz grains have calcite cement, The calcite amounts to about 25-30%. Disseminated pyrite. Rare zircon.

18103.[121] (79) Picrite, containing abundant phenocrysts of olivine and smaller phenocrysts of augite in a groundmass of rock glass and very fine grains of magnetite. Some of the olivine is partly altered to serpentine. No feldspar present.

18104.[121] Quartzite, rather coarse grained quartz about 85%. No cement. Calcite about 15%. Few zircons.

18105.[121] Quartzite of medium grain. Calcite fills interstices and seems to occur as original grains. Calcite amounts to 15-20% of rock. Rare zircon, much rounded.

18106.[144] Limestone. Calcite with about 10% quartz in scattered grains. Minute cracks filled by later calcite.

18107.[144] Limestone, stained by limonite. No quartz. No zircon. Rare nearly amorphous material suggesting opal.

18108.[121] Quartzite containing fine granular quartz in a calcite cement. Calcite makes up 41% of rock. Disseminated pyrite and rare zircon.

18109.[121] Quartzite, with some distinct quartz enlargements. Quartz about 85%, Calcite 15%. Iron oxides. Zircon.

18110.[121] Quartzite of medium grain, with a few recognizable quartz enlargements. No calcite. Rare zircon.

18111.[144] Fine grained siliceous limestone with 30% quartz. About half the quartz is in grains of radically larger size. Much of the calcite is clearly secondary, replacing quartz. Rare zircon.

18111a.[144] Limestone with abundant fine grained quartz. Quartz amounts to 24% of rock. One zircon grain.

18112.[121] Quartzite somewhat porous. Not more than 10% calcite. Rare zircon.

18113.[144] Limestone, very pure. Very little quartz, and that mostly secondary. No zircon.

18114.[144] Limestone with microscopic spots suggesting fossils. Quartz about 5%. No zircon.

18115.[120] Sandstone, rather coarse, about 80% quartz with calcite cement. Rare zircon.

18116.[120] Sandstone of diverse grain; a conglomerate on a microscopic scale. The cement is calcite which makes up about 25-35% of the rock. Rare zircon.

18117.[M] Chiefly chalcedony with some very fine granular quartz, and irregular spots and veinlets of fine to coarse calcite, and a few spots of coarse quartz. Produced by replacement.

18118.[121] See description of 3301. after 18167

18119.[144] Limestone with 20-25% fine grained quartz. I find no zircon.

18120.[120] Sandstone of fine grain with nearly equal parts of quartz and calcite. Quartz about 51%.

18121.[144] Limestone with limonite stain. Very little granular quartz, perhaps 5%. A little disseminated pyrite.

18122.[145] Marble of rather even, fine grain. Granular quartz about 5%. No zircon.

18123.[120] Sandstone with about 10-15% of calcite as cement and in anhedra. Rare zircon.

18124.[121] Quartzite, with a microscopic spot of siliceous limestone containing about 60% primary and secondary calcite. The original quartz grains make up about 20% of the main rock, which has about 65% secondary chalcedonic quartz and 10% secondary calcite, with some zircon.

18125.[144] Limestone of fine grain with 40% granular quartz. Very rare zircon.

18126.[121] Quartzite. Rather coarse to fine quartz grains with calcite cement. Quartz about 80%. Rare zircon.

18126a.[144] Limestone of fine grain with about 5-10% granular quartz; little disseminated pyrite; no zircon.

18127.[120] Sandstone of medium grain with 51% of quartz grains and 49% of calcite including about 25% clearly primary calcite. Little limonite and opal. No visible zircon.

18128.[144] Limestone of fine grain with about 5-10% of quartz, mostly in secondary veinlets. No zircon.

18129.[121] Quartzite with about 25% calcite. Rare zircon, well rounded.

18130.[144] Siliceous limestone, the calcite about 70% and fine grained primary quartz 25%. A little mica and pyrite. Fragments of fossils?

18131.[8] Alkali rhyolite, containing considerably altered phenocrysts of orthoclase, smaller crystals of phlogopite or bleached biotite, small amount of quartz filling interstices, very little colorless amphibole, and a notable amount of secondary pyrite. It might be called an alkali trachyte, since the quartz is so small in amount. I find no rhyolites described by Boutwell from Park City, but I find orthoclase and no plagioclase in the thin section.

18132.[121] Quartzite with about 45% calcite, much of it being secondary, replacing quartz. Section badly broken. I find no zircon.

18133.[144] Siliceous limestone with 42% of quartz in large rounded grains with about 15% of rounded calcite grains in calcite cement. Rare zircons. Excluding the cement as secondary, this sample is a sandstone.

18134.[144] Limestone of fine grain with about 25-30% fine granular quartz. Much of the calcite is in small grains. Disseminated pyrite.

18135.[121] Quartzite of medium grain with about 35% calcite, mostly as cement. Few small zircon grains.

18136. [144] Limestone with size of grain varying much in narrow bands or layers. Quartz makes up about 25-35% of the rock. Rare zircon.

18136a. [144] Limestone with quartz grains of variable size in calcite cement. Quartz 43%. Small zircons.

18137. [144] Limestone, almost wholly free from quartz, and perhaps fossiliferous.

18138. [144] Limestone with about 40-60% of calcite and 10% of primary granular quartz. Secondary chalcedony is abundant, from 25-75%. No zircon.

18139. [120] Sandstone; quartz grains in calcite cement. Quartz about ¾. zircons.

18140. [121] Quartzite of medium gmain with about 15-25% of calcite, chiefly as cement. Rare zircons.

18141. [120] Sandstone rather coarse with calcite cement. Rare zircon. Quartz about 80%.

18142. [121] Quartzite of coarse grain with small irregular spots (having no definite borders) of siliceous limestone. Part of calcite probably secondary. Quartzite contains 41% of calcite. Rare zircon.

18143. [121] Quartzite with siliceous cement. Calcite in anhedra makes up 5-15% of rock. Quartz enlargements remarkably distinct, practically all the sand grains showing it.

18144.[121] Quartzite of medium grain with calcite cement. Calcite about 10-20%. Rare small zircons.

18145.[121] Quartzite with siliceous cement, some quartz enlargements being distinct. Anhedra of calcite make up about 15-20% of rock. Few zircon grains.

18146.[121] Quartzite of medium grain with about 10-15% of calcite in anhedra. A few rounded zircons.

18147.[144] Limestone of fine grain with 38% fine granular quartz. Disseminated pyrite. Rare zircon.

18148.[121] Quartzite of medium grain. Very rare biotite. Rare zircon. No calcite!

18149.[144] Limestone containing patches quite quartzose. Quartz primary. Limestone apparently fragmental.

18150.[121] Quartzite of variable grain, with about 25% calcite and about 5% argillaceous matter. Zircon rather common.

18151.[144] Limestone, with microscopic fragments of quartzite (with zircon). The limestone contains 5-10% of quartz. The quartzite contains about 5% of calcite.

18151b.[121] Quartzite of fine grain with 34% of calcite partly secondary. Rounded zircons.

18152.[144] Limestone of fine grain with a variable amount of quartz grains, averaging 32%, but varying from about 20-45%. Disseminated pyrite. Rare zircon.

18152a.[121] Quartzite of medium, somewhat variable grain, with about 10-15% of calcite, partly as cement. Rare zircon.

18153.[121] Quartzite with irregular areas of coarser grain which grade into marble. In main part of rock the calcite amounts fo 40%; in other parts it increases to 70-90%. Pyrite abundant in fine grained part of rock. Rare zircon.

18153a.[121] Quartzite. Part of the section almost pure quartz; another part contains 5-10% calcite. Much coarser grained than 18153.

18154.[43] Andesite with plagioclase and green hornblende phenocrysts with a little brown biotite and small magnetite in a matrix of the same minerals with very little quartz. Considerable alteration of hornblende to calcite and of plagioclase to muscovite.

18155.[121] Quartzite of medium grain with a siliceous cement, in small part of chalcedonic. No calcite.

18156.[120] Sandstone. About 2/3 quartz with sericite cement, also rather abundant pyrite and rare zircon.

18157.[144] Limestone with minute layers and irregular spots of quartzite. The limestone contains 0-20% quartz grains; the quartzite contains 10-40% calcite. Disseminated pyrite. Rare zircon.

18158.[121] Quartzite with large areas of limestone (in the same section). The quartzite contains 40% of calcite, and the

limestone contains 34% of quartz. The two grade into each other and have no definite boundaries nor definite relative positions. Much of the calcite is probably secondary. Disseminated pyrite and rare zircon.

18159.[144] Limestone with about 10% quartz partly secondary.

18160.[120] Sandstone of fine grain with about 40% of calcite. Rare zircons.

18161.[121] Quartzite of varying grain; only about 10% calcite. More zircon than usual.

18162.[121] Quartzite of medium grain with about 10-15% of calcite largely as cement. Rare zircons.

18163.[144] Limestone of fine grain with some veinlets of secondary calcite. Very little quartz.

18164.[144] Limestone of fine grain with about 10-20% of quartz, mostly secondary. No zircon.

18165.[121] Quartzite of medium grain with very rare calcite. Rare zircon.

18166.[M] Replacement material largely chloritoid, but containing also chalcedony, pyrite, and a small amount of argillaceous material. The chloritoid is very unusual in its optical characters, indicating a variety poor in iron.

18167.[144] (167) Baldwin shaft, 75' from surface. Limestone with a microscopic layer nearly siliceous enough for sandstone; main part about 70-80% calcite.

18168.[144] Balboa shaft (168). Limestone with an average of 49% quartz, but variations from about 25 to 75% quartz. Small well-rounded zircons.

18118.[121] Quartzite with minute layers of argillaceous quartzite, containing muscovite, kaolinite, limonite, etc. Zircon. No calcite.

COLLECTION FROM BAUXITE ARK., PRESENTED BY J. SEGALL.

E-4-5
18169 144 Iron carbonate — Tertiary formation 0-15'

E-4-6
18170 144 " " — " " Sec. 16, Hole 119, 44-45'

E-4-7
18171 144 " " — " " 0 - 26'

D-30-4
18172 129 Gray shale — " " Hole 119, 95'-134'

18173 104 Gravel — " " 0 - 15'

D-30-5
18174 129 Black Sandy Shale — " " Hole 119, 45 - 54

D-30-6
18175 129 Black carbonaceous shale — " " Hole 119, 23 - 36

18176 105 Ferrugenous conglomeratic mass — " " 0 - 12

18177 Min White Sphalerite — Pittsburg M., Galena Ill,, W.L. W.L.Uglow.

THIN SECTIONS FROM NATIONAL, NEVADA, PRESENTED BY A.N.WINCHELL,1914.

18178-18308

Thin sections of specimens taken for National Mine Law Suit.

U.W.No.	Old No.		
18178 M	13 88	Altered andesite	
18179	14 88	" "	
18180	15 87	" rhyolite	
18181	16 88	" "	
18182	17 88	" "	
18183	18 87	" "	
18184	19 88	" "	
18185	20 43	Andesite	
D-6-14 18186	21 88	Altered rhyolite	
18187	21a 88	" "	or trachyte
18188	22 88	" rocks	
18189	23 88	" dacite	
18190	24 88	" rhyolite	
18191	1 121	Quartzite	Idaho
18192	2 121	"	"

18197 D-37-19

Thin Sections of Specimens taken for National Mine Law Suit, National, Nev.

A.N. Winchell, 1912.

U.W.No.	On Sec.		
18212	S.12 87	Rhyolite - altered	Indian Valley Claim
18213			
18214			
18215	S.15 9	Obsidian	Fairview Claim #1.
18215a	S.15a 88	Altered Rhyolite	" " "
18216	S.16 43	Andesite (angite)	West Virginia Fraction
18217			
18218	S.18 43	Augite Andesite	Charleston Hill Cliffs.
18219	S.19 7	~~Biotite granite~~ rhyolite	" " shaft.
18220			
18221			
18222	S.22 99	Altered rhyolite in andesite	National Mine
18223	S.23 88	" andesite (2sec.)	" "
18224	S.24 88	" rhyolite	" "
18225	S.25 87	" andesite	" "
18226	S.26 88	" rhyolite	" "
18227	S.27 88	" andesite	" "
18228	S.28 123	Rhyolite Tuff	Mammoth Mine
18229	S.29 102	" breccia-tuff	" "
18230	S.30 96	" tuff, altered.	" "
18231	S.31 88	Altered andesite	" "
18232	S.32 43	Andesite	" "
18233	S.33 43	" (augite)	" "
18234	S.34 43	" "	" "
18235	S.35 43	" (2 sec.)	" "
18236	S.36 123	" tuff	" "
18237	S.37 88	Altered basalt	National "
18238	S.38 88	" "	" "
18239	S.39 96	" tuff	" "
18240			

U.W.No.	On Sec.		
18241	S.41 87	Altered basalt	National Mine
18242	S.42 88	" andesite	" Pit
18243)			
18244)			
18245)			
18246)			
18247)			
18248)	These have no sections.		
18249)			
18250)	Banded Iron Formation		
18251)			
18252)			
18253)			
18254)			
18255)			
18256	S.56 43	Andesite	National Mine
18257			
18258			
18259			
18260			
18261	S.61 31	Dacite	Smith shaft
18262	S.62 85	Altered angite andesite	Sage Hen Claim.
18263	S.63 M	Black Quartz	National Mine.
18264	S.64 87	Altered rock	" "
18265	S.65 88	" " (2 sec.)	" "
18266	S.66 88	" " "	" "
18267			
18268			
18269	S.69 9	Obsidian (green)	Sliver slipper Claim
18270			
18271	S.71 M	Vein quartz	National Mine
18272	S.72 M	" "	" "
18273	S.73 M	" "	" "

18274	S.74	M	Vein Quartz	National Mine
18275	S.75	M	" "	" "
18276	S.76	M	" "	" "
18277	S.77	M	" "	" "
18278	S.78	M	" "	" "
18279	S.79	M	" "	" "
18280	S.80	M	" "	" "
18281	S.81	M	" "	" "
18282	S.82	M	" "	" "
18282	S.83	M	Ve" "	" "
18284	S.84	M	" "	" "
18285	S.85	M	" "	" "
18286	S.86	M	" "	" "
18287	S.87	88	Altered basalt	Hatch Tunnel
18288	S.88	M	Vein Quartz	Stall shaft
18289	S.89	M	Vein material	" "
18290	S.90	88	Altered andesite	" "
18291	S.91	M	Quartz in ore	National Mine
18292	S.92			
18293	S.93	M	Vein material	" "
18294	S.94	M	High grade ore - electrum	" "
18295	S.95	M	Quartz	" "
18296	S.96	88	Altered angite andesite	Mammoth "
18297	S.97	88	" basalt	" "
18298	S.98	M	Black quartz	National "
18299	S.99	M	High grade electrum ore	" "
18300	S.100	M	Quartz & pyrite (2 sec.)	" "
18301	S.101	M	Black quartz	Mammoth "
18302	S.102	M	White quartz	" "
18303	S.103			
18304	S.104			
18305	S.105	88	Altered rhyolite	National "
18306	S.106	88	" "	" "

18307	S.107 88	Altered rhyolite		National Mine
18308	S.108 88	"	"	" "

Specimens presented by E. Steidtmann, 1914,

from North Part of Georgia.

	Old. No.	
E-34-13 18309 U168	214	Roan gneiss.
F-3-7 18310 U173	273	Carolina gneiss.
C-39-17 18311 U98	227,293,	Phases of weathered Roan gneiss.
C-39-18 18312 M18U98 Hall		Weathered Carolina schist or gneiss ?
C-39-19, ~~U68~~98 18313		" " " or gneiss ?
E-34-14, 168 18314		Roan gneiss, igneous (fresh) → Specimen donated to Norris Johnes, Oshkosh, 1970
C-39-20 18315 " 98 Hall		" " " (weathered)
E-40-9 18316 " 172		Carolina gneiss, fresh.
C-39-21 18317 " 98		" " weathered.
E-40-10 18318 U172	212	" " fresh.

18319 Se	Calcite vein in diabase	Cobalt Dist., Ont., Canada
E-40-11 5 in Mt Col 18320 M18U154 Hall	Palmer gneiss (sedimentary)	Maitland Mine footwall, Mich.
18321 Wm Case 23	Copper in basalt with epidote and calcite.	Dedham, Wis.
E-4-8 18322 U144	"Glass rock" limestone.	Southwestern Wisconsin.
D-16-9 18323 119	White sand (Tertiary)	Hole 119, Sec. 16,- 6-23, Bauxite, Ark.
D-16-10 18324 119	Red sand.	0'-25', Bauxite, Ark.
D-16-11 18325 119	White micaceous sand.	0'-24', " "
18326 M1	Contact altered rocks. (contact metamorphosed conglomerate slate)	Saline Co., Ark. → 1 Specimen given to JOHN TINKER, Fond Du Lac, 1970
18327 M1	Arkose ? Recomposed granite ?	Cobalt Dist., Ont.

Thin Sections from Cripple Creek, Colo.

Presented by A. N. Winchell,
1914.

18328 U20	1W	Trachyte	Vindicator No. 6, 2nd level.
18329 44	2W	Latite	" " 11, 3rd "
18330 44	3W	"	" " " 5th "
18331 17	4W	Syenite-aplite.	Christmas shaft, dike 30,7 level
18332 87	5W	Sericitized syenite-aplite.	" " " 436, "
18333 87	6W	" " "	" " " 514, "
18334 20	7W	Dark and light trachyte.	" " " 514, "

Collection of rocks from Marquette Iron Range, Mich.,

W. J. Mead, 1914. 18335-18399

There are all in Metamorphic Rocks.

18335		Garnet and ottrelite in chlorite schist.	Michigamme Mine.
18336	Hall	" " amphibole " " "	" "
18337	Hall	Banded chlorite schist and iron formation, with amphibole, garnet, etc.	" "
18338	S Hall Sheared	Igneous rock, #1 of series.	" "
18339	Hall	Altered rock, #2 " "	" "
18340	2 S Hall Sheared	Hornblende schist, #3 of series.	" "
18341		No specimen.	
18342	M1 Hall	Series of 3 samples taken in greenstone intrusive near contact with Negaunee iron formation on Mt. Humbolt. Greenstones have suffered shearing near contact.	
	B1A Sheared S	A, normal sheared greenstone about 3 feet from contact.	
	2 S	B, porphyritic amphibole phase about 1½ feet nearer contact.	
	2 S	C, porphyritic garnet phase which extends from contact about 1 foot.	
18343	2 S M1	Ottrelite (?) rock.	Old pit #10, Humbolt, Mich (Michigamme Mine)
18344	Hall	Same as last.	
18345	M1	Mentite or magnetite in chlorite schist.	Michigamme Mine.
18346	Hall	Chlorite schist.	Spurr Mine.
18347	Hall	Garnetiferous igneous rock.	Michigamme Mine.
18348	S Hall	" greenstone.	" "
18349	Hall	Banded amphibolitic iron formation.	" "
18350	M1	Same.	" "
18351	Hall	Garnetiferous-martite-chlorite schist.	" "
18352	M1	Ottrelite-chlorite schist.	" "
18353	Hall	Massive chlorite schist.	Spurr mine.
18354	Hall	Massive red granite.	Volunteer Mine.

E-4-9
~~[illegible]~~

18355 V144	St. Lawrence limestone.	Sauk City, Wis.
D-20-4 18356 120	Jordan sandstone.	" " "
QSA 18357 2S Met Col	Sericite schist from quartzite.	
18358 S " "	Original quartzite (somewhat weathered).	
18359 S	Garnet	Michigammie Mine.
18360 S-Met Col	Sheared Palmer gneiss.	Falls S. of Pioneer Mine, 90' cross section.
18361	Massive granite.	Large exposure ¼ mile N. of Old Pioneer Mine.
18362	Martite chlorite schist. Sheared intrusive greenstone in Negaunee iron formation near Jasper Hill near contact.	

Hall

18363 M1	Sericite schist (~~4~~ spec.) Large open pit W. end of Mt. Humboldt.	3 specimens donated to JOHN TINKER, Fond Du Lac, 1970
18363a M1	Conglom.? phase of last	
18364-74 M1 72, 68, 67, 71, 73, 74	Series from same dike as Nos. 17495-17506. (66 in Hall)	(showing katamorphism of a diabase dike)
18375 Hall	Sericite schist.	Miscauna Island, E. of Pembine, Wis.
18376 Hall	Rock.	" "
18377 Case 14	Bauxite. Analysis, by Alum. Ore Co., E. St. Louis, Ill. Al_2O_3 50.82, SiO_2 16.25, Fe_2O_3 18.63 TiO_2 2.00 Loss on ignition, 12.30	Dalmatia
18378-18383 Cu Case 83 in Case 26	Series of samples of copper in Nonesuch shale. White Pine Mine, Porcupine Mts., Mich.	
18378a E1		
18384, M1, 18384a SS	~~Secondary in met. col.~~ Greenstone & Grs. St. (~~No spec.~~)	Marquette, Dist., Iron Range, Mich.

18384 d see next page!

W.J. MEAD

Series of samples of contact altered iron carbonate,

Magpie Mine, Michigamme District, Ont., Canada in Metamorphism Lab

Station crosscut.

U.W.No.	
18384 See	note duplication
18385 See	1-8
18386 See M1	1-12
18387 See	1-17 Tremolite needles.
18388 See	1-19 Crosscut
18389 See M1	Same.
18390	1-20 Crosscut
18391 See	Same
18392 See	Same
18393	Basal conglomerate of Middle Huronian. S ¼ p. 29, 44-29 W. Mich.
18394	Pebble of quartzite, same.
E-7-17 18395 121	Quartzite. " (2 specimens)
C-11-18 18396 69	Greenstone (two specimens). N. of S. ¼ p.12, 43-29 W. Mich.
18397 029	Chert from Ranchville (?) dolomite. N.W. cor. 32, 43-28 W. Mich.
18398	Tuff, upper Huronian (2 spec.) edge of R. R., Cen. 15, 43-29 "
18399 E1 from case 24	Limonite replacing birch stem, SW 25, Vankoughnet Twp., Algoma, Ont.

Hall

Specimens from Brazil, presented by H. K. Shearer, 1914.

Minerals & Rocks showing alteration of Hornblendite and Limestone

18401 Case 11 B323		Gold ore.	Antonio Besto Mine, (Minas Geraes) Ouro Preto.
18402 Case 8 B319		Albite, siderite, pyrite, chlorite and quartz.	Parigem Mine, Minas Geraes
18403 6C3		Quartz and rutile.	" "
18404 7A3		Mica	Phenacite Mine, Talha 458-463 Alberta mine, Villa Rio Piracicaba
C-25-13 18405 073	484 see.	Hornblendite.	Road between Santa Barbara & Itabira.
C-35-20 18406 85	485	Alteration product of last.	"
C-35-21 18407 86	485	Soil derived from 18405.	" Hall
E-25-17 18408 159	See.	Limestone. (Marble)	Antonia Pera.
C-38-7 18409 98		Weathered limestone.	" "

Specimens sent by C. Bennett, Woods, La. April, 1914.

See letter under B.

18410 129 River mud. Depth, 1 foot.
D-27-10
18411 129 Blue clay.
D-38-2
18412 140 Marsh muck.
D-27-11
18413 129 Clay, depth, 8 feet.

WISCONSIN SPECIMENS 18414-18476

W.O. HOTCHKISS & F.T. THWAITES (1914)

A-6-8
18414 1 3 specimens of granite from supposed ledge North of Kilbourn. Show glacial striae.

18415 Quartzite with supposed glacial striae. Necedah, Wis.
E-7-18
18416 121 " . " "
D-3-18
18417 103 " breccia. " "

18418-18476 Specimens collected by W. O. Hotchkiss and F.T.Thwaites, summer of 1914 when with E.O.Ulrich. Collection mainly in drawers in Survey collection; list in binder in survey collection. See also notebooks. Some are in U.W. collections as indicated: Sed.= sedimentary structure collection in museum. Red numbers= Petrographic collection.

18418
19
22
24
26
30
32
34
37
38
68
72
73
74
75
Se

71 Case 14

18419 D-6-15
18463 D-6-16
18434 D-20-5

Miscellaneous specimens

D-27-12

18477 U125 Loess, Nan-Kow, China

18478 T Case 22 Vitrophyre, Chafee Co., Col.

18479 T Case 22 Quartz-hornblende diorite, Beverly, Mass.

18480 T Case 22 Pyroxenite, Renfew Co., Ont.

18481 T Case 22 Peridotite, Cumberland, R.I.

18282 T Case 22 Amphibolite, Bedford, N.Y.

18483 T Case 22 Syenite, Salem Neck, Mass.

Drill Cores from Porphyry Copper Deposits, Ajo district, Arizona.

Cores, showing primary, enriched, and oxidized zones of a porphyry copper deposit in Nonesuch shale.

Number.

18484 E1 Primary sulphide zone.

18485 E1 Enriched sulphides.

18486 E1 Oxide zone.

} economic lab. coll.

Specimens from Long Lake Zinc Mine, N. E. of Kingston, Frontenac Co., Ontario.

18487-18491 Hall coll

W. J. Mead, March, 1915. 6 miles from Tichbome Jc. Taken from a mass of Grenville (?) limestone about 2 miles long and 1/8 to 1/2 mile wide in granite and gneiss.

E-32-9

18487 M1 Crystalline limestone with secondary silicates (5 spec.) (4 sec. in U.S.G.S.)

18488 M1 Limestone with small dike of intrusive material which grades into a large aplite dike.

18489 Very coarsely crystallized sphalerite (~~5~~ spec.)

18490 (sec.) Coarsely crystalline limestone (not vein matter).

18491 (sec.) M1 " " "

} Hall

Cont. at No. 18610. -18618

18500-18598 Collection of sedimentary rocks from vicinity of Madison made by F.T.Thwaites, fall of 1914. Specimens in Survey collection. List in binder in Survey office. See notebook III.

18568 } se
18587 }

18596 D-14-17
18595 D-30-7
18597 D-30-8

Thin sections of, Sphalerite and Wurtzite.

18601 1 S.W. Wisconsin

18602 2 Joplin, Mo.

18603 3 Utah

18604 5 Montana. Wurtzite?

18605 7 S.W.Wisconsin.

18606 8 Missouri.

18607 9 S.W.Wisconsin.

18608 10 " "

18609 ~~Bohemia~~ Czechoslavakia. Wurtzite.

Drill Cores from Long Lake Zinc Prospect, Ontario, Canada

Cont. from No. 18491.

18610	Crystalline marble with disseminated Galena and pyrite.
18611	Coarse marble.
18612	Marble with silicates (5 pieces).
18613	Marble with pyrrhotite and pyrite.
18614	Marble with sphalerite and pyrite and silicates (2 pieces).
18615	Sphalerite, galena and pyrite (2 pieces).
18616	Intrusive granite (3 pieces).
18617	Intrusive aplite.
18618	Fine-grained intrusive rock (2 pieces).

Hall

Collection from Mayville District, Wisconsin. April, 1915. (F.T. THWAITES) 18619 - 18623

18619	Case 21	Red shale from dolomite.	Old pit.
18620	Case 21	Green shale from dolomite.	" "
18621	E1	Coarse ore, top of bed.	" " ,drift at S.end.
18622	Case 21	Sulphide (marcasite)	New mine.
18623	Case 21	Altered (?) sulphide (below)	" "

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Recat. 10 9175.

18624	—	~~Chalcopyrite in dolomite breccia.~~	~~Mineral Point S. W. Wisconsin. ?~~
18625	Case	Smithsonite, gypsum and calcite.	" " "

Minerals exchanged by Wm. Carpenter.
Leonard Mine, Butte, Mont., Nov. 1914.

21393	Quartz, enargite, tetrahedrite.
21394	" " pyrite. wrong place
21395	Covellite on chacocite and bornite.
21396	Chalcocite with pyrite, bornite, enargite and covelite.
21397	Covellite with chalcocite, bornite and pyrite.
21398	Chalcocite with pyrite.
21399	Bornite altering from chalcocite, with pyrite.

W. J. Mead Collection, 1915.

18626-18630 Mich., Marquette Iron Range

18626 Sa Hall case 14	Iron formation.	Top of Mt. Humbolt, Mich.
18627 See M1	Chloritic quartzite (Fresh)	Mt. Humbolt, old pit 10.
18628 See Hall	Greenstone.	" " " " 10.
18629 See M1	Chloritic rock between quartzite beds.	" " " " 10.
18630 St Hall	Basic intrusive showing inclusions.	Banner Mine, 175 p. S. of E ¼ cor. Sec. 12, 45-43, Mich.
18631	Pseudo-slickensides on slaty iron formation.	Top of Ironwood formation, W. of Mt. Whittlesey, Sec. 8, 44-2 W., Wis. W.O. Hotchkiss

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D-29-5

18632 122	Volcanic ash showing surface concentrations of gold by evaporation.	Des Chutes Canon, Cook Co., Ore.
D-8-24 18633 108	Volcanic tuff.	Same location.

Thin Sections Presented by A. N. Winchell, 1915.

18634-18648

18634	1 Mineral	" Huhnerite	Scottish Chief Mine, Butte, Mont.
18635	2 M	"	Same.
18636	3 M	"	Birdie M., Butte, Mont.
18637	4 M		" " " "
18638	5 M	"	" " " "
18639	6 M	"	" " " "
18640	7 M	Scheelite	Kimberly-Montana Mine, Jardine, Mont.
18641	10 M	Arsenopyrite	" " " "
18642	11 M	" in rock.	" " " "
18643	12 173	Country rock - mica schist.	" " " "
18644	13 173	" " " "	" " " "
18645	14 M	Smoky quartz, vein	" " " "
18646	15 M	" " " movable bubble and cube NaCl	" " " "
18647	16 M	Scheelite.	" " " "
18648	17 M	"	" " " "

Set of sections of Diabase from Lighthouse Point, Marquette, Mich., presented by A. C. Lane. Showing increase of grain from margin of dike. See Spec. 17406.

18649-18657

18649	18	At 1 cm. from border of dike.
18650	19	At 10 cm.
18651	20	At 40 cm.
18652	21	At 137 cm.
18653	22	At 170 cm.
18654	23	At 404 cm.
18655	24	At 516 cm.
18656	25	At 670 cm.
18657	26	At 740 cm.
18658	27 M	Tourmaline (?) Stephens, Elliott Co., Ky.

Thin Sections from Tonopah Extension Mining Co., Tonopah, Nev. 18659-18682
A. N. Winchell, 1915.

Spec.No.	Old No.	
18659	26	188 Hydrothermal altered andesite.
18660	27	31 Dacite.
18661	28	88 Altered andesite.
18662	29	88 Altered andesite.
18663	30	88 Altered andesite.
18664	31	88 Altered dacite.
18665	32	31 Dacite.
18666	33	88 Altered trachyte.
18667	34	88 Altered trachyte.
18668	35	88 Altered dacite.
18669	36	43 Andesite.
18670	36a	88 Altered andesite.
18671	37	123 Volcanic tuff from dacite.
18672	38	123 " " " "
18673	39	31 Dacite.
18674	40	43 Andesite (trachyte of Spurr)
18675	41	88 Altered andesite.
18676	42	43 Andesite ("later andesite" of Spurr)
18677	43	88 Altered andesite.
18678	44	124 Tuff. broken
18679	45	88 Altered andesite.
18680	46	88 " "
18681	47	88 " "
18682	48	88 " "

Thin Sections from Quatsino Mine, Vancouver Island.

A. N. Winchell, 1915.

18683	51	69~	Diabase.
18684	52	43	Andesite.
18685	56	139	Chert.
18686	57	25	Tonalite.
18687	59	102	Volcanic breccia.
18688	Q	54	Diorite.
18689	Q2	43	Andesite.
18690	57	166	Contact altered limestone.

Thin Sections of Minerals, presented by A. N. Winchell, 1915.

18691	M	Cordierite in gneiss	Perig, Saxony.
18692	M	Cyanite in schist	Zillerthal, Tyrol
18693	M	Olivine in basalt.	Hochthal, Saxony
18694	M	Analcite.	
18695	M	Scapolite in marble.	Sparta, N. Y.
18696	M	Talc	Hevitts, N.C.
18697	M	Andalusite and cordierite in slate (2 sec.)	Halifax, N. S.
18698	M	Opal (2 sec.)	Donafas Co., Ore.
18699	M	Andalusite slate.	Halifax, N. S.

Miscellaneous Specimens, 1915.

18700	S Sed. Col.	Sandstone cobbles showing concentric weathering.	Wauzeka, Wis. S.Weidman.
18701	D-10-3 113 & mat col. Sed. Col.	Ferromagnesian sand. (Basic sand)	Beach of Pork Harbor, Minn. W. J. Mead.
18702	F-29-7 Rock Col.	Red shale.	Lower Keweenawan, Black Sturgeon R., S.W. of Lake Nipigon. C.K.Leith.
18703	T Case 22	Xenoliths in 10 ft. dike.	Purcell (Belt) series, Ainsworth, B.C. W. L. Uglow.
18704	G208	Cemented gravel.	Near Ft. Atkinson, Wis. W. O. Hotchkiss.
18705	min.	Crystallized hematite.	Montreal Mine, Wis. W. O. Hotchkiss.
18706	S	Schist showing cleavage and bedding.	Rowe Mine, Ironton, Minn. W. J. Mead.
18707	Min. Case 26	Sheet silver.	Cobalt District. W. J. Mead.
18708	S	Banded slate.	24½ miles above Circle, Alaska. E.Blackwelder.

(and Au ores?) and associated breccias and dikes

Hart Collection of Copper Ores, Rocks, etc. 1915.

Cripple Creek. 18709-18816 Room 210

18709	E	Fe Case Typical breccia near crater	12th level, Crasson Mine.
18710	E	Rebrecciated breccia in sub-crater 3 ft. from last.	12th " " "
18711	E	Volcanic fragment near vug from. which $1,000,000 of ore was taken.	Same.
18712	E	Fragments from dikes which cut breccias (2 spec.)	Crasson Mine.
18713	E	High grade ore.	18th level, Golden Cycle.
18714	E	Oxidized ore (2 Spec.)	Same.
18715	E	Typical breccia	"
18716	E	Fragments from dikes	"
18717	E	Dike	17th level, Portland, M.
18718	E	Granite fragment included in phonolite and breccia.	Same.
18719	E	Typical breccia	"
18720	E	Gold ore	"
18721	E	Fluorite and quartz in granite near contact with breccia.	"
18722	E	Phonolite dike cutting breccia	8th level, Portland.
18723	E	Gold ore.	12th " "
18724	E	Phonolite flows.	S.W. part of district.
18725	E	Weathered granite contact with phonolite extrusive (2 spec.)	Same.

Bingham district, Utah 18726 — 18752

18726	E	Bingham quartzite, characteristic black shape.	Utah Copper Co., u. level
18727	E	Siliceous phase of monzonite	" " "
18728M	E	Weathered, leached monzonite	" " " u.level
18728		Siliceous Limestone Canada	
18729	E	Monzonite dike in quartzite	" " "
18730	E	Contact of 10 ft. monzonite dike with quartzite.	" " "

18731	El	Shear zone ("fault gauge")	Utah Copper Co., Bingham Dist., Utah
18732	El	Dark phase of monzonite, high grade ore.	" " "
18733	El	Typical monzonite but more broken than average.	Given to Dr. Emmons for class work 1/10/41
18734	El	Molybdenite in monzonite	" " "
18735	El	Oxidized ore in fissure	" " "
18736	El	Oxodized streak of ore	" " "
18737	El	Pyrite in marcasite	" " "
18738	El	Pyrite vein in marcasite	" " " OLD USGS collection, found in storage
18738		Red Jasper conglomerate	North channel of Georgian Bay, Lake Huron (3H of Logan) Thin sec. no. 10,887
18739	El	Banded limestone.	Highland Boy Mine, Bingham Dist., Utah
18740	El	Black "	" " "
18741	El	Lead ore.	" " "
18742	El	Hematite.	" " "
18743	El	Mineralized quartzite	" " " lower levels
18744	El	Quartzite	Keystone Gulch, Bingham Dist., Utah
18745	El	Porphyry dike	Highland Boy Mine " " "
18746	El	Breccia	Keystone Gulch, west side " " "
18747	El	Weathered andesite	" " " " "
18748	El	Andesite	R.R. cut N. of Keystone Gulch
18749			
18750			
18751			
18752	Case 27	Cerargyrite	Tombstone, Ariz.
18753-18764.	El	Set of specimens running from porphyry mass of Sacramento Hill, level 1, east well, Copper Queen Mine. Intervals about 40 ft. Begin with low grade copper (below 1%) 1 to 3, 4 on from 3% to 6%. All in secondary chalcocite zone.	Bisbee, Ariz.

18765-18775. Set showing alteration from porphyry intrusive into Escabrosa limestone. The porphyry is massive and not oxidized. The siliceous material, etc. near limestone is oxidized as is mineralized portion of limestone.
Lowell Mine, 13th level.

18776 Collection of 9 specimens of porphyry all from Nephene ? Mine. Show varying phases of oxidized and mineralized porphyry.

18777	Porphyry dike (2 specimens)	S. base, Sacramento Hill
18778	Siliceous porphyry from surface.	Summit, N. side of Sacramento Hill
18779	Siliceous breccia (?)	Sheeted zones near last (prospect hole).
18780	Same.	Same; near summit.
18781	Same (porphyry)	Sacramento Hill, 2nd level, Copper Queen.
18782	Gossan.	Dident fault, 1000' west of Sacramento Hill
18783	Specularite ?	Briggs Shaft, Calumet & Arizona, 12th level.
18784	Siderite, on calcite with limonite	Same.
18785	Copper ore, south west	Copper Queen Mine.
18786	Chalcocite	Shattuck Mine.
18787	Pinal schist	Mt. Martin, near west extremity of granite.
18788	Juniper Granite	Mt. Martin
18789	Porphyry cutting schists	" "
18790	Balsa Quartzite (3 specimens), conglomerate & basal phase.	" "
18791	Abrigo limestone (3 phases)	" "
18792	Quartzite capping Abrigo.	" "
18793	Martin limestone (2 spec.)	" "
18794	Escabrosa limestone (2 specimens)	" "

18795 E1	Replacement in limestone.	Dallas shaft, 13th level, Copper Queen.Mine.
18796 E1	Same.	Same.
18797 E1	Same	Same
18798 E1	"	"
18799 E1	High grade porphyry ore	1st level, Sacramento Hill, Copper Queen Mine.
18800 E1	Same	Same
18801 E1	"	"
18802 E1	"	"
18803 E1	Mineralized porphyry	12th level, Sacramento Shaft, Copper Queen Mine.
18804 E1	Same	Same
18805 E1	"	"
18806 E1	Siliceous breccia	Copper Queen
18807 E1	Same	" "
18808 E1	"	Briggs Shaft.
18809 E1	"	" "
18810 E1	"	" "
		~~Sacramento Hill, 1st level~~
18811 E1	---	Sacramento Hill, 1st level
18812 E1	---	Same
18813 E1	---	"
18814 E1	---	"
18815 E1	---	Briggs Shaft, 14th level
18816 E1	Porphyry dike.	

Thin Sections from Butte Collection, 1909.

Thin sections of weathered, mineralized and leached granite

No specimens. In Metamorphic Collection.

	Old No.	
18817	1027	Weathered granite.
18818	1029	Mineralized rock.
18819	1031	Leached granite
18820	1036	Mineralized granite
18821	1046	Same.
18822	1047	Same
18823	1062	Same

Specimens from Panama.

W. J. Mead, 1916

Weathered and fresh specimens from canal zone slides

Metamorphic Lab 210

18824	Basalt, fresh	Zion Hill
18825 M1	" , showing weathering (3 specimens)	" "
18826	" , weathered	" "
18827	" "	" "
18828	Weathered Cuchuracha	Big slide N. of Gold Hill
18829	Basalt, weathered	Gold Hill
18830	" "	Zion Hill
18831	" "	" "
18832	" "	" "
18833	Calcite concretions	E. Cuchuracha Slide
18834	Weathered tuff breccia	Culebra
18835	Typical Cuchuracha tuff.	
18836	Cuchuracha contact with basalt	S. side, Gold Hill
18837	Immediate contact of Cuchuracha formation and basalt	Cuchuracha Slide
18838	Contact of Cuchuracha and basalt dike.	

Specimens & thin section → L. PRAY

Cut to 3 specs. with 3 thin sections 1930

No.	Specimen	Locality
D-20-6 18850 120	Sandstone from fossil track slab	Keystone Mound, Adams County, Wisconsin
18851 W	Contact of Franconia and Dresbach	Trempeauleau Mountain
E-40-12 18852 172	Baltimore Gneiss	Baltimore, Md.
18853 E9 Case II	Gold Ores	Cresson Mine, Cripple Creek (Ray Hart)
18854 E9 Case II	Gold Ores, quartz, pyrite	Cresson Mine, Cripple Creek (Ray Hart)
18855 E9 Case II	Gold ore (pyrite)	Cresson Mine, Cripple Creek (12th level)
18856 E Case 16	Curved banding of chalcopyrite and magnetite (with quartz)	Quatsino Mine, Quatsino Sound, Vancouver, B. C.
18857 E Case 16	Hematite in vein below sulphides Fumarolic mineralization ?	Loretto, California
E-7-19 18858 121 (2 Sec)	Quartzite	Utah Copper Company

Rocks from Tonopah - Hydrothermal Altered Igneous Rocks A.N. WINCHELL

C-36-12 18859 88	48 (2 specimens, 1 section)	1350 ft. level space of 502 x ct
C-36-13 18860 88	49 (3 specimens, 5 sections)	1350 ft. level - wall of brecia vein, west end rhyolite?
C-36-15 18861 88	50 (section)	Footwall, 950 Ft. level, E. Side Main N x ct, dike or gorge
C-36-14 18862 88	(3 specimens) glassy trachyte, inclusion in west end	

Thin Sections of Minerals

18863 ~~88~~ M	Pyrrhotite	Sudbury, Ontario
18864 ~~88~~ M	Pyrrhotite	Gap Mine, Pennsylvania
18865 M	Sulphides	~~Denktown~~ Ducktown, Tenn.
18866 M	Chalcopyrite	Falls of French Cr., Pa.
18867 M1	Schistose Apbik (Ajibik) Quartzite near contact with the Archean and an intrusive	Republic, Mich., ¼mi. south of power house of Republic Mine C. K. Leith, May 6, 1916

18869 – 18896

Hall

Specimens from Utah Copper Co. Properties

Bingham Utah, C. K. Leith, Sept.1916.

18869 Hall Sub 5. Light porphyry called, "Payroll porphyry" See location on level maps.

18870 Hall Sub 5. Porphyry 18 inches from contact.

18871 Hall Sub 5. Quartzite (2 samples) 2 inches from contact.

18872 Sub 5. Quartzite with vein of ore.

18873 Hall Sub 5. Hard light porphyry.

18874 Hall Sub 5. Gouge along fault showing cleavage.

18875 Hall Sub 5. Dark porphyry.

18876 Hall Light porphyry near specimen 18875.

18877 Hall Light porphyry from Sub 8.)
) Locations not given.
18878 Hall Dark porphyry from Sub 8.)

18879 Quartzite on K level showing pyrite and chalcocite disseminated and also in veins.

18880 Ml Qu artzite from capping near same place. Carries almost no value. Very little carbonate staining.

N 11 { 18880 Calcareous slate Ontario, Canada

18881 Hall Quartzite from k level showing veining near contact. Chalcocite replacing chalcopyrite and pyrite.

18882 Hall Dark porphyry on K level, said to be typical.

18883 Hall Capping over dark porphyry from M level, S. end carries no value.

18884 Hall Capping of light porphyry from M level. Note leaching of feldspars.

18885 Hall Hematite sulphide ore. Supposed to be replacement of carbonate just below the quartzite. This is commonly associated with the quartzite which in some places occurs bwtween the dark and light porphyry. 3 to 4% copper. M level.

18886 Hall From fault on S. level. Note the graphite or molybdenum which usually comes near the top or bottom of the gouge. This black material also follows the curved and inclined cleavage.

18887 Hall Quartz deposited on the terminal faces of pyrite with chalcocite. What are its relations to the chalcocite?

18888 Hall Carbonate ore from weathered porphyry on level I. S. end.

18889 Hall Chrysacolla from capping on the south side of level I.

18890) Hall
18891) Hall Typical of the best light porphyry ore from about the 1000 ft. section on level H. Shows chalcocite, covellite, chalcopyrite, secondary quartz. Said to be the hardest rock on the mountain. Due to recrystallization.

18892 Hall Covellite ore in light porphyry from P level, near big thrust fault. Covellite is confined to the upper levels.

18893-5 Hall Quartzite ore from Ohio copper mine.

18896 Hall Ohio copper, supposed porphyry sill above hanging wall vein, about 3 ft. thick.

Specimens collected by C. K. Leith, July 1916

Hall case

18907 E1	Metallic copper from vein crossing bedding of black slate between Sandstone lodes	White Pine Mine, Keweenaw copper district, Mich.
18908 S E1	Slate carrying copper	White Pine Mine
18909 2 S	Nonesuch sandstone carrying metallic copper showing veins of secondary chalcocite	White Pine Mine
18910 S E1	Nonesuch sandstone carrying copper showing vein of metallic copper	White Pine Mine
18911 E1	Nonesuch sandstone carrying copper showing vein of metallic copper	White Pine Mine
18912 S E1	Copper-bearing shale from between sandstone lodes showing mud cracks	White Pine Mine
18913 E1	Nonesuch sandstone showing vein of copper and chalcocite in same vein	White Pine Mine
18914 S E1	Amygdaloidal copper	Newport exploration on Black River about 8 miles north of Bessemer, Mich.
18915 E1	Amygdaloid blown out in blasting, cause of form unknown	Lake Mine

Specimens collected in British Guiana by Lewis, 1916

Metamorphic lab. 210

18916 E1	Outer shell of diabase	Hope Quarry, Abyina
18917 E1	Diabase alteration	Hope Quarry, Abyina
18918 E1	Diabase alteration, final product	Hope Quarry, Abyina
18919 E1	Diabase alteration, outer shell	Hope Quarry, Abyina
18920 E1	Banded bauxite	

Miscellaneous

18921 Fe Case	Pegmatite containing iron carbonate altered to ~~limestone~~ limonite (3 specimens)	N W 22, 29 - 6 E, Wis.
18922 E1 Case 21	Limonite	Penokee Range, Wis.
E-4-10 18923 144	Oolitic limestone	St. Genevive Co., Mo.
18924 E1 Hall OKL	Iron Ore	Pretori~~a~~, S. A. (H. F. Bain, 1916)

No.	Specimen	Locality
D-23-6 18925 122	Volcanic Dust	Barbadoes, W. I., C. C. Lawhorn, Brooklyn, N. Y.
E-25-18 18926 159	Marble	S. W. of Foster, Wis., Sec. 24, 44 - 4W
18927 Sed.	Zonal weathering in graywacke	Aspin formation near Spring Valley, Vista Co., Wyo. (W. J. Mead)
18928 S	(3 specimens) Folded graphitic slate	Tudson Mine, Alpha, Mich.

18929 - 18934
Series of specimens illustrating Dolomitization Presented by E. Steidtmann for Metamorphic Collection, February 1917

18929 M1	Fossileferous mixed ~~with~~ limestone and dolomite	Unknown
18930	Platteville limestone and dolomite (stained)	Escanaba, Mich.
18931 M1	Platteville limestone and dolomite	Weights Quarry, 1 mi. N E Lancaster, Wis.
18932 M1	Galena limestone & dolomite (")	Same, 12' below first beds
18933 Case 14	(4 specimens) Dolomite (not ferro-dolomite) and limestone (stained)	Etna, Wis.
18934 M1	Dolomite and limestone (stained)	Winnipeg, Manitoba, Canada

Series of specimens illustrating origin of bauxite from Bauxite, Ark., presented by W. J. Mead for Metamorphic Collection February 1917 18935 - 18940

18935 M1	Syenite	
18936 M1	Weathered syenite	
18937	Kaolinzed syenite	
18938 M1	Kaolinzed syenite with unaltered core	
18939	Bauxite	
18940 M1	Bauxite (sponge ore)	
18941 M1	Greenalite Rock	Mesabi Range, Minn.
18942	Iron carbonate altering to iron oxide (limonite) along joints	Crystal Falls District, Mich.

No.	Specimen	Locality
18943 Fe Case	Iron carbonate and chert	Florence Mine, Florence, Wis. (Coll. 1917 ?)

18944 – 18953

Specimens from Nonesuch formation, White Pine Extension Mine, 7, 50 - 43 W Mich., C. K. Leith, 1917

18944	E/	Conglomerate sandstone from base of sandstone bed which rests upon the No. 2 shale, 1 st. level
18945	E/	Copper-bearing shale from so-called No. 1 shale, overlying the sandstone from which last was taken. From basal 5 ft. which carries values, 1 st. level
18946	S E/	Brown shale from the barren layer a foot or so thick on the footwall side of No. 2 shale (main copper horizon)
18947	S E/	From copper bearing portion or main mass of the so-called No. 2 shale. This is the main ore-bearing horizon shown by present development and is a bed four to six feet thick lying beneath the sandstone, from which 18944 was taken. 1st level, E. drift
18948	S E/	Mineralized sandstone from the copper-bearing vein (18" to 24" thick) lying 10 to 11 inches to the footwall beneath shale No. 2. This seam runs about 60 lbs. per ton, the richest and narrowest horizon thus far shown. Short cross cut 100 ft. W. of shaft, 1st level
18949	E/	No. 2 shale (same bed as 18947) 450 ft. west of shaft, 1st level
18950	S E/	Sandstone, unmineralized, from footwall formation beneath No. 2 shale, below mineralized bed of 18948, shaft crosscut, 1st level
18951	E/	Copper-bearing sandstone from the mineralized zone described for 18948, eight feet north of No. 2 shale, shaft crosscut, 1st level
18952	E/	No. 2 shale, dump pile
18953	S E/	Brown shale (compare 18946) dump pile

Specimens from Butte, Montana ? C. K. LEITH, 1917 18954 - 57

18954(A)	Hall Slightly altered granite	1200 ft. level, Black Rock Mine

No.	Specimen	Locality
18955(B) Hall	Phase of same altered and whitened along joint	
18956(C) Hall	~~No specimen~~ - Pegmatite Ore	Black Rock Mine
18957 (D) Hall	Zinc Ore	Elm Orlu Mine
18958 M 686	Arsenopyrite in wall beds of No. 1 gold vein (1 displaced)	Kiski-Wekuska Claims, Wekusko or Herb Lake, Man. (F. M. Wolverton) 98
18959 M1	Weathered gabbro	Sudbury District, Ont., Canada W. J. Mead
18960 Ei Case 21	Hematite	Bathurst Mines, N. S. Guide Book No. 1, 12 Geological Congress, 1913 (W. H. Twenhofel)

18961-64

Specimens showing relations of lead, zinc, silver veins to to dikes in Star Mine, Coeur d'Alene Dist., Idaho, C. K. Leith, 1917.

18961. Hall 1. S Dike. Coarsely crystalline feldspar and hornblende in fine grain matrix containing little quartz, Ophitic texture.

18962a. 2S Hall 2a. Dike. Showing contact with sphalerite, Sphalerite yellow in center and toward contact becomes black, probably due to increase in iron. Directly at contact a narrow rim of pyrite. Irregular isolated masses of dark sphalerite near contact are entirely included in diabase.

18962b. Hall 2b. Ore in sharp contact with dike with distinct band of pyrite between dark colored marginal phase and diabase. Shows up especially well in polished surface. Note also pyrite in diabase.

18963. 5S Hall 3. Sphalerite and dark hornstone associated with dike. Under the microscope a distinct banding of sphalerite carbonate and dark granular masses which probably are the dark sphalerite. Also distinct bands of finely crystalline quartz which may be vein quartz and distinct bands of a nearly colorless pyroxene.

18963a. 3a. Hall Sphalerite with dark margin associated with greenish mineral, probably hornblende.

18963a. 3a. Hall Sphalerite with the dark margins including and closely associated with a green mineral, probably hornblende.

The sphalerite occurs in bands and irregular shots in a matrix which seems to be the typical diabase. Note also bands of quartz which seem to be vein quartz.

18963b. 3b. Principally the greenish yellow hornstone material. Hall Consists of very fine hornblende or pyroxene with bands of chalcedonic quartz containing some dark mineral which may be sphalerite, pyrite, or magnetite. The characteristic feature is bands of finely granular material looking like colorless pyroxene with almost no feldspar or quartz.

18963b.3b. Hall The same, but principally ore in matrix which seems to be green hornblende. Ore is in finely granular form, not easy to distinguish from some dark green silicate.

18964. 4. Hall Slickensided surface on lead, zinc and silver ore.

18965 S Mullion structure in Couchiching Schist., Namekan River, Hunters Island, Ontario, Canada, C. K. LLeith, Sept. 1917.

18966 MI Bijiki Schist showing porphyritic development of amphibole and garnet in chlorite schist. Old Michigawnee Mine, Mich. → Specimen donated to Norris Johns Oshkosh, Wis.

18967-70 case 15 No. 18967 Recat. Manganese ore, Cuyuna Range, Minn., C. K. Leith May 1917. Nos. 18968-70 disposed. LO 3896

18971 Case 15 ~~Manganite Peris Mine Cuyuna Range, Minn., W. J. Mead.~~ LO 9573

18972 Case 15 ~~Greisen carrying cassiterite, Tin region of Virginia, R. J. Holden.~~ LO 9583

18973 case 15 -75 Leached ore near surface. Molybdenum ores from Climax near Leadville, Col. Molybdenum Products Co., W. J. Mead 1917.

18974 Case 15 Same deeper. LO 9725

18975 6A5 Case 15 Case 10 8 Specimens showing phases of ore at depth. LO 9728 LO 9727 34

18976 Curious weathered chert , Wyocena Town, Columbia Co. J. J. Kohler, Pardeeville Wis.

18977 WHT Mud cracks in Richmond dolomite, Sturgeon Bay.

18978 WHT Mud cracks in sand-stone, Eau Claire shales, Rudolph Quarry, Eau Claire.

W. H. TWENHOFEL

18979 WHT Same as 18978.

Specimens donated by W. O. Hotchkiss, 1917.

18980 GFZ Case 7 Aragonite Calcite on sphalerite (2 spec.), Miami district, Oklahoma. 277

18981 Sphalerite and chert. Same.

~~18982 Limestone pebble oil saturated, Sulphur La.~~

18983 Case 17 Sulphur in gypsum (4 spec.), Freeport, Texas.

18984 Case 17 Limestone cap rocks. (2 spec.), Same.

18985 Case 17 Gypsum altered by stream, Same. Specimens from Ashio Mine, Japan, A. N. Winchell, 1917.

18986 Hard vein ore, Enser (60°) vein.

18987 Kajika ore, near Tengu Veins, lower 8th level.

18988 Kajika ore, Ninen vein.

18989 Calcite and chalcopyrite.

18990 Wolframite.

18991 Clay slate, Tsudo.

18992 Liparite, Tsudo Adit.

Hall

A. N. WINCHELL (1917) Ashio Mine Japan

ABBREVIATIONS INDICATING DISPOSITION OF SPECIMENS.

B Boxed, number following

C Case, number following (stored specimens)

Cr, Collection of crystals (not shown in special list

D Drawer, number following, indicates

E Collection of economic minerals, letter following indicates special collection

a - aluminum
co cobalt and nickel
cu copper
cl coals
g gold
¢ iron
l lead and zinc
m manganese
n non-metallic, general
r rare metals
s silver and silver lead

D Display collection of minerals. Number following indicates classification in table. Letter not given in special list of this collection 19001-19600.

G Collection of gem and ornamental minerals (not shown in special list)

M University mineral collection (not including display minerals). Letter not given in special list 19601-20000, 20501-

Numbers following indicate classification in table.

Mb Metamorphic collection. Letters show classification

M Missing.

P Collection of pseudomorphs (not shown in special list).

S Thin sections (not given where an entire collection is sectioned)

Se Sedimentary structure collection

St Structural collection

T Collection showing textures of igneous rocks (not shown in special list)

U University rock collection. Number following indicates classification in table.

W Collection of Wisconsin rocks.

Wm Collection of Wisconsin minerals and ores.

WHT W.H. Twenhofel sedimentation collection

Display Collection of Minerals. 19001-19597

Arranged on Chemical Basis.

The specimens are numbered in the order they were found in the cases in April, 1912. They were for the most part numbered with red on blue numbers of which no record was available.

old no.			Dana #
19001	Case 26 Diamond	S. Africa.	1
19002	Case 26 Graphite	Jefferson Co., N.Y.	2
19003	Case 26 "	Amity, N.Y.	2
19004	Case 26 Sulphur (2 spec.)	Lake Co., Calif. I.G. YATES Coll.	3
19005	Case 26 " (3 spec.)	Girghenti, Sicily, Italy	3
19006	Case 26 Graphite	Ticonderoga, N.Y.	2
19007	Case 26 ~~Native arsenic~~	~~Saxony~~, Germany Exch: ~~19007~~ 10/31/34	8
19008	Case 26 " "	Andreasberg, Harz, Germany	8
19009	Case 26 " "	Pribram, Bohemia.	8
19010	Case 26 Allemontite	Allemont, France.	9
19011	Case 26 Native antimony	Mt. Ramsey, Tasmania, Australia	10
19012	Case 26 Bismuth	Saxony, Germany	11
19013	Case 26 Antimony	York Co., New Brunswich, Canada	10
19014	Case 26 Native gold, 3 spec.)	Black Hills, S.D. (mainly Hildreth M.)	13
19015	Case 26 Native gold	Gold Coin M., Victor, Col.	13
19017	Case 26 " " (gold bearing qtz.)	Australia. (a	13
19018	Native silver	Guanajuato, Mex.	14
19019	" "	Ontario.	14
19020	Case 26 " gold	Sunshine Bowlder Co., Col.	13
19021	Case 26 " silver, niccolite, & annabergite	Lake Temiskaming, Ontario, Canada	14
19022	Case 26 Native copper	Lake Superior, Michigan	15
19023	Case 26 Native copper (3 spec.)	Calumet & Hecla M., Michigan (Keweenaw Dist.)	15
19024	Case 26 " "	South of Superior, Wis.	15
19025	Platinum	Nizhni Tagilsk, Ural Mts., Russia.	20
19026	Case 26 Native mercury	Napa Co., Calif.	16
19027	Case 26 Molybdenite	Enterprise, Ontario, Canada	34

Dana #

MX19028	Case 26	Realgar (2 spec.)	Baia-Sprie, Bai-Mare, N.W. Romania (Felsöbanya, Hungary)	26
19029	Case 26	Orpiment As_2S_3	Allchar, Macedonia.	27
19030	Case 26	" As_2S_3	(Siebenbürgen) (~~Siebenbürgen, Romania~~?) = Transylvania, Romania	27
19031	Case 26	"	Kunderstan, Turkey-in-Asia. (?kurdestan?)	27
19032		Stibnite	Cape Corse.	28
19033	Case 26	"	Seijo, Japan.	28
19034		"	Kremnitz, Hungary.	28
19035	Case 26	"	Western Japan.	28
19036	Case 26	"	Iron Co., Utah.	28
19037	Case 26	Molybdenite	Madawaska, Ontario, Canada	34
19038	Case 26	"	Westmoreland, N.H.	34
19039		"	Unknown.	34
19040	Case 26	Argentite	Freiberg, Saxony, Germany	42
19041	Case 27	Galenite coated with pyrite 2 spec marcasite	Peru Zinc M., Galena, Ill.	45
19042	Case 27	Galena	" " " " "	45
19043	Case 27	" in sphalerite	Cow Branch M., Rors & Henry, Grant Co., Wis.	45
19044	Case 27	"	Schullsburg, Wis.	45
19045	Case 27	" with sphalerite & Calcite	Peru Zinc Co., Galena, Ill.	45
19046	Case 27	" & quartz	Schemnitz, Hungary.	45
19047		"	Clausthal, Harz, Germany	45
19048	Case 27	"	Freiberg, Saxony, Germany	45
19049	Case 27	Chalcocite	Cornwall, England	54
19050	Case 27	"	Bristol, Conn. HENRY collection	54
19051	Case 27	"	" "	54
19051		Enargite Cu_3AsS_4	Morrocoha, Peru	
19052	Case 27	Galena, quartz, pyrite	Cumberland, England	45
19053	Case 27	Chalcocite	Arizona.	54
19054	Case 26	Stromeyerite	"	55
~~19054~~		~~Sylvanite $(Au,Ag)Te_2$~~	~~Cripple Creek, Colorado~~	
19055	Case 27	Galena	Andreasberg, Harz, Germany	45
19056	Case 27	" & marcasite	Galena, Ill.	45
~~19057~~	~~Case 27~~	~~"~~ Proposed	~~Peru Zinc M., Galena, Ill.~~	~~45~~
19057		"		

				Dana 7th
19058	Case 27	Sphalerite	Hazel Green, Wis.	58
19059	Case 27	Sphalerite and dolomite	Webb City, Mo.	58
19060	Case 27	Sphalerite, dolomite, & chert	Tom Malory M., Carterville, Mo.	58
19061	Case 6 Case 27	Sphalerite	Cumberland, England	58
19062	Case 27	Sphalerite, dolomite, & chert	Webb City, Mo.	58
19063	Case 27	Sphalerite	Joplin, Mo.	58
19064	Case 27	Sphalerite & calcite	Carterville, Mo.	58
19065	Case 27	Covellite (disbursed)	Rambler M., Mont.	67
19066	Case 27	Sphalerite, quartzite, & pyrite	Cumberland, England	58
19067	Case 27	~~Sphalerite~~	~~Joplin Co., Mo.~~ Recat. L° 3347	58
19068	Case 27	Cinnaber	Napia Co., Calif.	66
19069	Case 27	"	Moschellandsberg, Germany	66
~~19070~~	~~Case 27~~	" Poor Specimen	~~Alnaden, Spain.~~ Discarded To Mineral Lab	~~66~~
19071	Case 27	Covellite	Sangerhausen, Saxony, Germany	67
19072	6 B4	Millerite	Gap M., Lancaster Co., Penn.	70
19073	Case 27	" in quartz	Pittson, Penn.	70
19074	Case 27	"	Antwerp, N.Y.	70
19075	Case 27	Sphalerite & pyrite	Peru Zinc M., Galena, Ill.	58
19076	Case 27	Millerite	St. Louis, Mo.	70
19077	Case 27	Greenockite (Missing)	Friendensville, Missouri	68
19078	Case 27	Niccolite	Hesse, Germany	71
19079	Case 27	Niccolite	Riechelsdorf, Hesse, Germany	71
19080	Case 27	Pyrrhotite	Lancaster Co., Penn.	74
19081		"	Monte Somma, Italy.	74
19082	Case 27	" ? Pichnite	High Bridge, N.J.	74
19083	Case 27	"	Vernon, N.J.	74
19084	Case 27	Bernite	Hartford, Conn.	78
19085		Chalcopyrite	Caldera, Chili.	83
19086	Case 27	~~Pyrite~~ Marcasite (2 spec.)	Peru Zinc M., Galena, Ill.	85
19087	Case 27	Marcasite & calcite	Galena, Ill.	96
19088	Case 27	Marcasite (2 spec.)	Peru Zinc M., Galena, Ill.	96
19089	Case 27	Chalcopyrite	French Cr., Chester Co., Penn.	83

Dana 7th

19090	Case 27	Pyrite (auriferous)	Shepherd M., Gilpin Co., Col.	85
19091	Case 27	Pyrite (2 spec.)	Gouverneur, N.Y.	85
19091		Chalcocite and calcite	Bristol, Conn.	
19092		Pyrite	Roxbury, Ct.	85
19093	Case 27	Pyrite	Nova Scotia, Canada	85
19094	Case 27	Pyrite (auriferous) (Mining) MS	Georgetown, Col.	85
19095	Case 27	Pyrite	Brosso, Piedmont, Italy.	85
19096		Smaltite-chloanshite ($CoAs_2$)	Lake Tenniskaming Rest, Ont. (? New Ontario, Ontario ?)	87
19097	Case 27	Gersdorffite with crythrite & chalcopyrite	Prov. Malaga, Spain. etc.	90
19098	Case 27	Marcasite (Proposed)	Linden M., Wis.	96
19099	Case 27	Smaltite	Schneeberg, Saxony, Ger.	87
19100	Case 27	Sperrylite	Sudbury, Ontario, Canada	93
19101	Case 27	Marcasite	Wildemann, Harz, Germany	96
19102	Case 27	Marcasite on sphalerite & galena	Peru M., Galena, Ill.	96
19103	Case 6	Halite	Stassfurt, Germany	166
19104	Case 27	Marcasite	Cornwall, England	96
19105	Case 27	" & galena (2 spec.)	Peru M., Galena, Ill.	96
19106	Case 27	" & calcite	" " "	96
19107	Case 27	Marcasite	Crow Branch M., Mineral Pt., Wis.	96
19108	Lec. Col. II 726 6B6	Pyrite (see X-RAY film # 1399) 6/15/37	Linden M., Wis.	96
19109	Case 27	" ? (Pyrite)	Illinois.	96
19110	Case 27	Arsenopyrite	De Lowe, Canada.	98
19111	Case 27	"	Freiberg, Saxony, Germany	98
19112	Case 27	Loellingite	Dutchess Co., N.Y.	97
19113	Case 27	Nagyagite	Nagyag, Hungary.	106
19114	Case 27	Calavertite ?	Gold Coin M., Victor, Col.	near 105
19115	Case 26	Argentite	Guanajuato, Mex.	42
19116	Case 27	Jamesonite	Endellion, Cornwall, England	130
19117	Case 27	Sylvanite, $(Au, Ag)Te_2$	Offenbanya, ~~Hungary~~, Transylvania, Romania	104
19118	Case 27	Berthierite	Braunsdorf, Saxony, Germany	119
19119	Case 27	Proustite	Joachimsthal, Bohemia.	145
19120	Case 27	~~Bournonite~~ Tetrahedrite Arsenopyrite	Cornwall, England Kapnik, ~~Hungary~~ Transylvania, Romania	136
19121	Case 27	Bournonite	Liskeard, Cornwall, England	136

				Dana #
19123	Case 27	Stephanite $5Ag_2S.Sb_2S_3$	Austin, Nev.	153
19124	Case 27	Enargyrite (erargyrite) "Horn Silver"	Leadville, Col.	169
19125	Case 27	Enargite	San Juan Co., Col.	158.
19126	Case 27	Tetrahedrite with sphalerite $4Cu_2S.Sb_2S_3$	Kapnik, Transylvania, ~~Hungary~~. ~~Kapnik~~ Kapnic (= Kapnic)	148
19127	Case 27	Geocronite	Sala, Sweden.	152
19128	Case 27	Tetrahedrite	Kapnik, Hungary.	148
19129	Case 27	Pyrargyrite (2 spec.)	Andreasberg, Harz, Germany	144
19130	Case 27	Tetrahedrite	Lisheard, Cornwall, England	148
19131	Case 26	Graphite	Ceylon.	2
19132	Case 27	Keweenawite & chloanthite	Mohawk M., Mich.	37
19133	Case 6	Spinel	Amity, N.Y.	234
19134	Case 6	Spinel	Edenville, N.Y.	234
19135	Case 6	Gahnite	Sterling, N.J.	236
19136	Case 7	Chrysoberyl X-RAY Film # 1155	Ekaterinburg, Ural Mts., Russia.	242
19137	Case 6	Magnetite (2 duplicated)	Mineville, Essex Co., N.Y.	237
19138	Case 7	Franklinite & calcite	Franklin, N.J.	239
19139	Case 27	Stannite	Cornwall, England	84
19140	Case 7	Cassiterite	Zinnwald, Bohemia.	248
19141	Case 7	Rutile	Graves Mt., Ga.	250
19142	Case 7	" (Missing)	Lynchburg, Va.	250
19143	Case 7	" (sagenite)	Tavetsch, Switzerland.	250
19144	Case 7	Cassiterite	Victoria, Australia.	248
19145	Case 7	Octahedite	Tavetsch, Tyrol, Switzerland. → 60 km SSE of Zürich	252
19146	Case 7	Diaspore	(Schemnitz) ~~Hungary~~. Banska-Stiavnica Southern Slovakia, Czechoslovakia	256
19147	Case 7	Pyrolusite	Wegaunee, Mich.	254
ES 32 19147		Manganite $Mn_2O_3 \cdot H_2O$	Cuyuna Range, Minnesota	
19148	Case 7	Brookite	Magnet Cove, Arkansas Analyzed by X-ray pattern # 464 (Sturges W. Bailey)	253
19149	Case 7	Manganite	Ilefeld, Hartz, Germany	258
19150	Case 7	Göthite (? Gold ?)	Lake Superior M., Ishpeming, Mich.	257
19151	Case 7	Diaspore	Cherlier, Mass.	256
19152	Case 7	Limonite	Mineral Point, Wis.	259
19153	Case 7	Manganite	Ilefeld, Hartz, Germany	258
19154	Case 7	Ochre (Limonite, var. Ochre)	Mineral Point, Wis.	259
19155	Case 7	Limonite & maganite	Newpert M., Ironwood, Mich.	259

Dana #

19156	Case 7	Gibbsite	Richmond, Mass.	264
19157	Case 6	Magnetite	Tilly Foster M., Brewster, N.Y.	237
~~19158~~	~~Case 19~~	~~Limonite after pyrite~~	~~Anderson Apache Copper Co., Hachita, N. Mex.~~	259
		10.K. 1 Recat. no 10x1 4711. (not recatalogued)		
19159	Case 7	Calcite	Furness, Eng.	270
19160	Case 7	"	Cumberland, Eng.	270
19161	Case 7	" & spalerite	Carterville, Mo.	270
19162	Case 7	"	Chester Co., Penn.	270
19163		"	Van Buren Co., Ia.	270
19164	Case 7	"	Iceland Spar, Iceland.	270
19165	Case 7	"	Guanajuato, Mex.	270
19166	Case 7	"	Andreasberg, Harz, Germany	270
19167	Case 7	Red calcite	Renfrew, Canada.	270
19168	Case 7	Golden calcite	Bad Lands, S.D.	270
19169	Case 7	Calcite (Vug?) filling on chalcedony	Yellowstone Pk., Wyo ,	270
19170	Case 7	Blue "	Canton, N.Y.	270
19171	Case 7	Calcite -on Pyrolosite ?	Fenny Cape, Nova Scotia, Canada	270
19172	Case 7	" (dispersed)	Smithfield, R.I.	270
19173	Case 7	"	Bristol, Ct.	270
19174	Case 7	"	Schullsburg, Wis.	270
19175	Case 7	"	Lockport, N.Y.	270
19176	Case 7	"	Pallaflat, Cumberland, Eng.	270
19177	Case 7	" (hot spring deposit)	Yellowstone Park, Wyo.	270
19178	Case 7	"	Antwerp, N.Y.	270
19179	Case 7	" (Nail head spar)	Manlius, Onondoga, Co., N.Y. ? HENRY collection ?	270
19180		" ..	Chester Co., Pa.	270
19181	Case 19	" (sileceous) (sand after calcite)	Washington Co., S.D.	
19182	Case 7	"	Lampassas Co., Tex.	270
19183	Case 7	" (large crystal)	Joplin, Mo.	270
19184	6B6 Case 6	also Marcasite Fluorite (large specimen)	Cumberland, England	175
MS {19184		Marcasite	Locality unknown Hardenberg, Ger?	
19185	Case 6	Quartz crystals	Hot Springs, Ark.	210
19186	Case 6	Fluorite (10 spec,) (dispersed)	Cumberland, Eng. (Missing)	175

19187	Case 6	Fluorite	Cornwall, England	175
19188	Case 6	~~"~~	~~Alston Moor, Eng.~~ exch: 10/31/34	175
19189	Case 6	" Flourescent.	Teffin, O.	175
19190	Case 6	Cryolite	Jvigtut, Greenland.	183
19191	Case 6	"	Arksukfiord, "	183
19192	Case 6	Atacamite X-RAY Film #1157	Ataema, Calif.	193
19193	Case 6	Nocerite	Nocera, Italy.	195
19194	Case 6	Pachnolite $NaF.CaF_2.AlF_3.H_2O$	Ivigtut, Greenland.	205
19195	Case 6	Opal	Hinsdale Co., Colo.	212
19196	Case 6	Quartz	Southberry, Ct.	210
19197	Case 6	Yttrocerite & Chlorphane	Amity, N.Y.	209
19198	Case 6	Quartz	Tovetsch, Tyrol. (? Tavetsch 80 km SSE from Zürich, Switzerland?)	210
19199	Case 6	" containing liquid inclusions		210
19200	Case 6	Quartz	Herkimer Co., N.Y.	210
19201	6C4	"	Roundout, N.Y.	210
19202	Case 6	" (Missing)	Little Falls, N.Y.	210
{19202		Agate	Montana	
19203	Case 6	Opal (Hayalite)	San Luis Potosi, Mex.	212
19204	Case 6	Quartz	Pierrepont, N.Y.	210
19205	Case 6 Case 8	"	Little Pipestone, Dist., Jefferson Co., Mont.	210
19206		Quartz geode	Keokuk, Ia.	210
19207	Case 6	Quartz - agate	Montana.	210
19208	602 Case 6	Wood opal (1 despaced)	Nevada Co., Calif.	212
19209	Case 6	Quartz	Wanlochead, Scot.	210
19210	6C4	Silicified wood (cedar)	Colorado.	210
19211	Case 6	" "	Bijou Basin, Col.	210
19212	Case 6	Quartz, amethyst (2 spec.)	Thunder Bay, Lake Superior.	210
19213	Case 6	Quartz	Pierrepont, N.Y.	210
19214	Case 6	" chaledony	Hinsdale Co., Col.	210
19215	Case 6	Senarmonite	Hamimate, Algeria. X-Ray No.-776.	214
19216	Case 6	Cervantite $Sb_2O_3.Sb_2O$	Arizona.	221
19217	Case 6	Cu Arprite	Cornwall, England	244
19218	Case 6	" (1 despaced)	Copper Queen M., Bisbee, Ariz.	244

19219	Case 6	Cu Arprite	Cornwall, Eng. (Exch: 10/31/34	244
19220	Case 6	"	Broken Hill, N.S.W. Australia	244
19221	Case 6	"	Copper Mt. M., Morenci, Ariz.	244
19222	Case 6	Zincite with franklinite, troostite, calcite	Franklin, N.J.	228
19223	Case 6	"	Sterling, N.J.	228
19224	Case 6	Corundum Al_2O_3	Jackson Co., N.C.	231
19225	Case 6	" (1 disposed)	Cullakenll, Clay Co., N.C.	231
19226	Case 6	Tenorite	Monte Somma, Italy.	230
19227	Case 6	Corundum (1 disposed) Al_2O_3	Buche Co., N.C.	231
19228	Case 6	"	Anderson, S.C.	231
19229	Case 6	"	Carter Mine, Madison Co., N.C.	231
19230	Case 6	"	Ontario, Canada	231
19231	6D3	Blue Corundum (1 disposed) Al_2O_3	Renfrew Co., Ont., Canada	231
19232	Case 6	Hematite	Isle of Elba, France ← specimen x-rayed (Burges W. Bailey) x-ray film # 546	232
19233	Case 6	Hematite (specular)	Negaunee, L. Superior, Michigan	232
19234	Case 6	Hematite	Cumberland, England	232
19235	Case 6	"	Bilboa, Spain.	232
19236	Case 6	" (specular)	Ishpenning, Mich. (Lake Superior)	232
19237	Case 6	Martite	Cerro Mercado.	near 232
19238	Case 6	Hematite	Hudson, N.Y.	232
19239	Case 6	Ilmenite	Amity, N.Y.	233
19240	Case 7	Dolomite (2 spec.) (1 disposed)	Joplin, Mo.	271
19241	Case 7	Dolomite	Brewster, N.Y.	271
19242	6E7	Magnesite	Mediterranean Coast, Piedmont, Italy.	272
19243		Siderite	Roxbury, Ct.	273
19244	Case 7	Dolomite	Cumberland, England	271
19245	Case 7	Dolomite	Lochport, N.Y.	271
19246		Ankerite	Eisenerz, Styria.	271 A
19247	Case 7	Siderite $FeCO_3$	Harz Mts., Germany	273
19248	Case 7	Siderite	Antwerp, N.Y.	273
19249	Case 7	Dolomite	Traversella, Piedmont, Italy.	271
19250	Case 7	Rhodochrosite	Nagyag, Transylvania, ~~Austria~~ Romania	274
19251		"	Franklin, N.J.	274

19265

CERUSSITE , $PbCO_3$

Arizona

Cerussite is an important and widely distributed lead ore of secondary origin, and is formed by the action of carbonated waters on galena in the upper zone of lead veins. It is associated with the primary minerals, galena and sphalerite and various secondary minerals.

Cerussite like the exhibited is mined extensively in the Arizona mining districts.

			Cavnic(=Capnic), Baia-Mare, N.W.Romania (= ~~Kapnik, Hungary~~ Banya)	Dana #
19252	case 7	Rhodochrosite $MnCO_3$		274
19253	case 7	Smithsonite (2 spec.)	Mineral Pt., Wis. → 1 specimen traded away 1981	275
19254	case 7	Smithsonite	Campana, Spain.	275
19255		Smithsonite	Granby, Mo.	275
19256	case 7	Aragonite	Chester Co., Pa.	277
19257	case 7	~~Aragonite~~ Calcite (checked optically)	Utah.	277
19258	case 7	"	Cumberland, Eng.	270
19259	case 7	"	Eisenerz, Styria, Austria	277
19260	case 7	" (1 disposed)	Herrengrund, Hungary.	277
19261	case 7	"	St, Nectaine, Puy du Rome, Auvergne, France.	277
19262	case 7	"		277
19263	case 7	"	La Catolica, Sicily, Italy	277
19264	case 7	Witherite	Cumberland, Eng.	279
19265		Cerussite $PbCO_3$	Arizona	281
19266	case 8	Cerussite	Broken Hill M., N.S.W, Australia	281
19267	case 8	Malachite $Cu_2(OH)_2CO_3$	Copper Queen M., Bisbee, Ariz.	288
19268	case 8	Barytocalcite X-RAY Film No. 1158	Northumberland, England	282
19269	case 7	Ploss Ferri	Laurium, Greece.	277
19270	~~case 8~~	~~Cerussite on galena~~ $PbCO_3$	~~Mineral Point, Wis.~~ Recat. LO 9345	281
~~19271~~	case 8	Malachite	~~Silver City, N. Mex.~~ Donated to Historical Museum	288
19272	case 8	" and barite	Cheshire, Conn.	288
19273	case 8	"	Betzdorf, Nassau, Germany	288
19274	case 8	"	Crawford, Co. Wis.	288
19275	case 8	Azurite	Morena, Graham Co., Ariz.	289
19276	case 8	"	Broken Hill M., N.S.W., Australia	289
19277	case 8	Malachite	Chili, S.America	288
19278		Azurite	Tintic Dist., Utah.	289
19279	case 8	"	Mineral Point, Wis.	289
19280	case 8	Malachite $Cu_2(OH)_2CO_3$	Graham Co., Ariz.	288
19281		Azurite	Copper Queen M., Bisbee, Ariz.	289
19282	case 8	Gay-lussite	Churchhill Co., Nev.	297
19283	case 8	Hydomagnesite $Mg_4(OH)_2(CO_3)_3 \cdot 3H_2O$	Hoboken, N.J.	300
19284	case 8	Pennite $(Mg, Fe, Al)_6(Si, Al)_4O_{10}(OH)_8$ (Chlorite Group)	Zerwall, Switzerland. (? Zermatt ?) Viesch	302

19300 D.316

ALBITE
OLIGOCLASE

Madawaska, Ont.

				Dana H
19285	Case 8	Zaratite	Lancaster Co., Penn.	303
19286	Case 8	Pennite on chromic iron	" " "	302
19287	Case 8	Adularia (Orthoclase, $KAlSi_3O_8$, var.)	St. Gothard, Switzerland.	313
19288	Case 8	Sanidine (Monoclinic disordered Orthoclase) $KAlSi_3O_8$	Mont Somma, Italy. (Fluorescent) Pink	313
19289	Case 8	Feldspar	Grass Lake, Jefferson Co., N.Y.	313-320
MS 19289		Feldspar (decomposing)	Carbonateville, Colorado	
19290	Case 8	Perthite (Potassium-Feldspar with lamellae of Plagioclase	Lanark Co., Ontario, Canada	near 313
19291	Case 8	Microcline	Pikes Pk., Col.	315
19292	Case 8	"	Pitcairn, St. Lawrence Co., N.Y.	315
19293	Case 8	Pericline	Tyrol. (? Austria)	316
19294	Case 8	Plagioclase	Mt. Corb, N.Y.	316-320
19295	Case 8 Case 7	Albite (pericline)	St. Gothard, Switzerland.	316
19296	Case 8	Orthoclase	Guanajuato, Mex.	313
19297	Case 8	Albite	Brachville, Ct. X-ray no. 796.	316
19298	Case 8	Albite	Amelia C.H., Va. 10/4581	316
19299	Case 8	Plagioclase	Madawasha, Ont. (? k) Canada	316-320
19300	Case 8	Oligoclase - Albite & Diopside $CaMg(Si_2O_6)$	Pitcairn, St. Lawrence Co., N.Y.	X-rayed (S. Bailey) for ident. of Diopside 1939.
19301	Case 8	Leucite	Roeca Monfina, Italy.	321
19302	Case 8 Case 9	Leucite	Monte Somma, Italy.	321
19303	Case 8	Anorthite	" " "	320
19304	Case 8	Bronzite	Bare Hills, Balt, Md.	323
19305	Case 8	Hypersthene	Labrador.	324
19306	Case 8	Enstatite (decomposed)	Krabat, Styria, Austria	323
19307	Case 8	Enstatite	Pelham, Mass.	323
19308	Case 8	Diopide	De Kalb, N.Y.	325
19309	Case 8	Pyroxene (missing)	Pine, N.Y.	325
19310	Case 8	"	Templeton, Canada.	325
19311	Case 8	"	Orford, Quebec, Canada	325
19312	Case 8	"	Nordmark, Sweden.	325
19313	Case 8	"	Grass Lake, N.Y.	325
19314	Case 8	"	Russell, N.Y.	325
19315	Case 8	"	Pierreport, N.Y.	325
19316	Case 8	Traversellite	Traversella, Piedmont, Italy.	325

19317	Case 8	Pyroxene	Rossie, N.Y.	325
19318	Case 8	Spodumene (1 displaced)	Chesterfield, Mass.	327
19319	Case 8	"	Chester, Mass.	327
19320	Case 8	"	Norwich, Mass.	327
19321	Case 8	~~—~~	~~Branchville, Ct.~~ Exch: 10/31/24 (apparently at least 1 specimen still in collection (June, 1977)	327
19322	Case 8	" (1 displaced)	Chesterfield, Mass.	327
19323	Case 8	" (1 displaced)	Branchville, Ct.	327
19324	Case 8	Pyroxene (2 spec.)	East Russell, N.Y.	325
19325	Case 8	"	Grathan, Ont.	325
19326	Case 8	Hexagonite	Edwards, N.Y.	338
19327	Case 8	Hornblende $Na_2Al_2Si_4O_{12}$	Milford, Mass.	338
19328	Case 8	Wollastonite	Diana, Lewis Co., N.Y.	329
19329	Case 8	Fowlerite (labeled Trobstite)	Franklin, N.J.	335
19330	Case 8	Pectolite	Bergen Hill, N.J.	330
19331	Case 8	Rhodenite	Franklin, N.J.	335
19332	Case 8	~~Rhodenite~~ Hedenbergite (Bustamite)	Campiglia Marithian, Italy.	325
19333	Case 8	Tremolite	Gouverneur, N.Y.	338
19334	Case 8	Actinolite	Cranston, R.I.	338
19335	Case 8	~~Amphibole~~ Amphibole var. actinolite	Zillethial, Tyrol, Austria	338
19336	Case 8	~~Hornblende~~ Actinolite	Russell, N.Y.	338
19337	Case 8	Cummingtonite	Cummington, Mass.	338
19338	Case 8	Asbestos $Ca(Mg,Fe)_3(SiO_3)_4$	N.C.	338
19339	Case 8	Tremolite	Canaan, Conn.	338
19340	Case 8	Asbestos	Milford, Conn.	338
~~19341~~	~~Case 8~~	~~Beryl~~ OK	~~Goshen, Mass.~~	~~344~~
19342	Case 8	Hornblende $Na_2Al_2Si_4O_{12}$	Ottawa, Canada.	338
19343	Case 8	Beryl $Be_3Al_2(SiO_3)_6$	Unionville, Chester Co., Penn.	344
19344	6G7 Case 8	Garnets in schist	Ft. Wrangell, Alaska.	370
19345	Case 8 Case 10	Beryl	Portland, Ct.	344
19346	Case 8	Nephelene (1 displaced)	Monte Somma, Italy.	357
19347	Case 8	Cordierite (Iolite)	Haddam, Conn.	353
19348	Case 8	Nephelene	Monte Somma, Italy.	357

Dana 7th

19349	Case 8	Cancrinite	Litchfield, Me.	360
19350	Case 8	Haüyne (lafis lazuli)	Monte Somma, Italy.	363 or 365
19351	Case 8	Sodalite	Dunganrai, Hastings Co., Ont.	362
19352		"	Litchfield, Me.	
19353	Case 8	Garnet	Salida, Col.	370
19354		Garnet (Hessonite)	Warrem, N.H.	370
19355	Case 9	Almandite (~~Hess~~) (Garnet var.)	Delaware Co., Penn. HENRY coll.	370
19356	Case 9	Grossularite	Raymond, N.Y.	370
19357	Case 9	Grossularite	Cziklova, Austria.	370
19358	Case 9	Garnet ("spessartite")	Ruby Mt., Nathrop, Col.	370
19359	Case 9	Garnet	Franklin, N.J.	370
19360	Case 9	Hyalosiderite	Antrúm, Ireland.	376
19360½	Case 9	Ouvarovite	Templeton, Canada.	370
19361	Case 9	Forsterite	Monte Somma, Italy.	375
19362	Case 9	Chrysolite	Blue Hills, Del. Co., Penn.	376
19363	Case 9	Chrysolite (Missing)	Montville, N.J.	376
19364	Case 9	Tephroite (destroyed)	Franklin, N.J.	379
19365	Case 9	Chabazite	Arssig, Bohemia(,)	447
19366	Case 9	Chabazite	Chester Co., Penn.	447
~~19367~~	~~6H7~~	~~Apophyllite?~~ 19367 what is it		435?
19368		Pachnolite	Oberstein, Germany	205
19369	Case 9	~~Anderite~~ Analcite	Bergen Hill, N.J.	450
19370	Case 9	Analcite	Delapath, Tyrol. Austria	450
19371	Case 9	Analcite	Cape Blomidan, Nova Scotia, Canada	450
19372	Case 9	Natrolite	Marrienburg, Bohemia.	453
19373	Case 9	Natrolite (disposed)	Bergen Hill, N.J.	453
19374	Case 9	Natrolite	Nova Scotia, Canada	453
19375	Case 9	Scolecite	Iceland.	454
19376	Case 9	Chlorastrolite	Isle Royal, L. Superior.	near 456
19377	Case 9	Muscovite	Buckfield, Me.	458
19378	Case 9	" — $2M_1$	Minot, Me.	458
19379		" (curved)	Buckfield, Me.	458
19380	Case 9	"	Branchville, Ct.	458

			Dana #
19381 Case 9	Muscovite	Pennsburg, Pa.	458
19382 Case 9	Phacolite	Collingwood, Australia.	447
19383 Case 9	Natrolite	Cape Blomidon, Nova Scotia, Canada	453
19384	Biotite $(H,K)_2(Mg,Fe)_4(Al,Fe)_2Si_2O_{16}$	Frontenac Co., Ontario "	462
19385 Case 9	Phlogopite	Rideau Lake, Ont. "	462A
19386 Case 9	Nacrite = 2M, MUSCOVITE	Smithfield, R.I.	458
19387	Lepidolite	Auburn, Me.	460
19388 Case 9	Phlogopite	St. Lawrence Co., N.Y.	462A
19389 Case 9	"	Rideau L., Ontario, Canada	462A
19390 Case 9	Talc	Edwards, N.Y.	484
19391 Case 9	Chlorite	Lake Superior.	469
19392 Case 9	~~Bowenite~~ Antigorite, $Mg_3Si_2O_5(OH)_4$ (Serpentine Group) and traces of Calcite, $CaCO_3$ Ident: X-ray # 167 (S. BAILEY).	Smithfield, R.I.	481
19393 Case 9	Serpentine	Brewster's, N.Y.	481
19394 Case 9	Penite	Schneeberg, Saxony, Germany	302
19395 Case 9	Lepidolite (to x-ray lab 2 Sped)	Paris, Me.	460
19396 Case 9	Zinnwaldite	Altenberg, Saxony, Germany	461
19397 Case 9	Biotite	Renfrew, Canada.	462
19398 Case 9	Phlogopite	Frontenac Co., Ontario, Canada	462A
19399 Case 9	Lepidomelane X-RAY Film # 1167	Litchfield, Mass.	462B
19400	Margarite	Chester Co., Mass.	464
19401 Case 9	Clintonite	Amity, N.Y.	465
19402 Case 9	Masonite (1 test sheet)	Natic, R.I.	466
19403 Case 9	Ottrelite	Cranston, R.I.	467
19404 Case 9	" ~~Ripidolite~~ (?) (Clinochlore) Chlorite-Vermiculite X-ray (S. BAILEY) # 1240	Lebanon Co., Penn.	468
19405 Case 9	Clinochlorite X-ray (S. BAILEY), Film # 111 ; Structure IIb (~~Result~~)	Birmingham, Penn.	468
19406 Case 9	Kämmererite (?penninite ?)	Cecil Co., Md. (specimen x-rayed (Sturges W. Bailey) x-ray film # 1236	468A
19407 7A6 Case 9	Chlorite (same as #19391.)	Spurr M., Lake Superior.	469
19408 Case 9	Diabantite? Danburite?	New Britain, Conn. (specimen x-rayed (Sturges W. Bailey) x-ray film # 1232	476
19409 Case 9	Delessite	Copper Falls M., Lake Superior.	478
19410 Case 9	" ~~Marmolite~~ Lizardite and Orthochrysotile (Serpentine Group). $Mg_3Si_2O_5(OH)_4$ specimen x-rayed (S. BAILEY) # 182	Hoboken, N.J.	481
19411 Case 9	Serpentine	Barnle, Norway.	481
19412 Case 9	"	Montville, N.J.	481
19413 Case 9	Talc.	Manville, R.I.	484

Dana 17

19414	Case 9	Koalin (?Kaolinite?)	Bedford, Ind. Film no 798	492
19415	Case 9	Stéatite (after chiastolite?)	Carbonate M., Leadville, Col.	484
19416	Case 10	Titanite	Renfrew, Ontario, Canada.	510
19417	7B5	Apatite	Montreal, Oregon	549
19418	Case 10	"	Ont., Canada	549
19419	Case 10	Pyrophyllite, $Al_2Si_4O_{10}(OH)_2$	Graves Mt., Lincoln County, Ga.	497
19420	Case 10	~~Chysocolla~~ Malachite + Azurite	Logan Co., Kansas	504
19421	7B3	Chrysocolla $CuSiO_3 + 2H_2O$	Gila Co., Ariz.	504
19422	Case 10	Titanite	Gratton, Ontario, Canada	510
19423		"	Tavetsch, Switzerland.	510
19424	Case 10	"	Diana, Lewis Co., N.Y.	510
19425	Case 10	Columbite (disperced)	Middlefield, Ct.	525
19486	Case 10	" in quartz	Glastonbury, Ct.	525
19427	Case 10	"	Chesterfield, Mass.	525
19428	Case 10	Samarskite	Mitchell Co., N.C.	529?
19429	Case 10	Triplyhite (?)	Stoneham, Me.	543
19430	Case 10	Apatite ~~(2 spec.)~~	~~Renfrew, Can.~~ Renfrew Fam. 1 specimen. Exchanged with A. Vinje for services	549
19431	Case 10	" (2 spec.)	Bob L., Canada	549
19432	Case 10	"	Grathan, Ontario, Canada	549
19433	Case 10	"	Kingston, Canada	549
19434	Case 10	Pyromorphite	Braubach, Nassau, Germany	550
19435		"	Broken Hill M., N.S.W.	550
19436	7B5	"	Phenixville, Penn.	550
19437	Case 9	Scapolite	Grass Lake, N.Y.	485?
19438	Case 9	"	Burgess, Ontario, Canada	485
19439	Case 9	"	Russell, N.Y.	485
19440	Case 9	Willemite	Franklin, N.J.	381
19441	Case 9	Méionite X-RAY Film # 1151	Monte Somma, Italy.	386
19442	Case 9	Scapolite	Bolton, Mass.	485
19443	Case 9	Vesuvianite (?xanthite?)	Monte Somma, Italy.	393
19444	6H2	"	Guilford, Conn.	393
19445	Case 9	Scapolite	Russel, N.Y.	485

19446	Case 9	Vesuvianite (?xanthite?)	Fassathal, Tyrol.	393
19447	Case 9	Scapolite	Mc Comb, N.Y.	386-390
19448	Case 9	Vesuvianite (?xanthite?)	Sadford, Me.	393
19449	Case 9	Zircon,	Brudenelle, Ontario, Canada	394
19450	Case 9	Egeran (Vesurianite)	Eger, Western Bohemia, Czechoslovakia	393
19451	Case 9	Zircon	Lewis Co., N.Y.	394
19452	Case 9	Pyenite	Altenberg, Saxony, Germany	397
19453	Case 9	Topaz	Brazil, S.America	397
19454	Case 9	Topaz	Thomas Mt., Utah.	397
19455	Case 9	Topaz	Auburn, Me.	397
19456	Case 9	Scapolite	N. Bridge, N.Y.	485
19457	Case 9	Chiastolite	Rochester, N.H.	398
19458	Case 9	Sillmanite (1 dis/pared)	Chester, Conn.	399
19459	Case 9	Andalusite (1 dis/pared)	Lisens, Tyrol, Austria	398
19460	Case 9	" (1 dis/pared)	Chester Co., Penn.	398
19461	Case 9	Sillmanite Al_2SiO_5 Al_2SiO_5	Yorktown, N.Y.	399
19462	Case 9	Kyanite	Yancey Co., N.C.	400
19463	Case 9	Kyanite	Swain Co., N.C.	400
19464	Case 9	"	Lancaster Co., Penn.	400
19465	Case 9	Datolite (2 spec.) (2 dis/pared)	Bergen Hill, N.J.	401
19466	Case 9	Zoisite (Rose-red Zoisite)	Conway, Mass.	406
19467	Case 9	Thulite	Telemark, Norway.	406
19468	Case 9	Zoisite	Buck Creek, Clay Co., N.C. HENRY COU ?	406
19469	Case 9	Epidote	Untersulzbachthal, Tyrol, Austria	407
19470	Case 9	Thulite (Zoisite var. Thulite)	Delaware Co., Penn.	406
19471	Case 9	Klinozoisite	Praegratten, Tyrol. Austria (?Pregarten?) near	406
19472	Case 9	Albanite	Amherst Co., Va.	409
19473	Case 9	Epidote	Arendal, Norway.	407
19474		Epidote	Willimantic, Ct.	407
19475	Case 9	Danburite	Russell, N.Y.	396
19476	Case 9	Kyanite	E. Bradford, Chester Co., Penn.	400
19477	Case 9	Datolite x-rayed, april 1973 film enclosed in card file.	Bergen Hill, N.J.	401
19478	Case 9	Tourmaline	Pierrepont, N.Y.	426

			Dana #
19479 Case 9	Tourmaline	Gouverneur, N.Y.	426
19480 Case 9	" (green)	Middleton, Ct.	426
19481 Case 9	Prehnite	Somerville, Mass.	411
19482 Case 9	"	Phaenix M., Mich.	411
19483 Case 9	"	Bellows Falls, Vt.	411
19484 Case 9	Humite X-RAY Film # 1147	Monte Somma, Italy.	414
19485 Case 9	Chondrodite	Tilly Foster M., Brewster, N.Y.	415
19486 Case 9	"	Amity, Arage Co., N.Y.	415
~~19487 Case 9~~	" Re-entered X-RAY Film # 1156	~~Brewster, Putnen Co., N.Y.~~ # LO 4478	415
19488 Case 9	Calamine	Ogdensburg, N.J.	423
19489 Case 9	Ilvaite	Isle of Elba, France	417
19490 Case 9	Cerite → Cerium-rich Zoisite X-RAY Film 1154	Westmanland, Sweden.	425
19491 Case 9	Staurolite	Fannin Co., Ga.	428
19492	"	Windham, Me.	428
19493 Case 9	Calamine	Bergen Hill, N.J.	423
19494 6H7	Apophyllite	Harz Mts., Germany	435
19495 Case 9	"	Bergen Hill, N.J.	435
19496 Case 9	"	Guanajuato, Mex.	435
19497 Case 9	Heulandite	Fanathal, Tyrol, Austria	438
~~19498 Case 9~~	~~Heulandite & chabozite~~ (Missing) ~~disposed~~	~~Two Islands, Nova Scotia, Canada~~	~~438~~
19499 Case 9	Heulandite (2 spec.)	Nova Scotia, Canada	438
19500	Heulandite	Theigahom, Ireland.	438
19501 Case 9	Beaumonite (Heulandite)	Bare Hills, Baltimore, Md.	438
19502 Case 9	Stilbite (3 spec.)	Cape D'Or, Nova Scotia, Canada HENRY collection	443
19503 Case 9	" (2 spec.) (Missing)	Nova Scotia, Canada	443
19504 Case 9	Chabazite ~~in phonolite~~	Wessons Bluff, Nova Scotia, Canada	447
19505 Case 9	Lawsonite	Santa Flora, Tuscany. (? Italy ?)	near 424
19506 Case 9	Stilbite radiated in gneiss	New York, N.Y.	443
19507 Case 10	Pyromorphite (4 spec.)	Wheatley M., Phaenixville, Penn.	550
{19508 Case 10	Mimetite	Mine La Garonne, Fr.	551
{19508	Lepidolite	Keystone, South Dakota	
19509 Case 10	Tiplite	Stoneham, Me.	555
19510 Case 10	Montebrasite	Montebras, Fr.	559
19511 Case 10	Vanadinite (Pb Cl) Pb_4 $(VO_4)_3$	Yama Co., Ariz.	552

				Dana #
19513	Case 10	Vanadinite	Hillsboro, N.Mex.	552
19514	Case 10	Descloizite (2 spec.) (1 displaced)	Georgetown, N. Mex.	564
19515	Case 10	Lazulite	Graves Mt., Ga.	574
19516	Case 10	Mullicite	Mullica Hills, N.J.	597
19517	Case 10	Vivianite	Cornwall, Eng.	597
19518	Case 10	"	Shrewsbury, N.J.	597
19519	Case 10	Erythrite (1 displaced)	San Juan, Calif.	601
19520	Case 10	Varisite	Montgomery Co., Ark.	611
19521	Case 10	Pharmacosiderite	New York Co., N.Y.	646
19522	Case 10	Barite	Mineral Point, Wis.	719
19523	Case 10	"	Cumberland, Eng.	719
19524	Case 10	"	Lucy M., Nagaunee, Mich.	719
19525	Case 10	"	Cheshire, Ct.	719
19526	Case 10	Turquoise (2 spec.)	Los Cerillos, N.Mex. 1 displaced	642
19527	Case 17 Case 10	Wavellite ($Al_3P_5 \cdot 12H$?stalactitic on limonite?)	Chester Co., Penn.	639
19528	Case 10	"	Montgomery Co., Ark.	639
19529	Case 10	Cacoxene	Weilburg, Nassau, Hanover, Germany	647
19530	Case 10	Diadochite	Tullinggraber near Laben, ~~Ger.~~ Styria, Austria	677
19531	Case 10	Boracite	Limeburg, Hanover.	698
19532	Case 10	Soda Nitre	Chili.	683
19533	Case 10	Borax	Borax Lake, Calif.	707
19534	Case 10	Ulexite	Nevada.	708
19535		Ulexite	Chili.	708
19536	Case 26	Moldavite (Meteorite?)	Moldautheim, Bohemia.	a glass
19537	Case 17	Hartite	Koflach, Styria, Austria	Hydrocarbon
19538	Case 17	Jet	Ohmden, Wütemberg, Germany	Hydrocarbon
19539	Case 10	Wulfenite	Red Cloud M., Yuama Co., Ariz.	818
19540	Case 10	Wulfenite	Colorado.	818
19541	Case 10	Wulfenite	Bleiberg, Saxony, Germany	818
19542		Wulfenite	Utah.	818
19543	Case 10	Scheelite	Zimnwald, Saxony, Germany	814
19544	Case 10	Wulfenite	Eureka, Nev.	818
19545	Case 10	Wolframite	Schlackenwald, Bohemia.	812

Dana #

19546	Case 10	Scheelite	Zinnwald, Bohemia. "Austria" ?	814
19547	Case 10	Scheelite	Zinnwald, Saxony. Germany	814
19548	Case 10	"	Long Hill, Saxony. Germany	814
19549	Case 10	~~Huebneite~~ Wolframite	Los Guijas Camp, ~~Penia~~ Pima Co., Ariz.	812
19550	Case 10	~~Wolfranite~~ Scheelite ~~(2 spec.)~~	Trumbull, Ct.	814
~~19551~~	~~Case 10~~	~~Wolfranite~~	~~Zinnwald, Bohemia. Austria ?~~	~~812~~
19552	Case 10	"	Zinnwald, Saxony. Germany ?	812
19553	Case 10	Gypsium	Poland, Ohio	746
19554	Case 10	Polyhalite	Ishl, Austria. (= Bad Ischl ?)	762
~~19555~~	~~Case 10~~	~~Selenite~~ Disposed	~~Onondaga, N.Y.~~	746
19556	Case 10	"	Gouverneur, N.Y.	746
19557	7C5 Case 10	Gypsum	Paris, France.	746
19558	Case 10	"	Bridgeford, Eng.	746
19559	Case 10	Huebnerite	San Juan Co., Calif.	813
19560	Case 9 Case 10	Anglesite	Anglesea, England	721
19561	Case 10	"	Phaenixville, Penn.	721
19562	Case 10	Anhydrite	Bleiberg, Carinthia. Austria	722
19563	Case 10	Anglesite PbSO4	Tassmania. Australia	721
19564	Case 10	Celestite	Strontian Id., Lake Erie.	720
19565	Case 10	"	Mineral Point, Wis. Locality erroneous	720
19566		Anglesite	Müsen, Siegem, Ger.	721
19567	Case 10 Case 26	Barite	Wildmann, Harz. Germany	719
19568	Case 10	Barite	5 Islands, N.S., Canada. HENRY collection	719
19569	Case 10	Celestite (4 spec.) SrSO4	Girghenti, Sicily, Italy.	720
19570	Case 10	Barite	Fritzington, Eng.	719
19571	Case 10	"	Pribran, Bohemia.	719
19572	Case 10	Barite	Mc Comb, N.Y.	719
19573	Case 10	"	Hungary.	719
19574	Case 10	Thenardite	Mojave, Calif.	716
19575	Case 17	Laterite (Hydrocarbon	Utah.	Hydrocarbon
19576	Case 17	Uintahite (gilsonite) "	Uinta Valley, Utah.	hydrocarbon
19577		Copal (Manilla Gum)		Hydrocarbon
19578	~~Case 10~~	~~Barite (1 disposed)~~	Astrapha Cr., Col.	719

Dana #

19579	Barite (discarded)	De Kalb, N.Y.	719
19580	" (fetid) (discarded)	Near Bernville, Berks Co., Penn.	719
7C4			
19581	Brochantite	Frisco, Utah.	740
19582	Copalite	Island of Zanzibar.	Hydrocarbon
19583 Case 10	Sand after Barite	Rockenberg Nivdl, Frankfurt, Germany From Prof. Emerson.	719
19584	Terrestrial iron, 50% cohenite	Niakomak, Greenland, Ded. by E. Cohen Grerfswald, Ger.	25
19585 Case 26	Terrestrial iron	Ofivak, Greenland.	25
19586 Case 26	Cohenite (Fe Ni Co)3 C from terrestrial iron	Niakomak, Greenland.	25
19587 Case 26	Fulgerites or lightning tubes, See Merril, Bul. U.S. Nat. Museum. Vol. 9, 1887, p. 83.	Illinois.	not a mineral
19588 Case 6	Fluorite containing liquid inclusions	Weardale, Durham, England	175
19589 Case 6	Carigorn stone (quartz) (discarded)	Fowler, N.Y.	210
19590	Rose quartz	Southbury, Conn.	210
19591 Case 10	Silicified wood	Apache Co., Ariz. gift of Capt. J.A. Cote, U.S.A.	210
19592 Case 10	Gypsum	Large crystals.	746
19593	Feldspar	" "	313-320
19594 Case 7	Grape ore (~~hematite~~ Psilomelane	Cary M., Iron Co., Wis. Prest. by L.M. Hardenburgh.	269
19595 Case 19	Limonite after marcasite see #21241	Near Richland Center, Wis. H.B. North, Rurger Col., ~~N.B.~~ N.J.	259
19596 6F4	Fibrous malachite on cuprite (discarded)	Cuba (Mr. Reid)	288
19597	Native copper (same as 21357)	Santa Rita, N.Mex.	15

{19597 Psilomelane (grape ore) Cary Mine, Iron County. Wis.
Source: L.M. HARDENBURGH

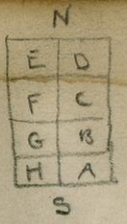

Diagram of Case

Collection of Minerals arranged chemically: supplementary to display collection. 19601 - 19999

No.	Name.	Locality.	Dana H
	Case		
19601	1 Diamond	Kimberly Mine, South Africa.	1
19602	~~I 5~~ 6A4 Copper	Copper Queen Mine, Arizona.	15
19603	~~I 5~~ 6A4 Copper and calcite	Franklin Mine, Mich.	15
19604	~~I 5~~ 6A4 " " "	Calumet & Hecla Mine, Mich.	15
19605	~~I 5~~ Lec. Col. "II 401	Houghton Co., Mich.	15
19606	~~I 5~~ 6A4 "	Michigan. (Keweenaw Dist.)	15
19607	~~I 5~~ 6A4 "	Calumet & Hecla Mine, Mich. (Keweenaw Dist.)	15
19608	~~I 1~~ 6A1 Graphite	Grass L., Jefferson Co., N.Y.	2
19609	~~I 1~~ 6A1 "	Siberia.	2
19610	~~I 1~~ 6A1 "	Ticonderoga, N.Y.	2
19611	~~I 1~~ 6A1 "	Ontario, Canada HENRY collection	2
19612	~~I 1~~ 6A1 "	Chester Co., Penn.	2
19613	~~I 1~~ 6A1 "	Grenville, Quebec, Canada	2
19614	~~I 1~~ 6A1 " → 939 →	Edenville, N. Y. HENRY collection	2
19615	~~I 1~~ 6A1 "	Chester, Mass. Henry Coll.	2
19616	~~I 4~~ 6A1 Sulphur in gypsum	Camillus, N. Y. HENRY collection	3
19617	~~I 4~~ 6A1 Sulphur in selenite	Girghenti, Sicily, Italy	3
19618	~~I 4~~ 6A1 " (and cinnabar)	Lake Co., Calif.	3
19619	~~I 4~~ 6A1 " crystals	" " "	3
19620	~~I 4~~ 6A1 " (in selenite ?)	Girghenti, Sicily.	3
19621	~~I 2~~ 6A1 "	Kilauea, H. I.	3
19622	~~I 4~~ 6A1 "	Peter Reiser Mine, Mineral Point, Wis.	3
19623	~~I 4~~ 6A1 "	Lake Co., Calif. I. G. Yates Collection	3
19624	~~I 4~~ 6A1 " (Miocene age)	val di Noce, Romagios.	3
19625	~~I 5~~ 6A2 Copper	Lake Superior region. ? Mich.?	15

No.		Name.	Locality.	Dana #
19626	6A5	~~Graphite~~ Molybdenite MoS_2	(Canada ?) ~~Ticonderoga, N. Y.~~	34
19627	6A4	Copper in prehnite (beach pebble?)	Isle Royal, Mich.	15
19628		Copper	Quincy Mine, Mich.	15
19629	6A4	Copper	Wheal Basset Mine, Redwith, Eng.	15
19630	6A4	Copper in prehnite and calcite.	Clark Mine, Mich.	15
19631	Case 26	Copper with calcite	Calumet and Hecla Mine, Mich.	15
19632	6A4	Copper crystals	Cornwall, Lebanon Co., Pa.	15
19633	6A4	Copper, Native, Cu	Nizhniy Tagil, central urals, Russia. Henry Coll.	15
19634	6A4	Copper (platy forms)	Pewabic Mine, Mich. exchanged	15
19635	6A4	Copper after azurite	Copper glance, Potosi Mine, ~~Wis.~~ Grant Co. N.M.	15
19636	Ec.	Copper float	Calumet and Hecla Mine, Mich.	15
19637	6A4	Copper in calcite	Animas R. Co., Colorado.	15
19638		Graphite	Ceylon.	2
19639		Gold	Basin, Mont.	13
19640	6A3	Silver in kaolinite	Broken Hill Mine, N. S. W., Australia Source: ENGLISH	14
19641	6A5	Molybdenite	Cumberland, R. I.	34
19642	6A5	"	Chaffee, Colo.	34
19643	6A5	"	Westmoreland, N. H.	34
19644	6A5	"	Cranston, R. I.	34
19645	6A5	Orpiment and realgar Discarded 1944	Nagyag, ~~Hungary~~ Transylvania, Romania	27
19646	6A5	Orpiment	Mercury, Utah.	27
19647	6A5	"	Baia-Spier (Felsöbanya), ~~Hungary.~~ Baia-Mare, N.W. Romania	27
19648	Case 26	Bomeykite	Houghton, Mich.	37
19649	6A4	Copper in epidote	Calumet and Hecla Mine, Mich. (Keweenaw Dist.)	5
19650		Galena (argentiferous)	Denver, Colo.	45
{19650	ESSMC 209}	Argentite	Humboldt, Nevada	
19651	6A6	" " (2 sp.) (1 decomposed)	Humboldt.	45
19652	6A6	" and sphalerite and dolomite.	Missouri. Exchanged	45

No.		Name.	Locality.	Dana #
19653		Galena and limonite	Galena, Ill.	45
~~19654~~	6A6	Galena	Crawford Mine, Wis.	45
19655		"	Lafayette Co., Wis.	45
~~19656~~	6A6	" disposed	Galena, Ill.	45
19657	6A6	" , sphalerite, pyrite.	Makala Mine, Leadville, Colo.	45
~~19658~~	6A6	" and sphalerite disposed	Galena, Ill. Source: H.B. PATTON	45
19659	6A6	" " quartz	Cumberland, Eng.	45
19660		"	Harz, Germany.	45
19661	6A6	" , pyrite, quartz.	Freiburg, Saxony, Germany	45
19662	6A6	"	Clausthal, Harz, Germany	45
MCM 19662		Quartzite	Michigan	
19663	6A6	" and marcasite	---	45
19664	6B3	Sphalerite (1 disposed)	Carterville, Mo.	58
19665	6B3	"	Cumberland, Eng.	58
19666	6B3	" , calcite and marcasite.	Linden, Wis.	58
19667	6B3	"	Chemnitz, Hungary. (? Schemnitz ?)	58
19668	6B3	"	Joplin, Mo.	58
19669	6B3	" (cadmium bearing)	Montague, Sardinia.	58
19670	6B3	" disposed	Cornwall, Eng.	58
19671	6B3	"	Peru Mine, Galena, Ill.	58
19672	6B3	" (1 disposed)	Joplin, Mo.	58
~~19673~~	6B3	" (1 disposed)	Crow Branch Mine, Wis.	58
19674	6B3	"	Galena, Ill.	58
19675	6B3	" and pyrite	Kokomo, Colo.	58
19676		" " calcite	Carterville, Mo.	58
~~19677~~	6B3	" " marcasite	Crow Branch Mine, Grant Co., Wis.	58
19678	6B3	" " chert (1 disposed)	Joplin, Mo.	58

No.		Name.	Locality.	Dana H
19679	6B3	Sphalerite and dolomite	Casper Mine, Smithville, Ark.	58
19680	6B3	" (iridescent) (disposed)	Joplin, Mo.	58
19681	6B3	" (Missing)	" "	58
19682	6B4	Millerite in quartz	Pittstown, Penn. (?HENRY coll.?) no. 33037	70
19683	6B4	Pyrrhotite-chondrodite, hornblende	Brewersts, N. Y.	74
19684		Marcasite on quartz	Hardenberg, Germany.	96
19685		Millerite	Gap Mine, Lancaster Co., Penn.	70
19686	6B5	Quartz and pyrite disposed	Cumberland, Eng.	85
19687	6B2	Zorgite	Tilkerode, Harz. M+s Germany Source: STADTMULLER	52
19688	6B4	Chalcopyrite	Cheshire, Ct.	83
19689	6B4	" on sphalerite (disposed)	(Mineral Point, Wis.)	83
19690	6B2	Clausthalite	Tilkerode, Harz.	47
19691	6F3	Cerussite	Phoenixville, Penn.	281
19692	6B4	Bornite	Wallingford, Ct.	78
19693	7B5	Pyromorphite	Badens Weiler, Swabia, SW. Germany	550
19694	6B4	Chalcopyrite	Joplin, Mo.	83
19695	6B4	" disposed	Bristol, Ct.	83
19696		Marcasite	Crow Branch Mine, Grant Co., Wis.	96
19697		"	Linden Mine, Wis.	96
19698	6B5	Pyrite and calcite disposed	Bergen Hill, N. J.	85
19699	6B5	Pyrite with quartz	Schemnitz, Hungary.	85
19700	6B6	Glaucodote	Hakansbo", Sweden.	101
19701		Auriferous cupro-pyrite and pyrite	Georgetown, Colo.	83
19702	6B5	Pyrite, chalcopyrite and quartz. Disposed.	Ritchman Mine, Georgetown, Colo.	85
19703	6B5	Marcasite Pyrite pebble	Lake Michigan.	96
19704	6B5	Pyrite	French Cr., Chester Co., Penn. HENRY coll. #259a	85
19705		"	Trafajach, Styria, (?) Austria.	85

No.	Name.	Locality.	Dana #
19706 6B5	Pyrite, calcite, galena, gold-bearing disposed	Alps Mine, Gilpen Co., Colo.	85
19707 6B5	Pyrite disposed	Lebanon Co., Penn.	85
19708 6B5	"	Pawtucket, R. I.	85
19709 6B6	Marcasite and siderite — 1 specimen disintegrated & disposed, June 1990	Cap Mine, Penn. — Source: STADTMULLER U.S.	96
19710 6B5	Gersdorfite (nickel glance)	Harz (?), Germany.	90
19711 6B6	Marcasite FeS_2	Brix, Bohemia. (? Czechoslovakia ?) Source: STADTMULLER	96
19712	Pyrite, sphalerite, calcite	Mineral Point, Wis.	85
19713 6B5	Cobaltite	Germany.	89
19714 6A1	Graphite	? Upernavik, Greenland.	2
19715 Case 12	Wyscragite	Cobalt, Ontario.	35
19716	Platinum	Ural Mts., Russia.	20
19717 6B4	Cinnabar	Idvia, Carnviola, Austria.	66
19718	Diamond	Kimberly Mine, South Africa.	1
19719 6A3	Silver and argentite	Cobalt, Dist. Ont. Canada	14
19720 Case 27	Metacinnabarite	Radington Mine, Lake Co., Calif.	59
19721 Case 27	"	Napa Co., Calif.	59
19722 6A5	Stibnite and siderite	? Loben, Kamthia, Germany. (? Loben, Karinthia, Austria ?)	28
19723 7C4	Anglesite on galena	Wheatly Mine, Phoenixville, Penn.	721
19724 6B4	Metacinnabarite	Lake Co., Calif.	59
19725 Lec. Cab. II 903	Cerussite	Bleiall, Nassau, Germany	281
19726	Chalcocite	Anaconda Mine, Butte, Mont.	54
19727 6B4	Chalcopyrite, malachite and chert	Mineral Point, Wis. Henry Collection	83
19728 6B4	Chalcopyrite	Ellenville, N. Y.	83
19729 6B6	Sylvanite	Boulder Co., Colo.	104
19730 6C1	Geyserite	Shasta Co., Calif.	152
19731 6B5	Pyrite & Tremolite (matrix)	French Creek Falls, Chester Co., Penn. HENRY collection	85

X-rayed (S. BAILEY) film # 1756 of

No.		Name.	Locality.	Dana #
19732	~~6B5~~	Pyrite, ~~showing twins~~ disposed		85
19733	6B6	Telluride ore - sylvanite	Battle Mt., Monument, Cripple Cr., Mont. (? Colo. ?)	104
19734	6C2	Nocerite	? Nocera, ~~Flatz~~ Italy	195
19735	6C2	Pachnolite (2 spec.)	Ivigtut, Greenland.	205
19736	6C1	Clay after halite (after large hopper-shaped halite crystal)	Salina, Syracuse, N. Y. Source: HENRY collection, no. 460?	166
19737		Halite	Strassfurt, Germany.	166
19738		Halite, pink	Strassfurt, Germany.	166
19739		Cryolite	Evigtok, Arksutfiord, Greenland.	183
19740		Fluorite	Cumberland, England.	175
19741	6C2	Cryolite and chalcopyrite	Arksut Fjord, Greenland	183
19742	6C1	Fluorite (1 disposed)	Onondaga Co., N. Y.	175
19743	6C2	Laurionite- phosgenite formed by action of sea on ancient slag	Laurium, Greece.	189
19744	6C1	Part of Fluorite geode in water lime	Lower Helderburg Period formation, Onondaga Co., N. Y. (L. Dev.) no. 2934 Henry Coll. #2934	175
19745	6C1	Fluorite (violet), sphalerite and calcite. (Missing)	Cumberland, England. 1364	175
19746	6C1	Fluorite (purple) and pyrite	Thunder Bay, Lake Superior, Canada	175
19747	Lec. Col. II 1223 6C2	Cryolite (4 spec.) Na_3AlF_6	Ivigtut, Greenland.	183
19748	6C2	Atacamite	Mt. Vesuvius, Italy.	193
19749	6C1	Fluorite	Wheatly Mine Phoenixville, Penn. (? HENRY collection ?) - no. 3864	175
19750	6C1	" (green) (1 disposed)	Gouverneur, N. Y.	175
19751	6C1	Fluorite in crevices in granite	Kingston, Ont. (Collected by W.O. Hotchkiss)	175
19752	6C1	Chlorophane (Fluorite var. ...)	Cumberland, R. I.	175
19753	6C1	Fluorite and pyrite	Bergan Peak, Colo.	175
19754	6C1	Fluorite (green) 3364	Plymouth, Ct.	175
19755	6C2	Pachnolite	Greenland. (? Ivigtuk ?)	205

No.	Name.	Locality.	Dana #
19756 Lec. Col. F 106	Fluorite	Macomb, N. Y.	175
19757 6C3	Rose quartz	Bolton, Mass.	210
19758 6C3	Quartz colored by green mica (Missing)	Buenos Ayres, S. America.	210
19759 6C3	Rose quartz (2 spec.) (1 disposed)	Cobalt, Conn.	210
19760 Lec. Col. I 1501	Rose quartz	Southbury, Ct.	210
19761 6C3	Quartz with CO_2 inclusions 3350	Branchville, Ct.	210
19762 6C3	Quartz 3230	Natural Bridge, Lewis Co., N.Y.	210
19763 6C3	Rose quartz	Paris, Me. Henry Collection # 1508	210
19764 6C3	Rose quartz	Ackworth, N.H.	210
19765 Case 6	Quartz	Hot Springs, Ark.	210
19766 Case 6	Quartz enclosing actinolite	Japan.	210
19767 6C3	Quartz (smoky) and feldspar (2 spec.) (1 disposed)	Pikes Peak, Colo.	210
19768 6C3	Quartz (yellow) with dolomite	Lime Rock, R. I.	210
19769 6C3	Quartz crystals	St. Lawrence Co., N. Y.	210
19770 Lec. Col. I 1533	Quartz with tourmaline	Pierreport, N. Y.	210
19771 Case 29	Agate (blue)	Brazil, South America.	210
19772 6C4	Quartz crystals	Elba.	210
19773 6C3	Quartz (amethyst) (1 disposed)	Gammon River, Colo.	210
19774 6C4	Quartz after plagioclase	Tyringham, Mass.	210
19775 6C3	Quartz	Herbiemer Co., Colo.	210
19776 6C3	"	North Bridge, Lewis Co., N.Y.	210
19777 6C3	" with included hematite	Missoula, Mont. F. C. Bond	210
19778 6C5	" (green) doubly terminated crystals	Staten Island, N. Y. Henry coll.	210
19779 6C5	" (coralloidal) (2 spec.)	McKays Head, Nova Scotia. Henry coll.	210
19780 6C5	" (smoky, on granite)	Rockport, Mass. 3046	210
19781 6C5	" ("mud-shot") (1 disposed)	Rondout? Rondont, N. Y.	210

No.		Name.	Locality.	Dana #
19782 A	6C5	Quartz, chalcopyrite, galena	Rico, Colo.	210
19782		Quartz in parallel growth	Silverton, Colo.	
19783	6C4	Rose quartz	— —	210
19784	Lea. Col. I1527	Opal	Fermorf, Queensland, Australia	212
19785		Quartz (1 disposed)	Maine.	210
19786	GER 6C5	Lithiophorite on quartz	Weisbach, Rangersdorf, Germany.	269
19787	case 6	Quartz enclosing mud	Catawba Co., N. C.	210
19788	6C5	Quartz	Rhode Island. (Lime Rock) HENRY coll.	210
19789		"	Rondout (Roundout), N. Y.	210
19790	6C5	" (smoky)	Colorado.	210
19791		Tridymite	San Chrysobal, Pachuca.	211
19792		"	Hidalgo, Mexico.	211
19793	6D2	Hyalite (Opal, var Hyalite)	Yorkville, N. Y.	212
19794	6C5	Novaculite (2 spec.) (1 disposed)	Ouachita Springs, Ark.	210
19795	6C5	Siliceous flour	Minnehaha Co., S. D. Donor: C. E. CULVER	210
19796	6A4	Copper on quartz	Superior, Wis. (?)	15
19797	6B6	Arsenopyrite	Mountain, Oconto Co., Wis.	98
19798	6B5	~~Smaltite-chloanthite~~, largely ~~smaltite~~. disposed:	~~Temiscaming, Cobalt Mine, Ont.~~ locality erroneous.	87
19799	6F2	Smithsonite (botsyoidal) stained by limonite	Mineral Point, Wis.	275
19800	6B1	Galena on smithsonite	Benton, Wis. (Lafayette Co.)	45
19801	6B2	Chalcocite and chalcopyrite	Bully Hill, Colo.	54
19802	Case 6	Quartz	Crystal Mountain, Ark.	210
19803	Case 6	"	Hot Springs, Ark.	210
19804	6C5	"	Hoboken, N. J. HENRY coll	210
19804		" with rutile	Minas. Greece.	
19805		"	Ellenville, N. Y.	210
19806	6C5	"	White Plains, N. C.	210

No.		Name.	Locality.	Dana #
19807	6C5	Rose quartz	Southbury, Ct.	210
19808	6C5 case 6	" " (2 spec.) (1 disposed)	Unknown. Exchanged (1)	210
~~19809~~	~~6C5 Case 6~~	~~Quartz (4 disposed)~~ all disposed	~~" or uncertain.~~	210
19810	6D2 Case 6 #20 Lec. Col. 1931	~~Opal~~. Agatized Coral	Florida "	212
19811	6C5	Quartz	Ratingen b. Düsseldorf, Germany. Coll. WM. H. HOBBS	210
19812	6B5	Pyrite	Roxbury, Ct.	85
19813		Pyrite on quartz	Cumberland, England.	85
~~19814~~	~~6B5~~	~~Pyrite~~ disposed	~~Knauertown, Chester Co., Penn.~~	85
19815	6E1	Cassiterite (wood tin)	St. Blazey, Cornwall, England.	248
~~19816~~	~~6B2~~	~~Chalcocite and calcite~~ disposed	~~Bristol, Ct.~~ HENRY coll.	54
19817	6A1	Graphite, pargasite, calcite,	Amity, Orange Co., N.Y. ? HENRY coll. #814 ?	2
19818	6A1	Graphite	Chester, Mass.	2
19819	6B2	Red ruthite (chalcocite)	Cornwall (?), England.	54
19820	6A3	Auriferous quartz, stained with malachite	California.	13
19821		Arsenopyrite	Acton, York Co., Maine.	98
MS 19821		Allemontite —	Allemont, ~~France~~	
19822	6C1	Tetrahedrite	Cornwall, England.	148
19823	7B5	Pyromorphite	Cumberland, England.	550
19824	7C4	Anglesite	Wheatly Mine, Phoenixville, Penn.	721
19825	6B4	Chalcopyrite	Kapnick, Hungary.	83
19826	6B5	Smaltite	Cobalt District, Ontario, Canada	87
19827	6C2	Pink cryolite partially altered to pachnolite	St. Peters Dome, near Pikes Peak, Colo.	183
19828	6A6	Galena and smithsonite	Wythe Co., Va.	45
19829		Pyrite	Trofajoch, Styria, Austria.	85
19830	6B5	"	Unknown or uncertain.	85
19831	6C1	Fluorite (1 disposed)	Liskead, Cornwall, Eng. (?) (Liskeard)	175

No.		Name.	Locality.	Dana #
19832	6C1	Stephanite	Freiberg, Saxony. Germany	153
19833	~~2131~~ 6C1	"	Unknown. Coll. ENGLISH	153
19834	6B4	Chalcopyrite (1 disposed)	" (Min. Point, Wis.)	83
19835	6B3	Sphalerite and calcite	"	58
19836	Case 27	Greenockite on sphalerite	Joplin, Mo.	68
19837	6C5	Hyalite (Opal, var.)	Lenobia Mine, Bull Hill, Cripple Creek, Colo.	210
19838	6C5	Quartz in parallel growths	Silverton, Colo. (?)	210
19839	Case 27	Tetrahedrite	Kapnik, Hungary.	148
~~19840~~	~~6B3~~	~~Sphalerite and pyrite~~	~~Grant Co., Wis.~~	58
19841	7C6	Herrengrundite (Missing)	Herrengrund, Saxony, Germany	780
~~19842~~	~~6A6~~	~~Galena and cerussite~~ disposed	~~Galena, Ill.~~	~~45~~
~~19843~~	~~6B5~~	~~Pyrite and sphalerite~~ disposed	Galena, Ill.	85 & 58
19844	6B6	Berthierite	Braunsdorf, Saxony, Germany. HENRY collection	119
19845	Case 26	Chilenite, (300 oz. Ag per ton)	North Star Mine, Silverton, Colo.	40
19846	6A6	Sphalerite and galena	Ute and May Mine, Lake City, Colo.	58 & 45
~~19847~~	~~6B6~~	~~Marcasite~~	~~Unknown.~~	96
19848	6B5	Sperrylite (2 spec.)	Sudbury, Ont., Canada	93
~~19849~~	~~6C6~~	~~Agate~~ Specimen missing 5/19/38 RW	~~Lake Superior.~~	~~210~~
19850		" (Kidney)	Middle Park, Colo.	210
19851	6C6 Case 20	" ~~~~ 966	Montana. HENRY Collection (no. ~~1865~~ 5869)	210
19852	Case 20	" (blue)	Brazil.	210
19853		" (not polished)	Drift, St. Croix River, Wis.	210
19854	Case 20	"	Brazil.	210
19855		"	Oberlin, Germany.	210
19856	Case 20	"	Brazil.	210
19857	Case 20	"	"	210

No.		Name.	Locality.	
				Donna H
19858	6C6	Agate, pebbles from Keweenawan lava.	North shore of Lake Superior. Source: U.S.G.S	210
19859	Lec. Col. I 1512	Agate	Brazil.	210
19860	6C6	Novaculite	-- exchanged	210
~~19861~~	~~6C6~~	~~Chalcedony on limestone.~~ (displaced)	~~Centerville, Hickman Co., Tenn.~~	210
19862		" on coral	Tampa, Florida.	210
19863	6C6	" on limestone	Centerville, Hickman Co., Tenn	210
19864	6C6	Coraloidal quartz	McKays Head, Nova Scotia, Canada	210
19865	6C6	Amethyst	Adams Co., Penn. HENRY COLL. HENRY COLL. 304	210
19866		Wood opal	Near Three Forks, Gallatin Co., Mont.	212
19867	case 6	Quartz	St. Gothard, Sicily.	210
19868	6C6	" , columnar growth	?Georgetown? Cripple Creek, Colo.	210
19869	6C6	Amethyst on magnetite	Nova Scotia, Canada Henry Coll.	210
19870	6C6	Quartz	Pikes Peak, Colo.	210
19871	6C6	Chalcedony on quartz	San Juan, Colo.	210
19872	Case 6 6C6	Flint		210
~~19873~~	~~6C6~~	~~Quartz on quartzite~~ (displaced)	~~Devils Lake, Wis. (?)~~	210
~~19874~~	~~6C6~~	~~Chalcedony after calcite~~ (displaced)	~~Rico, Ouray Co., Colo.~~	210
~~19875~~	~~6C6~~	~~Quartz (amethyst)~~ (displaced)	~~Schemnitz, Hungary.~~	210
~~19876~~	~~6C6~~	~~Quartz geode~~ (displaced)	---	210
~~19877~~	~~A11 6D1~~	~~Quartz (ferruginous)~~ (displaced)	Sundwig, Westphalen, Germany	210
19877	(?U.S.G.S.)	Sericite schist	Michigan .33, 48-28	
F13 ~~19878~~	~~6D1~~	~~Petrified "palm"~~ (displaced)	~~Colorado.~~	210
19879	6D1	Jasper 3360	Woodbridge, Ct. Source STADMULLER	210
19880	6D1	Chalcedony on quartz	400' level, Reward Mine, Nevada City, Calif.	210

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No.		Specimen	Locality.	Dana #
19881	6D2	Wood opal	Gallatin Co., Mont. --- to NEWELL 9/28/37	212
19882	6D1	Quartz containing rutile (1 displaced)	White Plains, N. C.	210
19883	6D1	Chalcedony	Yellowstone National Park, Wyo.	210
19884	Lec. Col.	Agate (wood) I 1532	Middle Park, Colo.	210
19885	Case 6	Agatized wood	Chalcedony Park, Ariz.	210
19886		Quartz	Herkimer Co., N. Y.	210
19887	6D1	Quartz after calcite	Newlin, Chester Co., Pa.	210
19888	6D1	Quartz crystals, doubly terminated	Georgetown, Colo.	210
19889	6D1	Geyserite (1 displaced)	Yellowstone National Park, Wyo.	210
19890	6D1	Quartz (on calcite now removed)	Hendenberg.	210
19891	6D1	Chalcedony after calcite	Rico, Ouray Co., Colo.	210
~~19892~~	~~6D3~~	~~Cuprite and malachite~~ sent to Milw. Pub. Museum, 1/20/37 (Exchange)	~~Spensley Mine, Mineral Pt., Wis.~~	~~224~~
19893	6D3	Cuprite (?)	Chili.	224
19894	6D3	Parisite	Mono Co., Calif.	222
19895	6D3	Chalcotrichite (Cuprite, var.)	Cornwall, Lebanon Co., Pa.	224
19896	6D3	Chalcozincite (zincite)	Franklin, N. J. --- HENRY Coll	228
19897	6D3	Cuprite	Cornwall, Pa.	224
19898	6D3	Tenorite (lava of 1760) (1 displaced)	Vesuvius, Italy	230
19899	6D3	Tenorite (" " 1873)	Vesuvius, Italy.	230
19900	Case 7 Case 6 6D3	Zincite, Calcite, Franklinite, Troostite, Willemite, Tephroite (6 spec.) (1 displaced)	Franklin, N. J. Flourescent	228, 270, 23? , 381 379
19901	6D3	Corundum	Franklin, N. C.	231
19909		Cuprite coated with malachite	Chessy, France.	224
19910	6D3	Emery (Missing) (CORUNDUM & Magnetite)	Naxos, Greece.? Turkey? ASIA MINOR, 1 Exch: 10/31/34	231
19911	6D3	Corundum (1 displaced)	Franklin, N. C.	231
19912	6D3	" (1 displaced)	Cumbermere, Ont. CANADA	231
19913	6D3 Case 6	" (2 spec.)	Kingston, Ont. CANADA	231

No.	Specimen.	Locality.	Dana #
19914	603 Lesleyite	Newlin, Chester Co., Pa.	Hydrous Silicate
19915	603 Corundum (emery) (1 dispersed)	Chester, Mass.	231
19916	603 " (1 dispersed)	Coosa Co., Ala.	231
19917	603 " (1 dispersed)	Hamburg, N. Y.	231
19918	603 " and Hereynite 1052	India. - Source: WARD + HOWELL	231
19919	603 " (1 dispersed)	Tallapoosa Co., Ala.	231
19920	603 " altered to Fibrolite	~~Stoups Ford, Burke Co., N.C.~~ Media, Delaware Co., Pennsylvania	231
19921	603 " " " Damonite (Genth)	Unionville, Chester Co., Pa. HENRY Coll.	231
19922	604 "	Black Horse, Media, Delaware Co., Pa.	231
19923	604 " (white & Pink)	Pouck Creek, Clay Co., N.C. HENRY Coll.?	231
19924	604 ~~" , Actinolite~~ (Missing)	~~Cullabrence, Clay Co., N.C.~~ Exch 19924	231
19925	604 " (sapphire) (1 dispersed)	Emery M., Chester, Mass.	231
19926	604 " altered to Prochlorite	Culsarge, Macon Co., N.C.	231
19927	604 " (ruby) Prochlorite (1 dispersed)	Jackson Co., N. C.	231
19928	604 " (pink) altered to Damourite (1 dispersed) (Missing)	Hogred Farm, Jackson Co., N.C.	231
19929	604 " altered to Clinochlore	Towns Co., Ga. 1155	231
19930	604 " altered to Maragodite	Belts Bridge, Iredell Co., N.C.	231
19931	604 " (carborundum)	Combermere, Ont., CANada	231
19932	604 " showing parting	Jackson Co., N.C.	231
19933	604 " altered to Damourite (1 dispersed)	Coosa Co., Ala.	231
19934	604 " " " "	Anderson, S. C. HENRY Collection?	231
19935	604 " (emery)	Manser, Asia Minor.	231
19936	604 " and Magnetite	Naxos, Asia Minor (Turkey?, Greece?)	231
19937	604 " (bronze), Magnetite and Chlorite	Chester, Mass.	231
19938	604 " and Ripidolite	Jenks M., Macon Co., N.C. (HENRY Coll.?)	231

Identification of Ripidolite (film no. 1223) confirmed by x-ray (S. BAILEY) No. 377 (red)

No.		Specimen.		Locality.	Dana #
19939	6D4	Corundum (Sapphire) showing parting		-------	231
19940	6D4	"	in Albite	Chester Co., Pa. HENRY Coll.	231
19941	6D4	"		Newlin, Chester Co., Pa. HENRY Coll.	231
19942	6D4	"		Unionville, Chester Co., Pa. HENRY Coll.	231
19943	6D4	"	(Carborundum)	Middleton, Delaware Co., Pa.	231
19944	6D4	"	in Indianite	Mineral Hill, " " "	231
19945	6D4	"	with Andesine and Maragolite (1 disposed)	Cullabrence, Clay Co., N.C.	231
19946	6D4	"	, Kokscharoffite, Andesine, and Chromite	" " "	231
~~19947~~	~~6D4~~	"	altered to Chlorite and Damourite	Jacobs Mine, Macon Co., N.C. HENRY Coll. ?	231
19948	6D4	"	(1 disposed)	Belts Bridge, Iredell Co., N.C.	231
19949	6D6	Hematite	and quartz (1 disposed)	Fowler, N. Y.	232
19950	6D6	"	(specular)	Ishpeming, Mich.	232
19951	6D6	"	"	Republic M., Mich.	232
19952	6D6	"	" (2 spec.) (2 disposed)	Lake Superior M., Ishpeming, Mich.	232
19953	6D6	"	"	Hawley, Mass. Henry Coll.	232
19954	6D6	"	"	Antwerp, N. Y.	232
{19954		•	-	Marquette, Michigan	
19955	6D6	"	(botryoidal)	Lake Superior M., Mich.	232
19956	6D6	"	"	Rio Mavina, Isle of Elba.	232
19957	6D6	"	(oolitic)	Iron Ridge, Dodge Co. Wis.	232
~~19958 (259)~~	~~6D6~~	"	, soft red	~~Lake Superior Region.~~	~~232~~
19959	6D6	"	(specular)	Marquette, Mich.	232
19960	6D6	"	(micaceous with Alluminite and Hematite)	Lake Superior M., Ishpeming? Mich.	232
19961	6D6	"	and quartz (Missing)	Antwerp, N. Y.	232

No.		Specimen.	Locality.	Dana #
19962	6D6	Hematite (2 spec.)	Antwerp, N. Y.	232
19963	6D6	" in sandstone	Petit Anne Island, Louisiana.	232
19964	6D7	Ilmenite	Chester, Mass. HENRY Coll.	233
19965	6D7	Menaccanite (2 spec.) (disposed)	Litchfield, Ct.	233
19966	6D7	" (Paracolumbite)	Taunton, Mass.	233
19967	6D7	Ilmenite (Washingtonite)	Litchfield, Ct.	233
19968	6D7	" and orthoclase	Waterford, Mass.	233
19969	6D6	Hematite (kidney ore)(2sp.) (disposed)	Lake Superior M., Ishpeming Mich.	232
19970		Magnetite crystals	Unknown.	237
19971	6D7	Washingtonite (Menaccanite)	Litchfield, Ct.	233
~~19972~~	~~7C4~~	~~Celestite (disposed)~~	~~Girgenti, Sicily.~~	~~720~~
19973	6E1	Chromite and talc	Texas, Chester Co., Pa.	241
19974	6D3	Cuprite	~~Chessy, Lyons, France.~~ Lake Superior	224
19975	6D7	Magnetite (lode stone)	Magnet Cove, Ark.	237
19976	6D7	" sand	New Zealand.	237
19977	Case 6 6D7	"	Hopewell, Chester Co., Pa.	237
19978	6E1	Chromite and Chrysolite	Youngs, Young Co., N.C.	241
19979	6D7	Magnetite in Chlorite	Dublin, Hartford Co., Md.	237
19980	6E1	Octahedrite	Bonig d'Orians, Dauphine, Fr.	252
~~19981~~	~~7A2~~	~~Chondrodite and Spinel~~ disposed	~~Amitz, N. Y.~~	~~415~~
19982	6D7	Magnetite	Greiner, Zillerthal, Tyrol., Austria HENRY Coll.	237
19983		"	Guilford, Ct.	237
19984		Pseudobrookite	Aranyesberg, Transylvania.	246
19985	6E1	Franklinite and Calcite (2)	Franklin, N. J. Flourescent	239
19986		Spinel (green and black)	Amitz, N. Y.	234
19987	6D7	Magnetite	Port Henry, Essex Co., N.Y.	237

No.	Specimen.	Locality.	Dana #
19988 6D7	Magnetite, Dysanalyte and Monticellite (loadstone)	Magnet Cove, Ark.	237
19989	Hematite	Binnenthal, Switzerland.	232
19990 6E2	Houghite after spinel	"Philan", N. Y. HENRY Coll.	266
~~19991 6D7~~	~~Magnetite (1 disposed)~~	~~Oneil M., Orange Co., N. Y.~~	~~237~~
19992 6D7	Titaniferous and aluminous magnetite	Dublin, Hartford Co., Md.	237
19993 6D7	Spinel and Chondrodite in crystalline limestone	3 specimens Perch: 10/31/34 Laboro Co., Ont., CANada SOURCE: W.O. Hotchkiss	234
~~19994 6E1~~	~~Rutile (1 disposed)~~	~~Waterford, Mass.~~	~~250~~
19995	Manganite	Negaunee, Mich.	258
19996	Psilomelane	Georgia.	269
19997 6E1	Rutile (3 spec.) (1 disposed)	Graves Mt., Ga.	250
19998 6E1	Cassiterite, SnO_2	Arms Tin M., Dartmoor, Downs, England	248
19999 6E1	" SnO_2	Inverell, New South Wales, Australia	248

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TRENTON

Found, 1865 Washington Co.

MINERAL COLLECTION CONTINUED FROM 19999.

No.		Specimen.	Locality.	Dana #
20501	6E2	Pyrolusite	Rossbach, Nassau, Ger.	254
20502	6E2	Manganite (1 dispersed)	Seefeld, Harz., Germany	258
20503	6E2	Red manganese oxide	Hot Springs, Ark. HENRY Coll.	near 254
20504	6E2	Pyrolusite (1 dispersed)	Nova Scotia, Canada	254
20505	6E1	Rutile	Rison, Norway	250
20506	6E1	Cassiterite (1 dispersed)	Elsemore, N. S. W., Australia	248
20507	6E2	Pyrolusite on Limonite	Salesburg, Ct.	254
20508		Zircon	Green R., Henderson Co., N.C.	394
20509	6E1 Case 1)	Cassiterite (placer tin)	Jahore, Malacca.	248
20510	6E1	Rutile	Waterford, Mass.	250
20511	6E1	Cassiterite in Granite	Ross M., Gaffney, S. C.	248
20512	6E1	Octahedrite	Birmenthal, Switzerland.	252
20513	6E1	Cassiterite	Mt. Poischoff, Tasmania, Australia	248
20514	6H2	Zircon (1 dispersed)	Renfrew Co., Ont, CANada	394
20515	6E1	(Anatase) Octahedrite	Tavetsch, Switzerland.	252
20516	6E1	Rutile	Kora Yoe, Carinthia, Austria.	250
20517	6E1	Octahedrite	Birmenthal, Switzerland.	252
20518	6E1	" (1 dispersed)	Rauris, Salzburg, Tyrol, Austria	252
20519	6E2 Case 7	Nemalite (fibrous Brucite)	Hoboken, N. J. HENRY Coll.	262
20520	case 7	Brucite, $Mg(OH)_2$	Lancaster County, Pennsylvania [analyzed by x-ray Pattern # 1932]	
20521	6D7	Magnetite in Chlorite schist	" " " (?HENRY Coll.?) no. 776	237
20522	6E2	Psilomelane (grape Ore)	------	269
20523	6E2	" (1 dispersed)	Georgia	269
20524		Manganite	Lake Superior.	258
20525	6E1	Cassiterite and Muscovite vein	Kirkman's Lode, Alviggon, Cornwall, Eng.	248
20526	6E2	Limonite after (Marcasite) Pyrite	Mineral Pt., Wis.	259
20527	6E2 Case 7	Chalcophanite (2 spec.)	Sterling Hill, Ogdensburg, N.J.	268

No.		Specimen.	Locality.	Dana #
20528	Lec. Col. II 816	Pyrolusite and limonite	Negaunee, Mich.	254
20529	6E2	Stibbsite on Limonite (1 disposed)	Richmond, Mass.	264
20530	Lec. Col. II 725	Limonite	Cumberland, R. I.	259
20531	6D7	Magnetite in talc (1 disposed)	Hartford Co., Md.	237
20532	6E2	Bauxite	Ironwood, Ga. Source: ENGLISH	261
20533	6D4	Corundum	Hindoostan.	231
20534	6E1	Chrysoberyl	? Ekaterinenburg, Ural Mts., Russia ?	242
20535		Limonite	Salisbury, Ct.	259
20536	6E2	Diaspore	Newlin, Chester Co., Pa.	256
20537	6E2	Bauxite (1 disposed)	Republic M., Rock Run, Ala.	261
20538	6E3	Calcite and Nacrite	Lime Rock, R. I.	270
20539	6E3	Calcite	Bergen Hill, N. J.	270
20540	6E3	"	Smithfield, R. I. HENRY Coll.	270
20541	6E3	"	Peru M., Galena, Ill.	270
20542	Lec. Col. II 1713	Dolomite and Sphalerite	Hilm M., Smithville, Ark.	271
20543	6E3	Calcite and Sphalerite	Linden M., Wis.	270
20544	6E3	" " Galena in glass rock.	Mineral Point, Wis.	270
20545	6E3	" " Marcasite and Sphalerite	Diamond Grove, Wis.	270
20546	6E3	" (1 disposed)	Copper Falls M., Mich.	270
20547	6E3	Limestone and calcite	Lady Alice M., Leadville, Colo.	270
20548	6E3	Calcite (1 disposed)	Partridge Island, Nova Scotia.	270
20549	6E3	" with Sphalerite and Quartz	Pie Island, Canada.	270
20550	6E3	" and Copper	Ontonagon Co., Mich.	270
20551	6E3	" (1 disposed)	Bergen Hill, N. J.	270
20552	6E3	" , Galena, Pyrite	Crow Branch M., Wis.	270

No.		Specimen.	Locality.	Dana #
20553	6E3	Calcite (2 spec.) (Dogtooth Spar) (1 disposed.	Smithfield, R. I. HENRY Coll. no 2039	270
20554	6E3	"	Andrearburg, Harz, Germany	270
20555	6E3	"	Chester Co., Pa.	270
20556	6E4	", oolitic limestone (disposed)	Kamdem, Baden, Ger.	270
20557		"	El Paso Co., Colo	270
~~20558~~	~~6E4~~	~~"~~ disposed		~~270~~
~~20559~~ D	6E4	~~" (Mexican onyx)~~	~~Mexico~~.	270
~~20560~~ D	6E4	~~" and limestone~~	~~Wheel of Fortune M., Kokomo, Colo.~~	270
20561	6E4	" and sphalerite	Bergen Hill, N. J.	270
20562	6E4	" showing etchings	Linden M., Wis.	270
20563	6E4	"	S. W. Wisconsin. exchanged	270
20564	6E4	" on Sulphur and Celestite	Ginghenti, Sicily, Italy.	270
MS 20564		" - Calcite, pink disposed	Linden Mine, Wis.	
~~20565~~	~~6E4~~	~~"~~	~~Linden, Wis.~~	270
20566	6E4	Travertine (2 spec.) 1 disposed.	Wyoming, Wis.	270
20567	6E4	Calcite (1 disposed)	Calumet & Hecla M., Mich.	270
20568	6E4	" (pink)	Linden, Wis. LO 4/29	270
20569	6E4	" on gypsum	Partridge Island, Nova Scotia. Canada.	270
20570	6E4	" (1 disposed)	Dodgeville, Wis. HENRY Coll.	270
20571	6E4	" on Manganese	Carthagena, Spain.	270
20572	6E4	"	Lockport, N. J.	270
20573	6E4	" (1 disposed)	Apishapa, Colo.	270
20574	6E4	" (1 disposed)	Wheatly M., Chester Co., Pa.	270
20575	6E4	" (oolite)	Salt Lake, Utah.	270
20576	6E4	" (pink)	Franklin, N. J.	270
20577	6E5	" (1 disposed) (Missing)	Andreasberg, Harz, Germany	270
~~20578~~ D	~~6E5~~	~~"~~	~~Hardenberg, "~~, Germany	270
20579		"	Rockland, Me.	270

No.	Specimen.	Locality.	Dana #
20580	6E5 Calcite	Mineral Pt., Wis. HENRY Coll.	270
20581	6E5 " (1 dispersed)	Cheshire, Ct.	270
20582	6E5 " and Chalcopyrite	Rossie, N. Y.	270
20583	6E5 " and Sphalerite	Mineral Pt., Wis.	270
20584	6E5 "	Cheshire, Ct. Henry coll	270
20585	6E5 " on Hematite (1 dispersed)	Bilboa, Spain	270
~~20586~~	6E5 "	~~Limerock, R. I.~~	270
20587	6E5 "	Galena, Ill.	270
20588	6E5 " and Dolomite in trap	Sorthington, Ct.	270
20589	6E5 " (1 dispersed)	St. Lawrence Co., N.Y.	270
20590	6E5 "	Lockport, N. Y.	270
20591	6E5 "	Belmont, Wis.	270
20592	6E5 " (2 generations)	Mineral Pt., Wis.	270
20593	6E5 " ("star")	Rossie, N. Y.	270
20594	6F1 "	Galena, Ill. Exchanged	270
20595	6E5 " (1 dispersed)	Dodgeville, Wis. HENRY Coll.	270
20596	6E5 " , ~~Pyrite~~ Marcasite and Sphalerite	Peru M., Galena, Ill.	270
20597	6E5 " (Strontianocalcite)	Broken Hill M., N.S.W., Australia	270
20598	6E5 " (Pink)	Rockland, Me.	270
20599	6E5 "	Peru M., Galena, Ill.	270
20600	6E5 " (? and Celestite?)	Tiffin, O.	270
20601	6E7 Magnesite	California. exchange Field Museum, Chicago.	272
20602	6E5 Calcite and Smithsonite	Welch Settlement, Iowa Co., Wis. HENRY Coll.	270
20603	case 7 Ankerite	Felsobanga, Hungary	271A
20604	6E7 Magnesite	Mineral Hill, Delaware Co., Pa.	272
20605	6E7 Siderite (1 dispersed)	Newbury, R. I. HENRY Coll. no. 3309	273
20606	(Ankerite) Siderite ("Spathic Iron")	Cranston, R, I. ?HENRY? collection no. 862	271A
20607	Lec. Col. II 714 Dolomite	Gilesia, Prussia (?Silesia, Now: Poland)	271

No.	Specimen.	Locality.	Dana
20608 6E6	Calcite (?Pink?)	Cork, Ireland. HENRY Coll.	270
20609 6E6	"	Wiehawken, N. J. ?	270
{20609	Tourmaline (brown)	— — — given to Kermit Berger, Soils dept. 5/13/38	
20610 6E7	Siderite and Cryolite	Ivigtuk, Greenland	273
20611 6E7	Ankerite	Londonderry, N. S. (N.W of Truoro, Colchester Co. Canada)	271 A
20612	Siderite	Roxbury, Ct. HENRY Coll.	273
20613 6E6	Onyx (polished)	Missouri. Henry Coll.	270
20614 6E7	Dolomite (1 dispersed)	Jasper Co., Mo.	271
20615 6E7	Siderite	Germany.	273
20616 6E6	Calcite	Andresberg, Harz, Ger.	270
20617 6E7	Magnesite	Oberndorf, St. Katharein, Styria. (?HENRY coll.?) no. 3308 (Austria)	272
20618 6E6	Calcite on Sphalerite	Linden, Wis.	270
20619 Lec.Col.II 709	Siderite	Thomson, Minn.	273
20620 Lec.Col.II 709	" and stibnite	Karuthia, Prussia (?Carinthia, Austria?)	273
20621	Magnesite and Hydro-magnesite	Regla, Cuba.	272
20622 6F2	Aragonite and Sulphur	Cranciana, Sicily, Italy	277
20623 6E6	Calcite	Wyoming valley, near "Lowry", Wis.	270
20624 case 7	Aragonite	Organ Mts., N. Mex.	277
20625 6F2	"	Dox, Pyrenees, Spain? France?	277
20626 6E6	Calcite (Iceland spar)	Joplin, Mo.	270
20627 6F2	Aragonite in amygdaloid	Auvergne, France.	277
20628 6E6	Calcite	Linden, Wis.	270
20629 Lec.Col.II 1710	Aragonite	Eisenerz; Steirnach, Austria.	277
20630 6F2	" (green)	Lebanon Co., Penn.	277
20631 6F2	"	Eisenerz, Styria, Austria	277
20632 6F2	" (flos ferri) (1 dispersed)	Hot Springs, Ark.	277
20633 Lec.Col.II 1712		Chester Co., Pa.	277
{20634 6F2	" (Mexican onyx)	Mexico.	277
Mx {20634	"	North Star Mine, Iron Dist., Elk Co., Nev. (?)	

No.	Specimen.	Locality.	Dana #
20635 6F2	~~Aragonite~~ Calcite (x-rayed) film #1404	Alston Moor, Eng.	277
20636 6F2	Calcite (x-rayed) film #1403	Suisam, Calif.	277
20637 case 7	Aragonite	North Star M., Iron Dist., Elko Co., Nev.	277
20638 6F2	" (flos ferri)	Eisenerz, Styria, Austria	277
~~[redacted]9 6F2~~	~~Smithsonite after Calcite (2 spec.)~~ 2 to SSMC	~~Mineral Pt., Wis.~~	275
20640 6F2	" imprinted by calcite	Linden, Wis.	275
20641 6F2	" replacing calcite	Granby, Newton Co., Mo.	275
20642	Rhodochrosite	Butte, Mont.	274
20643 6E7	"	Saynache Co., Col.	274
20644 6E7	"	Napmik, Hungary	274
20645	"	Leadville, Col.	274
20646 6E7	" (1 disposed)	Branchville, Ct.	274
20647 6E7	" , Pyrite, Quartz	" "	274
ug {20647	Palmer Gneiss, ?Quartzite?	Michigan — specimen donated to Norris Johnes, Oshkosh, 1970	
20648 6F2	Rhodochrosite	Alston Moor, Eng.	274
20649	Cerussite	Mammoth Mines, Pinal Co., Ariz.	281
20650 6F2	Smithsonite and Galena	Wythe, Co., Va. Source: U.S. National Museum	275
~~20651 6E6~~	~~Calcite on Manganese oxide~~ Exchange	~~Carthagena, Spain~~	270
20652 6F5	Dawsonite (1 disposed)	Santa Fiosi, Tuscany, Italy	293
20653 6F2	Aragonite (2 disposed)	Karlsbad, Bohemia	277
~~20654 6E6~~	~~Calcite (pink)~~ Exchanged	~~Linden M., Wis.~~	~~270~~
20655 6F2	~~Aragonite~~ Calcite (checked optically 12/12/37) after Hanksite	Albany Co., Wyo.	277
20656 6F3	Strontianite	Hamm, Westphalia.	280
20657 6F3	Cerussite	Mineral Pt., Wis.	281
20658 6F3	Cerussite and Galena	Diamond Grove, Wis.	281
20659 6E6	Calcite (pink)	Peru M., Galena, Ill.	270
20660 6F4	Malachite	Green Mt. Boy M., Wyo.	288
20661 6F4	"	San Antonio, Tex.	288
20662 6F4	" and Azurite	Jefferson Co., Colo.	288

No.	Specimen.	Locality.	Dana #
20663 6F4	Malachite (1 disposed)	Cheyenne, Wyo.	288
20664	" after Azurite	Morenci, Ariz.	288
20665 6F5	Azurite (1 disposed)	Cornwall, Lebanon Co., Pa.	289
20666 6F4	Malachite and Barite	Cheshire, Ct.	288
20667 6F4	" , Azurite and Chalcopyrite	Bear Creek, Wis.	288
20668 6F4	" in copper silicate	Crawford Co., Wis (?HENRY?) collection no. 1048	288
20669 6F4	" and Chalcopyrite and Azurite	Mineral Pt., Wis.	288
20670 Lec. Col. II 413	"	Clifton, N. Mex.	288
20671 6F5	Zaratite	Lancaster Co., Penn.	303
20672 6F4	Malachite	Crawford Co., Wis.	288
20673 6F4	" and Barite (1 disposed)	Middletown, Ct.	288
20674 6F5	Hydromagnesite on marmolite	Hoboken, N. J. HENRY collection no. 3107	300
20675 6F5	Azurite	Mineral Pt., Wis.	289
20676 case 8	Dawsonite	Santa Fiora, Tuscany, Italy	293
20677 6F4	Malachite (1 disposed)	Betzdorf, Nassau, Germany	288
20678 6F5	Azurite	Cornwall, Penn.	289
20679 6F5	"	Shasta Co., Calif.	289
20680 6F4	Malachite replacing wood	Texas.	288
20681 6F5	Azurite	Spessant, Germany. HENRY Coll.	289
20682	"	Clifton, New Mexico.	289
20683 6F5	Dawsonite in limestone	Montreal, Can.	293
20684 6F5	Azurite (1 disposed)	Eagle M., Georgetown, Colo.	289
20685 6F5	" (sent to Milw. Pub. Museum 1/20/37 Exchange)	Mineral Pt., Wis.	289
20686 6F4	Malachite (1 disposed)	Lebanon Co., Penn.	288
20687 6F6	Eudidymite (a complex Beryllium silicate)	Ovre-avo 22?, Langesund Fiord, Norway. Source: ENGLISH & Company	312
20688 ~~6G1~~ x1 ~~case 8~~	Labradorite (Plagioclase Feldspar)	Labrador, Canada Co 4599	319
20689 6F6	Orthoclase Microcline (1 disposed)	Bob Lake, Ont., Canada	313
20690 Case 8 6F6	"	Baveno, Italy. Source: English Co.	313

No.	Specimen.	Locality.	Dana #
20691 6F6	Orthoclase and Nepheline after leucite	Magnet Cove, Ark.	313
Mx 20691	" "	Guanajuato, Mexico	
20692 6F6	" disposed	Kokono, Colo.	313
20693 6F6	Chesterlite (1 disposed)	Poor House Quarry, Chester Co., Penn.	313
20694 6F6	Orthoclase (1 disposed)	Wanen, N. H.	313
20695 6F6	"	Mineral Hill, Delaware Co., Pa.	313
[20696 - - -	Dawsonite - - - -	Santa Fiora, Tuscany, Italy - - - -	
20696 6F6	Petalite (- castorite) crare and biotite $LiAl(Si_4O_{10})$	Bolton, Mass. HENRY Collection (38..)	310
20697 6F6	Feldspar, decomposing	Grand Union M., Carbonateville, Colo.	313-320
20698 6F6	Orthoclase (1 disposed)	Carlsbad, Bohemia.	313
20699 6F6	Moonstone	Hotchkiss M., New Marlborough, Mass.	313
20700 Case 8	Microcline	Amelia Co., Va. (?)	313
20701 6F6 Case 8	Orthoclase 1 retained 3 disposed	Unknown.	313
20702 Case 8	"	Lake Maggine, Italy.	313
20703 6F6	Moonstone (1 disposed)	New Marlborough, Mass.	313
20704 Lec. Coll. III 217	Orthoclase 630	E. Russell, N. Y.	313
20705 6G1	Indianite	Chester, Mass.	320
20706 6G1	Plagioclase disposed	Tine, St. Lawrence Co., N.Y.	316-320
20707 6G1	Anorthite Feldspar	Franklin, N.J. Source: Stadtmüller	320
20708	"	Miakyima, Japan.	320
20709 6G1	Oligoclase &/or Sanidine	Arendal, Norway (?) Source: WARD & HOWELL	317
20710 6G1	"	Branchville, Ct. (?)	317
20711 Case 8	" and Tourmaline	Haddam, Ct.	317
20712 6G1	Albite in mica schist disposed	Mt. Greylock, Mass.	316
20713 6F6	Moonstone disposed	Mineral Hill, Delaware Co., Pa.	313
20714 Lec. Coll. III 209	Albite	Hebron, Me.	316
20715 6G1	" (Cleavelandite)	Auburn, Me.	316
20716	Apophyllite disposed	Tyrol	435

HEWLETT, Cecil George: Significance of Optical variation in some potash feldspars. Ph.D. Thesis 1954 Advisors: Bailey & Emmons (Bull. Geol. Soc. of Am., Vol. 70, PP. 5th. 538, 1959) O-85 14

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No.	Specimen.	Locality.	Dana #
20717 Lec. Col. III 211	Perikline	Tyrol	316
~~20718 6G1~~	~~Albite disposed~~	~~Chesterfield, Mass.~~	~~316~~
~~20719 6G1~~	~~" (2 disposed)~~	~~Unknown.~~	316
20720 6F6	Orthoclase	Tamagama, Yama, Japan.	313
~~20721 6F6~~	~~Microcline (1 disposed)~~	~~Jones Falls, N.Y.~~	315
20722 6F6	Orthoclase (sun-stone) (Missing)	Mineral Hill, Dela. Co., Pa.	313
20723 Case 8	Microcline and Quartz	Pikes Peak, Colo. ← LO 4568	315
20724 Lec. Col. III 218	← Feldspar $KAlSi_3O_8$	" " "	315
~~20725 6F6~~	~~" (1 disposed)~~	~~Crystal Butte, Pikes Peak, Colo.~~	~~315~~
20726 6F6	" and Calcite	Pitcairn, N. Y.	315
20727 6F6	" and Albite	Branchville, Ct.	315
~~20728 6G4~~	~~Asbestus in limestone (1 disposed)~~	~~Bolton, Mass.~~	338
~~20729 6G4~~	~~" (1 disposed)~~	~~Unknown.~~	338
20730 Lec. Col. III 414	Anthophyllite	Upper Providence, Delaware Co., Penn. HENRY Collection	337
~~20731 6G4~~	~~Actinolite (1 disposed)~~	~~St. Lawrence Co., N. Y.~~	338
~~20732 6G4~~	~~" in Talc (1 disposed)~~	~~Smithfield, R. I.~~	338
~~20733 6G4~~	~~" (1 disposed)~~	~~Cedar Mt., __?~~	338
20734 6G4	"	Cumberland, R. I. (?HENRY Coll?) no 2944	338
20734.1 6G4	" ("Thetis hair stone")	" "	338
20735 6G4	"	Burgers, Canada.	338
20736 6G4	"	Tyrol, Germany. Austria	338
~~20737 6G4~~	~~" disposed~~	~~Newfane, Vt.~~	~~338~~
~~20738 6G4~~	~~Tremolite (1 disposed)~~	~~Gouverneur, N. Y.~~	338
20739 6G4	Amphibole, Albite, Graphite	Kaiserberg, Styria, Austria.	338
20740 6G5	Riebeckite	St. Peter's Dome, Colo.	340
~~20741 6G4~~	~~Hornblende~~ ~~one~~ new no. LO ~~20~~ 4330	~~Uncertain.~~ Amity, New York.	338
~~20741.1 6G4~~	~~Actinolite in Talc (1 disposed)~~	~~Belts Bridge, Iredell Co., N.C.~~	338
20742 6G4	"	Providence, R. I.	338
20742a	"	Henry coll. # 5456 Johnston RI.	

No.		Specimen.	Locality.	Dana #
20743	6G4	Asbestus (radiated)	Middletown, Del. Co., Pa.	338
20744	6G5	Arfvedsonite	Magnet Cove, Ark. HENRY Coll. no. 3007	342
20745	6G4	~~Pargasite~~ Tremolite	Natural Bridge, N. Y. HENRY Coll.	338
20746	6G5	Paragasite	Edenville, N. Y.	338
20747	6G5	Nephrite	Cumberland, R. I. Henry Coll # 3421	338
20748	6G5	Edenite	Edenville, N. Y.	338
20749	6G5	Cummingtonite	Cummington, Mass.	338
20750	6G5	Byssolite and Pyrite	Warwick, Chester Co., Penn. HENRY Coll.	338
20751	6G5	Hornblende (dense crystals)	Cleveland M., New Marlboro, Mass. Wm. H. HOBBS Coll.	338
20752	6G5	Actinolite, Hornblende	Pierrepont, N. Y.	338
20753	6G2	Spodumene, Muscovite, Quartz, Feldspar	Goshen, Mass.	327
20754	6G3	Pectolite, Prehnite	Bergen Hill, N. J. HENRY Coll.	330
20755	6G2	~~Killinite~~ (destroyed)	Chesterfield, Mass.	327
20756	6G2	~~Spodumene~~ destroyed	" "	327
20757	6G5	Tremolite in marble	Canaan, Conn.	338
20758	6G2	Pyroxene and pink Calcite	Tilly Foster M., N. Y.	325
20759		Spodumene	Chesterfield, Mass.	327
20760	6G2	Augite	Mt. Rossie, Sicily, Italy	325
20761		Tremolite	Redding, Conn.	338
20762	6G1	Albite	Haddam, Conn. LO 4582	316
20763	6G1	~~Bytownite~~ (destroyed)	Naerodal, Norway.	near 319
20764	6G2	Diallage (Pyroxene var.)	St. Lawrence Co., N. Y.	325
20765	6G3	Photozite (? Rhodonite?)	Cumberland, R. I. Source: WARDS.	335
20766	6G3	Rhodonite	" " HENRY Coll. no. 3187.	335
20767		"	Franklin, N. J.	335
~~20768~~	6G3	~~Wollastonite~~, green Calcite and Pyroxene (Missing) destroyed	Natural Bridge, Diana, Lewis Co., N. Y.	329
20769	6G3	Wollastonite	Monte Somma, Italy.	329

No.	Specimen.	Locality.	Dana H
20770 case 8	Aegerite	Magnet Cove, Ark.	326
20771 6G3	Rhodonite	Minas Geraes, Brazil. Source: St. Louis Exposition	335
20772 6G3	Wollastonite and Calcite (1 disposed)	Natural Bridge, Diana, Lewis Co., N. Y. HENRY COLL.	329
20773 6G3	" and Chondrodite (1 disposed)	Edenville, N. Y.	329
20774 6G3	"	Bucks Co., Penn.	329
20775 6G3	Rhodonite $MnSiO_3$	Broken Hill M., N. S. W. Australia	335
20776 Case 8	" (Fowlerite), with Epidote and Garnet	Trotter M., Franklin, N.J.	335
20777 6H2	Vesuvianite (1 in section) (xanthite) (2 remaining disposed)	Juniper Mts., N. Mex. DON.: A.N. WINCHELL, 1912	393
20778	Stilbite	Coppereid, Nev.	443
20779 6G5	Tremolite in dolomite (1 disposed)	W. Chester Co., N. Y.	338
20780 6G5	" (asbestiferous)	Canaan, Conn.	338
20781 6G5	"	Smithfield, R. I.	338
20782 6G3	Anthophyllite	Medway, Mass. Henry Coll	337
20783 6G5	Tremolite in Dolomite	W. Chester Co., N. Y.	338
20784	Pyroxene in Dolomite	Canaan, Ct.	325
20785 6G2	Pyroxene and " (1 disposed)	Riceville, St. Lawrence Co., N. Y.	325
20786 6G2	" (1 disposed)	Edenville, N. Y.	325
20787	Wollastonite	Amitz, N. Y.	329
20788 6G2	Pyroxene	Templeton, Can. Source: Stadtmuller	325
20789 6G2	"	Bolton, Mass. Henry Coll.	325
20790 6F6	Delawareite (Microcline), $KAlSi_3O_8$	Lenni, Penn. Henry Collection	313
20791 6G6	Danalite in granite	Rockport, Mass.	367
20792 6G6	Beryl (1 disposed)	Newlin, Chester Co., Penn.	344
20793	" (emerald)	Big Crabtree Mt., Mitchell Co., N. C.	344
20794 6G4	Wollastonite, Calcite and Pyroxene (1 disposed)	Natural Bridge, Diana, Lewis Co., N. Y.	329
20795 6G6	Beryl showing zonal structure (1 disposed)	Wilson M., New Milford, Ct.	344

No.	Specimen.	Locality.	Dana II
~~20796 6G6~~	~~Sodalite (1 disposed)~~	Litchfield, Me.	367
20797 6G6	Nephelene	Magnet Cove, Ark.	357
~~20798 6G6~~	~~" (Edaeolite) (1 disposed)~~	" " "	357
20799	Lazulite	Persia.	574
20800 6G6	Beryl	Ackworth, N. H.	344
20801 ~~6G6~~	" (3 spec.) (1 disposed)	Jefferson, Ashe Co., N.C.	344
20802 6G7	Essonite (Garnet var.)	Redding, Ct.	370
~~20803 6G6~~	~~Nephelite (1 disposed)~~	Litchfield, Me.	357
20804 6G6	Beryl	Delaware Co., Penn.	344
20805 6H5	Tourmaline	Penig, Saxony, Germany	426
~~20806 6H5~~	~~" (achroite) (1 disposed)~~	DeKalb, N. Y.	426
~~20807 6H5~~	~~" (black) (1 disposed)~~	Battleboro, Vt.	426
20808 6H5	" (brown) (Missing)	Gouverneur, N. Y.	426
20809 6H5	" (Missing) with Quartz and Lepidolite	Paris, Me.	426
~~20810 6H5~~	~~"~~ (green) with qtz. and lepidolite	" " Source: American Museum of Natural History	426
20811 6H5	"	~~Guilford, Vt.~~ St. Lawrence Co., N.Y.	426
20812 6H5	"	Clarks Ledge, Mass.	426
~~20813 6H5~~	~~" (1 disposed)~~	St. Lawrence Co., NY.	426
20814 6H5	Indicolite ~~and~~ Tourmaline, variety	Goshen, Mass. HENRY Coll.	426
20815 6H5	"	Hebron, Me.	426
~~20816 6H5~~	~~Tourmaline (1 disposed)~~	State Road, Macomb, N.Y.	426
~~20817 6H5~~	~~" in Calcite (1 disposed)~~	Tilly Foster M., N.Y.	426
20818	Garnet (almandite)	Concord, Penn.	370
20819 6G7	" , Franklinite, Calcite (Missing)	Franklin, N.J.	370
20820 6G7	" altered to Chlorite and Magnetite on Chlorite Schist	Spur M., Mich. HENRY Coll.	370
20821 6G7	"	Woodstock, Me.	370
20822 6G7	" and Staurolite in Schist	Salisbury, Ct.	370

No.	Specimen.	Locality.	Dana #.
20823 6H3	Andalusite (Chiastolite)	Lancaster, Mass.	398
20824 ~~6G7~~	~~Garnet altered to Chlorite~~ (~~1 disposed~~)	Chester, Mass.	370
20825 6G7	" in gneiss	East River, Hell Gate, N. Y.	370
20826 ~~6G7~~	~~Polyadelphite~~ (~~1 disposed~~)	Franklin, N.J.	~~370~~
20827 Lec. Col. III 1004	Garnet (Almandite)	Zillerthal, Tyrol, Austria	370
20828 X1,	" "	Salida, Colo.	370
20829 7A5	Biotite in Muscovite (par.growth)	Black Hills, S. D. to R.J. Comer. 2/4/38	462
20830 7A6	Chlorotoid (Masonite)	Natie, R. I. Source: Henry Collection No. 3304 or 3394	466
20831	Margarite	Newlin, Chester Co., Penn.	464
20832 7A5	Phlogopite	New Connecticut, Jefferson Co., N.Y.	462A
20833 7A3	Margarodite (Muscovite)	Mt. Greiner, in the Zillertal, Tyrol, Austria | HENRY collection no. 3285	458
20834 7A6	Ottrelite (Phyllite)	Cranston, R. I.	467
20835 ~~6H2~~	~~Scapolite (gray)~~ (~~1 disposed~~)	Bolton, Mass.	386-390
20836 6H2	" (lilac)	" "	386-390
20837 6H2	"	E. Russel, N. Y.	386-390
20838 ~~6H2~~ X1	Wernerite	Gouverneur, N.Y.	387
20839	Beryl	Inursuike, Siberia.	344
20840 6H2	Scapolite, Pyroxene, Chalcopyrite,	Burgess, Ont, Canada	386-390
20841 6H2	—"— (Missing)	—"— Canada	386-390
20842 6H2	Gehlenite	Tyrol.	392
20843 ~~6H2~~	Idocrase	Windham, Me.	393
20844 6H2	"	Cranston, R. I.	393
20845 6H2	Vesuvianite (Xanthite)	Amity, N. Y. W.T. HENRY Coll. no. 2595	393
20846 ~~6H3~~	~~Danburite~~ (~~1 disposed~~)	Mt. Shofi, Switz.	396
20847 6H3	Kyanite	Cumberland, R. I. HENRY Coll.	400
20848 6H4	Allanite (Orthite) - Epidote Group $(Ca,Fe^{2+})_2(R,Al,Fe^{3+})_3Si_3O_{12}OH$ X ray # 1406	Edenville, N. Y. HENRY Coll.	409

No.		Specimen.	Locality.	Dana II
~~20849~~	~~6H2~~	~~Scapolite (1 disposed)~~	Pierrepont, N.Y.	386-390
20850	6H1	Tephroite and Willemite	Sterling, N.J. Flourescent HENRY Coll. no. 697.	379
~~20851~~	~~6H2~~	~~Zircon in Elaeolite Syenite~~ disposed	~~Litchfield, Me.~~	394
~~20852~~	~~7A3~~	~~Thomsonite~~ Re-entered. # LO 4481	~~Harz Mts., Ger.~~ X-Ray film #284	~~456~~
20853		"	Nova Scotia.	456
20854	7A3	Zeolites	Fritz Island, Berks Co, Reading, Pa.	447-457
20855	7A3	Farolite (Thomsonite) → $NaCa_2(Al_5Si_5O_{20})6H_2O$	Faroe Island. HENRY Coll. no. 3627 HENRY Coll.	456
20856	7A2	Natrolite and Datolite	Bergen Hill, N.J.	453
~~20857~~	~~7B7~~	~~Chalcolite (1 disposed)~~	~~San Juan, Chili.~~	659
20858	Lec. Col. III 247	Chabasite in Phonolite	Aussiz, Bohemia.	447
20859	7A3	Thomsonite	Bergen Hill, N.J. Source: STADTMULLER	456
~~20860~~	~~7A2~~	~~Natrolite (Mesolite) and Calcite~~	~~Guthenberg, N.J. (1 disposed)~~	453
20861	7A1	Phillipsite	Giessen, Germany. Source: Stadtmuller	441
20862	7A2	Natrolite	Salesel, Bohemia. HENRY Coll no. 3425	453
20863	7A2	"	Bergen Hill, N.J.	453
20864	7A2	Analcite	Cyclopean Ids., Sicily, Italy	450
~~20865~~	~~7A2~~	~~" , Calcite, Datolite~~ disposed	~~Bergen Hill, N.J.~~	450
~~20866~~	~~7A2~~	~~" (1 disposed)~~	~~Weehawken, N.J.~~	450
20867	7A2	"	Two Islands, N.S., Canada	450
20868	7A2	"	Seisser Alp, Tyrol, Austria	450
~~20869~~	~~7A2~~	~~Natrolite (1 disposed)~~	~~Bergen Hill, N.J.~~	453
20870	7A2	" , Prehnite, Datolite	" " "	453
20871	7A2	"	Giants Causeway, Ireland.	453
20872	6H3	Monrolite	Monroe, N.Y. HENRY Coll. no. 5658	399
~~20873~~	~~6H3~~	~~Kyanite (1 disposed)~~	~~Lancaster, Penn.~~	400
20874	6H4	Orthite (Allanite) — Epidote Group $(Ca,Fe^{2+})_2(R,Al,Fe^{3+})_3Si_3O_{12}OH$	New York City. HENRY Collection	409
20875	6H3	Fibrolite (Sillimanite) 384	Norwich, Ct. Source: Stadtmuller.	399
20876	6H3	Topaz (2 spec.)	Trumbull, Ct.	397

No.	Specimen.	Locality.	Dana #
20877 6H4	Allanite (1 disposed)	Bethlehem, Penn.	409
20878 6H3	Kyanite (gray) (1 disposed)	E. Bradford, Chester Co., Penn.	400
20879 6H3	Sillimanite	Chester, Ct.	399
20880 Lec. Col. III. 1602	Epidote, Quartz	Willimantic, Ct.	407
20881 6H3	Danburite (2 spec.)	Mt. Shofi, Switzerland.	396
20882 6H3	"	E. Russell, N.Y.	396
20883 6H2	Phenacite	Mt. Sutero, Chaffee Co., Colo.	382
20884 6H3	Andalusite (Chiastolite)	Unknown. (? Lancaster, Mass.?)	398
20885	Epidote	Cumberland, R. I.	407
20886 6H3	Datolite Disposed	Bergen Hill, N. J.	401
20887 Lec. Col. III. 2000	Prehnite	Farmington, Ct.	411
20888	Meerschaum	Media, Penn.	485
20889	Epidote, Quartz, Asbestos from diabase dike	Haileybury, Ont.	407
20890 6H4	Prehnite (1 disposed)	Cheshire, Ct.	411
20891 6H5	"Calamine" = Hemimorphite	Ogdensburg, N. J.	423
20892 6H4	Chondrodite and Magnetite	Tilly Foster M., Putnam Co., N.Y. (? HENRY Coll.)	415
20893 6H4	" in limestone	Brinton Qr. Pennsbury, Penn. HENRY Coll.	415
20894 6H4	", Clintonite, Spinel, Calcite (1 disposed)	Amitz, N. Y.	415
20895 6H5	Calamine	Altenberg, Saxony, Ger. E. Germany.	423
20896 6H4	Chondrodite, ?Magnetite Clinochlore	Tilly Foster M., N.Y. (? HENRY Coll?) Putnam Co. no. 2920	415
20897 6H5	Calamine	Granby, Miss.	423
20898 6H4	Chondrodite, Spinel	Amitz, N.Y. HENRY Coll. no. 260?	415
20899 6H5	Calamine (1 disposed)	Joplin, Mo.	423
20900 6H5	"	Bethlehem, Northampton Co., Penn. HENRY Coll. no. 222?	423
20901 6H5	" (1 disposed)	Franklin, N.J.	423

No.		Specimen.	Locality.	Dana #
20902		Calamine	Sancon M., Lehigh Co., Penn.	423
~~20903~~	~~6H5~~	~~"~~ (Missing) disposed	~~Altenberg, Saxony.~~	~~423~~
~~20904~~	~~6G2~~	~~Spodumene~~ disposed	~~Pennington Co., S. D.~~	~~327~~
20905	6H1	Forsterite, var. Boltonite (2 spec.) (1 disposed)	Bolton, Mass. Henry Coll	375
20906	Lec. Col. III 1100	Olivine	Iceland.	376
20907	6H1	Tephroite (gray), Zincite, Franklinite	Franklin, N.J.	379
~~20908~~	~~6H1~~	~~Forsterite (1 disposed)~~	~~Wassenburg, Styria, Ger.~~ ?Austria.	~~375~~
~~20909~~	~~6H6~~	~~Tourmaline (brown)~~ to Soils dept for research (Missing)	~~Gouverneur, N.Y.~~	~~426~~
20910	6H2	Vesuvianite (1 disposed) (Xanthite)	Guilford, Ct.	393
20911	6H6	Tourmaline (1 disposed)	Pierrepont, N.Y.	426
20912	6H6	"	Franconia, N.H. HENRY Coll.	426
~~20913~~	~~6H3~~	~~Zoisite (disposed)~~	~~Neudorf, Harz,~~ Germany	406
20914	6H2	Zircon var malacon	Cheyenne Canyon, Colo.	394
~~20915~~	~~6H3~~	~~Kyanite (1 disposed)~~	~~Cumberland, R. I.~~	~~400~~
20916	6H7	Apophyllite, Stilbite	Cape D'Or, Nova Scotia, Canada Source: Stadtmuller	435
20917	6H3	Kyanite 382	Newtown, Conn.	400
20918	Lec. Col. III 1002	Garnet	Snarum, Norway.	370
20919	7A6	Kaemmererite (Penninite)	Texas, Lancaster Co. Penn.	468A
Ms {20919		Garnet (franklinite and calcite) --	Franklin, New Jersey	
20920	6H3	~~Kyanite~~ (Missing)	~~Litchfield, Ct.~~ Exch: 10/31/34	400
20921	6H4	Epidote	Cumberland, R. I.	407
20922	6H2	Zircon in metamorphosed limestone	Natural Bridge, Diana, Lewis Co. N.Y.	394
20923	7B3	Chrysocolla	Silver City, N. Mex. HENRY Coll.	504
~~20924~~	~~6G2~~	~~Diopside~~ disposed	~~Russell, N.Y.~~	~~325~~
20925	6G2	Hypersthene	Allen Jct., Mesabi Range, Minn. Source: Wm. H. HOBBS	325
20926		Pyroxene	St. Lawrence Co., N.Y.	325
20927		Fluorite	Castle Dome Dist., Yuma Co., Ariz.	175

No.		Specimen.	Locality.	
20928	7A6	"Kammererite (Penninite)	St. Stephen, Styria, Austria. Henry Coll.	468A
20929	6F5	ur Amichalcite	Betown M., Grant Co., Wis.	290
20930	7B3	~~Chrysocolla~~ Malachite	Cornwall, Penn.	504
20931		Halite	Heilbromn, Ger.	166
20932		"	Kingman, Kans.	166
20933	6A3	Allemontite	Allemont, France.	9
20934	6C2	Laurionite and Phosgenite formed by action of Sea on Ancient Slag.	Laurium, Greece.	189
20935	6G2	Pyroxene (Jeffersonite)	Ogdenburg, N.J.	325
20936	7A3	~~Nacrite (1 disposed)~~	Smithfield, R. I.	458
20937	6G2	~~Sahlite (2 disposed)~~	Franklin, N.J.	325
20938	6C1	Fluorite, Quartz, Siderite (1 disposed)	Cornwall, Eng.	175
20939		Hexagonite	St. Lawrence Co., N.Y.	338
(1) 20940	6H3	~~Topaz~~	Schbekenstein (neck), Saxony, Germany	397
20941	6G2	Pyroxene (1 disposed)	Templeton, Can.	325
~~20942~~	~~6F3~~	~~Cerussite~~ Exchange	~~White Quail M., Kokomo, Col.~~	281
20943	6F5	Pennite on Chromic Iron	Lancaster Co., Penn. HENRY Coll. no. 1252	302
20944		Scapolite	Burgess, Ont. X-Ray Film 758	386-390
20945	6H3	Kyanite	E. Bradford, (Chester Co.) Penn.	400
20946	6H6	Tourmaline	Newlin, Chester Co., Penn. Exchanged	426
20947	6H6	" (1 disposed)	Newton, Ct.	426
20948	6H6	" , Cleavelandite	Chesterfield, Mass.	426
20949	6H6	~~" (Missing)~~	~~Pierrepont, N.Y.~~ Exch: 10/31/34	426
20950	6H6	"	Guilford, Ct.	426
20951	6H6	"	Litchfield, Ct. HENRY Coll	426
20952	6H6	"	Westchester, Penn. HENRY Coll. no. 3513	426
20953		Chondrodite, Chlorite (1 disposed)	Brewsters, Putnam Co., N.Y.	415
20954		" , Spinel (2 spec.)	Amitz, N.Y. HENRY Coll. no. 7565	415
20955	Lec. Col. III 1807	Staurolite	Rockport, Mass.	428

20957

Prehnite in magnetite

Label on specimen reads:
Prehnite in magnetite
Cornwall, Lebanon Co., Pa:
This is a very rare and exceedingly interesting occurrence of a white variety of prehnite lately observed at the great Cornwall ore beds (Geuth).

Cornwall, Lebanon County, Pennsylvania

HENRY Coll. no. 3824

No.		Specimen.		Locality.	
20956	7A3	Chlorastrolite (2 spec.)		Isle Royale, Lake Superior.	near 456
20957	6H4	Prehnite (white) in Magnetite		Cornwall, Penn.	411
~~20958~~	~~6H4~~	"	~~(1 disposed)~~	Dauphiny, France.	411
~~20959~~	~~6H4~~	"	(1 disposed)	Bergen Hill, N.J.	411
20960	6H4	"		Goslar, Harz, Ger. HENRY Coll.	411
20961		"		Scotland.	411
~~20962~~	~~6H4~~	"	~~(1 disposed)~~	Wellingford, Ct.	411
20963	6H4	" , Calcite (amber)		Cheshire, Ct.	411
~~20964~~	~~case 9~~	Epidote	~~(1 disposed)~~	Calumet M., Calumet, Colo.	407
20965	6H6	Tourmaline (black)		Battleboro, Vt.	426
20966		" (Rubellite)		Rumford, Me.	426
~~20967~~	~~7A1~~	Laumonite	~~disposed~~	~~Phoenix M., Mich.~~	~~445~~
20968	6H5	Ilvaite		Elba.	417
20969	Lec. Col. II 1221	Spinel, Chondrodite		Amitz, N.Y.	234
20970	6H6	Dumortierite		Yuma Co., Ariz.	427
20971	6H6	Tourmaline		Lyme, N.H.	426
20972	6H3	Fibrolite on Bucholzite (Sillimanite)		Wilmington, Dela. Henry coll. no. 2927	399
20973	Lec. Col. III 1802	Staurolite		Windham, Me.	428
20974	Lec. Col. III 1804			North Carolina	428
20975	7A2	Mesolite (Antrimolite) (2 spec)	1 disposed	Antrim, Ireland. HENRY Coll. no. 2754	455
20976	7A1	Gismondite		Capo di Bove, Italy.	444
~~20977~~	~~7A2~~	Natrolite (Mesolite)	(1 disposed)	Guttenberg, N. J.	453
20978	7A1	Chabazite on gneiss		Williams Wms. Bridge, N.Y. HENRY Coll. no. 2624	447
~~20979~~	~~7A2~~	Mesolite		Fritz's Island, Penn.	455
20980	6H7	Apophyllite, Stilbite	(1 disposed)	Isle Haute, N. S., Canada	435
20981	7A1	Chabazite (phacolite)		Oberstein on the Nahe, Ger. Henry Coll	447
20982	7A2	Levynite		Antrim, Ireland. HENRY Coll. no. 3228	448

4278

1201

No.	Specimen.	Locality.	Dana 7th
20983 7A1	Chabasite in Phonolite	Wessons Bluff, N. S., Canada	Henry Coll. 447
20984 6G7	Garnet and black Tourmaline	Chester Co., Penn. (1 disposed)	370
20985 6G7	Garnets 24-sides	Warren, N. H. Henry Coll.?	370
~~20986 6H1~~	~~" disposed~~	~~Chester Co., Penn.~~	~~370~~
20987 6H1	Ouvarovite, Rhodochrome, on Chromite	Near New Idria, Monterey Co., Calif.	370
20988 6H1	Garnet (Gussularite), Pyroxene	Ontario, Canada	370
~~20989 6H1~~	~~Garnet (1 disposed)~~	~~Bowdwinhain, Me.~~	370
20990 6H1	Garnet, altered to Chlorite	Burke Co., N.C. (1 disposed)	370
~~20991 6H1~~	~~Almandite (1 disposed)~~	~~Ft. Wrangell, Alaska.~~	458
~~20992 7A3~~	~~Muscovite (1 disposed)~~	~~Plainfield, Me.~~	458
~~20993 7A3~~	~~" (Damourite) (disposed)~~	~~Stoneham, Me.~~	462
~~20994 7A5~~	~~Biotite (Disposed)~~	~~Jones Falls, N.Y. (?)~~	462B
20995 7A5	Annite (lepidomelane)	Rockport, Mass. Source: Henry Collection # 2948 or 3948	231
20996 6D4	Corundum altered to black Spinel, Prochlorite.	Culrogee, Macon Co., N.C.	455
20997 7A2	Mesolite	N. S., Canada Henry Coll. #3314	443
20998	Stilbite, Calcite (2 spec.)	1 disposed Bergen Hill, N.J.	450
~~20999 7A2~~	~~Analcite disposed~~	~~Weehawken, N.J.~~	443
21000 7A1	Stilbite (1 disposed)	N. S., Canada	443
~~21001 7A1~~	~~" (disposed)~~ Scapolite; Wausau, Wis. (section)	~~New York City.~~	456
~~21002 7A3~~	~~Thomsonite, Chabazite, Garnet~~ Scapolite Wausau, Wis. (Section)	~~Fritz I., Penn.~~	443
21003 7A1	Stilbite + Scapolite; Wausau, Wis. (section)	Guttenberg, N.J.	441
21004 7A1	Phillipsite + Scapolite; Wausau, Wis. (Section) 1292	Antrim, Ireland. HENRY Coll.	438
21005 7A1	Heulandite (1 disposed)	C. Blomidon, N.S., Canada	443
21006 7A1	Stilbite, Apophyllite (1 disposed)	Isle Haute, N.S., Canada	447
21007 7A1	Haydenite (chabazite var.)	Bare Hills, Baltimore, Md. 1299 HENRY Coll. no 3169.	443
21008 7A1	Stilbite	Partridge I., N. S., Canada HENRY Coll.	

No.		Specimen.	Locality.	Dana #
21009	7A1	Stilbite	C. D'Or, N. S., Canada HENRY Coll.	443
21010	6H7	Apophyllite	Reading, Penn.	435
~~21011~~	~~6H7~~	" , Stilbite (disposed	N. S., Canada. Source: Stadtmuller	435
21012	6H7	"	Andreasberg, Harz., Germany	435
21013	6H7	"	Keweenaw Pt., Mich.	435
21014	7A3	Thomsonite in Ancient Lava	Vesuvius, Italy Source: WARD & HOWELL	456
21015	7A1	Phillipsite 1293	Faroe Islands. HENRY Coll. no. 3774 danish ?	441
~~21016~~	~~6H7~~	Apophyllite, Natrolite (disposed)	Bergen Hill, N.J.	435
21017	6H7	"	Guanajuato, Mex.	435
~~21018~~	~~7A1~~	Chabazite (2 spec.), Thomsonite, Mesolite, Apophyllite, Garnet (disposed)	Fritz I., Reading, Penn.	447
21019	Lec. Col. III 2219	Quartz and Chlorite	Woonsocket, R. I.	210 & 469
21020	7A6	Clinochlore (Chlorite Group)	Westchester, Penn. source: HENRY Coll	468
21021	Lec. Col. II 2204	Lepidolite	Hebron, Me.	460
21022	7A6	Pelhamite	Pelham, Mass.	480
~~21023~~	~~7A6~~	Diabantite	New Britain, Ct.	476
21024	7A6	Vallite	South Africa.	480
21025	cure?	Chamoisite	Moselle, France.	473
21026	7A6	Corundum in part altered to Prochlorite (disposed)	Culsagee, Macon Co., N.C.	231 & 469
21027	7A6	Proto-vermiculite (1 piece disposed)	Magnet Cove, Ark.	480
21028	6H6	Tourmaline in Muscovite	Paris, Me. A.E. Foote Source	426
21029	7A3	Muscovite (disposed)	Branchville, Ct.	458
21030	7A3	Damourite fibrous and scaly due to the alteration of corundum (Genth	Unionville, Penn. Chester County HENRY collection	458
21031	7A3	Muscovite after Spodumene	Chesterfield, Mass.	458
21032	7A3	Gieseckite (Muscovite var. ...)	Natural Bridge, Jefferson Co., N.Y. (? HENRY Coll.?) no. 3135 ? 428	458
21033	7A3	Muscovite and Quartz	Kokomo, Col.	458

21048.

"Original label on specimen reads :
Talc (from Prof. Genth)
You will observe some black spots and rhombic square forms. They are quite soft and mostly Talc like the mass but are containing remnants of magnetite which gives the color. The whole bed of Talc was formerly magnetite which latter has almost completely disappeared.

Dublin, Harford County, Maryland"

Source : HENRY Collection (red number 4202).

No.		Specimen.	Locality.	Dana #
21034	7A3	Muscovite Henry Coll. # 3363	Williamsburg, Mass.	458
21035		~~Lesleyite (disposed)~~	Newlin, Penn. Hydrous silicate	
21036	7A4	Euphyllite in Tourmaline	Newlin, Chester Co., Penn. HENRY Coll. no. 2910	459
21037	7A3	~~Nacrite (disposed)~~	Smithfield, R. I.	458
21038	7A5	Biotite	Renfrew Co., Ont., Canada	462
21039	6G2	~~Cymatolite~~ disposed	Chesterfield, Mass.	327
21040	7A3	Muscovite after Cymatolite	" " HENRY Coll.	458
21041	7B2	Talc	West Chester, Penn.	484
21042	7B2	"	Carbonate M., Leadville, Colo.	484
21043	7B2	Talc, var. Rensslaerite	Hermon, N.Y. Source: HENRY Collection no. 3784	484
21044	7B2	Talc after Augite	N. B. New Brunswick, Canada	484
21045	Lec. Coll. III 2316	Talc	Mt. Grimer, Zillerthal, Tyrol., Austria	484
21046	Case 9	"	Kantahala, N. C.	484
21047		"	Smithfield, R. I.	484
21048	7B2	" and Magnetite	Dublin, Harford Co., Md.	484
21049	7B3	Saponite	Antrim, Ireland.	488
21050	7B3?	~~Silhomargic~~ Lithomargic? (Meerschaum)	Chester, Mass. HENRY Coll. 3270	485
21051	7B3	~~Montmorillonite (disposed)~~	Transylvania, Hungary? Rumania?	496
21052	7B2	Talc	New Zealand.	484
21053		Serpentine	Chester, Penn.	481
21054	7B3	Fibrous Meerschaum	Cottonwood, Utah.	485
21055	7B2	Talc (slaty) (2 spec.)	New York City.	484
21056	7B1	Picrolite	Texas, Penn.	481
21057	7B3	~~Pyrophyllite (disposed)~~	North Carolina.	497
21058	7B1	Serpentine	Newburyport, Mass.	481
21059	7B1	~~" disposed~~	Brewster, N.Y.	481
21060	7B1	Deweylite	St. Stephens, Obersteirmach, Austria.	482
21061	6E1	Franklinite, Asbestos	New Jersey Zinc Co., New Jersey	239

Number.		Specimen.		Locality.	Dana #
21062	7 B1	Serpentine		Edwards, N. Y.	481
21063	7 B1	"	(1 disposed	Low M., Lancaster Co., Penn.	481
21064	7 B1	" — $Mg_3Si_2O_5(OH)_4$ (Chrysotile, and trace of Lizardite) specimen x-rayed (Bailey, No. 166)		Montville, N. J.	481
21065	7 B1	"	(chrysotile)	Wegatchie, N.Y.	481
21066	7 B1	"	" (1 disposed)	Hermon, St. Lawrence Co., N.Y.	481
21067	7 B1	"		Cornwall, Penn.	481
21068	7 B1	"		Le Terriccia, Tuscany, Italy	481
21069	7 B1	"		Hoboken, N.J.	481
21070	7 B1	"	(1 disposed)	Texas, Penn.	481
21071	7 B1	"	(Marmolite or Kerolite)	Hoboken, N. J. (1 disposed	481
21072	Lec. Col. III 2408	Allophane		Loben, Styria, Germany? Austria?	498
21073	7 B1	Marmolite		Staten I., N. Y.	481
21074	Case 9	Kaolinite, $Al_2Si_2(OH)_4$ 1386		Stevens Pt., Wis.	492
21075	7 B3	Chrysocolla		Lordsburg, Ariz.	504
21076	7 B1	Garnierite		Crow Creek, Douglas Co., Ore.	483A
21077	7 B1	(Serpentine) (Lizardite and Clinochrysotile (both:) $Mg_3Si_2O_5(OH)_4$, corundum, Al_2O_3, and...?		Este City, Socorra Co., N.Mex. Source: WARD'S HOWELL	
21078	7 B1	" , Picrolite		Texas, Penn. Source: St. Louis Exposition? Identified by x-rays (S. BAILEY) film # 181 → Lancaster Co. Henry Collection. S Bailey: x-ray # 185	481
21079	7 B1	Genthite $2Ni{\cdot}O{\cdot}2MgO{\cdot}3SiO_2{\cdot}6H_2O$		Webster, Jackson Co. N. C. Source: U.S. National Museum.	483
21080	7 B4	Melanosiderite		Mineral Hill, Del. Co., Penn. HENRY Collection no. 774	506
21081	7 B3	Allophane 387		Cornwall, Eng.	498
21082	7 B2	Steatite after Chiastolite		Göffersgrün, Germany.	484
(1) 21083	7 B3	Montmorillonite disposed		Branchville, Ct.	496
21084	Case 10	Melanosiderite		Middletown, Penn.	506
21085	7 B3	Chrysocolla disposed		Clifton, New Mex.	504
21086	7 B3	Halloysite		Linden, Wis.	493
21087	7 B3	Montmorillonite	?	Transylvania, ? Harz. Mtns, Germany? ? Hungary	496

Number.		Specimen.	Locality.	Dana #
21088	7B4	Sphene (1 disposed) (Titanite), $CaTiSiO_5$	Oxbow, N. Y.	510
21089	7B4	Sphene in pink Scapolite ($(Na,Ca,K)_4Al_3(Al,Si)_3Si_{16}O_{24}(Cl,F,OH,CO_3,SO_4)$) from Crystalline Limestone	Bolton, Mass.	510
21090	7B4	" (Lederite)	Grathon, Ont., Canada	510
21091	7B4	" "	Renfrew, Ont., Canada	510
21092	7B4	~~" (envelope)~~ Diopside	Oxbow, Ont., Canada	510
21093	7B4	"	Williamsbridge, N. Y.	510
21094	7B4	Fergus~~ite~~ (rock) with Elaeolite	Rockport, Mass. Rockport?	523
21095	7B4	Sphene with Pyroxene and Scapolite	Bolton, Mass. (1 disposed)	510
21096	7B4	Sphene altering to Xanthitane in granite	Jones Zircon M., Green R., Henderson Co., N.C.	510
21097	7B5	Apatite, Calcite 111 ?	Renfrew, Ont., Canada	549
21098	7B5	Apatite, Tourmaline	Pierrepont, St. Lawrance Co., N. Y. HENRY Coll.	549
21099	7B5	" , Magnetite, Quartz (1 disposed)	E. Moriak, Essex Co., N.Y.	549
21100	7B5	" (1 disposed)	St. Lawrence Co., N.Y.	549
21101	7B5	" , Albite 157	Branchville, Ct.	549
21102	7B5	"	Greifenstein, Saxony., Germany	549
21103	7B4	Triphylite	Grafton, N. H. HENRY Coll. No. 3669	543
21104	7B7	Wavellite	Montgomery Co., Ark. Source: FOOTE	639
21105	7B5	Sombrerite (Soda Niter)	Sombrera I., West Indies. Henry Coll.	549
~~21106~~	~~7C5~~	~~Gypsum~~ Disposed	~~Aussei, Styria., Austria~~	746
21107		" (arrow head xl)	Montematre, Paris, France.	746
21108	7C5	"	Grand Rapids, Mich.	746
~~21109~~	~~7C5~~	~~"~~ Disposed.	~~Friedrichsrode, Harz., Germany~~	746
21110	7C5	" (alabaster)	Castelino, Italy. Source: FOOTE	746
21111	7C1	Ulexite, Selenite, Gypsum	Hants, N. S., Canada	708
21112	7C5	Gypsum	Salina, N. Y.	746

Number.	Specimen.	Locality.	Dana #
21113 case 10	Erythrite $Co_3As_2O_8 \cdot 8H_2O$	New Ontario, Ontario, Canada	601
21114 7B6	"	Cobalt, Ont., Canada	601
21115 7B6	Earthy Descloizite	Beaverhead Co., Mont.	564
21116 7B6	Dufrenite	Rocksbridge Co., Va.	573
21117 7B6	Annabergite	Cobalt, Ont., Canada	602
D ~~21118 7B5~~	~~Pyromorphite~~	---	556
21119 7B6	Montrebrasite, Turquoise	Montrebras, France. HENRY Coll. no. 3293	559
21120 7B7	Fischerite (Variscite)	Montgomery Co., Ark.	640
21121 7B7	Wavellite $4Al PO_4 \cdot 2Al(OH)_3 \cdot 9H_2O$	Chester, Co.? Penn.	639
~~21122 7B7~~	" (1 displaced)	Montgomery Co., Ark.	639
21123 Case 10 7B7	" (2 spec.)	Hot Springs, Ark.	639
21124 7B7	" on siliceous schist	Langenstriegis b. Frankenberg? Fraubenberg, Saxony. S.E. Germany	639
21125 7B7	"	Salisel, Bohemia.	639
21126 7B7	Conichalcite	Amer. Eagle M., Tintic Dist., Utah. Source: O.S. FROST	628
21127 case 10	"	Amer. Eagle M., Tintic Dist., Utah.	628
21128 7B6	Lazulite	Graves Mt., Ga. HENRY Coll.	574
~~21129 7B7~~	~~Wavellite (1 displaced)~~	Montgomery, Co.? Ark.	639
21130 7B7	Tyrolite	Amer. Eagle M., Tintic Dist., Utah.	635
~~21131 7B7~~	~~Variscite (1 displaced)~~	Garland Co., Cuba.?	611
~~21132 7B6~~	~~Vivianite (1 displaced)~~	Mullica Hills, N.J.	597
21133 7B6	Psillacinite tt	Iron Rod M., Montana.	567
21134 7B7	Diadochite	Tullinggraber, Leoben, Styria, Austria	677
21135 7B7	Tyrolite	Mammoth M., Tintic Dist., Utah. HENRY Coll.	635
21136 7C1	Ulisite ex, Gypsum	Hants, N. S., Canada	708
21137 7C1	Warwickite	Edenville, N.Y.	700
21138 7C1	Boracite	Wesleregeln, Magdeburg, Ger.	698
21139 7B4	Perofskite	Magnet Cove, Ark.	518

Number.	Specimen.	Locality.	Dana #
21140 7C5	Gypsum (alabaster)	Castelino,? Italy. Source: FOOTE	746
~~21141 7C3~~	~~Barite (1 disposed)~~	Five Isd., N. S., Canada	719
21142 7C3	Barite	Ishpeming, Mich.	719
21143 7C3	"	London Co., Va. HENRY Coll. no. I?84	719
21144 7C3 (1 Disposed)	" and smithsonite (3 spec.)	Mineral Pt., Wis. HENRY Coll. no's. 1614 and 1680	719
~~21145 7C4~~	~~Celestite~~	Strontian Id., Lake Erie.	720
21146 7C3	Barite	Schoharie Co., N.Y.	719
~~21147 7C3~~	~~" (1 disposed) and Quartz~~	Cheshire, Ct. HENRY Coll. no. 1697 HENRY Coll.	719
21148 7C3	"	Kindred & Baker's Mine, Pigeon Pt., Minn. (?HENRY Coll?) no. 1747	719
21149 7C3	Rhodochrosite, Pyrolusite, Barite	McComber Mine Negaum, Md.	274 or 719
21150 7C3	Barite (BROWN SPAR)	Canon City, Col. HENRY Coll. (1758)	719
21151 7C3	"	Carthagena, Spain.	719
21152 7C3	"	Mineral Pt., Wis. HENRY Coll. no's 1615 & 1631	719
21153 7C3	"	DeKalb, N.Y.	719
~~21154 7C3~~	~~", quartz~~	Cheshire, Ct.	719
21155 7C3	"	Jefferson Co., N.Y. HENRY Coll. no. 1755.	719
21156 Case 10 7C3	" on galena	McGregor M., Silverton, Colo.	719
~~21157 7C3~~	~~" (1 disposed)~~	Five Islands, N.S., Canada	719
21158 7C3	"	Parsons M., Maine.	719
21159 7C3	" on phonolite	Rubendorfel, near Aussig, Bohemia, Czechoslovakia HENRY Coll. no. 2628	719
21160 7C3	", quartz	Cheshire, Ct.	719
~~21161 7C4~~	~~Anglesite~~	Tanne, Harz, Ger.	721
~~21162 7C3~~	~~Barite, Calcite~~	Colorado.	719
21163 7C3	" (fetid)	Bernville, Berks Co., Penn.	719
21164 7C4	", Quartz	Cheshire, Ct. HENRY Coll.	719
21165 7C4	", Chalcocite, Bornite	" " HENRY Coll. no. 1683	719

Number.	Specimen.	Locality.	Dana #
21166	Anglesite on cerussite	Broken Hill Ms., N.S.W.	721
21167 7C4	Barite	Baden, Germany.	719
21168 7C4	"	Tetschen, Bohemia.	719
21169 7C4	Anglesite 983	Siegen, Ger.	721
21170 7C4	Celestite	Girghenti, Sicily., Italy	720
21171 7C4	"	Put-in-Bay, Ohio.	720
21172 7B6	Descloizite and Vanadinite	Commercial M., Georgetown, N.M.	564
21173 6H6	Tourmaline (Aroite)	DeKalb, N.Y.	426
21174 7B5	Apatite (1 disposed)	Branchville, Ct.	549
21175 7B5	"	(?City Lake Mine, Burgess, Ontario ?) Burgess, Ont., Canada (Berrgestown ?)	549
21175 7C5	Gypsum and Calcite. cave near Pennington Gap, Virginia		
21176 Lec. Col. II 1720		St. Lawrence Co., N.Y.	549
21177 7B5	Apatite	Jumilla, Murcia, Spain. Source: Stadtmüller	549
21178 7B5	Pyromorphite (1 disposed)	Canada.	550
21179 7C5	Gypsum, and Calcite	Cave near Pennington Gap, Va. Henry Coll. no. 206	746
~~21180 7C6~~	~~Scheelite~~	~~Kern Co., Calif.~~	814
~~21181 7C5~~	~~Gypsum (satin spar)~~ Disposed	~~Derbyshire, Eng.~~	746
(1) ~~21182 7C4~~	~~Barite~~	~~Cheshire, Ct.~~	719
(1) ~~21183 7C1~~	~~Colemanite~~	~~San Bernardino Co., Calif.~~	704
~~21184~~	~~Selenite~~ Disposed.	~~Onondaga, N.Y.~~	746
21185 7C4	Anhydrite	Bluberg, Carinthia., Austria Bleiberg?	722
~~21186 7C5~~	~~Gypsum~~ Disposed	~~Girghenti, Sicily.~~, Italy	746
21187 7C4	Barite (1 disposed)	Frizington, Eng.	719
21188 7C1	Ulexite	Rhode's Marsh, Esmeralda Co., Nev.	708
21189 7C6	Utahite on quartz	Eureka M., Tintic Dist., Utah.	786
21190 7C6	Polyhalite	Aussu, Styria., Austria (Russia?) HENRY Coll.	762
21191 7C4	Brockantite, Malachite and Limonite.	United Verde M., Yavapai Co., Ariz.	740

No.		Specimen.	Locality.	Dana #
21192		Samarskite	Mitchell Co., N. C.	529
21193		Wolframite	Schlackenwald, Bohemia.	812
21194	7C6	"	East Pool M., Cornwall, Eng.	812
[21194		Stibnite Sb_2S_3	Iron County, Utah HENRY Coll.	
21195	7C6	Wulfenite	Red Cloud M., Yuma Co., Ariz.	818
21196	7C6	" ,galena	Bleiberg, Saxony. Carinthia, Austria. HENRY Coll. no. 3592	818
21197	7C6	Wolframite	Schlaggenwald, Bohemia.	812
21198	7C6	Wulfenite $PbMoO_4$ + Q+z	Southampton, Mass. Henry Coll # 3597	818
21199	7C6	Scheelite	Kern Co., Calif.	814
21200	7C6	Hubnerite	Mammoth Dist., Nev.	813
21201	7C6	Wolframite after scheelite	Monroe, Ct. HENRY Coll.	812
21202	7C6	" " " changing to limonite	Long Hill, Ct.	812
21203	7B3	Chrysocolla malachite, bornite in quartz	Cheshire, Ct.	504
21204	7B7	Conichalcite	American Eagle M., Tintic Dist., Utah. Source: O.S. FROST	628
21205	6A5	Mohawkite	Mohawk M., Keweenaw Pt., Mich	37
21206	Case 2C	Keweenawite	" " " " "	37
21207	7C6	Copalite	Zanzibar, Africa. Source: FOOTE	Hydro-Carbon
21208	7A3	Chlorastrolite (1 disposed)	Isle Royale, Lake Superior.	near 456
21209	6E2	Grape ore (~~hematite~~) Psilomelane	Northern Michigan. (presented by Sol. Benges, Madison.)	269
21210	6H6	Tourmaline (brown) (1 disposed)	St. Lawrence Co., N.Y.	426
21211	Case 1D	Apatite	Burgess, Canada, (City Lake Mine)	549
21212	7B5	" 163	Branchville, Ct.	549
E-4-11 21213	U144	Travertine (calcite)	SW 26, T.5, R. 1 E., Mifflin, Iowa Co., Wis.	270
21214	7C6	Scheelite	Zinnwald, Bohemia, Austria	814

No.		Specimen.	Locality.	Dana #
21215	7B1	Genthite $H_4Mg_2N_2(SiO_4)_3+4H_2O$ D 483	{Lancaster Co., Texas, Penn.	483
21216	6E6	Calcite	Bergen Hill, N.J. HENRY Coll.	270
21217	Case 10	Bloldite	Valenca Co., N. Mex.	758
21218	7B4	Columbite	Chesterfield, Mass.	525
21219	Case 10	Mixite	HENRY Coll. no. 26[illegible] Mammoth M., Tintic Dist. Utah.	6068
21220	Lec. Coll. III 2310	Talc	Hunters Mill, Fairfax Co., Va.	484
21221	7C5	Gypsum (alabaster)	Castilius, Italy. Source: FOOTE	746
21222	Lec. Coll. III 2312	Talc (fibrous)	Little York (N. Y.?)	484
21223	7C6	Gilsonite Hydro-Carbon	Uintah Valley, Utah.	Hydrocarbon
21224		Azurite	Tintic Dist., Utah.	289
21225	7B5	Apatite	Iron Co., Utah (F.J. Katz Coll.)	549
21226	7C6	Scheelite and Wolframite (pseudomorphic intergrowth)	Long Hill, Ct. Source: Wm. H. HOBBS	814
21227	6E6	Calcite (satin spar)	Dubuque, Iowa. (? HENRY Coll.)	270
~~21228~~	~~7B2~~	~~Talc (Fibrous) displaced~~	Edwards, (N. Y.?)	484
21229	7C5	Gypsum	Independence, Okla.	746
21230		"	Fort Dodge, Iowa.	746
21231	6D7	Magnetite	New York state.	237
21232	Lec. Set 1419	Franklinite	Franklin, N. J.	239
21233	Lec. Set 1420	" , Zincite, Willemite	" "	239
21234	7B3	Chrysocolla (displaced)	Silver City, N. Mex.	504
(1) ~~21235~~	~~7C5~~	~~Celestite, Sulphur~~	Girghenti, Sicily., Italy	720
~~21236~~	~~6B5~~	~~Pyrite, Quartz displaced~~	Bristol, Ct.	85
21237		"	Louisa Co., Va.	85
21238	6B4	Chalcopyrite (3 spec.) (displaced)	" " "	83
21239	6C4 Case 6	Quartz after wood (2 spec.)	East of Vancouver on Spokane, Portland & Seattle R. R., Clarke Co., Wash. Harvey Hibbing, donor.	210

No.	Specimen.	Locality.	Dana#
21240 6C4	Quartz after wood (wood opal)(2 spec.)	Near Three Forks, Gallatin Co., Mont.	210
21241 6E2 case 7	Limonite after Marcasite	Richland Co., Wis.	259
21242 7D1	Sphalerite and Galena	Mineral Pt., Wis. HENRY Coll.	58
21243 7D1	" " "	Highland, Wis.	58
21244 7D1	Galena altering to Cerrusite, on Smithsonite	Mineral Pt., Wis.	45
21245 7D2	Radiated Marcasite	Linden, Wis.	96
~~21246 7D1~~	~~Galena on Chert~~ missing from case 2/21/58 RW	~~Joplin, Wis.~~	~~45~~
21247 7D1	Sphalerite, Pyrite, Calcite (Nail head Spar)	Diamond Grove, Wis. Exchanged	58
21248 7D1	Galena and Smithsonite	Benton, Wis.	45
21249 7D2	Marcasite	Peru M., Galena, Ill.	96
21250 7D2	Pyrite	Mineral Pt., Wis.	85
21251 7D2	Marcasite, Calcite, Sphalerite	Peru M., Zinc Co., Galena, Ill. discarded	96
21252 7D2	" , Sphalerite (2 spec.)	" " "	96
21253 Exchanged II 13	Smithsonite after Calcite	Mineral Pt., Wis.	275
~~21254 7D2~~	~~Pyrite~~ Marcasite DISINTEGRATED	~~Marsden Diggings, Jo. Davies Co., Ill.~~ Disposed, Nov. 1984 KW	85
21255 Exchanged II 13	Smithsonite after Calcite and Sphalerite	Mineral Pt., Wis.	275
21256 7D4	Calcite geode and Sphalerite	" " "	270
21257 6F5	Azurite and Malachite on Chalcopyrite	" " "	289
21258 WM case 23	Malachite	Near Baraboo, Wis.	288
21259 WM case 23	" , Chalcopyrite	" Boscobel, Wis.	288
21260 7D3	Limonite after Marcasite	Madison quarry, Wis.	259
21261 7D5	Celestite	Cement rock, Milwaukee, Wis.	720
21262 Se	Calcite geode.	Mineral Pt., Wis.	270
21263 6F1	Smithsonite and Sphalerite	" " "	275

No.		Specimen.	Locality.	Dana #
21264	7D4 6F1	Calcite (2 spec.) on x 3d line of fracture	Linden, Mine Wis.	270
21265	7D4	" (4 spec.) on Sphalerite	Mineral Pt., Wis.	270
21266	7D4	" (3 spec.)	Galena, Ill.	270
21267	7D4	" and Sphalerite	Mineral Pt., Wis.	270
21268	7D4	" , Marcasite, Sphalerite (2 spec.)	Peru M., Galena, Ill.	270
21269	7D4	" , Smithsonite and Barite	Mineral Pt., Wis. HENRY Coll.	270
~~21270~~	~~Case 27~~	~~Marcasite~~ DISINTEGRATED. Disposed, Nov. 1984 KW.	~~Peru M., Galena, Ill.~~	~~96~~
~~21271~~	~~7D2~~	~~" , Sphalerite~~ disposed.	~~" " "~~	~~96~~
21272	7D4	Calcite	Linden, Wis.	270
21273	7D4	" , Sphalerite, Trenton limestone.	Mineral Pt., Wis.	270
21274	6F2	Smithsonite, Galena.	Benton, Wis.	275
21275	7D3	Calavertite $AuTe_2$	Gold Mine Victor, Colo. Measured by PALACHE WM. H. HOBBS III Ded. ~~Dor~~ r: F. M. WOODS	near 105
21276	7D4	Calcite ~~(3 spec.)~~	Tiffin, O.	270
21277	7D3 Case 6	Brown Fluorite with Celestite (3 spec.)	" "	175
21278	7D3	Fluorite CaF_2	" "	175
21279	7D1	Sphalerite	" "	58
21280	Wm case 23	Pyrrhotite (2 spec.)	Sec. 13, T. 31, R. 16 E., Oconto Co., Wis.	74
21281	6B6	Goldschmidite Described by W. H. Hobbs, Amer. Jour. Sci., May, 1899, Vol. 7, p. 362. (4 specimens with models and drawings.)	Gold ~~Roller~~ Dollar Mine, Cripple Cr., Colo.	near 10

Specimens presented by Mr. G. SESSINGHAUS

21281. a. = Fig. 1.
21281. b. = Fig. 2. } p. 362, ...
21281. c. = Fig. 3.

21282 - 21361
Minerals from Wisconsin and other places described by W.H.Hobbs, Bull. of Wis., Krystallographie, Vol. 25, p. 258; Am. Journ. of Sci. Vol. 50 p. 121, 1895.

21281-21284
Azurite (domal habit) Mineral Point, wis. (289) / 21283
HENRY coll. also type specimen: W.H.Hobbs / fig. 6
Bull. Univ. of Wis. 1895 pl. 7 fig. 7 / pl.7
21284(MS) and ---/---
Zeitschrift für Krystallographie, Vol.25, fig. 27, / pl.5
1895 / fig. 26

21285
Barite (719) Negaunee, Mich.
Source: J.R. Thompson
Type specimen W.H.Hobbs, Am. Journ. of Sci. Vol.50 pp. 121-128, 1895 (MS).

21286
Barite (719) Linden Mine, Wis.
HENRY Coll. Type Spec. W.H.Hobbs Bull. Univ. of Wis. pl.7, fig4, 1895
and
Zeitschrift für Krystallographie Vol.25, pl.5 fig.24 p.269, 1895. (MS)

21287 Calcite (270) (MS) S.West Wisconsin.
21288 Calcite geode (270) (MS) Mineral Point, Wis.
21289 Calcite twinned (2700 (MS)
21290 - 21291
Calcite (and sphalerite?) (270)
Cement Quarry, Milwaukee, Wisconsin
21291 Doubly terminated calcite
Coll: Prof. Ed. Kremers, School of Pharm., U.W.
Type specimen: W.H.Hobbs Bull. Univ. Wis. fig. 9, 1895.
21292
Calcite (and sphalerite) (270) 2 generations
Cement Quarry, Milwaukee, Wis.
21293 Calcite Linden, Wis. (2700 (MS)
21294 Calcite geode Mineral Point, Wis. (270) (MS)

21295 Calcite (270) (7D4)
Diamond Grove, Wis.
Type Specimen: W.H.Hobbs Bull. Univ. of Wis. pl.4, fig. 6, 1895
and
(MS) Zeitschrift für Krystallographie, Vol. 25, pl. 3, fig. 6, p. 259, 1895.
21296 Calcite (and sphalerite) Mifflin, Wis. (270) (MS)

21297 Calcite Galena, Ill. (270) (MS)
21298 Celestite (and marcasite) (720) (MS)
Cement Quarry, Milwaukee, Wis.
X-ray film #952

Minerals from Wisconsin described by W. H. Hobbs.

Bull. U. of W., Science Ser., Vol. I, No. 4, 1894; Zeitschrift fur Krystalographie, Vol. 25, p. 258; American Jour. of Science, Vol. 50, pp. 121, 1895.

No.		Specimen.	Locality.	Dana A
21282	7D5	Azurite	Mineral Point, Wis.	289
21283	7D5	" I	" " "	289
21284	7D5	" II	" " "	289
21284		" III	" " "	289
21285	7D5	Barite Lucy Mine X-Ray # 951	Negaunee, Mich.	719
21286	7D5	"	Linden, Wis.	719
21287	7D4	Calcite	Southwestern Wisconsin.	270
21288	7D4	"	Mineral Point, Wis.	270
21289	6F1	" ,twinned		270
21290	7D4	"	Cement quarry, Milwaukee.	270
21291	7D4	"	" " "	270
21292	7D4	" , 2 generations	" " "	270
21293	7D4	" , (4 spec.)	Linden, Wis.	270
21294	7D4	"	Mineral Point, Wis.	270
21295	7D4	"	Diamond Grove.	270
21296	7D4	"	Mifflin, Wis.	270
21297	7D4	"	Galena, Ill.	270
21298	7D5	barite ~~and Celestite~~ Celestobarite, Marcasite (2 spec.) X-ray # 952	Cement quarry, Milwaukee.	720
21299 (281) (MS)	7D5	Cerussite X-Ray # 953	Galena, Ill. Twinned crystal. Type specimen: WILLIAM H. HOBBS, Bull. Univ. of Wis., pl. 7, fig. 3, 1895 —and— Zeitschrift für Krystallographie, vol. 25, p. 267, pl. 4, fig. 21, 1895	281
21300	7D5 (MS)	" with galena (3 spec.)	Near Missoula, Mont.	281
21301	7D5	" on galena	Mineral Point, Wis. HENRY collection	281
2130[illegible]	7D5 (MS)	"	Highland. Wis. — HENRY collection 21302 Type specimen: WILLIAM H. HOBBS, Bull. Univ. of Wis. pl. 7, fig. 1 and Zeitschrift für Krystallographie, vol. 25, pl. 4, fig. 19, p. 266, 1895	281
2130[illegible]	7D5 (MS)	" Highland, Wis. Type specimen WILLIAM H. HOBBS, Bull. Univ. of Wis., pl. 7, fig. 2, 1895. —and— Zeitschrift für Krystallographie, vol. 25, p. 266, pl. 4, fig. 19, 1895.	"	281
21304	7D5 (MS)	"	"	281

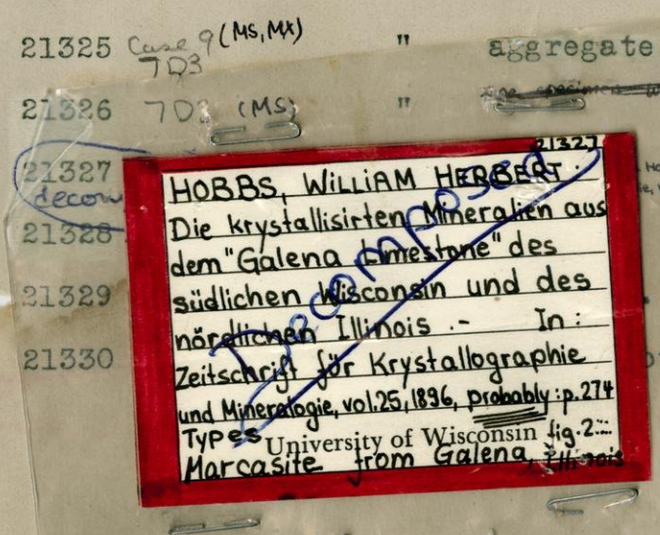
No.	Specimen.	Locality.	Dana #
21305	705 (MS) Cerussite with Sphalerite, etc.	Mineral Pt., Wis	81
21306	701 (MS) Galena	Highland, Wis.	45
21307	701 (MS) " aggregates	" "	45
21308	701 (MS) " arborescent forms	" "	45
21309	701 (MS) "	Mineral Point, Wis. HENRY collection	45
21310	701 (MS) "	Yellowstone, Wis (?Wyo)	45
21311	701 (MS) " skeleton forms	Galena, Ill.	746
21312	705 (MS) Gypsum on Smithsonite and Galena.	Mineral Point, Wis.	259
21313	703 (MS) Limonite after Marcasite	Linden, Wis.	259
21314	703 (MS) " " "	" "	96
21315	702 (MS) Marcasite	Hazel Green, Wis.	96
21316	" (2 spec.)	Linden, Wis	96
21317	703 (MS) " "	Hazel Green, Wis	96
21318	703 " (pseudo-cubic) (2 spec.)	Crow Branch Mine. X-Ray # 970	96
21319	703 (MS) " twins.	Linden Mine.	96
21320	703 (MS) "	Galena, Ill. (?Wis)	96
21321	703 " twinned parallel growth. HENRY collection.	" "	96
21322	703 (MS) " (2 spec.) HENRY collection	Hazel Green.	96
21323	703 (MS) "	" "	96
21324	703 (MS) " Stellate twins.	Diamond Grove, Wis.	96
21325	Cane 9 703 (MS,MX) " aggregate.	Galena, Ill.	96
21326	703 (MS) " [illegible] HOBBS	-----	96
21327	decon " [illegible] HOBBS (Probably in:) [illegible], vol. 25, p. 274, 1895.	Galena, Ill.	96
21328	"	Linden, Wis.	96
21329	")	Lake Superior.	258
21330	oups.	Mineral Point, Wis.	85

HENRY collection
Type specimen: WILLIAM H. HOBBS, Zeitschrift für Krystallographie, vol. 25, p. 9, fig. 19-20, p. 266, 1895

Crystal of pseudo-octahedral habit. HENRY collection.
Type specimen: WILLIAM H. HOBBS, Bull. Univ. of Wis., pl. 8, fig. 7, 1895 and: Zeitschrift für Krystallographie, vol. 25, p. 275, pl. 5, fig. 35, 1895

Type specimen: WILLIAM H. HOBBS, Bull. Univ. of Wis., fig. 6, 1895 and: Zeitschrift für Krystallographie, vol. 25, p. 274, fig. 34, 34a, 34b, 1895

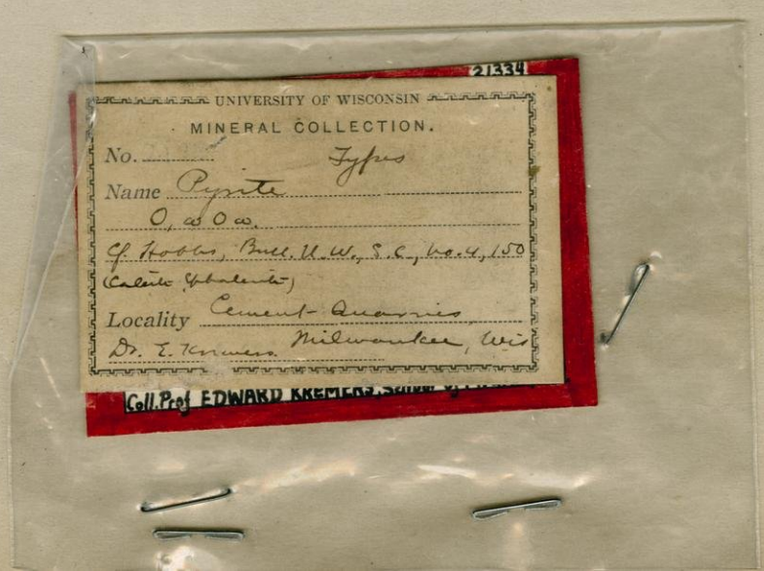
Type specimen WILLIAM H. HOBBS, Bull. Univ. of Wis., pl. 8, fig. 4, 1895, and: Zeitschrift für Krystallographie, vol. 25, p. 274, pl. 5, fig. 32, 1895



No.		Specimen.	Locality.	Dana #
21305	7D5 (MS)	Cerussite with Sphalerite, etc.	Mineral Pt., Wis	81
21306	7D1 (MS)	Galena	Highland, Wis.	45
21307	7D1 (MS)	" aggregates	" "	45
21308	7D1 (MS)	" arborescent forms	" "	45
21309	7D1 (MS)	"	Mineral Point, Wis. HENRY collection	45
21310	7D1 (MS)	"	Yellowstone, Wis (?Wyo)	45
21311	7D1 (MS)	" skeleton forms	Galena, Ill.	45
21312	7D5 (MS)	Gypsum on Smithsonite and Galena.	Mineral Point, Wis.	746
21313	7D3 (MS)	Limonite after Marcasite	Linden, Wis.	259
21314	7D3 (MS)	" " "	" "	259
21315	7D2 (MS)	Marcasite	Hazel Green, Wis.	96
21316		" (2 spec.)	Linden, Wis	96
21317	7D3 (MS)	" "	Hazel Green, Wis	96
21318	7D3	" (pseudo-cubic)(2 spec.)	Crow Branch Mine. X-Ray # 970	96
21319	7D3 (MS)	" twins.	Linden Mine.	96
21320	7D3 (MS)	"	Galena, Ill. (?Wis) Crystal of pseudo-octahedral habit. HENRY collection. Type specimen: WILLIAM H. HOBBS, Bull. Univ. of Wis., pl. 8, fig. 7. 1895 and: Zeitschrift für Krystallographie, vol. 25, p. 275, pl. 5, fig. 35, 1895	96
21321	7D3	" twinned parallel growth. HENRY collection.	" "	96
21322	7D3 (MS)	" (2 spec.) HENRY collection Type specimen WILLIAM H. HOBBS, Bull. Univ. of Wis., pl. 8, fig. 4, 1895. and: Zeitschrift für krystallographie, vol. 25, p. 274, pl. 5, fig. 32, 1895	Hazel Green.	96
21323	7D3 (MS)	"	" "	96
21324	7D3 (MS)	" Stellate twins.	Diamond Grove, Wis.	96
21325	Case 9 7D3 (MS,MX)	" aggregate.	Galena, Ill.	96
21326	7D3 (MS)	" ~~Type specimen WILLIAM H. HOBBS~~	-----	96
21327	7D3 (MS) decomposed	" Type specimen WILLIAM H. HOBBS (Probably in:) Zeitschrift für Krystallographie, vol. 25, p. 274, 1895.	Galena, Ill.	96
21328	7D3	"	Linden, Wis.	96
21329	7D3 (MS)	Manganite (2 spec.)	Lake Superior.	258
21330	7D2 (MS)	Pyrite, radial groups.	Mineral Point, Wis.	85

Type specimen: WILLIAM H. HOBBS, Zeitschrift für Krystallographie, vol. 25, pl. 4, fig. 19-20, p. 266, 1895

No.	Specimen.	Locality.	Dana #
21331	7D2 (MS) Pyrite, (2 spec.)	Schullsburg. Wis	85
21332	7D2 (MS) " branching forms.	Mineral Point, Wis.	85
21333	6B5 (MS) " (see No. 3790)	Democrat, near Etna. Wis	85
21334	7D2 (MS) " Calcite, Sphalerite decomposed. Collection Prof. ED. KREMERS, School of Pharmacy. – Type specimen WILLIAM H. HOBBS, Bull. Univ. of Wis., p. 150, 1895	Cement quarry, Milwaukee, Wis.	85
21335	7D3 (MS) Quartz, (3 spec.) Type specimen: WILLIAM H. HOBBS; Bull. Univ. of Wis., fig. 1, 1895. Ded. C. R. VAN HISE.	Devils Lake, Wis.	210
21336	7D5 (MS) Smithsonite after calcite	Mineral Point, Wis.	275
21337	7D5 (MS) " ("calamine") X-Ray # 954 Type specimen WILLIAM H. HOBBS (Probably in:) Zeitschrift für Krystallographie, vol. 25, p. 261, 1895.	" " " HENRY collection	275
21338	7D1 (MS) Sphalerite, ~~Calcite~~ Hamilton Cement Rock Coll. ED. KREMERS, School of Pharmacy, U. W. Type specimens: WILLIAM H. HOBBS, Bull. Univ. of Wis. (pp. 150-151 ?), 1895	Cement quarry, Milwaukee.	58
21339	7D1 (MS) " (2 spec.) Type specimen WILLIAM H. HOBBS, Bull. Univ. of Wis., fig. 7, 1895. – Seems also to be: type... Zeitschrift für Krystallographie, vol. 25, p. 263, pl. 4, fig. 22, 1895.	Galena, Ill. HENRY collection	58
21340	7D1 (MS) "	Schullsburg, Wis.	58
21341	7D1 (MS) " , yellow	" , "	58
21342	Lec. Col. U.W. H 1100 Monazite	Minas Geraes, Brazil.	537
21343	7B3 (MS) Kaolinite (displaced)	Webster, N. C.	492
21344	case 8 U.W. (MS) Thermonatrite (sodium carb.)	Churchill Co., Nev.	294
21345	7C1 Ulexite	Rhodes Marsh, Esmeralda Co., Nev.	708
21346	6A5 (MS) Molybdenite.	Australia.	34
21347	case 27 (MS) Pyrite.	Colorado.	85
21348	6B6 case 27 Arsenopyrite. 1 to M.P.M.	Mountain, Wis. (see 17287)	98



Dana H

~~213497~~	~~A2 (MS) Mesolite~~	~~discarded~~ Table Mt., Golden, Col.	~~465~~
213506	E7 (MS) Limonite	Ironton, Sauk Co., Wis.	259
213516	D6 Hematite	Hartford, Wis.	232
21352	case 9 (P.) Pseudomorphs of limonite after calcite.	Highland M., Siskiyon Co., Calif.	259
215537	C5 Celestite crystals (? selenite ?)	Tiffin, O. (A.N. Winchell)	746
21354	case 27 Sphalerite " (isometric, tetrahedral)	" " " "	58
21355	6A3 case 26 D14 (MS) Wire silver in dolomite & Galena (2 spec.)	Boulder Co., Col. (W.O. Hotchkiss)	14
21356	Stibnite	" " " " "	28
21357	6A4 (MS) (Specimens from S.L. Houghton) Copper	Cluno Copper Co., Santa Rita, N. Mex.	15
21358	6D3 (MS) Cuprite	— " " " "	224
213597	B6 (MS) Vanadinite (?) (2 specimens)	McGregor Mine, Georgetown, " (? Colorado ?) "	552
~~21360~~	~~Chalcanthite & Malachite (2 spec.)~~	~~Butte, Mont. (?)~~ Discarded	~~955~~
21361	(P & Minerals) (MX) case 19 Limonite after sphalerite (marcasite ?)	Riviere aux Vases, Ste. Genevive Co., Mo. (M.H. Mehl, 1913)	259

Ref.: W. Hobbs, Bull Univ. Wis., Krystallographie, Vol 25, p 258 and Am. J. of S., vol. 50, p. 121, 1895

Collection of Alleged Radium Minerals.

				Dana #
21362	Case 20	Pitchblende ? red albite	Branchville, Ct.	711
21363	Case 20	Uraninite	Joachimsthal, Bohemia, Aust.	711
21364	Case 20	Lime Uranite	Middleton, Ct.	711?
21365	Case 20	Autonite or Lime-Uranite in Gneiss	Philadelphia, Pa.	661
21366	Rusby	Willemite	Franklin, N.J.	381
21367	Case 10	Monazite	Raade, Norway.	537
~~21368~~	~~6H1~~	~~Willemite~~ erroneous in "vein rock" disposed	Franklin, N.J.	381
21369	6H1, Lec. Col. 1905	" (~~3 spec.~~ 1 spec.)	" " " Fluorescent	381
21370	6H4	Allanite disposed	E. Bradford, Chester Co., Pa.	409
21371	Case 8	Eudialyte	Kangerdluarsuk, W. Greenland.	345
21372	Case 8	Eucobite Value $0.35	Langesandfiord, Norway.	345
21373	Case 10	Phosphuranylite	Mitchell Co., N.C. Rock Mine	664
21374	Case 10	Microlite	Chesterfield, Mass.	522
21375		Gadolinite	Hittero, Norway.	404
21376	Case 10	Yttrotitanite (keilhanite)	Twedestrand, Norway.	511
21377	7B4	dysanalyte	Magnet Cove, Ark.	519
21378	Case 10	Samarskite, $(Fe,Y,U)_2(Nb,Ti,Ta)_2O_7$	Mitchell County, N.Carolina	529
21379	Case 10	Columbite	Branchville, Ct.	525
21380	Case 10	Xenotime	Twedestrand, Norway.	536
21381	6H2	Zircon	Chesterfield, Mass.	394
21382	6H2	"	Langesandfiord, Norway.	394
21383		Fergusonite	Llano Co., Tex.	523

Minerals Presented by W.O. Hotchkiss.

				Dana #
21384	Case 14	Galena (4 spec.)	Yellow Dog Mine, Webb City, Mo. (? Montana).	45
21385	~~Case 14~~	~~Sphalerite~~ Recat. LO 9307.	~~4½ miles W. of Joplin, Mo.~~	~~56~~
21386	6136	Sylvanite	Livingstone Mine, Col.	104
21387	6136	" with roscoelite	Logan Mine Col.	104
21388	6136	" " coloradorite	Smuggler Mine, Col.	104
21389	Case 27	"	" " "	104
21390	Case 11	"	Livingstone Mine, Col.	104
21391	Case 17	Graphite	Junction City, Wis.	2
21392	Case 27	Galena	Mineral Point, Wis. (Calvert Spensley)	45

Minerals exchanged by Wm. Carpenter,

Leonard Mine, Butte, Mont., Nov. 1914.

21393 6C1 Quartz, enargite, tetrahedrite.

21394 6C1 " " pyrite.

21395 6B4 Covellite on chacocite and bornite. (1 disposed)

21396 6B2 Chalcocite with pyrite, bornite, enargite and covellite.

21397 Case 27 Covellite with chacocite, bornite and pyrite.

21398 Case 27 Chalcocite with pyrite.

21399 Case 27 Bornite altering from chacocite, with pyrite.

Leonard Mine, Butte, Montana

210 158 148

210 158 85

67 54 78

54, 85, 78, 158, 67

67 54 78 85

54 85

78 54 85

Dana #

21400 Covellite, chalcocite and quartz. exchanged 67,54,210

21401 Case 27 Chalcocite, bornite and pyrite. 54, 78, 85

21402 Case 27 " " " " 54, 78, 85

Minerals presented by W. D. Smith, 1914.
from Berkeley, Calif.

21403 Glaucophane ? in schist. Berkley, California W.D. SMITH, 1914 339

~~21404~~ ~~? white platy mineral.~~ Disposed: to mineralogy dept. 11/1/35 ?

21405 Lawsonite. near 424

21406 Case 7 Dog tooth Calcite ~~Aragonite~~ on coal. (checked optically) Manitou, Colorado. Don.: Miss Genevieve Mills, Madison, Wis. 290

21407 Case 26 Argentite. West End Mine, Tonopah, Nev. 42

Minerals purchased from Foote, 1914.

21408 762 Kieserite. Stassfurt, Germany. 744

21409 Case 10 Kainite. " " 730

21410 Case 10 Melanterite. X-RAY Film # 1152 Sayreville, N. J. 751

21411 Case 10 Glauberite. X-RAY Film # 1150 (Missing) Villa Rubia, Spain. 718

21412 Case 10 Soda niter Tarapasa, Chili. 683

21413 Case 10 Monazite sand. Bahia, Brazil. Purchased from Foote, 1914 537

21414 Case 9 Montmorillonite. X-RAY Film # 1149 Maine. 496

21415 Case 7 Limonite after marcasite. Mineral Point, Wis. 259

21416 Case 17 Anthracite coal. Mahanoy Dist., Schuylkill Valley, Penn. Hydro-Carbon

21417 Case 17 Peat Minneapolis, Minn. Hydro-Carbon

21418 Case 10 Wulfenite. ---- 818

21419 Case 17 Cannel Coal. Riverton, Boyd Co., Ky. Hydro-Carbon

21420 706 Wolframite. St. Francois R., Mo. 812
Source: Foote, Philadelphia

Dana #

21421	Case 10	Mirabilite.	C. Borne, Ross Is., Antarctica.	743
21422	Case 10	Hanksite.	Borax Lake, Calif.	733
21423	Case 10	Crocoite (2 spec.) $PbCrO_4$	Near Dundas, Tasmania.	725
21424	Case 10	Thenardite	Borax Lake, San Bernardine Co., Calif.	716
21425	Case 10	Torbernite & autunite	Mt. Painter, S. Australia.	659
21426	Case 10	Autunite. $CaO \cdot 2UO_3 \cdot P_2O_5 \cdot 8H_2O$	Greenmont, Lawrence Co., S. Dakota — Foote Phil.	661
21427		Canotite { carnalite 319 / carnallite 201 } which?	Paradox Val., Montrose Co., Col.	319?
21428	Case 10	Scorodite.	Ouro Preto, Minas Geraes, Brazil. Purchased from FOOTE, 1914	607
21429	Case 10	Dufrenite on limonite.	Lobenstein, Germany.	573
21430	Case 10	Lazulite. (1 displaced)	Graves Mt., Germany? (? Georgia ?)	574
21431	Case 10	Endlichite (Endlichite var.)	Hillsboro, Sierra Co., N. Mex.	552
21432	Case 10	Dysanalyte	Magnet, Ark.	519
21433	Case 10	Allophane	Cornwall, England.	498
{21433*		Variscite $Al_2O_3 \cdot P_2O_5 \cdot 4H_2O$ — — —	Montgomery Co., Arkansas. — Source: FOOTE, Philadelphia	
21434	Case 10	Pyrophyllite $Al_2O_3 \, 4SiO_2 \, H_2O$	Guilford Co., N.C. SOURCE FOOTE PHILADELPHIA	497
21435	Case 9	Schorlomite. X-RAY Film No. 1146	Magnet, Ark.	371
21436	Case 9	Garnet, (pyrope)	Toblitz, Saxony, Germany	370
21437	Case 9	Monticellite X-RAY Film # 1159	Magnet Cove, Ark.	374
21438	Case 9	Garnet (topazolite)	Ala, Piedmont, Italy [redacted]	370
21439		Willemite Zn_2SiO_4	Altenberg, Saxony. Germany source: Foote Phil.	381
21440	Case 9	Tephroite	Langban, Sweden.	379
21441	Case 9	Melilite	Capo di Bove, Italy	391
21442	Case 9	Andalusite Al_2SiO_5	Delaware Co., Penn.	398
21443	Case 9	Zoisite	Granby, Conn.	406
21444		Epidote	Untersulzbachthal, Tyrol, Austria.	407
21445	Case 9	Allanite (orthite) (2 displaced)	Orange Co., N. Y.	409
21446	Case 9	Axinite	Tavetsch, Switzerland.	410
21447	Case 9	Dumortierite	Near Dehesa, San Diego Co., Calif.	427
21448	Case 9	("Calamine") Hemimorphite, $Zn_4(Si_2O_7)(OH)_2 \cdot H_2O$	Moresnet, prov. Liége, Eastern Belgium source: FOOTE, Philadelphia	423

			Dana #
21449 Case 9	Staurolite	Patrick Co., Va.	428
21450 Case 9	Apophyllite (Missing)	India	435
21451 Case 9	Phillipsite & phacolite	Melbourn, Austr~~ia~~alia.	441
21452 Case 9	Paragonite	Pizzo Forno, near St. Gothard, Switzerland.	459
21453 Case 9	Seybertite (Clintonite)	Amity, N. Y.	465
21454 Case 9	Chloritoid	Hohe Ta~~nem~~uern, Tyrol, Austria Source: FOOTE, Philadelphia	466
21455 Case 9	Penninite	Viesch, Switz.	468 A
21456 Case 9	Prochlorite	Salida, Col. Source: FOOTE, Philadelphia, Pa.	469
21457 Case 9	Amesite with diaspore on emery X-ray analyzed, film # 1405 (specimen on display)	Emery mines, Chester, Mass.	470
21458 Case 9	Sepiolite (meerschaum)	Grant Co., N. Mex.	485
21459 Case 9	Garnierite	Riddle, Oregon	483 A
21460 Case 9	Deweylite	Jackson Co., N. C.	482
21461 Case 9	Genthite Texas,	Lancaster Co., Penn. Source: FOOTE, Philadelphia	483
21462	Halloysite	Bergnessreuth, Bavaria	493
21463 Case 9 Case 8	Glauconite	Farmingdale, N.J.	490
21464 Case 8	Helvite	Kapnik, Hungary.	366
21465 Case 7	Lazulite (Lepis lazuli)	Ariccia, Rome, Italy	365
21466 Case 8	Hauynite	Albano, " "	363
21467 Case 8	Nephelite (Nephelene ?)	Capo di Bove, Italy.	357
21468 Case 8	Iolite (cordierite)	Madagascar.	353
21469 Case 8	Arfvedsonite	Narsarsuk, Greenland. Source: FOOTE, Philadelphia	342
21470 Case 8	Glaucophane silicate of Na, Al, Fe, & Mg	Valle di Susa, Piedmont, Italy. Source: FOOTE, Philadelphia	339
21471 Case 8	Aenigmatite (cossyrite)	Isle of Pamellaria.	343
21472 Case 8	Amphibole (Pargasite)	Pargas, Finland.	338
21473 Case 8	" (Nephrite, Jade)	New Zealand. Source Foote, Philadelphia	338
21474 Case 8	" (Hornblende)	Eganville, Ont.	338
21475 Case 8	" (Smaragdite)	Clay Co., N. C. SOURCE: FOOTE, PHILADELPHIA	338
21476 Case 8	" (Tremolite) (1 disposed)	--	338

Structure confirmed by X-ray (S. BAILEY) as ~~[illegible]~~ ite IIa X-ray film #110 ~~[illegible]~~ $(Mg, Fe, Al)_6(Si, Al)_4O_{10}(OH)_8$

				Dana #
21477	Case 8	Acmite (aegirite)	x-ray film # 1408 (specimen on display) Nassarsuk, Greenland.	326
21478	Case 8	Amphibole (actinolite)	Nayaokagun, Tosa, Japan.	338
21479	Case 8	Anthophyllite $(Mg, Fe)\ SiO_3$	Near Rose Tree, Del. Co.Pa.	337
21480	Case 8	Petalite (castorite) $Li\ Al\ (Si_2O_5)_2$	Isle of Elba. Source: FOOTE, Philadelphia	310
21481	Case 8	Pyroxene (hedenbergite)	Schwartzenberg, Saxony, Germany = Source: FOOTE, Philadelphia	325
21482	Case 8	Pectolite $H_2O.Na_2O.4CaO.6SiO_2$	Paterson, N. J. Source: FOOTE	330
21483	Case 8	Anorthite	Monzoni, Tyrol, Austria.	320
21484	Case 8	Pyroxene (augite) Silicate of Ca, Mg, Fe & Al	Vesuvius, Italy. Source: FOOTE, Philadelphia	325
21485	7C6	Scheelite.	Zinnwald, Boh., Austria	814
21486	case 10	Alunite	Muzai, Hungary.	800
21487	Case 10	Kalinite	Near Blair, Nev.	764
21488	Case 10	Varisite	Montgomery Co., Ark.	611
21489	Case 9	Heulandite	Paterson, N. J.	438

No.		Specimen	Locality	Dana #
21490	Case 23	Asbestos (serpentine)	Jackson Co., Wis.	338
21491	6A5	Molybdenite (5 displayed)	Norway (Nels Helson) Gjesdal, Norway	34
21492	Case 27	Sylvanite	Cripple Creek, Colo. (Ray Hart)	104
21493	Case 8	Pollucite (1 displayed) (3 5/ec)	New England	322
21494	7B4	Astrophyllite	El Paso Co., Cal.	514
~~21495~~		~~Manganite~~ LO 9572.	~~Hoch Mine, Arizona Dist, Minn.~~	258
21496	Case 10	Gypsum	McPherson Co., Kan. (W.H.Twenhofel)	746
21497	7C5	Gypsum	Ramsey Co., Minn. (W.Tillman)	746
21498	6E2 Case 7	Limonite after Marcasite ~~Goethite (?) after marionite~~ 2 2 2	La Crosse, Co., Wis.	257

MINERALS PRESENTED BY W. O. HOTCHKISS, 1916

21499	Case 26	Leaf gold	Kelly District, N. Mex.	13
21500		Smithsonite	Kelly District, N. Mex.	275
21501	Case 7	Calcite	Kelly District, N. Mex.	270

MISCELLANEOUS

21502	Case 23	Limonite after marcasite	Madison, Wis.	259
21503	Case 17	Albertite	Head of Bay of Fundy, N. B. Albert Mine (H.V.Winchell)	Hydro-Carbon
21504	7C6	Amber (hydro-carbon)	Hecla, Mont.	" "
21505	Case 9	Calamine	(Embreeville, Tenn.?)	423
21506	Case 6	Agate	Uräguay, S. A.	210
21507	6H1	Garnet	Button Mines, Gore Mt., Adirondaks, N. Y.	370
21508	6B6	Bournonite	Pribram, Bohemia	136
21509	6B6	Bournonite (Missing)	Horhausen, Nassau, Germany	136
21510	6C1	Tetrahedrite	Horhausen, Nassau, Germany	148

No.	Specimen	Locality	Dana #
	Case		
21511	6B4 Wurtzite	Giesehe Mine, Upper Silesia, Katowice, Poland	69
21512	6B4 Wurtzite ~~Exchanged [3]~~		69
21513	6B4 Wurtzite		69
21514	6B4 Wurtzite		69
21515	7A6 Amesite with Diaspore on Emery	Chester, Mass.	470
21516	7A6 Diabantite, in diabase	New Britain, Conn	476
21517	7A6 Prochlorite	Chester, Vt. Source: Wards	469
21518	7A6 Corundophillite	Chester, Mass.	470
21519	7B1 Serpentine, Var. Antigorite	Antigoristhal, Switzerland	481
21520	7A6 Aphrosiderite, psuedo after Garnet (Identified)	Michigamme, Mich.	477
21521	7A6 Thuringite	Lobenstein, Reuss. (Reuss?)	473
21522	Calcite } Johnson's specimens for X-Ray work		
21523	Magnesite }		
21524	6F6 Orthoclase	Dearborn River, Mont.	
21525	Case 9 Epidote	Copper Mt., Alaska	
21526	6H2 ~~Californite~~ Idocrase (Vesuvianite), $Ca_{10}Mg_2Al_4(SiO_4)_5(Si_2O_7)_2(OH)_4$	Siskiyou Co., Calif.	
21527	Fire Opal } Australia		
21528	Blue Opal		
21529	Pin Fire Opal		
21530	Blue Opal		
21531	Precious Opal		
21532	Precious Opal		
21533	Milk Opal		
21534	Emerald, Synthetic from artificial B and L Corundum	BAUSCH & LOMB	
21535	Ruby, Boule from which Synthetic rubies B & L are made (artificial corundum)		
21536	2C Stibnite, articicial B. & L. ~~Corundum~~		
21537	2C Argentite and acanthite, artificial B. & L.		

21543, 46(2) disposed

#'s 21538 – 24499 (when is catalogued date?)

74 Mx 21538 Pyrrhotite
Loc: Schneeberg, Tyrol
Source: Ward's

254 Mx[7] 21539 Pyrolusite & Limonite
Lake Vallez, New Mexico

443 Mx[9] 21540 Stilbite
Berufiord, Iceland

210 MS 21541 QUARTZ (labled Tridymite, x-ray shows Quartz)
San Piere Montagnone, Euganeen, Italy

597 mx[10] 21542 Vivianite
Loc: Ashio Copper Mine, Tochigi Provine, JAPAN

497 MS 21543 Pyrophyllite
Hemp, N.C.

497 7B3 21544 Pyrophyllite, $Al_2Si_4O_{10}(OH)_2$
Staley, N.C. (Sec. in Petrographic Col.)

497 MS 21545 Pyrophyllite
Staley, N.C. (Sec. in Petrographic Col.)

497 MS 21546 Pyrophyllite
Staley, N.C. (" " .)

497 MS 21547 Pyrophyllite
Staley, N.C. (" ")

21550 Tripheme
Loc: Minas Geraes, Brazil.

13 MS 21560 Gold
Loc. unknown

21578 Pyrrhotite (metallic crystals) on Sphalerite (brn.-black matrix) - Loc. unknown. Spec. found in storage: fall of 1969; x-rayed: fall of 1973. Film enclosed in card file.

F1 24096 Mesnard Quartzite
Michigan

F2 24108 Mesnard Quartz Schist
Michigan

F3 24123 Schist from Mesnard Quartzite.
Michigan
(Spec. donated to Norris Johnes, Oshkosh 1970

24500-24999 Collections by F. T. Thwaites mainly from Sparta and Tomah quadrangles, 1916. Includes also some material left by Weidman and collections of sedimentary rocks, glacial and fluvial deposits made at odd times. Lists in Survey binder. Collecti ns in Survey collection. See also notebooks in part, some have no notes. Chips were made for thin sections.

24563
64
77
84
83 Case

210 24583 Quartz on chert
Sparta, Wis.

24602 - 24610
Iron Ores ect.
Iowa - Waukon

24611 - 24615 Rocks
Iowa - Rockville

24621 - 24630 Iron Ores
Wisconsin - Sauk Co. - Ironton Mine

24648 - 24654 Iron Ores
Iowa - Mitchell

24655 - 24666 Cretaceous Fms.
Iowa - Guthrie Co.

25000-49999

COLLECTION OF WIS. GEOL. SURVEY

25064 Copper-bearing calumet conglomerate. Calumet Dist., Michigan.

25674 Cherty limestone Quinnesec, Ontario (ML13)
25730 (white on black) Peculiar specular hematite showing ridging on sheared surface which in cross section is shown to be due to minute displacements. Ishpeming, Michigan From old U.S.G.S. collections; specimen found in storage, 1971 (nov.)
25826 Sandstone with quartz enlargement (U.S.G.S.?) (E 10)

25874 Schistose marble Alabama

26059 Adinole (hornfels) contact with intrusion U.S.G.S.
Crystal Falls, Michigan (K 3)
26168 "Granular" jasper (ML 15)

27183 Collections of Wisconsin Geol. Survey. (ES80)
27183 Greenstone schist Quinnesec (ML 8)

27572 Slate Ely, Minnesota (J 10)

27720 Hornblende schist Loc: 280 N. ow Section 3-62-12 Minnesota,Vermillion Iron Range Old U.S.G.S. Collection; found in storage, 1971

27750 Collections of Wisconsin Geol. Survey. (ES47)

28987 Mashed arkose Minnesota, Minnesota (I 7)

29187 Green schist Loc: Lake of the Woods Spec. and slides to Dr. Pray

32273 Greenstone breccia (amygdaloidal) brecciated appearance due to flow Loc: Michigan, Crystal Falls District Thin sections 11866 and 13580 Old U.S.G.S. Collection; found in storage.1971

32711 Greywacke, Feldspar enlargements Crystal Falls, Michigan Spec.-- R.A.Paull Dept. of Geol. U.W.Milwaukee

33505 Collections of Wisconsin Geol. Survey. (ES83)

40620 Dolomite serpentine U.S.G.S. Canada (O 2)
40680 Greywacke-slate Mesabi, Minnesota (J 6)

40807 Sericite schist Penokee, Wisconsin (Thin sections to Pray) (V 5)
40860 Greywacke-slate Mesabi, Minnesota (I 2)

40884 Quartz schist Mesabi, Minnesota (ML 11)

41018 Soapstone in dolomite Menominee, Michigan (ML 14)
41018 Talcose dolomite Menominee, Michigan (ML 14)

41023a Hanbury slate U.S.G.S. (J 9)

41318 Sericite schist from dolomite Menominee, Michigan (ML 14)

42183 Copper filling amydale in ash bed lara. Arnold Mine., Eagle Harbor Michigan (ES 21)

42253 Contact metamorphosed amphibolite from limestone. U.S.G.S. New England (O 7)
42272 Micaceous quartz schist Loc: East of granite mass Northeast of Worchester, Mass. Slide no. 16, 100 Old U.S.G.S. Collection, found in storage,1971
42318 Garnet garnet gneiss with bleached rims. U.S.G.S. Bristol (G 2)

42571 Silver bearing Galena, etc. in Andesite Breccia. Virginias Mine, Curay, Colorado. (ES 6)
42654 Weathered limestone Utah (ML 13)

43030 Beryl 344 (? showing zonal structure ?) Unknown

44000 Fresh gabbro Wisconsin (ML 5)
44006-7 Fresh and altered gabbro Minnesota (ML 5)

45176 (white on black) Greenalite Figured specimen

45321 Quartz enlargement in sandstone U.S.G.S. Mesabi (E 11)
45324 Massive quartzite Mesabi, Minnesota (ML 11)
45332 Arkose Mesabi, Minnesota (Donated to John Tinker, Fond du Lac) (H 14)
45379 Hornblende Schist U.S.G.S. Mesabi Range, Minnesota (V 13)

45405;1.4 Contact meta greywacke Mesabi Range, Minnesota thin section #15687a, and #15688 Old U.S.G.S. Collec-

tion; found in storage, 1971 (1 of 2)
45405 (2 of 2) Porphyritic schist, contact metamorphism of greywacke by granite. Mesabi, Minnesota (ML 11)
45416 Contact altered greywacke Mesabi, Minnesota (I 6)

45722 Contact metamorphosed iron formation Mesabi Range, Minnesota (T 13)
45767 Argillite (U.S.G.S. ?) Mesabi (J 4)
45777 Nickel Suite Sudbury, Ontario U.S.G.S.
45787 Magnetite Lapland (ES48)
45789 Magnetite and associated rock Lapland (ES48)
45794 Magnatite Lapland (ES48)
45794 Nickel Suite U.S.G.S. Sudbury, Ontario
45799 Nickel bearing pyrrhotite U.S.G.S. Sudbury, Ontario (ES 2)

45874 Weathered limestone, original Huronian (ML 13)

46267-46275 Wabana iron ores. Newfoundland Leith, C.K. U.S.G.S. Basement of Music Hall. Drawers 376,377

46319 Blue limestone U.S.G.S. Utah (L 4)

46428 Iron ore Utah, Iron Co. Old U.S.G.S.Collection; found in storage, 1971

46602 Contact metamorphosed quartzite U.S.G.S. Utah, Iron County (Spec. donated to John Tinker Fond du Lac 1970 (G16)

47050 Keweenawan sandstone over iron formation (E 7)

47475 Pinal schist Bisbee, Arizona (V 8)

47477 Mexican copper Pyrite bearing porphory Cananea Dist., Mexico (ES20)

47478 Pyriliferious porphory Mineralized by Copper solutions to chalcopyrite. Cananea Dist., Mexico. (ES20)

47598 Slate Sunday Lake U.S.G.S. (J 8)

48013 Quartz Schist, Waterloo U.S.G.S. (F 10)

48014 Waterloo quartzite U.S.G.S. (F 9)

48028 Flexible sandstone U.S.G.S. (E 1)

48143 Pentlandite Creighton Mine, Sudbury, Ontario

48378 Altered granite Weyerhauser, Wisconsin (ML 3)

48570 Amphibole-magnetite rock Crystal Falls, Michigan (ML 15)

48589 Copper Suite Altered country rock andesite. Near Falcon Lode, Rock Creek, Nev. (ES 40)
48590 Copper Suite Fresh country rock granite Phoenix Mine, Tenaho, Nev. (ES 40)
48591 Altered granite wall rock of copper vein. Phoenix Mine, Tenaho, Nev. (ES 40)
48592-5 Weathering of granite Nevada (ML 1)

48627 (Red on black #223) U.S.G.S. Greenolite Mesabi Dist., Minn. (Ref. Mono. 43)

48876 Waterloo quartzite U.S.G.S. (F 11)
48877 Quartzite grading into schist Marquette U.S.G.S. (F 14)
48878 Waterloo quartz schist U.S.G.S. (F 12)

5000-54999 Wisconsin, Well samples

50415 Carnotite near 663 Long Park, Colorado MS (7B7)

Page Image not Available

Missing Pages

50001-54772 Collection of well samples in bottles in office of F.T.Thwaites. Lists in binder in Survey office. See also blue print logs in Township file.

54773-54999 Same except in new style register on ordinary paper.

Nos. 55000-59999 reserved for C. K. Leith.

Specimens collected by C. K. Leith from
Star Tunnel, Couer d'Alene District, Idaho, 1917.

All in hall' unless otherwise noted

UW55000. Hall Ore from vein. Surveypoints 63-235, north wall.

UW55001. Hall Quartz phase of ore. Near raise.

UW55002. Hall Pyrite and quartz vein material. Upper Grouse dump.

UW55003. M/ Hall (sidenized) Quartzite adjacent to vein carrying ore. Southwest Survey Point 53.

UW55004. Hall Oxidized phase of ore. Iron Crown dump.

UW55005. Hall Vein quartz. 50ft. southwest Survey Point 53.

55006 - 55058 Utah - Bingham - Copper. Drill samples

C.K. LEITH

Those checked are in [illegible]

Utah Copper. Hole 66.

55006.	0+05
55007	0+50
55008	1+00
55009	1+50
55010	2+00
55011	2+50
55012	3+00
55013	3+50
55014	4+00
55014a	4+50
55015	5+00
55016	5+50
55017	6+00
55018	6+50
55019	7+00
55020	7+50
55021	8+00
55022	8+50
55023	9+00
55024	9+50

Hole 78

55025	0+05
55026	0+50
55027	1+00
55028	1+50
55029	2+00
55030	2+50
55031	3+00
55032	3+50
55033	4+00
55034	4+50
55035	5+00
55036	5+50
55037	5+95

Hole 82

55038	0+35
55039	1+30
55040	2+30
55041	3+40
55042	4+40
55043	5+50
55044	6+50
55045	7+35
55046	8+30
55047	9+30
55048	10+30
55049	11+75
55050	12+40
55051	13+30
55052	14+05
55053	0+30
55054	1+30
55055	2+30
55056	3+30
55057	4+30
55058	5+30

Hole 101, Section 9. T 58 R 15

Mesabi Range, Minn,,

55059- 55281

Drilled by E. J. Longyear,
See blue print.

55059	148 - 148.6	Box 12.
55060	148.6- 157.5	
55061	157.5 -169.10	
55062	169.10-185.8	
55063	185.8 -205.10	
55064	205.10-226	
55065	226 -243	
55066	243 -254.6	
55067	254.6 -269.7	
55068	269.7 -285.9	
55069	285.9 -302.9	
55070	302.9 -317	
55071	317 -323	
55071a	323 -329	
55072	329 -343	
55073	343 -360	
55074	360 -369	
55075	369 -384	
55076	384 -394.6	
55077	394.6 -413	
55078	413 - 426	
55079	426 -438	
55080	438 -453	
55081	453 -467	
55082	467 -478	
55083	478 - 490	Box 13.
55084	490 - 503	
55085	503 - 515	
55086	515 - 529	
55087	529 - 540	
55088	540 - 554	
55089	554 - 564	
55090	564 - 579	
55091	579 - 592	
55092	592 - 603	
55093	603 - 613	
55094	613 - 620	
55095	620 - 630	
55096	630 - 643	
55097	643 - 655	
55098	655 - 669	
55099	669 - 682	
55100	682 - 692	
55101	692 - 706	
55102	706 - 720	
55103	720 - 725	
55104	725 - 735	
55105	735 - 744	
55106	744 - 757	
55107	757 - 768	

55108	768 - 783	Box 14.
55109	783 -793	
55110	793 - 805	
55111	805 - 814	
55112	814 - 821	
55113	821 - 831	
55114	831 - 840	
55115	840 - 850	
55116	850 - 859	
55117	859 - 871	
55118	871 -882	
55118a	882 - 895	
55119	895 - 898	
55120	898 - 910	
55121	910 - 918	
55122	918 - 925	
55123	925 - 939	
55124	939 - 954	
55125	954 - 965	
55126	965 - 975	
55127	975 - 985	
55128	985 - 1000	
55129	1000 - 1012	
55130	1012 - 1025	
55131	1025 - 1035	
55132	1035 - 1045	Box 15.
55133	Missing	
55134	1045 -1055	
55135	1055 -1065	
55136	1065 -1075	
55137	1075 -1085	
55138	1085 -1091	
55139	1091 -1101	
55140	1101 -1109	
55141	1109 -1115	
55142	1115 -1118	
55143	1118 -1120	
55144	1120 -1121.6	
55145	1121.6-1125	
55146	1125 -1131.6	
55147	1131.6-1141.6	
55148	1141.6-1152	
55149	1152 -1160	
55150	1160 -1170	
55151	1170 -1177	
55152	1177 -1188	
55153	1188 -1195	
55154	1195 -1205	
55155	1205 -1215	
55156	1215 -1226	
55157	1226 - 1237	

55158	1237 - 1247	Box 16.
55159	1247 - 1257	
55160	1257 - 1263	
55161	1263 - 1271	
55162	1271 - 1275	
55163	1275 - 1285	
55164	1285 - 1295	
55165	1295 -1301	
55166	1301 - 1308	
55167	1308 - 1316	
55168	1316 - 1319	
55169	1319 - 1329	
55170	1329 - 1338	
55171	1338 - 1348	
55172	1348 - 1355	
55173	1355 - 1361	
55174	1361 - 1371	
55175	1371 - 1381	
55176	1381 - 3183	
55177	1383 - 1388	
55178	1388 - 1398	
55179	1398 - 1401	
55180	1401 - 1407	
55181	1407 - 1414	
55182	1414 - 1422	
55183	1422 -1426	Box 17.
55184	1426 -1435	
55185	1435 -1443	
55186	1443 -1447	
55187	1447 -1449	
55188	1449 -1459	
55189	1459 -1462	
55190	1462 -1467	
55191	1467 -1471	
55192	1471 -1475	
55193	1475 -1477	
55194	1477 -1483	
55195	1483 -1487	
55196	1487 -1488	
55197	1488 -1491	
55198	1491 -1495	
55199	1495 -1502	
55200	1502 -1506	
55201	1506 -1508.6	
55202	1508.6-1511	
55203	1511 -1514	
55204	1514 -1516	
55025	1516 -1517.6	
55206	1517.6-1518.6	
55207	1518.6-1523	

55208	1523 -- 1524.6	Box 18.
55209	1524.6- 1527	
55210	1527 - 1537	
55211	1537 - 1543	
55212	1543 - 1550.6	
55213	1550.6- 1560	
55214	1560 - 1565	
55215	1565 -1567.6	
55216	1567.6- 1573	
55217	1573 - 1579	
55218	1579 - 1585	
55219	1585 - 1592	
55220	1592 - 1597	
55221	1597 - 1601	
55222	1601 - 1606	
55223	1606 -1613	
55224	1613 - 1619	
55225	1619 - 1629	
55226	1629 - 1633	
55227	1633 - 1637	
55228	1637 - 1643	
55229	1643 - 1648	
55230	1648 - 1656	
55231	1656 - 1666	
55232	1666 - 1670	
55233	1670 - 1677	Box 19.
55234	1677 - 1688	
55235	1688 - 1693	
55236	1693 - 1703	
55237	1703 - 1709	
55238	1709 - 1717	
55239	1717 - 1726	
55240	1726 -1732	
55241	1732 - 1738	
55242	1738 - 1748	
55243	1748 - 1754	
55244	1754 - 1759	
55245	1759 - 1766	
55246	1766 - 1774	
55247	1774 - 1779	
55248	1779 - 1787	
55249	1787 - 1794	
55250	1794 - 1802	
55251	1802 - 1809	
55252	1809 - 1818	
55253	1818 - 1828	
55254	1828 - 1832	
55255	1832 - 1841	
55256	1841 - 1850	
55257	1850 - 1858	

55258	1858	- 1868	Box 20.
55259	1868	- 1874	
55260	1874	- 1883	
55261	1883	- 1892	
55262	1892	- 1901	
55263	1901	- 1910	
55264	1910	- 1920	
55265	1920	- 1929	
55266	1929	- 1939	
55267	1939	- 1949	
55268	1949	- 1958	
55269	1958	- 1966	
55270	1966	- 1975	
55271	1975	- 1984	
55272	1984	- 1992	
55273	1992	- 2001	
55274	2001	- 2008	
55275	2008	- 2014	
55276	2014	- 2016	
55277	2061	- 2020	
55278	2020	- 2027	
55279	2027	- 2035	
55280	2035	- 2040	
55281	2040	-2049	

Well #1 Mesaba District

Section 23, T 57, R 18.

55282	112 -	122	Box 1.
55283	122 -	140	
55284	140 -	157	
55285	157 -	176	
55286	176 -	196	
55287	196 -	206	
55288	206 -	216	
55289	216 -	226	
55290	226 -	236	
55291	236 -	246	
55292	246 -	253	
55293	253 -	258	
55294	258 -	268	
55295	268-	278	
55296	278 -	284	
55297	284 -	294	
55298	294 -	301	
55299	301 -	307	Box 2.
55300	307 -	315	
55301	315 -	325	
55302	325 -	335	
55303	335 -	345	
55304	345 -	355	
55305	355 -	365	
55306	365 -	373	
55307	373 -	380	
55308	380 -	386	
55309	386 -	396	
55310	396 -	406	
55311	406 -	415	
55312	415 -	425	
55313	425 -	435	
55314	435 -	445	
55315	445 -	455	Box 3.
55316	455 -	465	
55317	465 -	475	
55318	475 -	485	
55319	485 -	495	
55320	495 -	503	
55321	503 -	510	
55322	510 -	520	
55323	520 -	530	
55324	530 -	540	
55325	540 -	545	
55326	545-	552	
55327	552 -	561	
55328	561 -	568	
55329	568 -	575	
55330	575 -	581	

55331	581 - 591	Box 4.
55332	591 - 598	
55333	598 - 603	
55334	603 - 610	
55335	610 - 618	
55336	618 - 623	
55337	623 - 633	
55338	633 - 640	
55339	640- 649	
55340	649 - 657	
55341	657 - 662	
55342	662 - 672	
55343	672 - 682	
55344	682 - 692	
55344a	692 - 700	
55345	700 - 705	
55346	705 - 712	Box 27.
55347	712 - 720	
55348	720 - 730	
55349	730 - 734	
55350	734 - 739	
55351	739- 745	
55352	745 - 752	
55353	752 - 759	
55354	759 - 765	
55355	765 - 775	
55356	775 - 785	
55357	785 - 790	
55358	790 - 800	
55359	800 - 807	
55360	807 - 817	
55361	817 - 823	
55362	823 - 831	Box 28.
55363	831 - 836	
55364	836 - 846	
55365	846 - 856	
55366	856 - 864	
55367	864 - 872	
55368	872 - 878	
55369	878 - 888	
55370	888 - 892	
55371	892 -899	
55372	899 - 907	
55373	907 - 917	
55374	917 - 927	
55375	927 - 937	
55376	937 - 943	
55377	943 - 951	

55378	951 - 961	Box 52.
55379	961 - 968	
55380	968 - 977	
55381	977 - 987	
55382	987 - 994	
55383	994 -1004	
55384	1004 -1014	
55385	1014 -1024	
55386	1024 - 1031	
55387	1031 -1041	
55388	1041 -1051	
55389	1051 -1056	
55389a	1056 - 1066	
55390	1066 -1076	
55391	1076 -1080	
55392	1080 -1090	
55393	1090 -1100	Box 53.
55394	1100 -1106	
55395	1106 -1116	
55396	1116 -1124	
55397	1124 -1134	
55398	1134 -1144	
55399	1144 -1154	
55400	1154 -1164	
55401	1164 -1174	
55402	1174 -1184	
55403	1184 - 1194	
55404	1194 -1200	
55405	1200 -1208	
55406	1208 -1216	
55407	1216 -1226	
55408	1226 -1229	
55409	1229 -1236	Box 54.
55410	1236 -1241	
55411	1241 -1251	
55412	1251 -1261	
55413	2161 -1271	
55414	1271 -1281	
55415	1281 -1286	
55416	1286 -1294	
55417	1294 -1301	
55418	1301 -1311	
55419	1311 -1319	
55420	1319 -1323	
55421	1323 -1333	
55422	1333 -1338	
55423	1338 -1347	
55424	1347 -1355	

55425	1355 - 1360	Box 64.
55426	1360 - 1367	
55427	1367 - 1375	
55428	1375 - 1384	
55429	1384 - 1391	
55430	1391 - 1397	
55431	1397 - 1403	
55432	1403 - 1411	
55433	1411 - 1416	
55434	1416 -1421	
55435	1421 - 1426	
55436	1426 - 1430	
55437	1430 - 1436	
55438	1436 - 1446	
55439	1446 - 1456	
55440	1456 - 1466	
55441	1466 - 1473	Box 65.
55442	1473 - 1481	
55443	1481 - 1488	
55444	1488 - 1497	
55445	1497 - 1502	
55446	1502 - 1512	
55447	1512 - 1521	
55448	1521 - 1531	
55449	1531 - 1536	
55450	1536 - 1543	
55451	1543 - 1547	
55452	1547 - 1557	
55453	1557 - 1567	
55454	1567 - 1577	
55455	1577 - 1585	
55456	1585 - 1590	
55457	1590 - 1597	Box 66.
55458	1597 - 1605	
55459	1605 - 1613	
55460	1613 - 1620	
55461	1620 - 1627	
55462	1627 - 1633	
55463	1633 - 1641	
55464	1641 - 1648	
55465	1648 - 1657	
55466	1657 - 1666	
55467	1666 - 1676	
55468	1676 - 1686	
55469	1686 - 1696	
55470	1696 - 1706	
55471	1706 -1716	
55472	1716 - 1726	

55473	1726 - 1736	Box67.
55474	1736 - 1746	
55475	1746 - 1754	
55476	1754 - 1764	
55477	1764 - 1773	
55478	1773 - 1776	
55479	1776 - 1779	
55480	1779 - 1787	
55481	1787 - 1795	
55482	1795 - 1803	
55483	1803 - 1806	
55484	1806 - 1814	
55485	1814 - 1823	
55486	1823 - 1830	
55487	1830 - 1836	
55488	1836 - 1841	
55489	1841 - 1848	Box 68.
55490	1848 - 1856	
55491	1856 - 1864	
55492	1864 - 1871	
55493	1871 - 1879	
55494	1879 - 1884	
55495	1884 - 1889	
55496	1889 - 1894	
55497	1894 - 1902	
55498	1902 - 1911	
55499	1911 - 1918	
55500	1918 - 1925	
55501	1925 - 1934	
55502	1934 - 1942	
55503	1942 - 1952	
55504	1952 - 1960	
55505	1960 - 1970	Box 69.
55506	1970 - 1980	
55507	1980 - 1990	
55508	1990 - 1998	
55509	1998 - 2008	
55510	2008 - 2018	
55511	2018 - 2024	
55512	2024 - 2030	
55513	2030 - 2035	
55514	2035 - 2039	
55515	2039 - 2045	
55516	2045 - 2050	
55517	2050 - 2055	
55518	2055 - 2060	
55519	2060 - 2067	
55520	2067 - 2073	

55521	2073 - 2078	Box 70.
55522	2078 - 2081	
55523	2081 - 2088	
55524	2088 - 2098	
55525	2098- 2108	
55526	2108 - 2111	
55527	2111 - 2118	
55528	2118 - 2126	
55529	2126 - 2133	
55530	2133 - 2143	
55531	2143 - 2146	
55532	2146 - 2156	
55533	2156 - 2166	
55534	2166 - 2171	
55534a	2171 - 2174	
55535	2174 - 2183	

Presented by C. K. Leith, August, 1919.

55536 Typical vein structure in Butte granite from the Rainbow lode (zinc ore) of the Elm Orlu Mine.
This specimen was used as Plaintiff's Exhibit #56 in the case Elm Orlu Mining Company vs. Butte and Superior Copper Co.

55537 Vein structure from Butte. Pyle vein in the Elm Orlu zinc mine. Used by C. K. Leith in testimony as illustrating horsetail and crossover structure typical of Butte veins.
Plaintiff's exhibit #49 in case of Elm Orlu Mining Company vs. Butte and Superior Copper Company. (Structural Collection)

Specimens presented Dec. 1919 from Highland Boy Mine, Bingham, Utah, showing difference in gouges formed from limestone and quartzite. (C. K. LEITH)

55538 L-2 Sheared silicated limestone from H.B. 1300; see analysis.
55539 L-5 H.B. 1200 25' E. of sta. 12-12. Limestone gouge beneath 4' of ore on footwall contact of Yampa just above Quartzite.
55540 L-6 from fissure in limestone of Apex 1000 Burch No. 2 drift.
55541 Silicate gouge from fault in Lawson R.
55542 Gouge from beneath P.C. ore 13-87. Stope--gangue between P.C. ore and underlying quartzite.
55543 L-7 Silicated limestone showing cleavage along fissure (one in Structural Coll.)
55544 L-8 Slickensided sulphide and gouge.

} Hall

1374/9605 to 1374/9694

Recat. 9/18/24. ~~1374 to 1374 / 9605 9694~~

COLLECTION OF BRAZILIAN ORES& ROCKS, E.C.HARDER, 1920.

New no. 1374/9605 — Old no. 55545 ~~Mn ore, Wigg mine, Usina Wigg, Minas Geraes~~ (manganese)

1374/9606 — 55546 ~~Piracicaba schist, Campo Grande (Alegria), Minas Geraes~~

1374/9607 — 55547 ~~Itacolumi quartzite, Bento Rodrigues, Minas Geraes.~~

1374/9608 — 55548 ~~Piracicaba schist, Campo Grande (Alegria), Minas Geraes~~

1374/9609 — 55549 ~~Fresh gneisoid granite, Lagoiuhs quarry, Bello Horizonte, Minas Geraes.~~

1374/9610 — 55550 ~~Soil from above.~~

1374/9611 — 55551 ~~Itabirite from Piracicaba schist, Fazenda Gualano.~~

1374/9612 — 55552 ~~Jacutinga, old tunnel, lower Perequito, Itabira de Malto Dentro~~ Malto Lentu, Minas Geraes

1374/9613 — 55553 Itabirite, ~~Itabira I F., Jao Manoel Ck., (Alegria)~~

1374/9614 — 55554 Itabirite, ~~trail below~~ Morrogudo

1374/9615 — 55555 ~~Itabirite, Itabira I.F., GOrge of Piracicaba (Alegria)~~

1374/9616 — 55556 Ocherous itabirite, ~~lower part of cliff above Acaba Mundo, Bello Horizonte, Minas Geraes~~

1374/9617 — 55557 ~~Manganese ore from Mr. Anderson, Minaes Geraes~~

1374/9618 — 55558 ~~Hard ore, Morra de~~ Mina, ~~Minaes Geraes~~

1374/9617 — 55559 Itabirite ~~from Piracicaba schist, Fazenda Gulaxo, Minas Geraes~~

1374/9620 — 55560 ~~Batatal schist, Batatal (Alegria), Minas Geraes~~

1374/9621 — 55561 ~~Ocherous itabirite, lower part of cliff above Acaba Mundo, Bello Horizonte, Minas Geraes~~

1374/9622 — 55562 ~~Canga, Alegaes, Minas Geraes~~

1374/9623 — 55563 ~~Manganese ore from Mr. Anderson, Minas Geraes~~

1374/9624 — 55564 ~~Itabirite from Itabira I.F., Joao Manoel Ck. (Alegria)~~

1374/9625 — 55565 Itabirite, ~~south of Manganese bed, Usina Wigg, Minas Geraes~~

1374/9626 — 55566 ~~Itabirite, shaft No.1, Alegria, Minas Geraes~~

1374/9627 — 55567 Itacolumi quartzite, Bento Rodrigues, Minas Geraes

1374/9628 — 55568 Quiluzite, ~~long upper tunnel near base of shaft, Mono da Mina, Minas Geraes~~

1374/9629 — 55569 ~~Hard ore, upper hard ore cliff, Conigo das Almas~~

1374/9630 — 55570 ~~Itabirite from Piracicaba schist, Campo Grande (Alegria)~~

1374/9631 — 55571 ~~Hard ore, lower hard ore Alegria, Minas Geraes~~

1374/9632 — 55572 ~~Caraca quartzite, Batatal, Minas Geraes~~

Recat.
New no.

1374/9633 55573 Hard ore, Periquito upper orebody, Itabira de Malto Dentro Lentio

1374/9634 55574 Manganese ore, Cabecade de Ferro, Morro Grande, Minas G . No 2

1374/9635 55575 Dark quartzite, bend of main tunnel, Morro da Mina

1374/9636 55576 Itabirite from Piracicaba schist, Campo Grande (Alegria)

1374/9637 55577 Itabirite from Itabira I.F., gorge of Piracicaba, (Alegria), Minas Geraes

1374/9638 55578 Hard ore, Periquito lower orebody, Itabira de Malto Dentro, Minas Geraes

1374/9639 55579 Itabirite, upper part of cliff above Acaba Mundo, Bello Horizonte, Minas Geraes

1374/9640 55580 Same as 55577

1374/9641 55581 Martite canga, Capao, Hargreaves, Minas Geraes

1374/9642 55582 Granite, trail between Seaham and Perma Fazenda

1374/9643 55583 Manganese ore, Sao Goncalo mine, Minas Geraes

1374/9644 55584 Canga, Alegria, Minas Geraes

1374/9645 55585 Laminated ore, shaft No. 1, Alegria, Minas Geraes

1374/9646 55586 Canga, Periquito above Grotto, Itabira de Malto Dentro

1374/9647 55587 Granite, Basement Complex, Santa Barbara, Minas Geraes

1374/9648 55588 Hard ore, Morro da Mina, Minas Geraes

1374/9649 55589 Manganese canga, Capao, Hargreaves, Minas Geraes

9650 1374/9650 55590 Decomposed rock containing Mn veins infiltered, Piquery Mine, Minas Gereaes

1374/9651 55591 Manganese ore same as 55574, No.3

1374/9652 55592 Manganese ore, small orebody of , Morro da Mina

1374/9653 55593 Serpentine rock, Morro da Mina, Minas Geraes

1374/9654 55594 Hard ore, Pissarrao orebody, Itabira de Malto Dentro

1374/9655 55595 Hard ore, upper hard ore cliff, Corrigo das Almas

1374/9656 55596 Red carbonate rock (ls), lens in schist, Rodrigo Silva, Minas Geraes

1374/9657 55597 Itabirite, Passapino mine, 400 meter level, 3 m. above the lode 3/11/17

1374/9658 55598 Itabirite, ledge near creek, Itabira Malro Deutro

1374/9659 55599 Batatal schist, Batatal (Alegria), Minas Geraes

1374/9660 55600 Laminated ore, shaft No.1, Alegria, Minas Geraes

1374/9661 55601 Serpentine rock, Morro da Mina, Minas Geraes

1374/9662 55602 Itabirite, Itabira I.F., gorge of Piracicaba (Alegria)

Recat. 9/24/34

1374/9663 55603 Manganese ore same as 55574, No. 1

1374/9664 55604 Dark red earth derived from I.F., hill SW of Acaba Mundo Bello Horizonte, Minas Geraes

1374/9665 55605 Laminated ore, shaft No.17, Corrego das Almas, Minas G.

1374/9666 55606 Hard itabirite, ledges in Acaba Mundo, Bello Horizonte

1374/9667 55607 Hard ore, Esmeril ore body, Itabira de Malto Dentro

1374/9668 55608 Manganese ore, trail, Tapeira, Serra do Corral, Minas G

1374/9669 55609 Amphibolite, above Pacas on road to Sao Miguel

1374/9670 55610 Itabirite, side of creek coming from M. Agudo Peak, Sao Miguel

1374/9671 55611 Limestone, Acaba Mundo, Bello Horizonte, Minas Geraes

1374/9672 55612 Caraca quartzite, Batatal, Minas Geraes

1374/9673 55613 Itabirite from Piracicaba schist, Campo Grande (Alegria)

1374/9674 55614 Manganese ore, same as 55608

1374/9675 55615 Canga, Alegria, Minas Geraes

1374/9676 55616 Crystalline schist, Basement Complex, Caltas Altas

1374/9677 55617 Manganese ore, Sabino mine, Minas Geraes

1374/9678 55618 Crystalline schist, Basement Complex, Agua Quante, Minas G.

1374/9679 55619 Manganese ore, Cado Preta, Morro Grande, Minas Geraes

1374/9680 55620 Itacolumi quartzite, Butto Rodrigues, Minas Geraes

1374/9681 55621 Itabirite from Itabira I.F., Joao Manoel Ck. (Alegria)

1374/9682 55622 Hard ore, Morro Agudo Peak, Sao Miguel

1374/9683 55623 Conglomerate from Piracicaba schist, Casa Aetho , (Alegria), Minas Geraes

1374/9684 55624 Canga, Periquito, below lower ore body, Itabira de Malto Dentro, Minas Geraes

1374/9685 55625 Itabirite from Piracicaba schist, Fazenda Gualaxo

1374/9686 55626 Conglomerate from Piracicaba schist, Casa Veltra, (Alegria), Minas Geraes

1374/9687 55627 Queluzite from top of hill, Morro da Mina

1374/9688 55628 Fresh gneissoid granite, Lagoniba quarry, Bello Horizonte, Minas Geraes

1374/9689 55629 Itabirite from Piracicaba schist, Fazenda Gulaxo

1374/9690 55630 Itabirite, cliff above Corrego, Agua Santa, Itabira de Malto Dentro, Minas Geraes

1374/9691 55631 Manganese ore from Mr. Anderson, Minas Geraes

1374/9692 55632 Hard ore, lower hard ore lens, Alegria, Minas Geraes

1374/9693 55633 Queluzite, Piquery mine, Minas Geraes

1374/9694 55634 Queluzite, top of hill, Morro da Mina, Minas Geraes

Specimens from Mineville, N.Y.

55635 Typical gray gneiss (Nason's Mt.Hope, N.J.)
D.D. hole 296, depth 635.5' Witherbee-Sherman & Co.
Drill hole started in floor of Harmony mine and drilled into Old Bed ore body (165' of 59+% Fe). Spec. from hanging wall of Lower Old Bed ore body.

55636 Contact between black rock and gray gneiss, breast 4A level Sherman Mine. F.L.Nason, Feb., 1918. 2 sections.

55637 Bismuth ore, ochre and Pucherite (bismuth vanadate) with mica. St.Joseph Mine, Sao Jose de Brejauba, Minas Geraes, Brazil.

1923 Specimens from Chili 55638-55663
See lists in file under L.

C. K. LEITH

Specimens from Tofo Mine, Tunnel 23

55638 Footwall near west end.

55639 Footwall near ore.

55640 Mixed ore and rock from footwall.

55641 Same.

55642 Dike on E. end E. crosscut.

55643 Sulphide and magnetite near E. contact of main ore body in main drift.

55644 Hanging wall gradation phase.

55645 Same.

55646 Fine grained andesite(?) on main hanging wall.

55647 Same.

55648 Probably typical footwall, from dump.

55649 Hornblendic phase of ore, probably near foot, from dump.

55650 Feldspathic phase of ore probably like those found in hanging wall.

55651 Same.

From Tunnel 7.

55652 Soft magnetite, possibly altering to hematite, some mica

55653 Hanging wall rock, hornblendic, much coarser than the rock seen in hanging wall of Tunnel 23, just below.

55654 Same.

55655 Footwall, railway cut W. of hill; shows sucessive phases; tourmaline?

55656 Same.

55657 N. side of ore in Tunnel 5; in footwall.

55658 Rock in ore in Tunnel 5. This entire belt of ore is probably in the footwall.

55659 Magnetite and hematite with banded structure used in recording dips, E. side N. hill.

55660 Same.

55661 Fines from float ore just above old French location. About 20% of bulk of ore in this place.
float

55662 Fines from float ore in lowest tunnel. About 30% of bulk of float ore here consists of fines like this.

55663 Fines from float ore at old French location. About 25% of bulk of float ore here is like this.

55664-74 In Hall

Specimens from Brazil, 1923 For full details with analyses see lists filed under L. Mine on Pacienta.

55664 557 Soft powdery ore

55665 Hard ore 558

55666 Somewhat sandy soft ore. 559

55667 560 Siliceous itabirite.

55668 Good quality itabirite. 561

55669 562 Rather siliceous itabirite

55670 563 Siliceous itabirite.

55671 564 Very siliceous itabirite.

55672 Hard ore

55673 Medium hard ore.

55674 Soft ore.

C 114 (C. K. Leith)
Minas Geraes, D

Collection from Brazil, J. C. Conover. Presented, 1923.
See notebook for full details. Small boxes with some specimens are concentrates, etc.

55675-758 In Hall

55675 1* Decomposed intrusive sill.

55676 2 Ferrugenous schist from footwall grades into ore above and into argillaceous schist below.

55677 3 3 phases of footwall schist from different horizons.

55678 4 Two phases of hard ore from opposite sides of a crack.

55679 5 Hematite from seam like those that yield gold.

55680 6 Hydrated ore from outcrop.

55681 7. Extremely hard itabirite 7.

55682 11 Decomposed dike, yellow clay.

55683 12 Decomposed dike.

55684 13 Ferrugenous rock

55685 14 Swelling green chloritic schist.

55686 15 Micaceous schist.

55687 16 Decomposed dike, yellow clay

55688 17 Hard ore from contact with decomposed dike.

55689 18 Red mud from joint and peices of iron ore.

55690 19 Green schist and interbedded ore.

55691 20 Specular hematite and mica from veinlets below itabirite.

55692 21 Two phases of dike.

55693 22 Apophysis of main dike extending into hard ore.

55694 23 Specular hematite and clay from seam cutting bedding.

55695 24 Mica and specular hematite from veins cutting ore.

55696 25 Dike close to contact with ore.

55697 26. From lens of ore in dike. ~~26.~~

55698 27 Purple and green schist.

55699 28 Bed of sand in ore.

55700 29 Green schist.

* Conover's No.

55701 30 Clay

55702 31 Vein quartz with specular hematite from fold.

55703 32 Decomposed dike.

55704 33 Dike at contact with hard ore.

55705 34 Hard ore from contact with dike.

55706 35 Hard ore about 2 meters from dike.

55707 36 Mica, specular hematite, quartz, etc. from irregular veins a meter from dike.

55708 37 Vein material from short irregular veinlets in medium hard ore.

55709 38 Evenly banded yellow schist interbedded with ore.

55710 39 Greenish material in dike.

55711 40 Brecciated medium hard ore.

55712 41 Hard ore from lens in lower schist.

55713 42 Martite ore.

55714 43 Footwall schist with martite crystals.

Missing 55715 44 Specimen missing.

55716 45 Lower schist.

55717 46 Soil.

55718 47 Iron ore and clay soil.

55719 48 Peracicaba schist.

55720 49 Granite gneiss.

55721 50 Weathered white granite.

55722 51 Manganese showings.

55723 52 Schists from float of itabirite hill.

55724 53 Phases of Piracicaba schist.

55725 54 Hydrated itabirite.

55726 55 Piracicaba(?) schist.

55727 56 Granite.

55728 57 Sandy sericite schist.

55729 58 Schists and concretionary iron oxide from canga.

55730 59 Sandy white sericite schist.

55731 60 Banded schists from footwall.

55732 61 "Black lead" ore.

55733 62 Very specular "pencil" itabirite.

55734 63 Laminated schist.

55735 64 Schisty ores.

55736 65 Schisty magnetite.

55737 66 Talc, specular hematite, and "black lead" ore.

55738 67 Fine grained steely blue ore.

55739 68 Highly specular ore.

55740 69 Medium specular ore.

55741 70 Hard ore showing sharp fold.

55742 71 Laminated ore from knob.

55743 72 Pebble of highly specular ore.

missing 55744 73 Specimen missing.

55745 74 "Schist" or decomposed intrusive.

55746 75 Thick-bedded tough steely Al ore.

55747 76 Somewhat specular medium thin bedded ore.

55748 77 Specular ore.

55749 78 Fairly massive thin bedded ore.

55750 79 Specular ore.

55751 80 Medium hard and hard ore.

55752 81 Thin bedded hydrated sandy ore.

missing 55753 82 Fine grained aggregate of martite. Missing.

55754 83 Hard hydrated crystalline itabirite.

55755 84 Extremely fine grained hard steely ore.

55756 Footwall schist. 85. of Morro Velho vein. Pencil structure

55757 86 Morro Velho ore.

55758 87 Coarse gneiss, Rio Janiro.

Collection from Pigeon Point , Minn.

C. K Leith, July, 1924.

ML11 55759 1 Quartzite at contact with gabbro.

ML11 55760 2 Contact of quartzite and basic intrusive

ML11 55761 3 Contact of quartzite and red rock.

ML11 55762 4 Contact of quartzite and red rock.

Thin sections of each. Metamorphic collection.

55763 Spec from Barabo – Lower narrows?

55764 - 55766 Spanish Morroco - Melibia - Uixan Mine (in the hall) . C.K. LEITH, 1926

Hall → 55764,5,6 ore and wall rocks Uixan mine, Melibia, Spanish Morroco 1926 C.K. Leith

Duplicates? →

55763 – 55778 Suite showing dynamic metamorphism of rhyolite. Coll. at Lower Narrows, near Barabo Wis, by RC Emmons and RHB Jones. (Missing?) (1937)

Hall → 55779 – 794 Pinal Series, Ariz. See Paper

Miscellaneous U. W. Specimens

60,000 Ripple marked sandstone with possible track.
Junction City, Wis.

60001 Quartzite showing polish due to slipping
T24, R4E, Wis.

D-24-9
60002 Volcanic tuff -Cucharacha formation. Panama.

60003 Same as last. Finer.

D-24-10
60004 " " " " (Shale)

Collections taken from South Hall store room, 1917.
Sent by Pirrson.

A-19-21
60005 7 Paisanite. 6 in dike, Home Quarry, Red Hill, N. H.

B-34-11
60006 55 Camptonite. Livermore Falls, Campton, N. H.

A-33-14
60007 13 Nepheline Syenite. Center of intrusins, Bremersville, N J.

B-34-12
60008 55 Camptonite, slightly altered. N. shore of Asquam Lake.

A-35-11
60009 16 Nepheline Syenite Porphyry. West Upper slopes,
Red Hill, N. H.

A-38-10
60010 19 Tinguarite Porphyry, South end of intrusion dyke
in Nepheline syenite, Bremersville, N. J.

A-34-6
60011 14 Syenite Porphyry, (quartzose Bostonite porphyry)

B-34-13
60012 55 Camptonite intrusion into Neph. Syenite, filled with
feldspar and fragments of rock. Horne Farm, Red Hill, N. J.

A-38-11
60013 17 Tinguarite with pseudo-leucites. Beemersville, N. J.

A-33-15
60014 13 Nepheline Syenite. Fine grain extension of mass,
poor in nepheline. Red Hill, N. J.

B-34-14
60015 55 Ouachitite filled and saturated with shale fragments.
Rotain's Hill, between Libertyville and Beemersville, N. J.

A-33-16
60016 13 Nepheline Syenite, coarse nephelite abundant. Interior
of mass, Home Quarry, Red Hill, N. H.

60023 E-32-10

Garnet hornfels, with epidote and calcite (from limestone contact)

Arroyo Grande, Mexico

166

Collection of rocks from San Jose, Tamanalipas, Mexico.

From Kemp and Finlay.

A-33-17 13
60017 Nepheline Syenite, Arroyo Grande, San Jose, Tamanlipas

60018 55 Camptonite, Rencon Type, Annals N. Y. Acad. Sci. 14, 287.

A-38-12 B-19-16
60018a ~~13~~ 40 ~~Tinguaite~~ Malchite

B-34-15
60019 55 Camptonite, Casa Grande type.

~~B-25-18~~ B-13-25
60020 ~~43~~ 32 ~~Andesite Porphyry~~ Quartz Latite from the Iacolith

A-34-8
60021 13 Nepheline Syenite, Mesa Verde type

Annals N. Y. Acad. Sci. 14, 263.

A-38-13 B-19
60022 a&b 19 Tinguarite

E-32-10
60023 166 Massive garnet with probably some diopside from

contact zone. (Garnet hornfels, with epidote and calcite) (from limestone contact) Arroyo Grande, Mex.

C-11-19
60024 69 Basalt of San Carlos Mts. South of other locality.

C-33-5
60025 94 Decomposed chert. Springfield, Mo.

F-8-18
60026 177 Garnet schist Roxbury Falls. Conn.

D-39-1
60027 143 Marl Algoma, Wis.

D-30-9
60028 129 Shale, Maquoketa S. W. Wis.

60029 se Concretions from red clay Duck Cr, Wis

60030 Same Sault Ste Marie, Mich. (W. A. Titus)

ES 744 60031 MI(E) Rocks from Sudbury Dist. (W. F. Mead)

60031 (342) Concretions. Pleistocene. Champlain Form., - Woodville, New Hampshire

Collection of Clays from Wisconsin E. R. Buckly.

60032, 60033 Red clay Shawano, Wis.

60034, 60035, 60036 Red clay Oconto

60037, 60038, 60039 Red clay Zunbel yard, Sheboygan

60040 Red clay Marengo

60041 Green clay Martner yard, Prairie du Chien

60042 Clay Baldwin

60043 missing

60044	Red clay	Sheboygan, Gunther yard.
60045	Same	Sheboygan Brick and Tile Co.
60046 60047 60048	Decomposed schist	Halcyon
60049	Clay 6' below surface,	Voight yard, Boltonville.
60050	Surface clay	
60051	Moulding sand	Same
60052	Top clay	Traber yard, Wonewoc
60053	Bottom clay	Same
60054	Clay	Wind Lake, Brick and Tile Co.
60055	Shale(?)	Robinson, Merrilan
60056	Loess clay	Tomah
60057	Same	De Louse, Janesville
60058	Shale	R. R. cut, S. of Merrilan
60059	Red clay	3½ m. W. of Bayfield Fish Hatchery.
60060	Brown clay	Plum Creek
60061 60062	Red clay	Schultz yard, 2, Butte des Morte, Oshkosh.
60063	Loess (?)	Grendall Yard, Platteville.
60064	" top	Same
60065	Blue clay	Lindaur yard, Kaukauna
60066	Clay	Paddock yard, Baraboo
60067	Clay 5' below surface.	Bristol, Tile works.
60068	Clay 1.5' " "	Same
60069 60070	Loess	Thenailt yard, Chippewa Falls.
60071	Blue clay	Burlington Brick and Tile Co.
60072	Red Clay	Same

60073	Gray clay	L. H. Corder & Co. Watertown.
60074	Brown clay	Drinker, Portage
60075	Blue clay	Same
60076	Top clay	Same
60077 60078 60079	Shale, red and green,	Robert Dunlap, Merrillan.
60080	Red clay	W. O. Jordan, Shiocton
60081	Fine sand	
60082	Coarse sand	
60083	Red clay	Sheboygan Brick and Tile Co.
60084	Clay	Langenberg Brick Co. Whittlarcy
60085	Clay	Same
60086	Loess	Viroqua, Foster yard
60087	Red sandstone	Viroqua
60088	White sandstone	Viroqua
60089	Moulding sand	Dunker
60090	Moulding sand	Dunker
60091	Clay and stones	Pisse yars, Dorchester.
60092 60093	Decomposed schist	Halcyon Pressed Brick Co. Black River Falls.
60094	Red	From _____ furnace, Black River Falls.
60100	Two sets of ripple marks in case hard-ened sandstone	Wilson, Wis.
60101	Fold in decomposed gneiss,	Eau Claire River, Wis.
60102	Oil Shale	Albert Mine, N.B
60103	Pebble, amydaloid-porph.	Black Sea, Batoum (H.V. Winchell 1918
60104	St. Peter sand stone with holes	S. of Cross Plains, Wis
60105	Anglesite on galena	Katherine Mine, Madison Co., Mo
60106	Silver ore	Sierra Nevada Mine, Comstock Lode, Virginia, Nev

Collection from Cuyuna Range, Minn. (Iron Formation)

D-30-10
60107 129 Paint Rock.
C-37-14
60108 93 Weathered bedded iron formation.
C-37-15
60109 93 Weathered slaty ore or paint rock.
C-37-16
60110 93 Weathered ferruginous chert.
C-37-17
60111 93 Weathered ferruginous slate.
C-37-18
60112 93 Soft lean ore.

D-39-2
60113 143 Marl, Glenbulsh, Wisconsin.
D-30-11
60114 129 Kaolin (washed), Hershey, Wisconsin.
60115 Case 14 Bauxite, (7 spec.), British Guiana.

Collection presented by A. N. Winchell, 1918,
Alaska Nickle Mine, Chichagof Island, Alaska.

B-29-13
60116.1 49 Gabbro.

60117.2 Hall Same 180 ft. level.

60118.3 Hall Same 180 ft. level.

60119S.4 Hall Gabbro and nickle ore.

60120.5 Hall Nickle ore.

60121 Hall Same.

60122 Case 15 Same. → Lo 9715

60123 Hall Same.

60124 Hall Same (5 pieces).

60125 Hall Acid like dike Cutting mica schist near mine.

60126 Hall Andalusite schist.

60127S Hall Same.

F-8-19
60128S.10 177 Same.

F-9-1
60129S.9 177 Schist.

60130S.8 Hall Andalusite in ore.

60131 Crude petroleum. oil case

60132 case 17 Oil shale, Utah.

E-4-12
60133 144 Granular limestone, uppe4 part of La Salle, Marquette Mine, La Salle Ill.

D-30-12
60134 129 Parting shale in La Salle ls. La Salle, Ill.

E-4-13
60135 144 Nodular clay limestone, La Salle , Ill,

D-30-13
60136 129 Shale below floor of mine, La Salle, Ill.

D-30-14
60137 129 Coal measures shale, Bloomington, Ill.

CHERTS COLLECTED BY W. H. TWENHOFEL, 1918.

60138 Lower chert in Wrefordds, Permian, N. E. of Hardy Kas. Co., Okl.

60139 Upper Wreford chert, Wreford, Permian, Otto-Dexter, anticline, 1m, N. of Otto, Cowley, Co., Kas.

SPECIMENS FROM SUDBURY, ONT. W.J. MEAD, 1919.

60140 Matte, Creighton, smelter.

60141 Ore, Creighton Mine.

60142 Ore showing weathered surface, Falconbridge Mine.

60143 E\ Ore, Garson Mine. LO 9750

60144 E\ Rejects, Creighton Mine. (3 spec.)

60145 E\ Arid igneous rock, Creighton Mine.

met. lab 210

MISCELLANEOUS.

60146 Brecciated chert, Franciscan Series, Calif. E. Blackwelder.

60147 Contorted Albert Mississippian shales, near Heelsboro, N. S. W. H, Twenhofel.

ROCKS FROM COLORADO, KANSAS AND OKLAHOMA.

W. H. Twenhofel, 1918. Hall

60148 Limestone (thin) about 11 ft. above top of Winfield lime, Mervine anticline, Kay Co., Oklahoma.

60149 Shales about 25 ft. below base of Stanton limestone, near Fredonia, Kas.

60150 Ripple marked Permian sandstone. Red beds near Bliss, Noble Co, Okla.

60151 Cavernous limestone of Stanton member about 25 ft. above base. Fredonia, Kas.

60152 Below White Cliff sandstone (Triassic) Craig, Col.

60153 Tertiary oil sand, Craig, Col.

60154 Winfield lime, Permian, Mervine anticline, Kay Co., Okla.

60155 Herington lime near top. Mervine anticline, Kay Co., Okla.

60156 Ft. Riley lime (Permian) Mervine anticline, Kay Co. Okla.

60157 WHT Sandy hematite, 10m. S. E. of Perry, Okla. Permian Red Beds.

60158 WHT Mud cracked, limestone, Near base of Foraker limestone S. E. Cowley Co, Kas.

60159 Permian limestone, (Red beds)-with peculiar marking. Near Perry, Noble Co, Okla.

60160 WHT Sandstone concretions, Permian, Red beds, E. side Otoe top, Nobel Co, Okla.

60161 Permian conglomerate, Red beds, 10m. W. of Perry, Noble Co. Okla.

60162 Limestone conglomerate, zone C of note book about 100ft. above Foraker limestone, Permian, Jersey Ranch, S. E. Cowley Co. Kas.

60163 Limestone conglomerate Permian Red beds, Sec. 26, Otoe top E. side, Noble Co, Okla.

60164 Florence Flint, Permian, Grand Summit, Kas.

60165 Permian conglomerate, Sec, 24, Oteo top, E. side, Noble, Co. Okla.

60166 WHT Mud cracks, obverse side. Thin limestones of Permian Red Beds, S. of Red Rock., Noble Co., Okla.

60167 Flint concretion showing rosette structure, Wakefield limestone Permian, Mervinem Kay Co. Okla.

60168 Limy conglomerate, Permian Red Beds, Sec. 26, Otoe twp, E. side, Noble Co., Okla.

60169 Red shales and sandstone, about 25ft. below base of Wakefield limestone, Permian. Mefvine, Kay Co., Okla.

60170 Mud cracked Permian limestone, Permian Red Beds, 4 m. N. W. of Perry. Noble Co. Okla.

60171 White cliff sandstone, Tunassic, Craig col. Large piece from top, small just below top (coll. by E. M. Stryker).

60172 WHT Nodules from Red Beds near Red Rock, Okla., About 100 to 150 ft. above Herington limestone.

60173 Stanton limestone, about 20 ft. above base of cliff lime. Fredonia, Kas.

60174 Sandstone immediately below Oread limestone, near Longton, Chantanqua Co, Kas.

60175 Sand layer about 12 ft. above top of Winfield limestone, Mervine Anticline, Kay Co, Okla..

60176 WHT Filling of small veinlet. Permian Red Beds 4 m. S. of Red Rocks, Kas.

60177 Conglomerate Permian Red Beds Otoe top, Noble Co., Okla.

~~60178 Foraker limestone, S. E. Cowley Co. Kas.~~

60179 Permian sandstone 10 miles due west of Perry, Noble Co., Okla.

60180 Iatan limestone Elk City, Kas.

60181 transferred to fossils Coral in chert of Foraker limestone, Permian, Jersey Ranch S. E. Cowley Co. Kas.

60182 WHT Concretions from Weston shale Wilson Co, Kas.

60183 WHT Chert from Richmond cliff, S. of Little Sturgeon, Bay, Wis.

60184 Upper beds of Stanton limestone, Volunteer Oil Field, Fredonia Kas.

60185 Concretions from Premian Red Beds, W. side Otoe top, Noble Co. Okla.

60186 White cliff sandstone, Craig Co., Coll. (bottom) (Stryker coll.)

60187 Permian sandstone Otoe top (sec. 24,) Noble Co., Okla.

60188 Mud cracked Permian limestone, 4m. W. of Red Rock, Noble Co. Okla.

60189 Permian limestone, Red Beds, Bliss, Noble Co. Okla.

60190 Limestone conglomerate, 150 ft. above base of Foraker limestone S. E. Cowley Co. Kas.

60191 Lawrence sandstone, Pennsylvanian, Elk City, Kas.

60192 Thin limestone in Permian Red Beds near Peckham, Kay Co. Okla.

60193 Red shale just below Herington limestone, Mervine anticline Kay Co. Okla.

60194 WHT Weathered Wreford limestone zoneB of note (Permian) S of Otto, Kas.

60195 Differantial weathering in limestone - Grouse limestone or state lime. S. of Otto, Kas.

NOTES ON ROCKS AND MINERALS FROM THE ECONOMY MINE,

13 mi. S.E. of Helena, Mont.

By A. N. Winchell - 1919

60196 - 60228 in Hall Case

60196 - 1. Banded "quartzite"? about 900' due north of center of NW¼ Sec. 22, T.9 N., R.2 W.

This sample contains no quartz, but abundant rock glass and some green amphibole in very small crystals. This is andesite or andesitic obsidian.

60197 - 2. Hornblende (?) near granite contact, north line Marion A. Lode.

This sample is isotropic with distinct cleavage in at least two directions. It is therefore isometric. The specific gravity is 3.75; the relief is high; the crystals are nearly equidimensional in spite of mutual interference. In thin section the color is greenish brown to nearly black with darker haloes about inclusions. This is probably a black iron spinel (hercynite).

60198 - 3. Non-schistose mica schist, 200' S. of N.W. corner of 10-acre tract on which John shaft is.

This sample is composed of plagioclase feldspar, biotite, hornblende, pyroxene, quartz, magnetite and chlorite. The original sedimentary texture is entirely gone except in the case of zircon, the rounded grains of which are still visible. The present texture is crystoblastic, that is, due to recrystallization of constituents while the rock is solid. Recrystallized feldspathic shale.

60199 - 4. Similar to 3, 225' S. of same corner. Finer grained.

Fine grained, similar to #3. Same constituents as the last and the same texture, but somewhat finer grained with some enstatite. Recrystallized feldspathic shale.

60200 - 5. "Augite porphyry" from dump of John shaft. Green porphyry. Augite porphyry.

This sample is composed essentially of recrystallization minerals, especially pyroxene, derived from shale. The large crystals are also pyroxene. Some pyrite and mica. Recrystallized shale.

60201 - 6. Andesite (?) from 300' S.E. of John shaft. Red porphyry.

The phenocrysts are chiefly of plagioclase; quartz is present but only as later material in veinlets and cavities. Some epidote. Andesite.

60202 - 7. Andesite (?) from north line of property 600' W. of N.E. corner. Black porphyry which seems to grade into red porphyry.

Phenocrysts of plagioclase quite abundant. A few phenocrysts of pyroxene. Typical igneous texture. Andesite.

60203 - 8. Black lime (?) from west side of Mitchell Creek near N. line of property.

This sample contains considerable calcite but also quartz and lime-silicate minerals such as diopside and wollastonite and abundant garnet. Contact-altered impure limestone.

60204 - 9. Dark shaly sandstone. Footwall of John vein, first level, 10' W. of east face.

This contains much argillaceous material, chlorite and quartz with a little limenite, kaolin, calcite, and mica. Shale.

60205 - 10. Dark shaley sandstone. Hanging wall of John vein, 1st level. 10' W. of east face.

This sample contains much plagioclase, quartz, hornblende, biotite, sericite, and some pyrite, ferrite, zoisite, kaolin, and orthoclase. Texture crystdblastic. Recrystallized shale.

60206 - 11. Limestone (?) John mine, 1st level in hanging wall ("sulphide") drift over incline shaft.

Section unnecessary.

60207 - 12. Like 11, but harder. Same place.

This sample contains little calcite and much plagioclase, biotite, hornblende, and some orthoclase, magnetite, etc. Recrystallized shale.

60208 - 13. Dark limy shale. Like 11, but darker. About 50' E. of incline on 1st level, hanging wall.

This is composed largely of plagioclase, biotite, hornblende, calcite, quartz, with some chlorite, sericite, limonite. Recrystallized limy (S.O.C.) shale.

60209 - 14. "Augite porphyry", E. wall, portal of crosscut to N. from W. drift, 300 level, John mine. Section "1".

This sample consists largely of wallastonite with some mica and large crystals of pyroxene which are probably diopside. Also some disseminated pyrite.
Recrystallized calcareous shale (or limestone).

60210 - 15. Tourmaline (?) chlorite rock with epidote, near granite contact at Sta. 7 - S.W. corner Last Chance.

The black mineral supposed to be tourmaline is isotropic and isometric. It shows forms of the octahedron and dodecahedron. It has imperfect cleavage. It is infusible before the blowpipe and becomes slightly magnetic when fused with sodium carbonate. It grades outward into an opaque black mineral. The index of refraction is a little higher than 1.74. This must be an iron spinel (hercynite or ceylonite).

60211 - 16. Black mineral in quartz. From pit about 200' S.W. of Beta shaft on Marion claim.

This sample is chiefly chlorite with a little magnetite (in quartz).

60212 - 17. Footwall of quartz vein in bottom of pump sump.

This is largely calcite, in part in secondary veinlets, but mostly primary. It contains some pyrite which has been introduced by replacement.
Impure limestone.

60213 - 18. Hanging wall of quartz vein in bottom of pump sump.

This sample is similar to preceding but contains more impurities, including sericite, chlorite, pyrite.
Impure limestone.

60214 - 19. "Granite", middle of Marion claim.

The rock has an igneous texture containing abundant plag-

ioclase with biotite, pyroxene and hornblende, some orthoclase, very little quartz, titanite, apatite, chlorite. This is the country rock of the Boulder batholith. Diotite.

60215 - 20. "Granite" (?) north of 19 on Marion claim.

This sample is composed largely of pyroxene with some olivine, biotite, hornblende and plagioclase, the last altering to sericite and chlorite and the olivine to bowlingite and calcite. Some magnetite. Schiller structure in pyroxene. The texture is that of an endomorphosed igneous rock.
A basic fine grained border phase of the "granite."

60216 - 21. "Granite" (?) north of 20 on Marion claim.

This is composed largely of olivine, pyroxene altering to hornblende, plagioclase, biotite, with some magnetite. Reaction runs between the olivine and plagioclase composed largely of mica. Angular crystals of magnetite.
A basic fine-grained border phase of the "granite."

60217 - 22. "Granite" (?) north of 21 on Marion claim.

This is composed largely of pyroxene and plagioclase with hornblende, chlorite, biotite, magnetite. Some apatite crystals are sharply angular.
A basic fine-grained border phase of the "granite."

60218 - 23. "Granite" (?) north of 22 on Marion claim.

This is composed largely of plagioclase, pyroxene, biotite, with some orthoclase and magnetite, Some sharply angular crystals of apatite.
A basic fine-grained border phase of the "granite."

Regarding fine-grained margin of "granite", compare Billingsley: "Boulder Batholith of Montana": Trans. Amer. Inst. Min. Eng., Vol. 51, 1915. p.43.

missing

60219 - 24. Primary (?) zinc ore, John vein, about 50' E. of shaft, 300 level.

The sphalerite contains no inclusions of chalcopyrite although intergrown with some quartz and pyrite.

60220 - 25. Secondary (?) zinc ore. Zinc vein bottom of electric pump sump. Below 300 level.

The sphalerite contains no inclusions of chalcopyrite but is intergrown with some pyrite and chalcite.

Samples 24 and 25 both represent secondary zinc ore according to the method of distinction worked out by L.P.Teas, since they both contain no chalcopyrite, which is believed to be deposited in primary sphalerite by replacement in very many cases, and probably, according to Teas, in all cases, whereas in secondary sphalerite such chalcopyrite is unknown. See Trans. Am. Inst. Min. Engrs., vol. 59, 1918, p.68.

60221 - 26. Andesite (?) or metamorphosed quartzite, 300 N. of center of Sec. 22.

This is composed largely of quartz with much wollastonite and some mica and calcite.
Recrystallized calcareous quartzite.

60222 - 27. "Granite" (?) about 100' N. 35° W. from center N.W.¼ Sec. 22.

This sample is composed largely of plagioclase, with orthoclase, microcline, and quartz, and biotite, hornblende. Sharply angular apatite, zircon, and rutile. Rare calcite as an alteration product. Rare microcline.
A fine-grained quartz monzonite.

60223 - 28. Apparent gradation andesite to quartzite, about 300 N. of center of Sec. 22.

This is an andesite with no detrital quartz, but much rock glass and some plagioclase phenocrysts.
Andesite.

60224 - 28b. Like 28a.

60225 - 29. Alteration (like aplite?). Just below John vein, east drift, 300 level, east of Hegman fault, Sec. "2".

Originally a calcareous sandstone, the sedimentary quartz grains still are distinct and abundant. Some remaining calcite, some pyroxene due to recrystallization.
Not an aplite.

60226 - 30. Alteration (like aplite?) above Hegman fault, 300, "S" drift.

Some parts of this material are composed of a fine mossaic of quartz and sericite and may represent much altered aplite, but much of it is merely a bleached hornblende - plagioclase rock - that is, bleached ("S.O.C.") recrystallized shale.

60227 - 32. Basalt? dike on north line of Economy Mines Co.property.

The rock is composed largely of labradorite feldspar with large hornblende crystals and very small flakes of biotite and some pyroxene with a little ferrite. It is closely related to the andesite of the region, but is a little more basic and is therefore called an olivine free basalt or an augenite.

60228 - 31. "Augite porphyry", Hegman crosscut, 22' N. of John vein, 300 level.

The rock is composed essentially of pyroxene--wollastonite and diopside--with a little quartz, pyrite, sphalerite(?), garnet and hornblende. The large crystals are pyroxene.
It is a recrystallized calcareous shale.

60229 → (skip two pages)

These numbers duplicate others (see below)

numbers duplicate those before

Descriptive list of samples from New Jersey marl

belt collected by G.R.Mansfield, Nov.1918 to Mar.1919.

1. 60243 Hole 1, farm of Louis Fogg, about 20 feet east of Walnut St., Salem, and .66 mile from north end of street, elevation of surface about 2 ft.-5 ft. of material from depth of 25 to 30 ft. Nov. 26.

2. 60244 Hole 1, 7 ft. 4 in. greensand from depth of 30 ft. to 37 ft. 4 in. Nov. 27.

3. 60245 Hole 1, 5 ft. 3 in. from depth of 37 ft. 4 in. to 42 ft. 7 in. Nov. 30.

4. 60246 Hole 1, 3 ft. 9 in. from depth of 42 ft. 7 in. to 46 ft. 4 in. Nov.30.

5. 60247 Hole 1, 2 ft. from depth of 46 feet. 4 in. to 48 ft. 4 in. Dec.4.

12. 60248 Hole 6, Isaac K. Lippincott's field at Woodstown, about 1 mile north of Woodstown station .- (375 ft. N. 30 E. from Hole 5,) (20 ft. E. of culvert on road to Auburn, north side of creek, elevation of surface about 48 ft.). 8 ft. 4 in. greensand from depth of 10 ft. to 18 ft. 4 in. taken by auger. Dec. 31.

13. 60249 Hole 6, 2 ft. 2 in. from depth of 18 ft. 4 in. to 20 ft. 6 in. taken in sand bucket. Jan. 6.

14. 60250 Hole 6, 2 ft. from 21 ft. 10 in. to 23 ft. 10 in.; believed to be representative of material from depth of 21 ft. 10 in. to 25 ft. Jan. 6.

15. 60251 Hole 6, bailing taken at depth of 29 ft.; believed to represent 5 ft. of material from depth of 25 to 30 ft. Jan. 6.

16. 60252 Hole 6, 1 ft. of material from depth of 30 to 31 ft.; believed to represent material to depth of 34 ft. 7 in. Jan. 7.

17. 60253 Hole 6, bailing at depth of 34 ft. 7 in. but apparently representative of 5 ft. 5 in. material to depth of 40 ft. Jan. 7.

18. 60254 Hole 6, bailing at depth of 40 ft. but apparently representative of material from 40 to 43 ft. 6 in. Jan. 8.

19. 60255 Hole 6, 1 ft. 6 in. material taken with cylinder attached to drill bit at depth of 43 ft. 6 in. to 45 ft. Jan. 8.

42. 60256 Hole 9, 330 ft. N. 20 W. from Hole 8, property of West Jersey Marl and Transportation Co. at Sewell, 2740 ft. southeast of center line of station and 40 ft. east of center of track. Elevation of sufface about 70 ft., 1 ft. 8 in. marl from depth 8 ft. 3 in. to 9 ft. 11 in. taken with core tool. Jan. 29.

43. 60257 Hole 9, 5 ft. marl from 9 ft. 11 in. to 14 ft. 11 in. taken with auger. Jan. 29.

44. 60258 Hole 9, 2 ft. 5 in. marl from depth 14 ft. 11 in. to 17 ft. 4 in. taken with auger. Jan. 29.

These numbers duplicate others (see below!)

45. 60259 Hole 9, 5 ft. 2 in. marl from 17 ft. 4 in. to 22 ft. 6 in. taken with auger. Jan. 29.

46. 60260 Hole 9, 4 ft. 2 in. green marl from 22 ft. 6 in. to 26 ft. 8 in. taken wet in sand bucket and trough. Jan. 30.

47. 60261 Hole 9, 3 ft. 3 in. chocolate marl from 26 ft. 8 in. to 29 ft. 11 in. taken wet. Jan. 30.

48. 60262 Hole 9, 5 ft. 9 in. chocolate marl from 29 ft. 11 in. to 35ft. 8 in. Jan. 30.

49. 60263 Hole 9, 5 ft. 3 in. chocolate marl from 35 ft. 8 in. to 40 ft. 11 in. collected as thick sludge. Jan. 30.

50. 60264 Hole 9, 3 ft. 1 in. chocolate marl from 40 ft. 11 in. to 44 ft. Sandy material just above lower shell bed. Jan. 30:

109. 60265 Hole 16, 330 ft. S. 82 E. from Hole 15, farm of Alphonso Fusco. Elmwood Road, 65 ft. N. 63 E. from center of railroad crossing just east of station. Elevation of surface about 65 ft.: 4 ft. of reworked marl 2 ft. to 6 ft. taken with auger. Mar. 6.

109b. 60266 Hole 16, 1 ft. 8 in. from 6 ft. to 7 ft. 8 in., lithologic sample sandy clay taken as sludge. Mar. 6.

109c. 60267 Hole 16, 8 ft. 4 in. gray, clayey glauconitic sand. Vincentown ? from 7 ft. 8 in. to 16 ft., lithologic sample collected as sludge. Mar. 7.

110. 60268 Hole 16, 3 ft. dark greenish gray black, sandy, glauconitic clay 16 ft. to 19 ft. basal part of Vincentown? collected as sludge. Mar. 7.

111. 60269 Hole 16, 5 ft. shell bed (3 ft.) and softer material from depth of 18 ft. to 24 ft. taken as sludge. Mar. 7.

112. 60270 Hole 16, 3 ft. 8 in. brown and green clayey marl, fossil corals etc., 24 ft. to 27 ft. 8 in. collected as sludge. Mar. 7.

113. 60271 Hole 16, 5 ft. 4 in. dark greenish marl, 27 ft. 8 in. to 33 ft. Mar. 7.

114. 60272 Hole 16, 4 ft. 6 in. brown and green marl from 33 ft. to 37 ft. 6 in., includes gravelly bed 7 in. thick at depth of 36 ft. From 36 ft. 7 in. to 37 ft. 6 in. probably represents top of chocolate or Navesink. Mar. 8.

115. 60273 Hole 16, 10 ft. 1 in. brown clayey marl, 37 ft. 6 in. to 47 ft. 7 in. collected as sludge. Mar. 10.

116. 60274 Hole 16, 10 ft. 5 in. brown marl, 47 ft. 7 in. to 58 ft. Mar. 12.

117. 60275 Hole 16, 3 ft. 4 in..lower part Navesink,58 ft.to 61 ft.4 in.Mar.12.

118.60276 Hole 16, 3 ft. 2 in. basal beds Navesink, Belemnitella etc., 61 ft. 4 in. to 64 ft. 6 in. Mar. 13.

118a.60277 Hole 16, washed sample of basal beds.

6b. 60278 Hole 1, 4 ft.2in.from depth of 48 ft.4 in.to 52 ft.6 in..with contained clay. Dec. 5.

19a. 60279 Hole 6, lithologic sample of sand at bottom of hole at depth of 47 ft. 7 in. Jan. 8.

These numbers duplicate others (see above!)

Collection donated by F. A. Wolverton, 1919. Manitoba, Canada.

6H760229 Staurolite-mica schist, Little Whitefish Lake, Man. 428
Case 9 60230 Staurolite-mica schist Grass R., Man. H Fe Al$_2$ Si$_2$O$_{13}$
Case 9 60231 Staurolite-mica-garnet schist, Crowduck Bay, Herb L., Man.
Case 26 60232 Tourmaline-gold quartz. Manitoba (?)
60233 Gold quartz, Rex Mine, Manitoba, Canada
Case 14 60234 ~~Zinc ore, Mandy Mine, Schist Lake, Man.~~ Recat. 10/16/34
60235 a, b, c, Chalcopyrite (3 spec.) Mandy Mine, Schist Lake, Man. Case 16
6B6 60236 Schistose arsenopyrite, Herb L., Man. Collection donated by W. H. Twenhofel, Dec. 1919. 98
60237 Solid hydrocarbons in Ordovician limestone. Ontral Mineral Region, Texas.
60238 Lane shales (3 spec.). Pennsylvanian, near Chanute, Kas.
60239 Gypsum. Permian "Red Beds", Belvidere, Kas.
60240

60241 Crossbedded limestone, Port Clarence ls., W. side of Lost River, Seward Pen., Alaska. E. Steidtmann.
60242 Flint from chalk. England. (F.T.Thwaites).
60243 Unoxidized iron formation. Ashland Mine, Wis. (Capt. King) in museum
60244 Sandstone with iron oxide markings. Sec. 3, T. 24, R 3W, S.W. of Fairchild, Wis. (W. O. Hotchkiss).

Collections presented by A. N. Winchell, 1920.

Case 10 60245 Hulsite (7 pieces)
12(FeMg) O_12 Fe_2O_3, : West slope of Brooks Mt., head of Mint R., Alaska. n694
: elev. 1000', See mineralogical notes,
SnO_2, $3B_2O_3$, $2H_2O$: Bull. 490, U.S.G.S., 1911. Schaller.

60246 Plattnerite, PbO_2, Tamarack Mine, Coeur d'Alenes, Idaho.
60247 Dust from duststorm, St. Charles, Ia. II-14-19.
60248 Same from Des Moines, Ia.
60249 Diatoms (Nitzschia) from duststorm, Madison, Wis. III-9-18.
60250 Same (Navicula)

Thin sections from United Verde and adjacent mines.

60251	1 Andesite	Copper Chief Tunnel
60252	2 Lamprophyric andesite	Copper Chief Tunnel
60253	3 Anorthosite aplite	Copper Chief Tunnel
60254	4 Andesite	Copper Chief Tunnel
60255	5 Aplitic granite	Copper Chief Tunnel
60256	6 Andesite	Copper Chief Tunnel
60257	7 Dolomite	300 E cross cut
60258	8 Andesite	1000 level, United Verde
60259	9 Diabasic andesite	Station, 1200 level, United Verde
60260	10 Schist	Oddity drift
60261	11 Chlorite	S end 50 level
60262	12 Trachyte	1500 level, United Verde
60263	13 Chert (2 sections)	1000 Tunnel, United Verde
60264	14 Opal	101 stope, 300 level
60265	15 Augite diorite	Surface, W of vein, United Verde
60266	16 Dolomite	800 level, W crosscut
60267	17 Mica andesite	Dillon tunnel
60268	18 Andesite, altered	1350 level
60269	19 Augite andesite (2 sections)	Dillon tunnel

These numbers duplicate others !

(see above !)

60270	20	Quartzite, argillaceous	Dillon tunnel
60271	21	Quartzite, micaceous	Hermit fault
60272	22	Quartzite, cherty	300 level, United Verde
60273	23	Quartzite	300 level, United Verde
60274	24	Argillite, sideritic (?)	Sta. 299, 1000 level, United Verde
60275	25	Chert, chloritic (2 sections)	1000 level United Verde
60276	26	Quartzite, chloritic	900 level United Verde
60277	27	Quartzite, chloritic	300 level, Sand Oddity Drift
60278	28	Argillite, sideritic (?)	900 level, 5 L. M., United Verde
60279	29	Limestone, cherty crystalline	800 level, E. of ore, United Verde
60280	30	Andesite, altered	1500 level, United Verde
60281	31	Trachyte, altered	1200 level, #3 S., United Verde, Ext.
60282	32	Syenite, altered	1400 level, near shaft," " "
60283	33	Pyrite (polished)	less in Algonkian schist, United Verde
60284	34	Chalcopyrite (polished)	United Verde

Second series

60285	1	Andesite, altered
60286	2	Andesite, altered
60287	3	Andesite
60288	4	Dacite
60289	5	Dacite
60290	6	Andesite
60291	7a	Quartz
60292	7b	Quartz
60293	8	Andesite
60294	9	Chlorite schist
60295	10	Altered andesite
60296	11	Dacite

Collection by N. H. Winchell from Montana (sections)

60297	75-44	Gneiss (county roads)	Neihart, Mont.
60298	76-45	Syenite intrusive in gneiss	" "
60299	77-46	Quartzite over gneiss	" "
60300	78-47	Leucite (?) rocksintrusive in ls.	Barker, Mont.
60301	79-48	Same as above	" "
60302	80-49	Same as above	" "
60303	81-50	Like #80 but white	" "
60304	82-51	Unknown	" "
60305	83-52	Monzonite	2 m. E. of Barker, Mont.
60306	84-53	Andesite, laccolith	near Monarch, Mont.
60307	84a-53	Andesite, laccolith	Monarch, Mont.
60308	85-54	Andesite, laccolith	" "
60309	86-55	Gneiss	Belt A, near Monarch, Mont.
60310	87-56	Basalt	Spokane, Wash.
60311	88-57	Granite	Cascade Tunnel, G.N.R.R.
60312	89-58	C. rock and bas inch	Clinton Mine, Clinton, Mont.

Rocks collected by F. E. Williams in northern Minnesota in 1919. See notebooks in files of C.K.Leith.

60313	1	Amphibolite	150 paces W. S.W. cor. Sec. 35, T. 63-18 R.
60314	2	Marble	400 p. E. S¼ stake, 3, 62-18
60315	3	Marble	Same
60316	4	Marble	Same
60317	5	Quartzite ?	800 p. N. corner 8,9,17,16,61-18
60318	6	Hornblende schist)	
60319	7	Gabbro)	700 p. N. corner 7,8,18,17,61-18
60320	8	Basalt)	
60321	9	Hornblende schist)	
60322	10	Gabbro)	
60323	11	Hornblende schist)	700 p. E. W ¼ post 8,61-18
60324	12	Contact ofbasalt and schist)	
60325	13	Quartz, hornblende rock)	
60326	14	Quartz vein in above)	
60327	15	Like 60325--schistose)	Near N.E. corner 18,61-18
60328	16	Like above)	
60329	17	Quartzite ??	700 p. N. S.E. corner 10, 61-18
60330	18	Greenstone schist)	
60331	19	Same)	
60332	20	Vein in above)	300 p. N. Flint Creek Sta., 36,63-19
60333	21	Darker phase of above)	
60334	22	Gabbro	200 p. N. last above
60335	23	Quartzite ? ?)	
60336	24	Gneiss)	500 p. E. of cor. 9,10,16,15,61-19
60337	25	Hornblende schist	500 p. W. of corner 9,10,15,16,61-19
60338	26	Gneissose quartz rocks	900 p. E. of cor. 9,10,15-16,61-19
60339	27	Quartz rock	
60340	28	Banded quartz rock	400 p. S, 200 p. E. N.W. cor. 18, 61-19.
60341	29	Hornblende schist	400 p. S. N ¼ stake 17, 61-19
60342	30	Hornblende mica schist	600 p. S. N.W. cor. 22, 60-20
60343	31	" " "	" " " " " "
60344	32	Hornblende schist)	
60345	33	Grano diorite)	
60346	33a	Same, gneissic)	S. of N. ¼ post 5,60-18
60347	34	Same, fine grained)	
60348	35	Pegmatite)	
60349	36	Rhyolite ?)	
60350	37	Black igneous rock)	
60351	38	Like 60349)	200 p. S. Rice R. Sta., C.N.R.R., 18, 60-17.
60352	39	Hornblende schist))	
60353	40	Granite	500 p. S., 700 p. E. W.¼ post 7,60-17, along R.R.

Miscellaneous specimens, 1920

E-32-11 to 16 inc. U167

60354-60359 Series of contact altered sediments, Bauxite, Ark.

~~B-15-2~~ B-17-14 Esterellite

60360 U38 ~~Monzonite porphyry~~ Herb Lake, The Pas, Manitoba, Canada

60361 M6H6 Tourmaline, same 426

60362 M6H7 Staurolite, same (disposed) ? 428

E-5-9

60363 U150 Cone in cone gypsum, ~~Natural~~ ~~Coral~~, McPherson Co., Kas. W.H Twenhofel

60364 St. case Herringbone structure in schist, Ducktown, Tenn. W.O. Hotchkiss

60365 St. case Schistose Cambrian, Alcoa, Tenn. W.J.Mead

D-24-11

60366 U123 Cucharacha formation, Panama Canal Zone, W.J.Mead

Collection by W.H.Twenhofel, 1920

60367 Bedford limestone showing Stylolites, Bedford, Ind.

60368 Types of Guelph limestone, near Castalia out from Sandusky west, Ohio, June 20, 1920

60369 Showing development of Septune, Pennsylvanian, Windslow, Ind.

60370 Guelph, back of Sloane Hotel, Sandusky, Ohio.

60371 Black shale, west side of Dubois Co., Ind. Pennsylvanian

60372 Steel Band limestone, Coal Measures, Windslow, Ind.

60373 Delta sandstone, Pennsylvanian, Midland, Owen Co., Ind.

69374 Pennsylvanian chert, lower chert of notes of July 9, near Himlingburg, Ind. W.H.T

60375 Black shale, delta origin, Coal Measures, Dubois Co., Ind.

60376 Paper shale, Coal Measures, Windslow, Ind.

60377 Black shale with fossils between Coals # 5 & 4, Hartwell Mine, Dubois Co., Ind.

60378 Pennslvanian chert upper chert of notes of July 9, near Himlingburg, Ind.

Hunt

60379 Wis. Col. case 24 Brown iron ore presented by Dr.C.F.Bowen from farm of N.D and P.C.Bowen, 1 1/2 miles west of Richland Center, Wis .

60380 Copper case 16 sulphides and gypsum, Iron Mask Mine, Kamloops, B.C.

60381 "Do with anhydrite. These two specimens from Marcus Link

60382 Zeolite, Lake Superior Region mineral

60383 M Kaolin, Red Mt , Col. (section)

Collection with thin sections from Pas District, Manitoba, Canada made by F A.Wolverton, 1919.

F-9-2 V177
60384 1 Staurolite, garnet, mica gneiss

F-9-3
60385 2 Muscovite schist

F-9-4
60386 3

F-9-5
60387 4

F-9-6
60388 5 Sericitized rock

F-9-7
60389 6 Garnet biotite gneiss

F-9-8
60390 7 Garnet gneiss

F-9-9
60391 8 Staurolite, mica, garnet gneiss

60392 V 105 Cretaceous conglomerate, Dean Mine, Mesabi range, Minn.

D-6-17 V105
60393 Do from Mahoning-Hull Rust pit.

60394 Slickensides on coal, Edwardsville, Ill. (Corbett)

Collection from J.A.Drushell (Twenhofel)

60395 St Peter sandstone, 50' from top of quarry, Pacific, Mo.

60396 Do. with concretionary structure, from top.

60397 Do. about 100' from bottom of quarry near top.

60398 Do. from case hardened bowlder.

60399 Top of St.Peter transition zone.

60400 Layfayette gravel, Frisco station, Webster Groves, Mo.

Collection from Montana, Twenhofel, March, 1921.

60401 River pebbles, Tertiary, near Billings.

60402 Mud conglomerates, Laramie formation, Twin Buttes, Crow Agency.

Collection sent by Perry Harrison to A.N.Winchell from Cripple Creek, Col. notes under W

60403 Altered latite-phonolite (No.1)

Hall 60404 Altered phonolite (No.2)

60405 Do.(No.3)

60406 Do.(No.4)

60407 Altered syenite (No.5)

Hall 60408 Fine grained phonolite (No.6)

60409 Pelees hair (E.Blackwelder)

60410 Marl, Daytona, Florida.

case 2\ 60411 Magnetite ore, Pretoria, S.Africa (J.A.Lounsberry)

Case 2\ 60412 Gold bearing conglomerate, Whitwaters Rand, S.Africa.

60413 Loess, Natches, Miss. (W.J.Mead)

Miscellaneous specimens, 1921. (W. H. TWENHOFEL)

60414 WHT Glauconitic sandstone, lower greensand, Franconia formation, Norwalk, Wis.

60415 7B7 Carnotite, radium ore, Long Park, Colo, presented by Radium Information Service, New York. (1 disposed) near 663

60416 Econ. Case 9 Asbestos veins adjoining serpentine in or near diabase dikes or sills in Cambrian limestone, Regal mine, 80 miles NE of Globe, Ariz. R.N.Hunt.

60417 See Cast of ripple marks, Keweenawan, Middle River, Douglas Co. Wis. F.T.Thwaites.

60418 See Ripple marks, same as above.

60419 See Weathered out gypsum, Western Kansas.

Miscellaneous specimens, 1922.

60420 Millerite, Niederhoevels, Rhine Province, Germany.

60421 Crystallized Kaolinite, analyzed, Red Mt., Col.

60422 Magnesite, Daphnopofamous, Euboea, Greece. H.C.Boydell.

Rock and mineral samples from property of Consolidated Manganese Co., New Ross, Lunenburg Co., Nova Scotia.
Collected by F.C.Fearing and studied by A.N.Winchell.
See detailed description in files.

60423 Carbonate from dump.

60424 Carbonate from dump.

60425 High grade pyrolusite ore from No.2 shaft, Upper mine.

60426 Biotite granite, 600' E. of lower mine.

60427 Inclusion in granite of last sample.

60428 Fine grained aplitic rock, 1½ m. N. on Porcupine Lake road.

60429 Weathered granite, 700' SW of International Manganese and Chemical Co. No.2 shaft.

60430 Normal biotite granite.

60431 Granite from about 200' north of lower mine shaft.

60432 Manganite with secondary pyrolusite.

60433 Weathered granite from dump of Lower Mine.

60434 Biotite granite on top of hill at Upper Mine.

60435 Same from north wall of lead.

60436 Calcite with some chalcedony.

60437 Calcite more replaced by chalcedony than above.

60438 More altered calcite containing manganese.

60439 Brown calcite.

60440 Biotite granite, bottom of lower mine shaft.

60441 Biotite granite from point 100' N. of Int. Mg. & Chem. Co., No.2 shaft.

60442 Biotite granite, 100' N. of Int,Mg. & Chem. Co. No.2 shaft.

Presented by W.O. Hotchkiss (Duplications? – see below!)

60443 W case 23 Onyx Wisconsin

60444-7 case 24 Rock and ore Cranberry, N.C.

60448 case 14 Sphalerite Mascott Mine, Tenn. Recat. 10/9348 10/9349.

60449 case 14 ~~Cerrusite & Drybone~~ Embreeville, Tenn. ~~(One numbered 60450)~~

60450 S e case 14 Spherical pot-hole pebble Presented by V.C. Finch

F-9-10

60451 V177 Non-schistose "Schist" Jardine, Mont. H.C. Bascom

60452 case 18 Carnotite ore 35% U_3O_8, 12% V_2O_5 Moab, Utah
replacing tree

60453 7B7 Same. 3 to 4% U_3O_8, 4%-5% V_2O_5 Gateway Dist., Col.

60454 case 18 18% V_2O_5, 3%-4% U_3O_8 (rare) $K_2O \cdot 2U_2O_3'' \cdot V_2O_5'' \cdot 2H_2''O$

Thin sections from Winchell

60455-8 M Opal United Verde Mine

60459 M Quartzite with moving bubbles Delaware Co., Penn.

60460 M Hallefluta Damemora (chert) Sweden

60461 V7 Felsite Salem, Mass.

60443 - 60466 Sedimentary structures

W.H. TWENHOFEL (sedimentation Lab.)

DUPLICATION – see above!

60462 St Granite showing fracture cleavage, Wausau, Wis.

60463 SE W.H.T. Mudcracked Byron dolomite, Sec. 31, 29-26E, Door Co., Wis.

60464 SE W.H.T. 3 spec. ripplemarked Byron dolomite, Sec. 7, 30-27E, Door Co., Wis.

60465 Area 23 Wm Gypsum from top of Richmond, Sec.18, 27 N.-24E, near Brussels Door Co., Wis.

60466 SE W.H.T. Ripplemarked Richmond shale. Sec. 7, 27-24E, Door Co., Wis.

Collection of Copper specimens from Michigan.

60467 Case 26 M Native silver

60468 Case 6 Agate (1 disposed)

60469 Case 26 Silver and copper "half-breeds". Keweenaw Dist.

60470 Case 26 Shot copper, Kearsarge vein.

60471 Case 26 Mohawkite, Mohawk Mine, Keweenaw Point, Mich.

60472 Case 16 Conglomerate, Calumet & Hecla, 64th level, 6400' down 38 deg. slope. (Specimen broken to make smaller polished spec. # 9992)

Ex. { 60472 Copper — Houghton, Mich.

60473 Case 16 Branching native copper.

60474 Case 16 Weathered copper.

60475 6AA Copper cut by tools. Exchanged 15

60476 Case 7 Calcite crystals.

60477 Met. Col. Gneiss from mountains near Rio Janiero, Brazil

All in El Col. at present 2/11/28 V.E.B.

Collection from Cornwall, England, with sections.

60478 Muscovite-biotite granite, Long Downs.

60479 Granite with tourmaline and fluorite, Botallack.

60480 Tourmalinized granite-Luxulliante, Luxillian

60481 Schorl rock, Roche.

60482 Fine grained granite with topaz, Knells monument, ST.Ives.

60483 Fine grained granite, Carn Marth, Redruth.

60484 Granite porphyry, Tuckingmill, Camborne.

60485 Granite porphyry, tourmalinized, Bolenowl Moor, Troon.

60486 Chilled margin of granite porphyry, Bolenowe Moor, Troon.

60487 Aplite, Long Dows, Mabe, Falmouth.

60488 Spotted clay slate, Praze.

60489 Tourmalineized clay slate, Castle-au-Dinas, St.Columb.

60490 China stone, St.Dennis.

60491 Calc-flinta, St.Dennis.

60492 Spotted "greenstone", Trevaylor quarry, Penzance.

60493 Slate hornfels, Gunards Head, St.Ives.

60494 Greenstone with axianite, Carrick du St.Ives.

60495 Garnetiferous greenstone, Camborne.

60496 Veinstone with cassiterite, S. Crofty Mine, Camborne

60497 Veinstone with wolfram, Do.

Miscellaneous Specimens, 1923-24

60498 Sheet copper from fault, Keeweenaw Pt., Mich.

60499 Bowl of copper, same

60500 Copper mass with end of D.D. hole, same.

60501 Agates, same.

60502 Brown phosphate, Mt.Pleasant, Tenn.

60503 Brecciated Mississippian ls., Meramec Highlands, St.Louis, Mo.

60504 Sphalerite, dolomite, Joplin Dist. Mo. G.L.Knight.

60505 156 Slate. Harbison-Walker quarry, N. Freedom, Wis.

60506 Stalactites from Capitol Portico, Mack.

60507 Unusual phase of Byron dolomite, Ruederbusch quarry, Mayville, Wis.

60508 Amphibolite?, 30, 45-3W, Wis.

60509 Plagioclasite?. 36, 45-4W, Wis. Keweenawan. Town of Marengo, Ashland Co.

60510 Bismuth ore showing twinned orthoclase crystals, S. side of hill, Big cut, Brazil. J.E.Carney.

60511 Bismuth ore with small crystal of Pucherite, same.

60512 Sulphur and dolomite, Akumada Mine, Mexico. H.A.Buehler.

60513 " Aquamarine, Brajauba Mine, Minas Geraes, Brazil J.E.Carney.

60514 " Pyroxene from syenite, Minn. F.F.Grout. Scheer. Analysis
SiO2, 46.85 ~~Al2O3~~, 2.50 Fe2O3, 11.40 FeO, 6.72
MgO, 8.17 CaO, 17.85 Na2O, 2.49 K2O, 0.50
H2O, none- H2Oplus, 0.92 TiO2, 2.13 MnO 0.31
Total, 99.84 Sp. G., 3.36 γ, = 1.740 ± 4 = gamma? γ
b, 1.728±6 a, 1.720±4 Estimate: Acmite 15, Hedenburgite 22, diopside 38 xs Al plus Fe 7 Silica 8, Biotite-Titanite 10.
2v very large. Faint green pleoch. Alters to biotite and Riebeckite. See

60515 Chert, Bates Mine, Iron River, Mich. See

60516 Inclusion in granite, State Capitol, Madison (Hardwick, Vt.) John Jennings.

60517 Faulted concretion, Tertiary, Trinidad C. G.Carlson, 1924

60518 Cerussite, Embreeville, Tenn.

60519 -60522 Calamine, same ↓ 60520 displaced

60523 Gypsum crystals from inside of salt tank, New York, W.H.Twenhofel

E-14-17

D-32-20

3

281

423

746

Brit. Columbia.

Thin sections of magnetite ores of Texada Island. C. O. Swanson, 1924. Thesis

U.W.	Box	Mark
60524	1	R1 Showing a vein of magnetite between garnetite replacement of calcite and amphibole-epidote rock, replacement of the intrusive.
60525	2	R24 Jasper and garnetite replacement of limestone.
60526	3	R27a Contact of magnetite with hornblende-rock, replacement of porphyry phase of the intrusive.
60527	4	R38a Garnetite replacement of intrusive in contact with slightly altered intrusive.
60528	5	R39 Garnetite in contact with recrystalized limestone.
60529	6	R52 Slightly altered phase of R 53.
60530	7	R53 Comparativly fresh tonalite.
60531	8	Q1 Alaskite dike.
60532	9	Q17 Augite-magnetite vein in diorite inclusion in tonalite.
60533	10	Q29 Serpentinized limestone.
60534	11	Q44 Epidotized alaskite.
60535	12	Q45 Intrusive altered with much secondary pyroxene.
60536	13	Q64 Comparativly fresh tonalite.
60537	14	Q65 Epidotized tonalite.
60538	15	Q66 Epidosite vein.
60539	16	Q82 Contact of garnetite with the intrusive.
60540	17	Same
60541	18	Q87 Contact of magnetite with hornblende rock, replacement of t e intrusive.
60542	19	Q88 Series of 4 slidesa and b at borders of magnetite c and d respectivly farther into intrusive beyond b.
60543	20	Same
60544	21	Same
60545	22	Same
60546	23	P2 This and following taken from a gradation from magnetite ore body to tonalite; P2 is nearer the ore. xSlightly Altered tonalite, epidotized phase.
60547	24	P3. See above. Slightly altered tonalite
60548	25	P9 This and following similar to above pair but nearer the ore body. Mostly garnetite.

60549	26	P10 Same, garnetite with much magnetite and sulphides.
60550	27	P15 Epidotized intrusive.
60551	28	P16 Epidotized intrusive, in contact with almost unaltered porphyrite.
60552	29	Hornblendite porphyry dike.
60553	30	P23-4 Series of chips from porphyry-ore body gradation. Altered porphyry.
60554	31	P22-2 Amphibole rock.
60555	32	P23-3 Amphibole-epidote rock.
60556	33	P23-5 Less altered porphyry. End of series.
60557	34	L5 Magnetite-pyroxene lense.
60558	35	L6 Dense mottled rock containing much garnet. Above ore.
60559	36	L7 Porphyrite below the magnetite lense.
60560	37	L8 Contact of lense with lower altered porphyrite.
60561	38	L10 Andesite above the lense.
60562	39	L12 Auganite above the andesite.
60563	40	L18 Diorite porphyry dike cutting the Lake ore body.
60564	41	L21 Recrystalized limestone, two feet from ore body.
60565	42	L25 Magnetite vein in altered porphyrite.
60566	43	Same.
60567	44	L28 Amphibole replacement of limestone with garnet.

Some of these are m ore fully described in Swanson's thesis, 1924.

Series collected by Gordon Taylor

60568 #1 Galena from 900 level Hecla Mine Coeur d' Alene district showing sheared structure and slicken side surface.

60569 # 2 Case 14 Galena from 900 level Hecla Mine Cour d' Alene district showing sheared structure.

60570 # 3 Altered Burke quartzite showing siderite on the slickensided surfaces. The specimen indicates, 1 fracture of the Burke quartzite, 2 alteration of the quartzite and deposition of vein siderite, 3 farther movement with failure of the weak siderite.

United Verde Mine, Jerome, Arizona 60571-60664

Series collected by J. D. Conover, 1924.

* = good spec.

60571 E\ 127* High grade gold and silver-bearing oxide material, showing wire silver - steam shovel workings - (2 pieces) - United Verde Mine.

60572 E\ 129 Vein-carrying Galena in quartz porphyry; Steam shovel dump, United Verde Mine.

60573 E\ 131*
60574 E\ 132*
60575 E\ 133* Black schist ore - Fresh, partly oxidized with considerable chalcocite, and more completely oxidized - Glory Hole - United Verde Mine.

60576 E\ 138* Brecciated material impregnated with iron oxide from main Verde fault, 500 level, east drift - United Verde Mine.

60577 E\ 141 Rich cuprite and malachite ore from Glory Hole - United Verde Mine.

60578 E\ 142 Hydrous basic iron sulphate (Copiapite), from steam shovel workings - said to have been formed by gases from burning sulphides - United Verde Mine.

60579 E\ 143 Fumarole deposit called "voltaite" by Ford - forming incrustations and filling cavities around vents where mine fire gases come out at surface - (2 specimens) United Verde Mine.

60580 E 163* Iron-stained schist, jaspery quartz and quartz stained with copper carbonates from surface showings of Venture claims, west side of Mescal Gulch - (4 pieces)

60581 E 128 High grade cuprite ore - Steam shovel dump - United Verde Mine

60582 E 130* Zincy ore - (18-N Stope) 700 level (?) - United Verde Mine

60583 E 135* High grade chalcopyrite ore from lower levels (3 pieces) - United Verde Mine.

60584 E 136* Jaspery quartz with some sulphides - From interior of main sulphide mass - 1650 level - (10 - O - # 4, Stope, North Wall) - United Verde Mine.

60585 E 137* Lean pyrite - This is typical of the massive sulphides outside of the cupriferous areas - United Verde Mine.

60586 E 140 Quartz and chalcopyrite in sheared quartz porphyry, southeast of main ore body - From Glory Hole - United Verde Mine.

60587 E 148 Massive sulphides with some spalerite (?) showing distinct banding - 1200 level (11-K,J) - United Verde Mine.

60588 E 106* Sulphide ore showing veinlets of chalcopyrite and "quartz-carbonate" from east edge sulphide mass - 1800 level - United Verde Mine

60589 E 107* Chalcopyrite ore with "Quartz-carbonate" from east edge of sulphide mass - 1800 level - United Verde Mine.

60590 E 108* Typical schist ore showing veinlets and bunches of chalcopyrite in black schist, from west side of sulphide mass - 1800 level - (2 pieces) - United Verde Mine.

60591 E 118* Massive pyrite, with some chalcopyrite, from main sulphide mass - 1950 level (About 16-V) - United Verde Mine.

60592 E 122* Black schist largely replaced by pyrite, with some chalcopyrite - West edge of sulphide mass - 1950 level (about 9-Q) - United Verde Mine.

60593 E 123* Quartz porphyry, partly replaced by massive sulphide, about six feet from No. 122 - United Verde Mine.

60594 E 124* Quartz porphyry and massive sulphides, showing sharp line of contact between replaced and unreplaced material - United Verde Mine.

60595 E 125 Schist ore with tetrahedrite - 1200 level - United Verde Mine.

60596 E 126* Schist ore with chalcopyrite, "quartz-carbonate", with tetrahedrite - 1200 level - United Verde Mine.

60597 E 134* Sheared quartz porphyry, with disseminated chalcocite - "Converter Ore Body" United Verde Mine.

60598A E 146* Massive sulphides stained with limonite and a little chalcocite, contiguous to "water-course" 1650 level (10-0-#2 stope, 10th floor) United Verde Mine.

60598 E 139* Sheared quartz porphyry with disseminated chalcocite from "Converter ore body" (23-G) This is entirely separate from main sulphide mass - United Verde Mine.

60599 E 144* Fresh, comparatively unweathered andesite dike, or "water course", from 2100 level, in quartz porphyry south of sulphide mass, (13-P) - United Verde Mine.

60600 E 145 Kaolinized and sheared dike cutting massive sulphides, 1650 level - 3 specimens, in one of which are several included fragments of sulphides - (10-0-#2 Stope, 10th floor) - United Verde Mine.

60601 E 147 Black schist from seam 1 foot wide within main mass of quartz porphyry and apparenetly grading into same - 2100 level, south of main sulphide mass - (3 pieces) - United Verde Mine.

60602 E 150 Massive sulphides and quartz, at south contact of isolated porphyry mass within massive sulphides - 1200 level (11-L) - United Verde Mine.

60603 E 151 Sheared porphyry, 4 to 6 inches from north contact of isolated porphyry mass within massive sulphides - 1200 level (11-L) - United Verde Mine.

60604 E 152 2 specimens of porphyry and sulphides from contact described under No. 151 - United Verde Mine.

60605 E 153 Massive sulphides 4 to 6 inches from contact described under No. 151 - United Verde Mine.

60606 E 154 Black schist with spots of"quartz-carbonate" from black schist area between sulphide mass and quartz porphyry, 1200 level - (15 - L) - United Verde Mine.

60607 E 155 Grey schist with angular quartzes, from east of sulphide mass - 1200 level (17-N) - United Verde Mine.

60608 E 156 Fine-grained conglomerate or arkose, from pre-Cambrian bedded sediments outcroping in gulch north of United Verde Mine, on road to Ball Park (Haynes Shaft area)

60608 A E 157 Massive grey jasper from outcrops of bedded sediments west of Ball Park (Haynes Shaft area)

60609 E\ 159 Green schist from edge of one of jasper masses described under No. 158.

60610 E\ 158* Banded jasper occurring in small masses surrounded by greenstone in gulch north of United Verde Mine (Haynes Shaft area)

60611 E\ 160* Brecciated jasper outcropping higher up the hill from No. 158.

60612 E\ 161 Small jasper masses in quartz porphyry, east of Walnut Springs (3 pieces)

60613 E\ 162* Jasper and greenstone from edge of jasper mass about five feet wide occurring between greenstone and quartz porphyry - (near Brookshire Shaft, south end of district) - (2 pieces)

60614 E\ 101 Light-colored sericite schist - 1200 level, south of No. 3 shaft (18-N) - United Verde Mine.

60615 E\ 102* "Grey schist" from east of sulphide mass - 1200 level (17-N) - United Verde Mine.

60616 E\ 103 Black schist from east of sulphide mass - 1200 level (17-M) - United Verde Mine.

60617 E\ 104 Schist intermediate between typical grey and black schists from gradation zone between these two - 1200 level (17-N) - United Verde Mine.

60618 E\ 105* Schistose bedded sediments - 1200 level (17-R)- United Verde Mine.

60619 E\ 109* Sheared quartz porphyry, unmineralized, from west of sulphide mass - 1800 level - United Verde Mine.

60620 E\ 110-114 Series of five specimens showing gradation (?) from quartz porphyry to black schist, taken over a width of about two feet, west side of sulphide mass - 1800 level - United Verde Mine.

60621 E\ 116* Unmineralized black schist - West side of sulphide mass - 1800 level - United Verde Mine.

60622 E\ 117* Clean, white, unmineralized quartz porphyry from southeast of sulphide mass - 1950 level (18-Q) - United Verde Mine.

60623 E\ 121 Black schist with "quartz-carbonate" vein - from east of sulphide mass - 1950 level (About 16-V) - United Verde Mine.

60624 E\ 1* Slightly copper-stained quartz capping from a few inches above contact with sulphides - West side of ore body - 1300 level, 6th floor - United Verde Extension Mine.

60625 E\ 2 Quartz with some limonite - Same locality as No. - United Verde Extension Mine

60626 E\ 8* Brecciated quartz capping or ore body, with veinlets of cuprite and native copper (?) - 1300 level, 7th floor, east side of ore body - (2 pieces) United Verde Extension Mine. High silver values in much of this material.

60627 E\ 9 Cuprite filling cavity in quartz breccia - Same location as No. 8 - United Verde Extension Mine.

60628 E\ 18* Quartzy gossan material - White coating is gunite on wall of drift - 950 level - (5 pieces) - United Verde Extension Mine.

60629 E\ 19 Gossan consisting of brecciated and re-cemented quartz - Central portion of ore body - 950 level - United Verde Extension Mine.

60630 E\ 20 Brecciated quartz and iron oxide occurring between big blocks of solid quartz - Southern part of gossan - 950 level - United Verde Extension Mine.

60631 E\ 21 High grade cuprite ore, from bunch about 10 feet wide - Also piece of quartz in contact with the cuprite material - In central portion of gossan - 950 level - United Verde Extension Mine.

60632 E\ 22* Botryoidal iron oxide gossan - Across the drift from No. 21. - United Verde Extension Mine.

60633 E\ 23 Soft aluminous iron oxide gossan material, from ten foot width grading into typical quartz gossan on either side - 950 level - United Verde Extension Mine.

60634 E\ 24 Quartz gossan, showing preservation of schist banding - 950 level - United Verde Extension Mine.

60635 E\ 25 Thoroughly silicified porphyry - Practically massive, cherty quartz, but preserving original phenocrysts - 950 level - United Verde Extension Mine.

60636 E\ 26* Brecciated and re-cemented quartz gossan, probably from northwest part of main body - 1100 level - United Verde Extension Mine.

60637 E\ 40* Quartz gossan material from central portion of mass - 800 level - United Verde Extension Mine

60638 E\ 41* Cuprite ore with some chalcocite (?) - West portion of gossan - 800 level - United Verde Extension Mine.

60639 E\ 42 Brecciated quartz cemented with native copper - 800 level - United Verde Extension Mine.

60640 E\ 43 Carbonate veinlet cutting the quartz gossan - Probably post-Paleozoic - 800 level - United Verde Extension Mine.

60641 E\ 45* High grade gold ore, from north portion of main ore body - 950 level - Sugary character due to leaching - This material overlies the high grade chalcopyrite on the 1500 level, shown by No. 36 b and 36 c - United Verde Extension Mine.

60642 E\ 4 Sulphide ore running about 20% copper - About 6 feet below the capping - Same locality as No. 1 - United Verde Extension Mine.

60643 E\ 5 Lean siliceous ore forming a "shell" a few feet wide along north side of ore body and grading into good sulphide ore to the south - 1300 level - United Verde Extension Mine.

60644 E\ 10 Pyritic, siliceous material from "vein ore body", about 350 feet N. 20° W. from main ore body - 1400 level - United Verde Extension Min.

60645 A E\ 13* Massive sulphide ore from central portion or main ore body, showing clear evidence of sulphides replacing quartz porphyr - 1400 level - United Verde Extension Mine.

60645 E\ 11* High grade copper ore showing banding of chalcocite and pyrite, from "vein ore body" - 1400 level - United Verde Extension Mine.

60646 E\ 16* Massive chalcocite ore, from central portion of ore body - 1400 level (20% Cu?) United Verde Extension Mine.

60647 E\ 17* Low grade pyritic ore, south portion of ore body - 1500 level - United Verde Extension Mine.

60648 E\ 28 High grade chalcocite ore from Jerome Verde ore body, north of U. V. X. ore body - 1100 level- United Verde Extension Mine.

60649 E\ 29* Massive banded sulphide ore from east portion of main ore body - 1300 level - United Verde Extension Mine.

60650 E 30* Jaspery quartz from mass about 25 feet long within main sulphide ore body - 1300 level - United Verde Extension Mine.

60651 E 31* High grade chalcocite ore (40% Cu or better?) - 1300 level - United Verde Extension Mine.

60652 E 32 Banded chalcocite ore from southeast corner of ore body - 1300 level - United Verde Extension Mine.

60653 E 33* Massive ore showing brecciated pyrite cemented by chalcocite, from northwest corner main ore body near junction with "vein ore body" - 1300 level - United Verde Extension Mine.

60654 E 34* Nearly pure chalcocite, with a little chalcopyrite or pyrite - 40 feet east of No. 33 - United Verde Extension Mine.

60655 E 35 Chalcocite and native copper from "vein ore body", 40 feet north of main ore body - 1300 level - United Verde Extension Mine.

60656- E 36a* Quartz and sulphides from "vein ore body" about 1,000 feet north of main ore body - 1500 level - United Verde Extension Mine.

60657 E 36* Massive chalcopyrite ore - Same locality as No. 36a - United Verde Extension Mine. This is about the only locality where the copper sulfides appear to be largely primary (hypogene)

60658 E 36c Chalcopyrite replacing schist - Same locality as No. 36a - United Verde Extension Mine.

60659 E 37* Massive high grade chalcocite ore - 1500 level - United Verde Extension Mine.

60660 E 38 Seven pieces of leaner sulphide ore - Representative of main sulphide mass on 1500 level - One small piece shows sphalerite - United Verde Extension Mine.

60661 ? missing 39 Nine small pieces representative of main sulphide mass on 1600 level - One piece shows the softer sandy nature of the ore near the point where it is cut by the main Verde fault - United Verde Extension Mine.

60662 E 6* Kaolinized material, probably greenstone - About 10 feet north of ore body - 1300 level - United Verde Extension Mine.

60663 E 7* Fresh greenstone, about 40 feet north of ore body - 1300 level - United Verde Extension Mine.

60664 E 27* Gouge from main Verde fault, west of U. V. X. ore body - Specimen consists of sheared porphyry from hanging wall - Smooth brown surface is the exact fault contact lying next to the greenstone foot wall - 1100 level - United Verde Extension Mine.

Norway 60665-60905
Olaf N. Rove (1924)
Collection of described rock types of Sweden
See specimen catalogue for various publications describing these rocks (Drawers in mineralogy Lab)

Rove Collection - Rocks from Norway, 1924

60665 Monazite; from Gandsverk, Evje, Setersdalen, Norway.

60666 Fergusonit; from Högtveit, Evje; Setersdalen, Norway.
(Y, Er, Ce, Fe)(Nb, Ta, Ti)O_4

60667 Priorit; from Frikstad, Tveland, Setersdalen, Norway.

60668 Fergusonite with Thalenit; from Högtveit, Evje, Setersdalen, Norway.

60669 Euxenit; from Moeland, Jveland, Setersdalen, Norway.

60670 Cleveit: from Aaseland, Setersdalen, Norway

60671 Monazit; from Tveland, Setersdalen, Norway
(J. Schetelig; Norsk Geologisk Tidsskrift, Bind II, No. 9, 1913)

60672 Broggerit; from Raade, near Moss Norway.

60673 Columbit; from Raade, near Moss, Norway.

60674 Xenotime; from Hvaler near Fredriksstad, Norway. (2 spec)

60675 Gadolinite; from Ueland station, Jaederbanen (S. W. Norway)
$Be_2FY_2Si_2O_{10}$

Polycrase, $(Y, Ca, Ce, U, Th)(Ti, Cb, Ta)_2O_6$
60676 ~~Polykras~~: from Hitterö (Ekersundsfeltet), Norway.

60677 Gadolinite from Hitterö (Ekersundsfeltet), Norway.

60678 Blomstrandin: from Rasvaag, Hitterøy (Ekersundsfeltet) Norway
(Priorite of Befafite) Nb-Ti (=Hidra)

60679 Quartz-sandstone: from E. shore of Mjosen, Norway.

D.101 N.Case A 60680 Boulder of Old Sparaginite taken from the young Sparaginite; E. shore of Myosen, Norway.

D.101 N.Case A 60681 Birikalk (limestone): from E. shore of Lake Mjosen, Norway.

60682 Young (red) sparogmite; from E. shore of Lake Mjosen, Norway.

D.101 N.Case A

(60683 described by Holtedhal: Amer. J. of Sci. Vol. IV-1922.

60683 Tillite - Like conglomerate from E. Shore of Lake Mjosen, Norway.
D.101 (60684 - 96 described by Brogger; Groth: zeitschr. für Krystallographie Vol. XVI.
N.Case A

60703.-60723.

Igneous rocks from Norway.

Donor: Olaf N. Rove, about 1890.

Reference: BRÖGGER, W. C.:
Die Mineralien der Syenitpegmatitgänge der ~~südnorwegischen Augit- und Nephelinsyenite.-~~
Zeitschrift für Krystallographie und
Mineralogie, Vol.16, 1890.

Dept. of Geology and Geophysics
University of Wisconsin–Madison (M-25 Series)

60684 - 60696 described by BROGGER, GROTH, Zeitschrift für Krystallographie, Vol. XVI

60684 Nepheline from ~~Laugesund~~ Langesund, Norway.

D.101 N.Case A 60685 Traces of Rosenbuschit from Laugesund, Norway.

D.101 N.Case A 60686 Eudyalite - 345 n
Eukolit from Laugesund, Norway.

60687 Wholerite from Laugesund, Norway.

60688 Eudyalite - 345 n
Eukolit from Laugesund, Norway.

D.101 N.Case A 60689 Traces of Astrophyllite and Thorite, Laugesund, Norway.

D.102 N.Case A 60690 Thorit and twins of Euddidymit, from Langesund, Norway.

D.102 N.Case A 60691 Fragments of Thorite, var. Orangit from Langesund, Norway.

60692 Thorite, var. Orangit and traces of Wohlerit(?). Langesund, Norway.

~~60692 ? Zircon in syenite ?~~

60693 Hornblende variety Barkevikite; Langesund, Norway. In nepheline syenite pegmatite X-ray film no. 720. (2 spec)

60694 Amphibole twins from Langesund, Norway

D.102 N.Case A 60695 Traces of Katapleit, from near Langesund, Norway. 2 spec.

60696 From Silurian near Langesund Norway. Fossils are replaced by pyrite and pyrrhotite.

60697 Albite (Clevelandite) from Tangen near Kragero, Norway.

D.102 N.Case A 60698 Thorite var. Orangite from Tangen near Kragero Norway. 2 spec.

D.102 N.Case A 60699 Serpentinized Amphibol; from Apatite mine near Kragero, Norway.

Rect Case 60700 Serpentinized Amphibole from Apatite mine near Kragero, Norway.

D.103 N.Case A 60701 Apatite from Apatite Mine near Kragero, Norway. 3 spec.

D.103 N.Case A 60702 Phlogopite from Apatite Mine near Kragero. 2 spec.

(60703 described by Brogger.) '23

D.103 N.Case A 60703 Nepheline syenite; from the Fen district, Norway.

D.103 N.Case A 60703 A Tinguaite; Nepheline bearing dike rock, the Fen Dist. Norway.

60703.-60723.

Igneous rocks from Norway.

Donor: Olaf N. ROVE, about 1924.

Reference: BRÖGGER, W.C.:
Die Mineralien der Syenitpegmatitgänge der südnorwegischen Augit- und Nephelinsyenite.-
Zeitschrift für Krystallographie und Mineralogie, Vol.16, 1890.

* Dept. of Geology and Geophysics
University of Wisconsin—Madison *

60704 + 60705 - D.103 - Case A - No description

60703 - 60723 described by Brogger

D.103 N. Case A 60706 Damkjernite from the Fen District.

D.103 N. Case A 60707 Damkjernite from the " "

D.103 N. Case A 60708 Damkjernite from near Melteig, The Fen District, Norway.

D.103 N. Case A 60709 Damkjernite, The Fen District.

D.103 N. Case A 60710 " " " "

D. 104 N. Case A 60711 Rauhaugite, The Fen District, Norway.

D.104 N. Case A 60712 Ägirinringite (?) The Fen District.

D.104 N. Case A 60713 Damkjernite The Fen District.

D.104 N. Case A 60714 Quartz-bearing Fenite, The Fen District. 2 spec.

D.104 N. Case A 60715 Fenite-Urgebirge transition zone in S-W part of the Fen District.

D.104 N. Case A 60716 Tveitasite: The Fen District.

D. 104 N. Case A 60717 Ranhang-Nodberg Type, from the Fen District, Norway.

D.104 N. Case A 60718 Calcitic rock, 200 yds. N. W. of Vandingssten, Fen Dist. Norway.

D.104 N. Case A 60719 Calcitic rock, 200 yds. N. W. of Vandingssten, Fen " "

D.105 N. Case A 60720 Calcitic Rock, 200 yds. N. W. of Vandingsten, " " "

D.105 N. Case A 60721 From the Fen District.

D.105 N. Case A 60722 " " " "

D.104 N. Case A 60723 " " " "

(60724-28 described by Goldschmidt: Norsk Geologiske Undersokalse #77.)

60724 Stretched Conglomerate from Lake Bygdin, Norway.

60725 " " " " " ".

Special Maps: Scale, 1: 100, 000.

Kristiania	
Honefoss	
Fet	1920-1922
Nannestad	
Flesberg	
Gran	1923.
Moos	1924.
Tousberg	

The map series is not yet complete. It is expected that Brogger and Schetelig will publish a new monograph, discussing and summarizing all data to date, probably during 1926, or thereabouts. This will be published as one of the monographs of the "Videnskapsselskapets Skrifter" (Accademy of Arts and Sciences of Kristiania).

1. OLDEST DIFFERENTIATION PRODUCTS OF THE MAIN MAGNA

1 a. The basic (and ultra basic) Essexite family.

A. Main intrusive rocks.

d. Main central type.

List of rocks from the Kristiania Region.

The numbers refer to the list of Brøgger ("Nyt Mag. f. Naturvidensk." Vol. 44, H. 2. Kristiania 1906).

See also the geological Maps: Kristiania, Hønefoss, Nannestad, Fet. Flesberg, Moss and Tønsberg.

3. Essexite: Fine grained type. Isl. Tofteholmen, Kristianiafjord. 60729 (Geol. Map."Moss).

4. Essexite. 60730 Normal type. Ranviksholmen, Kristianiafjord. (Geol. Map "Moss".)

5. Essexite. 60731 Somewhat leucocratic type. With abundant tabular labradorite Ranviksholmen SW., Kristianiafjord. (Geol. Map "Moss".)

5a. Essexite Normal type, with tabular labradorite. Ranviksholmen, Kristianiafjord.

8. Essexite. 60733 Small tabular and with biotite. Trasop, Husebyaasen, W. of Kristiania.

9. Micaessexite. 60734 Biotite the chief dark mineral. Trasop, Husebyaasen, W. of Kristiania.

11. Essexite. 60735 With phenocrysts of tabular labradorite, rich in alkali. Transition to foyaitic facies. Teien, Husebyaasen, W. of Kristiania.

12. Essexite. 60736 With phenocrysts of titaniferous augite. Summit of Brandberget, Brandbu. (Geol. Map "Gran", pbl. 1923).

B. Diaschistic (differentiated) Marginal facies

a. Melanocratic (basic and vetra basic) types

1. Rich in MgO and CaO (Pyroxenite)

13. Pyroxenite 60737 with brown amphibole. (with veins of hornblende-essexite). Summit of Brandberget. Brandbu. (Geol. Map "Gran", pbl. 1923).

14. Pyroxenite 60738 with brown biotite. Ranviksholmen, Kristianiafjord. (Geol. Map "Moss").

14a. Olivine-Yamaskite. 60739 Aurenhaugen (Volcanic neck) Haug, Ringerike. (Geol. Map "Hønefoss").

Madeirite

14b. 60740 from Bergen Railway betw. Tevnaker and Hæal. Ringerike belongs as inclusive sheet to the No 14 a.

2. Rich in TiO_2 (primarily types rich in hornblende)

15. Hornblendeessexite, rich in titanite and alkalihornblende. Transition 60741 to foyaitic facies. Teien, Husebyaasen. W. of Kristiania. (Geol. Map "Kristiania".)

16. Hornblendeessexite, as No. 15 but not altered. Husebyaasen, 60742 Kristiania.

B. Leucocratic (intermediate) Types.

1. Moderately rich in alkalies and SiO_2 (Akerite)

21 Akerite. Chiefly as veins in the essexite of Brandberget. 60743 Brandberget, Brandbu. (Geol. Map "Gran", publ. 1923).

2. Richer in alkalies (Foyaite)

51. Akerite. Ullernaasen. W. Aker. W. of Kristiania. 60744

51a. Akerite. With more of the coloured constituents. Ullernaasen. 60745

No. 51, Akerite from Ullernaasen is genetically related to the Essexite series.

B. Hypabyssol Rocks (Dikes)

a. Aschistic dikes.

23. Olivine-diabase. Sheet in ordovician strata. Island Ostø, Kristiania- 60746 fjord. (Geol. Map "Kristiania").

24. Olivine-diabase. Sheet in ordovician strata. Island Kjeholmen, 60747 Kristianiafjord. (Geol. Map "Kristiania").

B. Diaschistic (Complementary) dikes.

A. Melanocratic, ultrabasic Types.

25 Pyroxenite-porphyrite. Sheet in silurian strata.
60748 Tofteholmen SE., Kristianiafjord. (Geol. Map "Moss").

26. Pyroxene-Camptonite. Dyke. Tofteholmen NE.
60749

28. Camptonite. Sheet in cambrian black shales. Maena W. of Brandberget,
60750 Brandbu. (Geol. Map "Gran", publ. 1923).

29. Camptonite. Sheet in ordovician strata. Husebyaasen. W. of Kristiani
60751 (Geol. Map "Kristiania".)

b. Melanocratic, ultrabasic, pegmatitic Types.

30. Hornblendeessexite, pegmatitic veins in pyroxenite. Brandberget.
60752 Brandbu. (Geol. Map "Gran").

c. Leucocratic, intermediate Types.

32. Maenaite. Sheet in cambrian black shales.
60754 Vippetangen, Kristiania. (Geol. Map "Kristiania").

35. Maenaite. Sheet in cambrian black shales.
60754 Vippetangen, Kristiania. (Geol. Map "Kristiania").

d. Leucocratic, acid Types.

36. Akerite-porphyry. Dyke, intersecting the essexite.
Tofteholmen NW. Kristianiafjord. (Geol. Map "Moss", New ed. 1924).

52. Akerite-porphyry. Somewhat leucocratic, near mica-essexite. Dyke in
essexite. Tofteholmen NW. Kristianiafjord. (Geol. Map "Moss".)

C. Effusive rocks.

N. B. Nos. 37-42 are effusive rocks from the old solidified vlocanoe, whidh in pre-devonian times coverdd the area of the island group of Toftcholm These rocks correspond to the intrusives numbers 3,4,5,14. The Melaphyre next to No. 14, and the essexite porphyry next to the feldspar rich essexites.

38 a. Essexite-melaphyre: with great phenocrysts of pyroxene. Lavabed overlaying the Downtonian sandstone, Holmestrand.
60757

40. Essexite-melaphyre. (amygdaloidal). Lavabed.
60758 Freberg between Holmestrand and Horten. (geol. Map."Moss", new ed. 1924)

41. Essexite-porphyrite. Lavabed. Holmestrand.
60759 (Geol. Map "Moss". New ed. 1924).

41a. Essexite-porphyrite. Lavabed, altered rock. Holmestrand.
60760

42. Essexite-porphyrite. Lavabed. NW. of Borrevand between Holmestrand
60761 and Horten. (Geol. Map "Moss". New ed. 1924).

Contact metamorphosed effusives of the first series.

No 43 and 44 have been placed in the effusive series from Arokskogs-Gebietes; No. 57, 74-76, 84-85.

45. Essexite-melaphyre-shist; shistose and total metamorphic original lavabed, Contactdruckmetamorpose, cfr. Z. f. Kryst. Bd. XVI, p. 112-120. Arø, Langesundsfjord.

2nd. Major Class:

Kjelsasit - Laroikdt including Akerite and Tousbergite; Akerite as a differentiation phase and Tonsbergite as a weatheration phase.

1 b. The intermediate family, Akerite

(The Akerites (No. 46-50) as well as the akerite porphyry No. 53

belong to the Kjelsasit series as normal leucocratic differentiation products. The numbers 46-50 should be inserted following number 55, and no. 53 following no. 56. See the gological maps "Kristiania", and "Honefoss".

(Numbers 51 and 51 a are to be inserted in the essexite series following no. 21)

B. Hypabyssal rocks

(No. 53)

(No. 52 is to be inserted following No. 36)

2a: Kjelsasite and Akerite

A. Major Abyssol rocks

54. Kjelsaasite. (= larvikite-monzonite). Normal grained plutonic rock.
60763 Kjelsaas, Sø rkedalen, N". of Kristiania. (Geol. Map "Hønefoss".)

54 a. Kjelsaasite (Typical). Sorkedalen NW of Kristiania.
60764

55. Kjelsaasite. Coarse grained type. Kjelsaas. Sørkedalen NW. of
60765 Kristiania. (Geol. Map "Hønefoss").

47. Akerite. Type rich in mica. Skaadalen, NW of Kristiania.
60767 (Geol. Map "Kristiania").

48. Akerite. Sognsvand N. of Kristiania.
60768

59. Akerite. Hand specimen showing enclosures of fine-grained, more basic
60769 akerite. Midtstuen Station, Electr. railway Kristiania-Holmenkollen. (Geol. Map "Kristiania.")

50. Akerite. (genetically connected with Kjelsaasite as a more acid marginal
60770 modification. Midtstuen Station, Electr. railway Kristiania-Holmenkollen. (Geol. Map "Holmenkollen).

B. Hypabyssal rocks.

56. Kjelsaasite-porphyry. Dyke intersecting the Essexite lavabeds. Holmestrand.
60766

53. Akerite porphyry. intrusiv sheet in Ordovician strate. Toien, Christiania.
60771

C. Effusive rocks.

No. 57 = Kjelsasit - rhombporphryry has been inserted in the effusion series from Krokskogen as R P 15, "Agardslitypus".

II Middle Differentiation Products from Main Magma.

Intermediate alkali rocks of the Larvikite and Lardalite families.

II a. Larvikite family (and Tönsbergite)

II a 1. Division of rocks with Larvikite facies

A. Major abyssol rocks.

x Central major type.

58. Glimmerlarvikite. Rydningen, Hedrum.
60772

60b. Larvikite. Dark variety showing blue labradorisation of the anorthoclase
60773 on the face (601). Quarry varild in Tjølling b/ Larvik.

(Map: W. C. Br. Eruptivgest. III. Geol. Map "Tønsberg", ed. 1924).

61 b. Larvikite typical light grey variety. byskogen, Larvik.
~~Quarry Hovland, Larvik. Parallel the~~

62

~~61b~~. Larvikite. typical light grey variety.
60774 Quarry Hovland, Larvik. Parallel the "Farbenschiller".

63. Larvikite. Typic, bright greyyvariety. Haaø, Langesundsfjord.
60776

ß. Protoclastic Marginal facies.

66. Piece of a lensshaped inclusion of Larvikite, embedded with protoclastic
60777 schistose Ditroite. Kjørtingholmen, Langesundsfjord.
(Cfr. Z. f. Kr. Bd. 16. I. p. 106)

B. Hypobyssol Rocks.

68. Larvikite-porphyry (= Rhombporphyry). Dyke in ordovician strata.
60784 Tyveholmen, Kristiania. (Geol. Map "Kristiania") (Map N.G.U. nr.25)

71. Rhombporphyry. Dyke in essexite. Tofteholmen, Kristianiafjord. (Geol.
60789 Map "Hønefoss" "Moss", new ed. 1924).

73. Rhombporphyry. Dyke cutting rhombporphyry lava beds. Skaanaasen b/ Horten. Jarlsberg. (Geol. Map "Moss", ed. 1924).
60786

73 a. Rhomboorphyry. Dyke in upper ordovician strata. Roa Station. Lunner. (Geol. Map "Gran", ed. 1923).
60787

73 b. Rhombporphyry. Dyke intersecting the RP-lavabeds. Ørby, Vaale. (Geol. Map "Moss").
60788

C. Effusive rocks.

(The

(The effusives of the Mjelsasit-Larvikit series have been arranged according to age in a special classification of the Krokskogs lavas.)

N. B. The Larvikit porphyries overlie at all places the older effusives of the Essexite family, but are themselves cut by Nordmarkite porphyries etc.

77. Larvikite (Tonsbergite-facies). Bollaerne, Kristianiafjord.
60779

78. Larvikite (Tønsbergite facies). Jenseskjaer, Bollaerne, Kristianiafjord.
60780

79a. Larvikite, Marginal modification, Skjaeggestad, Rammaes.
60781

The Nos. 77, 78,79a and 80; Cfr. Geol. Map "Tønsberg" 1924.

II a 2. Division of the Tonsbergite facies.

A. Major abyssal rocks.

x. Central major type.

ß. Aschistic marginal facies.

80. Tønsbergite (weathered facies of Larvikite). Porphyritic marginal modification.
60778 Lonskollen, Vivestad, Jarlsberg. (Geol. Map "Tønsberg" ec. 1924)
N. B

81. Larvikite-porphyry, marginal modification, Maerkedammen, Vivestad, Jarlsberg.
60782

83. Tønsbergite-porphyry (= Rhombporphyry). Marginal modification of Tønsbergite from Lønskollen, Vivestad, Jarlsberg. (Geol. Map "Tønsberg", ed. 1924).

N.B. All the rocks of this division owe their red color to a weathering of the Fe minerals, both preglacially and postglacially. Hence the Tønsbergite facies is a weathered phase of the Larvikite facies.

II b. The Nephelite syenite family (Gardalite)

A. Major Abyssal rocks

x Central major type.

87. Lardalite. 60791 Normal type. Lovemoen, Lougendalen, N. of Larvik.

88. Lardalite. 60791 Normal type, Løve, Lougendalen.

89. Lardalite. 60792 Lien-type. Gjonelien, Lougendalen, N. of Larvik.

90 a. Nepheline-syenite. 60793 Ditroite-type. Bratholmen, Langesundsfjord.

ß. Aschistic marginal facies

91. Ditroite, 60794 protoclastic shistosé type. Kjørtingholmen, Langesundsfj.

x. Diaschistic marginal facies.

92. "Agirine-Ditroit-Schiefer" 60795 (cfr. the catalogue). Store Arø, Langesundsfjord.

B. Hypabyssal Rocks.

x Approximating aschistic dikes.

93. Lardalite-porphyry (= Nepheline-rhombporphyry). 60796 Dyke in Larvikite. Railway-tunnel between Andvik and Vasvik. Lake Farrisvand N. of Larvik.

ß. Diaschistic (complementary) dikes.

a. Melan ocratic, ultrabasic and basic types.

94. Jacupirangite. 60797 — Melanocratic dyke of the Lardalite series, cutting the mica-syenite between Kodal and Lougendal. (Geol. Map "Tønsberg", ed. 1924).

55. Kvellite. 60798 — Great dyke in Foyaite, hills between Lougendalen and lake Farris, N. of Larvik.

96. Tjosite. 60799 — Great dyke in Larvikite. Railway-tunnel by Farrisvand near Tjose Station. N. of Larvik.

97. Camptonite. 60800 — Melanocratic dyke of the Lardalite series. Tjose Station by the lake Farrisvand N. of Larvik.

98. Farrisite. 60801 — Near the station Aaklungen by the lake Farris N. of Larvik.

99. Heumite. 60802 — Dyke of the Lardalite series. Gjona between Lougendal and Farrisvand. N. of Larvik.

101. Natronminette. 60803 — Haaø, Langesundsfjord. Dyke in Larvikite.

103a. Natronminette. 60804 — Brathagen, Lougendalen.

b. Leucocratic, intermediate to acid series.

104. Tinguaite. 60805 — Dyke of the Lardalite series. Between the farms Asbjørnarø and Asildsrød. Hedrum, Lougendal, N. of Larvik.

105. Solvsbergite. 60806 — (Aegirine-mica-sølvsbergite). Dyke of the Lardalite series between the stations Tjose and Aaklungen by Farrisvand. N. of Larvik.

106. Sølvsbergite 60807 — (Katophorite-Sølvsbergite). Dyke of the Lardalite series between the stations Tjose and Asklungen by Farrisvand. N. of Larvik.

107. Foyaite. 60808 — Brathagen, Lougendal. Dyke in Lardalite.

108. Foyaite. (Aegirine-Katophorite-Foyaite). A Dyke north of the Eardalite
60809 series N. of the church Kvelle. Lougendal N. of Larvik.

110 a. Hedrumite (nepheline-bearing. Transition rock between Hedrumite and
60810 Foyaite). NB. Not fresh. Mica is altered into chlorite and nepheline into an aggregate of muscovite-scales. Dyke in mica-syenite. Hagenaes N. of Aasrumvand, Lougendalen. (Geol. Map "Tønsberg", ed. 1924).

111. Lestiwaartie, Dyke in Foyaite, Avelle, Lougendalen.
60811.

c. Leucocratic pegmatitic dikes.

113. "Riesenfoyait". Nepheline-syenite-pegmatite.
60812 Dyke in metamorphic essexite-melaphyre. Isl. Laaven, Langesundsfjord.

III YOUNGEST DIFFERENTIATION PRODCTS OF THE MAIN MAGMA.

Acid Alkali rocks. Rulaskite and Nordmarkite. The Ekerite and Biotite granite and the Rapakwik granite families.

III a. PULOSKITE AND NORDMARKITE FAMILIES.

III a 1. Division of rocks with Pulaskite facies.

A. Major Abyssal Rocks.

114. Glimmerpulaskite. Spaalen, Nordmarken (Geol. Map "Hønefoss")
60813.

116. Pulaskite. Sagbakken by lake Farrisvand.
60814

B. Hypabyssal Rocks.

x Aschistic dikes.

118. Hedrumite. Great dyke. Vestrum, Lougendalen.
60815

119. Hedrumite. Great dyke, Vestrum, Lougendalen.
60816

120. Hedrumite. Pulaskite series. Great dyke at Naes E. of river Lougen.
60817 NE of Larvik.

121. Hedrumite. Great dyke in silurian strata. Gjefsen, Gran.
60818 (Geol. Map "Gran" 1923).

ß Composite dykes.

122. Hedrumite. Central part of a large dyke in ordovician strata.
60819 Island Ostø, Kristianiafjord. (Geol. Map "Kristiania")

III a 2. Division of Rocks with Nordmarkite facies

(Nordwarkite, Soda quartz syenite).

A. Major Abyssol Rocks.

x Main central group.

126. Glimmernordmarkite, Quarry at Grorud church, E. Aker NE of Kristiania
60820

127. Nordmarkite. Ørfiskevand, N. of Maridal, Nordmarken.
60821

128a. Nordmarkite. Quarry at Aarvoldskogen. E. Aker N. of Kristiania.
60822 (Geol. Map "Kristiania").
The handspecimen shows an inclusion of contactmetamorfic ordovician slate.

129. Nordmarkite. Katophorite-and aegirine-bearing rock showing a
60823 transition-type to Ekerite. Near Sognsvand. W. Aker.

130. Nordmarkite. (Normalgrained rock). Quarry Monsebraaten by Grorud.,
60824 NE of Kristiania. (Geol. Map "Kristiania")

ß Border facies

134. Nordmarkite. Marginal modification a few meters from contact with
60825 contact-metamorphic essexite-porphyrite.
Stenbruvand. Grorud NE of Kristiania. (Geol. Map "Kristiania").

136. Nordmarkite. 60826 Marginal modification close at contact with contact-metamorphic essexite-porphyrite. Stenbruvand, Grorud NE of Kristiania. (Geol. Map "Kristiania").

NB. Nos. 130, 134 and 136 are forming a series from the same massive.

B. Hypabyssal Rocks.

x Aschistic dikes.

139. Sølvsbergite (Aegirine-sølvsbergite). 60827 Typical rock, quartz-bearing. Dyke in Essexite at Berget, Sølvsberget, Gran. (Geol. Map "Gran", 1923).

140. Sølvsbergite, from the same dyke as no. 139, but a little altered. 60828 Svenskerud, Sølvsberget, Gran.

143. Nordmarkite-porphyry. Dyke in Nordmarkite, Skjaersjødammen, Nordmarken 60829

144. Glimmernordmarkite-porphyry. Ullernaasen. W. Aker. Dykein ordovician 60830 strata.

147. Basic apophysis from the "Sahlband" of no. 144. 60831.

148. Glimmernordmarkite-porphyry, dyke in ordovician strata. Central part 60832 Huk, Bygdø, W. Aker.

149. Glimmernordmarkite-porphyry. 1 meter from the boundary of the dyke no. 148.

150.a. Glimmernordmarkite-porphyry, central part of the dyke Nesodtangen, 60834 Kristianiafjord.

150 b. Glimmernordmarkit-porphyry, basic "Sahlband" of the dyke Nesodtangen 60835. Kristianiafjord.

NB. 150 a. and b originate from a great dyke intersecting precambrian crystalline shists at Nesodden.

N. B. In Ullernåsen dikes of the Bygdö-Nakholmen-Type cuttthrough Essexites and Okerites, as well as in several places thru older and younger dikes of Larvikito porphyry (Rhomb-porphyry) as for example at Ganstad W. Aker, and thru dikes of older Nordwarkite-porphyry, as No. 142 from Bygdö; in turn the dikes of the Bygdö-Nakholmen-type are cut by dikes from the quartz porphyry of the granitite family, as well as by the youngest dikes of the Diabase porphyrite.

y. Diaschistic (Complementary) dikes.

a. Melanocratic, basic types.

151. Kersantite-porphyry. 60836 Melanocratic dyke rock of the nordmarkite series. Dyke in contactmetamorphic essexite-lava at Støitrenna, Grorud. NE of Kristiania. (Geol. Map "Kristiania").

153. Diabase-porphyrite. 60837 Dyke in ordovician strata. SW Snarøen, Kristianiafjord.

154. Diabase-porphyrite. 60838 Dyke in Lardalite, Gjonesaeter, Kvelle, Lougendalen.

155. Diabase-porphyrite. 60839 Dyke in Nordmarkite, Hvarnaes, Lougendalen.

156. Nordmarkite-porphyry, 60840 Dyke in sphaerolithfels, Aasen, Eidsfoss, (Geol. Map "Moss").

b. Leucocratic, acid Types.

161b. Lindøite, 60841 dyke in ordovician strata. Graakammen st. W. Aker.

163. Nordmarkite-Aplite, 60842 between the lake Movand and Nitedal, NO of Kristiana.

164. Nordmarkite-spherulite-rock, dyke in ordovician shists, near the boundary
60843. of Nordmarkite, between the farm rotnaes and Nitedal St., NO of Kristiania.

N.B. The growditic Lindoite and the typical Lindoite intersect the Rhomb-porphyries and are in turn cut by younger Quartz porphyries etc. of the granitite family.

C. Effusive Rocks.

(N.B. In part probably intrusive laccolithic masses).

166. Nordmarkite-spherulite-rock. Sheet in older lava beds of the Larvikite
60843 A. series. Aasen, Bergsvand, Eidsfoss. (Geol. Map "Moss", new ed. 1924).

N. B. No. 166 is cut by a dike shoot from Nordmarkitic dyke rock, namely Lindsite.

III b. Ekerite Family (Soda granite)

A. Major Abyssal rocks.

x. Main central Type.

168. Ekerite. Sagen, Parish Efteløt, Lougendalen.
60844

168a. Ekerite, with scarce quartz, cfr. No. 131. Great dyke in Nordmarkite at
60845 Grorud. O. Aker.

170a. Ekerite, with astrophyllite and elpidite.
60846 Jaeringselven, W. of Harestuen St., Hakedal, Nordmarken. (cfr. "Hønefoss").

ß. Aschistic marginal facies.

171. Ekerite-porphyry: Marginal modification of the Ekerite-massive,
60847 Skullestad, parish Eftelot, Løugendalen.

173. Ekerite-porphyry, fine-grained marginal modification of the Ekerite,
60848 SSO of Finnerud, Rudaasen, parish Efteløt, Lougendalen.

B. Hypabyssol rocks.

x. Primarily aschistic dikes

174. Ekerite. Farm O, Vivestad, Jarlsberg. (Geol. Map "Moss", new ed. 1924)
60849

β. Diaschistic (complementary) dikes

a. Melanocratic types (primarily with CaO, MgO, and FeO enriched)

175. Diabase-porphyrite. Dyke in contactmetamorphic silurian and devonian strata, Grinderud, SW of Konnerudkollen Skouger at Drammen.
60850

177. Dyke rock, diaschistic and rich in iron, dyke in silurian shists, S. of the lake Steglevand, parish Skouger, Jarlsbert.
60851

b. Iron rich, aplitic acid rocks.

179. Grorudite. Great dyke intersecting ordovician strata, essexite-mela-porphyre, rhombporphyry lava beds, and Nordmarkite. Gruesletten, Grorud, NE of Kristiania. (Geol. Map "Kristiania".)
60852

c. Iron rich, pegmatitic acid rocks.

182. Grorudite. Great dyke in silurian strata, Rundemyr, Eker, forest between Drammen og Vestfossen.
60853

N.B. No. 181, 180, 179, 178, 173, 172, 169 a etc.,
182 etc. approximate a facies suite of an aegirin-rich acid rock.

III c. Biotite granite series (granitite) (Kristianite)

A. Major abyssol rocks.

x Main central Types.

184. Biotite-granite (Kristianite). Quarry at Støa, Drammensfjord.
60854

185. Biotite-granite (Kristianite). Grey, Lahelleholmen, Drammensfjord.
60855

186. Biotite-granite. (Kristianite). Heggedal railway station between
60856 Kristiania and Drammen. (Geol. Map "Kristiania".)

187. Biotite-granite. (Kristianite). Gommerudfjeld, Lier NNE of Drammen.
60857 (Geol. Map "Kristiania).

187a. Biotite-granite (Kristianite). Bjorgesaeter, Hakedal. (Geol. Map
60858 "Hønefoss).

N.B. No. 9, 58, 114, 126, 184 etc. Constitute a mica rich series of deepseated rocks.

ß. Marginal facies (lencocratic)

188. Biotite-granite (Kristianite). Marginal modification, showing
60859 transition between normal rock and granophyre-aplite. Hørterkollen, Sylling by Tyrifjord (lake). (geol. map "Kristiania").

189. Granophyre-aplite. Marginal modification Hørterkollen, Sylling by
60860 the lake Tyrifjord.

190. Aplite. (Kristianite-aplite). Apophysis of the Kristianite-magma
60861 in contactmetamorphic ordovician strata. Hørterkollen, Sylling by the lake Tyrifjord. (Geol. Map "Kristiania").

N. B. No. 184, 187, 188, 189 and 190 constitute a facies suite.

B. Hypabyssol rocks.

x. Approximately aschistic rocks.

191. Felsophyre (Quartsporphyry). Intrusive sheet, 100 m. thick, in the
60862 lavabeds of Bragernaesaasen, Drammen. (Geol. map "Kristiania".

192. Brecciated quartz-porphyry. Sheet in the older series of rhombporphyry
60863 lava beds. Bragerøen Station b/ Drammen. (Geol. Map "Kristiania")

192a. Quartz-porphyry. Brighter variety. Gampaasen, parish Lier, by the
60864 lake Glitrevand, Finmarken.

193. Quartz-porphyry from central part of a dyke in ordovician strata. Torvøskjaer, near Hovik, Kristianiafjord. (Geol. Map "Kristiania").

ß Mixed dikes.

194. Diabase (proterobase) with brown amphibole, biotite, and rounded
60866 phenocrysts of Quartz. From the "Sahlband" of the quartz-porphyry dyke of Torvøskjaer, near Hovik, Kristianiafjord. (Geol. Map "Kristiania").

N. B. The separation of the mixed types, Nos. 193 and 194, from the same magma can probably be explained in the following manner:

1) A number of exactly analogous mixed dikes from the Kristiania region, in particular from Holmestrand, surround the Biotit granite region;

195. Diabase (Amygdaloidal) with brown amphibole and biotite (strongly
60867 altered). Dyke in ordovician strata. Uranienborg, town Kristiania.

2) The melanocratic rock occurs the entire length on each side of all these dikes, regardless of the nature of the enclosing rocks (whether they be limestones, schists, sandstones, essexite melaphyr etc.);

3) The melanocratic rock contains rather regularly thruout its whole mass sprinkling of quartz (and often of alkali feldspar) similar in nature to the quartz porphyry; 4) whereas, in contrast, this latter (quartz-porphry) contains many little round inclusions (solidified drops) of melanocratic rock, and also in places sends out veinlets into the marginal region of the enclosing rock. Specimen 194 which is indicative of the entire width of the "pinched out" dike, shows convincingly (thru the large content of "sprinklings" of quartz) the genetic consanguinity of the two (No. 193 and 194).

The dikes of the quartz porphyries cut thru all the above mentioned older major types of dike rocks (for example, also porphyrey and comptonite, Larvikite porphry, Nordmarkite, porphry, Lindoite, Grorudite (the Ekerite family), Ekerite, etc.

y Diaschistic (Complementary) dikes

a. Melanocratic basic type.

196. Kristianite-aplite. Dyke in Kristianite (biotite-granite).
60868 Kobberviksdal by Drammen, (Geol. Map "Kristiania").

197. Granitite-spherulite-rock, intrusive dyke in rodovician strata,
60869 Steinklevpladsen, N. of the Drammen-river, nearly opposite MJøndalen St.

197 a. Granitite-Aplite. Dyke in silurian strata. Between Movand and
60870 Nitedal. (Geol. Map "Hønefoss".)

Many dike rocks in the neighborhood of the biotite grault region - more exactly, usually well weathered dikes build an intimate association with granititaplite dikes a dike system of parallel dikes between spikkestad (Koken) and Lier, in the granitite massive; inasmuch as these diabase rocks , in part closely resembling the same marginal zone as in the quartz-porphyry dike (as no. 194), and as fragments of the same diabase from Tangen on the Drainmens fjord are found enclosed in younger Rapakivigranite (No. 199), it is reasonable that at least part of the diabase dikes of this group may be considered as differentiation products of the biotite granite magma.

b. Leucocratic, acid types.

III d. The youngest deep-seadted rocks of the Kristiania region, The Rapakivi Group.

A. Major abyssal rocks.

199. Rapakivi-granite. Nøste S. of Tangen, Drammenfjord.
60871

B. Dike rocks.

Appendix.

Diabasic dike rocks of undetermined age; in large part granitic, in part post granitic.

200. Proterobase. Dyke in Granitite, Grundvik, Drammensjford.
60872

201. Proterobase. Great dyke in ordovician strata. Island Brandskjaer in
60873 the harbour of Kristiania.

202 b. Diabase. Ostø, Kristianifjord. Tubersecting ordovician strata.
60874

203. Diabase-porphyrite. Great dyke with enclosures of precambrian
60875 rocks in the ordovician strata. Sinsen, town Kristiania.

204. Diabase-porphyrite. Dyke intersecting the silurian strata, the
60876 essexite, and a dyke of rhombporphyry. Tofteholmen, Kristianiafjord. (Geol. map "Moss" new ed. 1924)

Lavabeds of Krokskogen and Sørkedalen.

Essexite - and Kjelsaasite-Larvikite-series

"Geolog.Maps "Kristiania and "Hønefoss")

Cfr. the catalogue No. 37-45, 74-76 and 84-85.

Lavabeds.

No. 1. 60877 Essexitemelaphyre E_1, Kolsaas, Baerum.

No. 2. 60878 Rhombporphyry, RP_1 Kolsaastype, Kolsaas, Baerum.

No. 3. 60879 Rhombporphyry, RP_2 Homledalstype, Homledal, Ringerike.

No. 3 a. 60880 Volc. Agglomerate, RP_{2a} between the lavabeds No. 3 and 4.

No. 4. 60881 Rhombporphyry, RP Fjulsrudskartype, Homledal.

No. 4 a. 60882 Volc. Agglomerate RP_{3a} between no. 4 and 5.

No. 5. 60883 Rhombporphyry, RP_4 Kaarjordtype, Homledal.

No. 5a 60884 Tuffitic sandstone RP_{4a} between No. 5 and 6.

No. 5 b. 60885 Rhombporphyry. Dyke of the Nordlandsdals type (lavabed No. 5) intersecting the lavabed No. 4. On the road between Homledal and Sollihøgda, Ringerike.

No. 6. 60886 Rhombporpyry, RP_5 Nordlandsdals type, Road Sollihogda, Homledal.

No. 7. 60887 Rhombporphyry, RP_6 Aslegaardstype, Road Sollihøgda, Homledal.

No. 8. 60888 Rhombporphyry, RP_7 Sollihogdatype, Sollihøgda, Ringerike.

No. 9. Rhombporphyry, RP_8 Broløkketype, Avtjernsmyr, E. of Sollihøgda.
60889

No. 10. Rhombporphyry, RP Sørumsaetertype, Granbakken, Lommedalen.
60890

No. 9a. Volc. Agglomerate RP_{9a} between no. 9 and 10.
60891

No. 11. Es exiteporphyrite, E_{2a} Niskindvand E of Sollihøgda.
60892

No. 12. Rhombporphyry, RP_{10} Niskindtype, Niskindvand.
60893

No. 12 a. The scorious surface of RP_{10} with filling of tuffitic sandstone.
60894 Niskindvand.

No. 13. Essexitemelaphyre, E_{2a} Niskindvand.
60895

No. 14. Rhombporphyry, RP_{11} Gaupehaugtype, Rydningen, NE of Sollihøgda.
60896

No. 14 Rhombporphyry, RP_{11} Gaupehaugtype, Steinskogen, NE of Kolsaas.
60897

No. 15. Rhombporphyry, RP_{12} Rognlitype, Rognlien, Krogskogen.
60898

No. 16. Essexitemelaphyre, E_{3a} Høgbrenna E of Rognlien.
60899

No. 17. Essexitemelaphyre E_{3a} Steinsaasen, NE of Kolsaas.
60900 "Uralite-porphyry"

No. 17. Essexitemelaphyre, E_{3a} uralitized, Lommedalen.
60901

No. 18. Essexiteporphyrite, E_{3b} Huken, Grorud.
60902

No. 19. Essexiteporphyrite E_{3c} with greater phenocrysts of tabular
60903 labradorite. Pipenhus, Sørkedalen.

No. 20. Rectangelporphyry, RP_{13} Svartentype, Bergendal, Sørkedalen.
60904

No. 21. Rhombporphyry, RP_{14} Aagaardslitype, Aagaardslien, N. of Sørkedalen.
60905

No. 18, 19 and 20 of Lavabeds form a series of rocks with increasing amount of alcalis, and according to this showing the crystal habit of the phenocrysts of labradorite changes from thin tabular to thick tabular. No. 18 a common essexite porphyry. No. 20 a true Kjelsaasite porphyry. ("Rectangel-porphyry").

60726 Stretched Conglomerate from Lake Bygdin, Norway.

60727 " " " " " "

60728 " " " " " "

List of rocks from the Kristiania Region.

The numbers refer to the list of Brøgger ("Nyt Mag. f. Naturvidensk." Vol. 44, H. 2. Kristiania 1906).

See also the geological Maps Kristiania, Hønefoss, Nannestad, Fet, Flesberg, Moss and Tønsberg.

Rocks

Intrusive

Main central type

D.105 N.Case A 60729 3 Essexite. Fine grained type. Isl. Tofteholmen, Kristianiafjord. (Geol. Map "Moss").

D.105 N.Case A 60730 4 Essexite Normal type. Ranviksholmen, Kristianiafjord. (Geol. Map "Moss")

D.105 N.Case A 60731 5 Essexite. Somewhat leucocratic type. With abundant tabular labradorite Ranviksholmen S.W., Kristianiafjord, (Geol. Map "Moss).

D.105 N.Case A 60732 5a Essexite. LLacoratic type, with tabular labradorite. Ranviksholmen, Kristianiafjord.

D.105 N.Case A 60733 8 Essexite Small tabular and with biotite. Trasop, Husebyaasen, W. of Kristiania.

D.105 N.Case A 60734 9 Micaessexite. Biotite the chief dark mineral. Trasop, Husebyaasen, W. of Kristiania.

D.105 N.Case A 60735 11 Essexite. With phenocrysts of tabular labradorite, rich in alkali. Transition to foyaitic facies. Teien, Husebyaasen, W. of Kristiania.

60736 12 Essexite. With phenocrysts of titaniferous augite. Summit of Brandberget, Brandbu. (Geol. Map "Gran", published 1923).

D.106 N.Case A 60737 13 Pyroxenite with brown amphibole. (With veins of hornblende-essexite). Summit of Brandberget. Brandbu. (Geol. Map "Gran", publ. 1923.)

D.106 N.Case A 60738 14. Pyroxenite with brown biotite. Ranviksholmen, Kristianiafjord. (Geol. Map "Moss").

B. (see next page

D.106 N.Case A 60739 14a. Olivine-Yamaskite. Aurenhaugen (Volcanic neck) Haug, Ringerike. (Geol. Map Hønefoss".)

D.106 N.Case A 60740 14b. Madeirike from Bergen Railway lecku. Tevriaker and Hval. Ringerike

D.106 N.Case A 60741 ~~60740~~ Belongs as intrusive sheet to the No 14a.

60741? 15 Hornblendeessexonite, rich in titanite and alkalihornblende. Transition to foyaitic facies. Teien, Husebyaasen. W. of Kristiania (Geol. Map of "Kristiania")

D.106 N.Case A 60742 16 Hornblendeessexite, as No. 15 but not altered. Husebyaasen, Kristiania.

D.106 N.Case A 60743 21. Akerite. Chiefly as veins in the essexite of Brandberget. Brandberget, Brandbu, (Geol. Map "Gran", publ. 1923)

D.106 N.Case A 60744 51 Akerite. Ullernaasen, W. Aker. W. of Kristiania.

D.106 N.Case A 60745 51a Akerite. With more of the coloured constituents. Ullernaasen.

D.107 N.Case A 60746 23 Olivine-diabase. Sheet in ordovician strata. Island Ostaø, Kristianiafjord. (Geol. Map "Kristiania").

D.107 N.Case A 60747 24 Olivine-diabase. Sheet in ordovician strata. Island Kjeholmen, Kristianiafjord. (Geol. Map "Kristiania")

D.107 N.Case A 60748 25 Pyroxenite-porphyrite. Sheet in silurian strata. Tofteholmen SE., Kristianiafjord. (Geol. Map "Moss").

D.107 N.Case A 60749 26 Pyroxene-Camptonite. Dyke. Tofteholmen N.E.

D.107 N.Case A 60750 28 Camptonite. Sheet in cambrian black shales. Maena W. of Brandberget, Brandbu. (Geol. Map "Gran", publ. 1923)

D.107 N.Case A 60751 29 Camptonite Sheet in ordovician strata. Husebyaasen. W. of Kristiania (Geol. Map "Kristiania".)

D.107 N.Case A 60752 30 Hornblendeessexite pegmatitic veins in pyroxenite. Brandberget, Brandu

D.107 N.Case A 60753 32 Maenaite. Sheet in cambrian black shales. Maena W. of Brandberget, Brandbu. (Geol. Map "Gran" publ. 192). (Vippetangen, Krisrania)

D.107 N.Case A 60754 35 Maenaite. Sheet in cambrian black shales. Vippetangen, Kristiania. (Geol. Map " Kristiania").

D.107 N.Case A	60755	36	Akerite-porphyry. Dyke, intersecting the essexite. Tofteholmen N.W. Kristianiafjord. (Geol. Map "Moss", New ed. 1924).
D.108 N.Case A	60756	52	Akerite-porphyry. Somewhat leucocratic, near mica-essexite. Dyke in essexite. Tofteholmen N W. Kristianiafjord, (Geol. Map "Moss".).
D.107 N.Case A	60757	38a	Essexite-melaphyre: with great phenocrysts of pryoxene. Lavabed overlaying the Downtonian sandstone, Holmestrand.
D.108 N.Case A	60758	40	Essexite-melaphyre. (amygdaloidal) Lavabed. Freberg between Holmestrand and Horten. (Geol. Map "Moss", new ed.1924)
D.108 N.Case A	60759	41	Essexite-porphyrite. Lavabed. Holmestrand. (Geol. Map "Moss". New ed. 1924).
D.108 N.Case A	60760	41a.	Essexite-porphyrite. Lavabed, altered rock. Holmestrand.
D.108 N.Case A	60761	42	Essexite-porphyrite. Lavabed. N.W. of Borrevand between Holmestrand and Horton. (Geol. Map "Moss". New ed. 1924).
D.108 M.Case A	60762	45	Essexite-melaphyre-shist; shistose and total metamorphic original lavabed, Contactdruckmetamorphose, cfr. Z. f. Kryst. Bd. XVI, p. 112-120, Arø, Langesundsfjord.
D.108 N.Case A	60763	54	Kjelsaasite. (=larvikite-monzonite) Normal grained plutonic rock. Kjelsaas, Sørkedalen. Nw. of Kristiania. (Geol. Map "Hønefoss".)
D.108 N.Case A	60764	54a	Kjelsaasite (Typical). Sorkedalen NW. of Kristiania.
Rect.Case E	60765.	55	K jelsaasite. Coarse grained type. Kjelsaas. Sørkedalen N.W. of Kristiania. (Geol. Map "Hønefoss")
D.108 N.Case A	60766	56	Kjelsaasite-porphyry. Dyke intersecting the Essexite lavabeds. Holmestrand.
D.109 N.Case A	60767	47	Akerite. Type rich in mica. Skaadalen, N.W. of Kristiania. (Geol. Map "Kristiania").
D.109 N.Case A	60768	48	Akerite. Sognsvand N. of Kristiania.
D.109 N.Case A	60769	49	Akerite Hand specimen showing enclosures of fine-grained, more basic akerite. Midtstuen Station, Electr. railway Kristiania-Holmenkollen. (Geol. Map "~~Holmenkollen~~ "Kristiania")
D.109 N.Case A	60770	50	Akerite (Genetically connected with Kjelsaasite as a more acid marginal modification. Midtstuen Station, Electr. railway Kristiania-Holmenkollen. (Geol. Map "Holmenkollen").

60784 Larvikite-porphyry (Rhomboporphyry)
Dike in ordovician strata. Tyveholmen ?
Kristiania (Geol. Map "Kristiania") (Map N. G. U. nr. 25)

D.109 N.CaseA

60771 53 Akerite porphyry intrusive sheet in ordovician strata, Toien, Christiania

60772 58 Glimmerlarvikite. Rydninger, Hedrum

D.109 N.CaseA

60773 60b. Larvikite, Dark variety showing blue labradorisation of the anorthoclase on the face (801). Quarry Varild in Tjølling b/ Larvik. (Map: W. C. Br. Eruptivgest. III. Geol. Map "Tonsberg", ed. 1924).

D109 N.CaseA

60774 61b Larvikite. Typical light grey variety, byskogen, Larvik.

D109 CaseA

Larvikite

60775 62 Typical bright grey variety. Quarry Hovland, Larvik. Parallel the "Farbenschiller".

D.III N.CaseA

60776 63 Larvikite. Typical bright grey variety. Naaø, Langesundsfjord.

Rectangular case on mineral section — No. 4

60777 66 Piece of a lensshaped inclusion of Larvikite, embedded with protoclastic schistose Nitroite. Kjørtingholmen, Langesundsfjord. (Cfr. Z. f. Kr. Bd. 16. H. p. 106)

D.III N.CaseA

60778 80 Tonsbergite (weathered facies of Larvikite) porphyritic marginal modification. Lønskollen, Vivestad, Jarlsberg. (Geol. Map "Tonsberg" ed. '24)

D.III N.CaseA

60779 77 Larvikite (Tønsbergite-facies) Bollaerne, Kristianiafjord.

D.III N.CaseA

60780 78 Larvikite (Tonsbergite facies). Jenseskjaer, Bollaerne, Kristianiafjord.

D.III N.CaseA

60781 79a Larvikite, marginal modification, Skjaeggestad, Ramnaes.

Nos. 77, 78, 79a and 80; Cfr. Geol. Map "Tønsberg" 1924.

D III N.CaseA

60782 81 Larvikite-porphyry, marginal modification, Maerkedammen, Vivestad, Jarlsberg.

D III N.CaseA

60783 83 Tønsbergite -porphyry (-Rhomboporphyry) Marginal modification of Tønsbergite from Lønskollen, Vivestad, Jarlsberg. (Geol. Map. "Tonsberg", ed. 1924)

D.III N.CaseA

60784 68 Larvikite-porphyry (-Rhombporphyr.) Dyke in ordovician strata. Trosterud. Aker. at Kristiania.

D.110 N.CaseA

60785 69- Larvikite-porphyry (Rhombporphyry) Dyke in ordovician strata. Tyveholmen, Kristiania. (Geol. Map "Kristiania") (Map N.G.U. nr. 25)

D.110 N.CaseA

60786 73 Rhombporphyry. Dyke cutting rhombporphyry lava beds. Skaanaasen b/ Horten. Jarlsberg. (Geol. Map "Moss", new ed. 1924.

D.110 N.CaseA

60787 73a Rhombporphyry. Dyke in upper ordovician strata. Roa Station. Lunner. (Geol. Map "Gran", ed. 1923).

D.110 N.CaseA

60788 73b Rhombporphyry. Dyke intersecting the RP - lavabeds. Sorby, Vaale. (Geol. Map "Moss")

D.110 m.CaseA 60789 71 Rhombporphyry. Dyke in essexite. Tofteholmen, Kristianiafjord. (Geol. Map "Honefoss" "Moss", new ed. 1924)

D.112 m.CaseA 60790 87 Lardalite. Normal type. Løvemoen, Lougendalen, N. of Larvik.

D.112 m.CaseA 60791 88 Lardalite. Normal type, Løve, Lougendalen.

D.112 m.CaseA 60792 89 Lardalite . Lien-type. Gjonelien, Lougendalen, N. of Larvik.

D.112 m.CaseA 60793 90a. Nepheline-syenite. Ditroite-type. Bratholmen, Langesundsfjord.

D.112 m.CaseA 60794. 91. Ditroite, protoclastic shistose type. Kjortingholmen, Langesundsfj.

D.112 m.CaseA 60795 92 "Agirine-Ditroit-Schiefer" (Cfr. the catalogue). Store Arø, Langesundsfjord.

D.112 m.CaseA 60796 93. Lardalite-porphyry (-Nepheline-rhombporphyry). Dyke in Larvikite. Railway-tunnel between Andvik and Vasvik. Lake Farrisvand N. of Larvik.

D.112 m.CaseA 60797 94. Jacupirangite. Melanocratic dyke of the Lardalite series, cutting the mica-syenite between Kodal and Lougendal. (Geol. Map "Tønsberg", ed. 1924)

D.113 m.CaseA 60798 95 Kvellite. Great dyke in Foyaite, hills between Lougendalen and lake Farris, N. of Larvik.

D.113 m.CaseA 60799 96 Tjosite. Great dyke in Larvikite. Railway-tunnel by Farrisvand near Tjose Station. N. of Larvik.

D.113 m.CaseA 60800 97 Camptonite. Melancocratic dyke of the Lardalite series. Tjose Station by the lake Farrisvand N. of Larvik.

D.113 m.CaseA 60801 98 Farrisite. Near the station Aakungen by the lake Farris N. of Larvik.

D.113 m.CaseA 60802 99 Heumite. Dyke of the Lardalite series. Gjona between Lougendal and Farrisvand. N. of Larvik.

D.113 m.CaseA 60803 101 Natronminette. Haaø, Langesundsfjord. Dyke in Larvikite.

D.113 m.CaseA 60804 103a Natronminette. Brathagen, Lougendalen.

D.113 m.CaseA 60805- 104 Tinguaite. Dyke of the Lardalite series. Between the farms Asþjørnsrø and Asildsrød. Hedrum, Lougendal, N. of Larvik.

D.113 m.CaseA 60806 105 Sølvsbergite. (Aegirine-mica-sølvsbergite) Dyke of the Lardalite series between the stations Tjose and Aaklungen by Farrisvand. N. of Larvik.

D.114 m.Case A

60807 106 Sølvsbergite (Katophorite-Sølvsbergite) Dyke of the Lardalite series between the stations Tjose and Aaklungen by Farrisvand. N. of Larvik.

D.114 m.Case A

60808 107 Foyaite. Brathagen, Lougendal, Dyke in Lardalite.

D.114 m.Case A

60809 108 Foyaite. (Aegirine-Katophorite-Foyaite). Dyke north of the Lardalite series N. of the church Kvelle. Lougendal N. of Larvik.

D.114 m.Case A

60810 110a Hedrumite (nepheline-bearing. Transition rock between Hedrumite and Foyaite). NB. Not fresh. Mica is altered into chlorite and nepheline into an aggregate of muscovite-scales. Dyke in mica-syenite. Hagenaes N. of Aasrumvand, Lougendalen. (Geol. Map "Tønsberg", ed. 1924).

D.114 m.Case A

60811 111 Lestiwaarite, Dyke in Foyaite, Kvelle, Lougendalen.

D.114 m.Case A

60812 113 "Riesenfoyait". Nepheline-syenite-pegmatite. Dyke in metamorphic essexite-melaphyre. Isl. Laaven, Langesundsfjord.

D.114 m.Case A

60813 114 Glimmerpulaskite. Spaalen, Nordmarken (Geol. Map "Hønefoss").

D.114 m.Case A

60814 116 Pulaskite. Sagbakken by lake Farrisvand.

D.114 m.Case A

60815 118 Hedrumite. Great dyke. Vestrum, Lougendalen.

D.114 m.Case A

60816 119 Hedrumite. Great dyke, vestrum, Lougendalen.

D.115 m.Case A

60817 120 Hedrumite. Pulaskite series. Great dyke at Naes E of river Lougen. NE of Larvik.

D.115 m.Case A

60818 121 Hedrumite Great dyke in silurian strata. Gjefsen, Gran. (Geol. Map "Gran" 1923)

D.115 m.Case A

60819 122 Hedrumite Central part of a large dyke in ordovician strata. Island Ostø, Kristianiafjord. (Geol. Map "Kristiania")

D.115 m.Case A

60820 126 Glimmernordmarkite, Quarry at Grorud church, E. Aker.M. E. of Kristiania.

D.115 m.Case A

60821 127 Nordmarkite Ørfiskevand, N. of Maridal, Nordmarken.

D.115 m.Case A

60822 128a Nordmarkite. Quarry at Aarvoldskogen. E. Aker N. of Kristiania. (Geol. Map "Kristiania") The handspecimen shows an inclusion on contactmetamorfic ordovician slate.

D.115 m.Case A

60823 129 Nordmarkite. Katophorite and aegirine-bearing rock showing a transition-type to Ekerite. Near Sognsvand. W. Aker.

D.115 m.Case A

60824 130 Nordmarkite. (Normalgrained rock). Quarry Monsebraaten by Grorud., NE of Kristiania. (Geol. Map "Kristiania")

D.116 m.Case A 60825 134 Nordmarkite Marginal modification a few meters from contact with contact-metamorphic essexite-porphyrite. Stenbruvand. Grorud NE of Kristiania. (Geol. Map "Kristiania")

D.116 m.Case A 60826 136 Nordmarkite. Marginal modification close at contact with contactmetamorphic essexite-porphyrite. Stenbruvand, Grorud NE of Kristiania. (Geol. Map "Kristiania")

NB. Nos. 130, 134 and 136 are forming a series from the same massive

D.116 m.Case A 60827 139 Sølvsbergite (Aegirine-sølvsbergite). Typical rock, quartz-bearing. Dyke in Essexite at Berget, Solvsberget, Gran. (Geol. Map "Gran", 1923)

D.116 m.Case A 60828 140 Sølvsbergite. from the same dyke as no. 139, but a little altered. Svenskerud, Sølvsberget, Gran.

D.116 m.Case A 60829 143 Nordmarkite-porphyry. Dyke in Nordmarkite, Skjaersjødammen, Nordmarken

D.116 m.Case A 60830 144 Glimmernordmarkite-porphyry. Ullernaasen. W. Aker. Dykein ordovician strata.

D.116 m.Case A 60831 147 Basic apophysis from the "Sahlband" of no. 144.

D.116 m.Case A 60832 148 Glimmernordmarkite-porphyry, dyke in ordovician strata. Central part Hük, Bygdø, W. Aker.

D.116 m.Case A 60833 149 Glimmernordmarkite-porphyry. 1 meter from the boundary of the dyke no. 148.

D.116 m.Case A 60834 150 a Glimmernordmarkite-porphyry, central part of the dyke Nesodtangen, Kristianiafjord.

D.116 m.Case A 60835 150 b Glimmernordmarkite-porphyry, basic "sahlband" of the dyke Nesodtangen ".

NB. No. 150 a and b originate from a great dyke intersecting precambrian crystalline shists at Nesodden.

D.116 m. Case A 60836 151 Kersantite-porphyry. Melanocratic dyke rock of the nordmarkite series. Dyke in contactmetamorphic essexite-lava at Stoitrenna, Grorud. NE of Kristiania. (Geol. Map "Kristiania")

D.116 m.Case A 60837 153 Diabase-porphyrite Dyke in ordovician strata. SE Snarøen, Kristianiafjord.

D.116 m.Case A 60838 154 Diabase-porphyrite. Dyke in Lardalite, Gjonesaeter, Kvelle, Lougendalen.

D.116 m.Case A 60839 155 Diabase-porphyrite. Dyke in Nordmarkite, Hvarnaes, Lougendalen.

60840	156	Nordmarkite-porphyry, Dyke in sphaerolithfels, Aasen, Eidsfoss, (Geol. Map "Moss")
60841	161b	Lindøite, dyke in ordovician strata. Graakammen st. W. Aker.
60842	163	Nordmarkite-Aplite, between the lake Movand and Nitedal, NO of Kristiania.
60843	164	Nordmarkite-spherulite-rock, dyke in ordovician shists, near the boundary of Nordmarkite, between the farm rotnaes and Nitedal St., NO of Kristiania.
60843A	166	Nordmarkite-spherulite-rock. Sheet in older lava beds of the Larvikite series. Aasen, Bergsvand, Eidssfoss. (Geol. Map "Moss", new ed. 1924)
60844	168	Ekerite. Sagen, Parish Efteløt, Lougendalen.
60845	168a	Ekerite, with scarce quartz, cfr. No. 131. Great dyke in Nordmarkite at Grorud O. Aker.
60846	170a	Ekerite, with astrophyllite and elpidite. Jaeringselven, W. of Harestuen St., Hakedal, Nordmarken. (cfr. "Hønefoss").
60847	171	Ekerite-porphyry; Marginal modification of the Ekerite-massive, Skullestad, parish Efteløt, Lougendalen.
60848	173.	Ekerite-porphyry, fine-grained marginal modification of the Ekerite, SSO of Finnerud, Hudaasen, parish Eftelot, Løugendalen
60849	174	Ekerite. Farm O, Vivestad, Jarlsberg, (Geol. Map "Moss", new ed. 1924)
60850	175	Diabase-porphyrite. Dyke in contactmetamorphic silurian and devonian strata, Grinderud, SW of Konnerudkollen Skouger at Drammen.
60851	177	Dyke rock, diaschistic and rich in iron, dyke in silurian shists, S. of the lake Steglevand, parish Skouger, Jarlsberg.
60852	179	Grorudite. Great dyke intersecting ordovician strata, essexite-melaporphyre, rhombporphyry lava beds, and Nordmarkite. Gruesletten, Grorud, NE of Kristiania. (Geol. Map "Kristiania".)
60853	182	Ekerite-pegmatite. Dyke in silurian strata, Sundemyr, Eker, forest between Drammen og Vestfossen.
60854	184	Biotite-granite (Kristianite). Quarry at Støa, Drammensfjord.
60855	185	Biotite-granite (Kristianite) Grey, Lahelleholmen, Drammensfjord.

D.119 60856 M. Case A — 186 — Biotite-granite (Kristianite'. Heggedal railway station between Kristiania and Drammen. (Geol. Map "Kristiania".)

D.119 60857 M. Case A — 187 — Biotite-granite. (Kristianite). Gommerudfjeld, Lier NNE of Drammen. (Geol. Map "Kristiania).

D.119 60858 M. Case A — 187a — Biotite-granite (Kristianite). Bjorgesaeter, Hakedal. (Geol. Map "Hønefoss).

D.119 60859 M. Case A — 188 — Biotite-granite (Kristianite). Marginal modification, showing transition between normal rock and granophyre-aplite. Horterkollen, Sylling by Tyrifjord (lake). (Geol. map "Kristiania").

D.119 60860 M. Case A — 189 — Granophyre-aplite. Marginal modification Horterkollen, Sylling by the lake Tyrifjord.

D.119 60861 M. Case A — 190 — Aplite. (Kristianite-aplite). Apophysis of the Kristianite-magma in contact-metamorphic ordovician strata. Horterkollen, Sylling by the lake Tyrifjord. (Geol. Map "Kristiania")

D.119 60862 M. Case A — 191 — Felsophyre (Quartsporphyry) Intrusive sheet, 100 m. thick, in the lavabeds of Bragernaesaasen, Drammen. (Geol. map "Kristiania".

D.119 60863 M. Case A — 192 — Brecciated quartz-porphyry. Sheet in the older series of rhombporphyry lava beds. Brageroen Station b/ Drammen. (Geol. Map "Kristiania")

D.119 60864 M. Case A — 192a — Quartz-porphyry. Brighter variety. Gampaasen, parish Lier, by the lake Glitrevand, Finmarken.

D.119 60865 M. Case A — 193 — Quartz-porphyry from central part of a dyke in ordovician strata. Torvøskjaer, near Høvik, Kristianiafjord. (Geol. Map "Kristiania")

D.120 60866 M. Case A — 194 — Diabase (proterobase) with brown amphibole, biotite, and rounded phenocrysts of Quartz. From the "Sahlband" of the quartz-porphyry dyke of Torvøskjaer, near Hovik, Kristianiafjord. (Geol. Map "Kristiania)

D.120 60867 M. Case A — 195 — Diabase (Amygdaloidal) with brown amphibole and biotite (strongly altered). Dyke in ordovician strata. Uranienborg, town Kristiania.

D.120 60868 M. Case A — 196 — Kristianite-aplite. Dyke in Kristianite (biotite-granite). Kobberviksdal by Drammen, (Geol. Map "Kristiania"◊.

D.120 60869 M. Case A — 197 — Granitite-spherulite-rock, intrusive dyke in rodovician strata, Steinklevpladsen, N. of the Drammen-river, nearly opposite M Jøndalen St.

D.120 60870 M. Case A — 197a — Granite-Aplite Dyke in silurian strata. Between Movand and Nitedal. (Geol. Map "Hønefoss".)

D120 m.Case H 60871 199 Rapakivi-granite. Nøste S. of Tangen, Drammenfjord.

D120 m.Case H 60872 200 Proterobase. Dyke in Granitite, Grundvik, Drammensfjord.

D120 m.Case H 60873 201 Proterobase. Great dyke in ordovician strata. Island Brandskjaer in the Harbour of Kristiania.

D120 m.Case A 60874 202b Diabase. Østø, Kristianifjord. Intersecting ordovician strata.

60875 203 Diabase-porphyrite. Great dyke with enclosures of precambrian rocks in the ordovician strata. Sinsen, Town Kristiania.

60876 204 Diabase-porphyrite. Dyke intersecting the silurian strata, the essexite, and a dyke of rhombporphyry. Tofteholmen, Kristianiafjord. (Geol. Map "Moss" new ed. 1924)

Lavabeds of Krokskogen and Sørkedalen.

Essexite - and Kjelsaasite - Larvikite - series

(Geolog. Maps "Kristiania and "Hønefoss")

Cfr. the catalogue No. 37-43, 74-76 and 84-85.

Lavabeds.

60877 1 Essexitemelaphyre E_1 Kolsaas, Baerum.

60878 2 Rhombporphyry, RP_1 Kolsaastype, Kolsaas. Baerum.

60879 3 Rhombporphyry, RP_2 Homledalstype, Homledal, Ringerike.

60880 3a Volc. Agglomerate, RP_{2a} between the lavabeds No. 3 and 4.

60881 4 Rhombporphyry, RP_3 Fjulsrudskartype, Homledal.

60882 4a Volc. Agglomerate RP_{3a} between no. 4 and 5.

60883 5 Rhombporphyry, RP_4 Kaarjordtype, Homledal.

60884 5a Tuffitic sandstone RP_{4a} between No. 5 and 6.

60885 5b Rhombporphyry. Dyke of the Nordlandsdals type lavabed No. 5 intersecting the lavabed No. 4. On the road between Homledal and Bollihøgda, Ringerike

60886 6 Rhombporphyry, RP_5 Nordlandsdals type, Road Sollihogda, Homledal.

60887 7 Rhombporphyry, RP_6 Aslegaardstype, Road Sollihøgda, Homledal.

60888 8 Rhombporphyry, RP_7 Sollihogdatype, Sollihøgda, Ringerike.

60889 9 Rhombporphyry, RP_8 Brolokketype, Avtjernsmyr. E. of Sollihøgda.

60890 10 Rhombporphyry, RP_9 Sørumsaetertype, Granbakken, Lommedalen.

60891 9a Volc. Agglomerate RP_{9a} between no. 9 and 10.

60892 11 Essexiteporphyrite, E_{2a} Niskindvand E of Sollihøgda.

60893 12 Rhombporphyry, RP_{10} Niskindtype, Niskindvand.

60894 12a The scorious surface of RP_{10} with filling of tuffitic sandstone. Niskindvand.

60895 13 Essexitemelaphyre, E_{2a} Niskindvand.

60896 14 Rhombporphyry, RP_{11} Gaupehaugtype, Rydningen, NE of Solligbogda.

60897 14 Rhombporphyry, RP_{11} Gaupehaugtype, Steinskogen, NE of Kolsaas.

60898 15 Rhombporphyry, RP_{12} Rognlitype, Rognlien, Krogskogen.

60899 16 Essexitemelaphyre, E_{3a} Høgbrenna E of Rognlien.

60900 17 "Uralite-porphyry" Essexitemelaphyre E_{3a} Steinsaasen, NE of Kolsaas.

60901 17 Essexiteme laphyre, E_{3a} uralitized, Lommedalen. "Uralite-porphyry"

60902 18 Essexiteporphyrite, E_{3b} Huken, Grorud.

60903 19 Essexiteporphyrite E_{3c} with greater phenocrysts of tabular labradorite. Pipenhus, Sørkedalen.

60904 20 Rectangelporphyry, RP_{13} Svartentype, Bergendal, Sørkedalen.

60905 21 Rhombporphyry, RP_{14} Aagaardslitype, Aagaardslien, N. of Sørkedalen.

60906 Hornfels Contact zone near Aarvold (?) - Kristiania

No. 18, 19 and 2o of Lavabeds form a series of rocks with increasing amount of alcalis, and according to this showing the crystal habit of the phenocrysts of labradorite changes from thin tabular to thick tabular. No. 18 a common essexite porphyry. No. 20 a true Kjelsaasite porphyry. ("Rectangel-porphyry").

Specimens collected for R. C. Emmons (1925)

60907 #1 #1 Ore from Copper Mountain at Princeton, B. C.

60908 #2 " " " #6 orebody, Anyox.

60909 #3 " " " #5 orebody, " .

60910 #4 " " " #1 pocket, " .

60911 #5 " Pyrite from #4 stope, " .

60912 #6 " Ore from #1 orebody, 18 stope - 385 level, Anyox.

60913 #7 #2 ore from 9 chute footwall side of orebody, Anyox.

60914 #8 #3 ore #3 orebody - 101 stope, Anyox.

60915 #9 Bore. Silicious envelope around #1 orebody. Used for siliceous flux, Anyox.

60916 #9 B. Ore same as other sample

Miscellaneous

60917 St, Case Slate, Black Hills, S. D. J. J. Runner, U. of Iowa (1925)

60918 St, Case Baraboo quartzite, South Range, Baraboo, Leith, C. K. (1924)

~~Series of diabase specimens, R. C. Emmons. Ontario.~~

60919

60920 Disposed for lack of

60921 data

60922

60923 with consent of R.C.E.

60924

60925

60926

60927

60928

60929

60930

60931 St Banded ironformation, Denlo Co., Porcupine Dist., Ontario

Series from Porcupine, R. C. Emmons (Donated to)
Hollinger Mine, Ontario, J.E. Hawley

60932

60933

Canada - British Columbia - Anyox

Emmons, R. C. (1925) 60907-60916

Copper ore

Econ. Lab. Col. R210

Emmons, R. C. 60919-60930

Series of granite specimens.

1

Diabase

CANADA - ONTARIO - PORCUPINE DISTRICT 60932-60942

Emmons, R. C. or
Canada-Ontario-Hollinger Mine
Hawley, J E. Economic Lab Coll. Rm. 210
Gold Ores

60932 Gold Hollinger Mine, Ontario ES 9
60933 " " " " "

60935 Gold Hollinger Mine, Ontario ES 9
60936 Chalcopyrite and pyrite Hollinger Mine Ontario ES9
60937 Chalcopyrite Hollinger Mine, Ontario
60938 Gold Hollinger Mine, Ontario
60939 Chalcopyrite in quartz Hollinger Mine
60940 Petzite in ankerite Hollinger Mine, Ont.
60941 Gold from Graphite Gouge Hollinger Mine Ontario
60942 Gold Hollinger Mine, Ontario

CANADA - ONTARIO - COLBALT - NIPISSING MINE
60943-60953A

Emmons, R. C. Economic Lab. Coll. Rm. 210
Silver, cobalt, and Nickel Ores

60943 Silver Asbolite Nipissing Mine, Cobalt, Ontario
60944 Cobalt Erythrite Nipissing Mine, Cobalt Ontario
60945 Silver Arentite in geode Nipissing Mine Cobalt, Ontario
60946 Silver Annerbergite Nipissing Mine
60947 " Dyscrasite, solid Nipissing Mine
60948 " Breithauptite Nipissing Mine
60949 Slab Silver, massive Nipissing Mine
60950 Silver vein section Nipissing Mine
60951 " Niccolite Nipissing Mine
60952 " Bithmuth, very massive Nipissing
60953 Cobalt Smaltite Nipissing Mine
60953 A Silver Gangue Nipissing Mine

For additional information concerning nos. 60934 - see following page

For additional information concerning nos. 60932 - 60953 see preceding page

60934 Disposed for lack of data — RW 1957

60935

60936 Chalcopyrite, Pyrite.

60937 Chalcopyrite

60938

60939 Chalcopyrite in Quartz

60940 Petzite in Ankerite

60941 From graphitic gouge

60942

Series from Cobalt, Ontario, R. C. Emmons (Donated to) Collected by E. Hawley

60943 Asbolite, Nipissing Mine

60944 Erythrite " "

60945 Argentite in geode, Nipissing Mine.

60946 Annerbergite, Nipissing Mine.

60947 Dyscrasite, solid, Nipissing Mine.

60948 Breithauptite, " " .

60949 Slab silver, massive " " .

60950 Vein section, " " .

60951 Niccolite, " " .

60952 Bismuth, very massive, Nipissing Mine.

60953 Smaltite, Nipissing Mine.

60953A gangue " " " Nipissing, Minto Mine

Miscellaneous (1925)

60954 Bowlder from Cambrian conglomerate, Ablemans, Wis. Showing bleaching of outside.

(325) 60954 Sobralite (Pyroxen) Loc: Ijosne, Sweden; Source: John Palmgren

60955 Case 22 Graphic granite from drift in Wisconsin.

B-29-21

60956 Anorthosite, Lake St. John, Quebec, W. J. Mead.

B-29-~~25~~ 22

60957 " " " " " " .

B-29-23

60958 " " " " " " .

B-29-24

60959 " " " " " " .

60960 Spavinau granite, Spavinau Co., Okla. (An inlier)

60961 6E6 Case 7 Cave formation (calcite), Wind Cave, S. D., Elva J Lyman. Madison.

60962 Case 9 Meerchaum, Crystal Falls, Mich., Steven Royce.

60963 Case 8 Iron anthophyllite, Store Uttervks Hage, Tunaberg, Sweden. With fayalite, garnet, pyroxene, hornblende. H. V. Elkermann, Ijosne, Sweden.

60964 Case 8 Sobralite (var Pyroxene), same location, John Palmgren.

60965 Case 8 Jarnantofyllitebergait (var amphibole), Stromshult, Tunaberg, Sweden. John Palmgren.

60966 Se Quartz stalagmite, Arizona.

60967 Case 26 Schungite, 6th level Berkshire Mine, Iron River, Mich. Black shiny probably not crystalline, but showing shining surfaces. Opaque under microscope. Hardness 3 1/2. Weak tenacity. Sp. G. 1.59. Insoluble in HCl. Streak black. Colorless borax bead. Infusible. Not burnable without Oxygen.

60968 Se Stone with hole. Becker Co., Minn.

60969 Case 9 Thuringite, Minn. F. F. Grout.

60970 Case 9 Stilpromelane, Minn. F. F. Grout.

~~60971 Biotite (not anomite). F. F. Grout.~~ disposed.

~~60972 Crude biotite, Kekequabic. F. F. Grout (olivine gabbro)~~ "

60973 Case 8 Torendrickite, Ambatofinandzahana, Madagascar.

60974 7A6 Case 9 Jeffersite (mica-chlorite), Colorado. Two varieties other is 60974 A. (disposed) 480

60975 Case 8 (?Amphibole?) Imerinite, Cumas, Ohubatoarina, Madagascar.

60976 Case 10 Jarosite, Tintic Standard Mine, Dividend, Utah.

D534 60976 ms Euxenite

60977 Case 10 Plumbjarosite, Tintic Standard Mine, Dividend, Utah.

60978 Case 9 Montmorillonite, Encinitas, Sand Diego Co. California.

60979 Case 9 Montmorillonite, No location.

60980 Case 10 Argentojarosite, Tintic Standard Mine, Dividend, Utah.

60981 Case 9 Uniaxial lepidolite, Np = 1.5324, Ng = 1.5550, 2N = 0°, Grosmont, 12 miles SW of Coolgardie, Australia. Edward Simpson. See A. J. S. 9, p 427, (1925)

60982 Biotite Ubina, Ng = ?, Nm = 1.595± .004, Np = 1.562±.003, 2E = 55°, W = 33°± 3°, about 20 miles NW of Coolgardie, Australia. Analyses in Bull. 48, Geol. Survey Western Australia. See A. J. S. 9, p 426, (1925)

60983 Biotite, North Mohelumne River, Big Tree Quadrangle, Californiat see Turner, H. W.: Some Rock Forming Biotites and Amphiboles. A.J.S., vol. 157, pp 294-298, (1899) #1743.

60984 Same as above from Bloods Station, Alpine Co., California, # 1751.

Thin Sections from Cripple Creek, Colorado. A. N. Winchell (1920)

60985 30 Breccia, Portland Mine.

60986 31 Breccia, same.

60987 32 Latite Phonolite.

60988 33 Breccia (?)

60989 34 Breccia (?)

60990 35 Latite-Phonolite (?)

60991 36 "Syenite"

60992 37 Breccia.

60993 38 Breccia.

60994 39 Brecciat.

60995 40 Breccia.

60996 41 Breccia.

Miscellaneous

60997 Case 9 Mesolite, Table Mountain, Golden, Colorado.

60998 Case 10 Bentonite, Rock River, Wyoming.

60999 M1 Weathered bowlder, British Guiana.

Minerals from Holmquist.

61000 Case 9 Gadolinite, Ytterby, Sweden. X-RAY Film No. 1160

61001 Case 10 Fergusonite, Ytterby, Sweden.

61002 Case 9 Anderbergite (red-brown) with Fergusonite, Ytterby, Sweden.

61003 Case 10 Yellow Yttrotantalite (Fergusonite), Ytterby, Sweden.

61004 Case 9 Orthite (Allanite), Ytterby, Sweden.

61005 Case 10 Black yttrotantalite, Ytterby, Sweden.

Miscellaneous

E-40-13

61006 Epidote biotite gneiss, T. C. Chamberlin memorial bowlder at U. W. Observatory.

Minerals from Ward.

61007 ~~6 III~~ X1 Garnet, var. Almandite altered surficially to Aphrosiderite, Salida, Colo. 370

61008 Case 9 Aphrosiderite psuedomorphic after garnet, Michigamme, Mich.

61009 Case 9 Prochlorite, Chester, Vermont.

61010 Case 9 Thurngite, Schmiedefeld, Thuringia, Germany

61011 Case 9 Chloritoid var Masonite, Natic, R. I.

61012

61013

61014 7A4 Mica, Brazil, J. E. Carney, Jr. 458-462

Disposed ~~61015 7A4 Mica associated with Beryl, Brazil, J. E. Carney, Jr.~~ 458-462

Disposed ~~61016 7A4 Same as last except white in color, Brazil, J. E. Carney, Jr.~~ 458-462

61017 Recomposed granite, Vermillion Range, Minn.

61018 Case 10 Case 17 Alunite (~~2 specimens~~), Marysvale, Utah, W. J. Mead.

61019 Thomsonite, Table Mt., Golden, Colo. U. S. Nat. Mus. 83262, Hillebrand & Cross Nol 26, Analysis lx, p 25. Contributions to Mineralogy of Rocky Mountains. (1885) X-Ray # 315

61020 Case 9 Faroelite (Thomsonite), Faroe Islands. Source: Academy Natural Sciences Philadelphia (no. 13903)

D-20-7

61021 Gossen from near fault in Wilcox, San Antonio, Texas, A. W. Weeks.

61022 Case 27 Miargyrite, 5th level, 200 ft deep, Kelly Mine, Randsburg, California.

61023 Nepheline Syenite, Mt Royal, Montreal, Canada.

61024 Sphalerite & pyrite on dolomite and chert, Joplin Dist., Mo. W. F. Anderson.

61025 ~~Calcite on chert, Joplin Dist., Mo. W. F. Anderson.~~ Recat. LO 9304 9/20/34.

61026 ~~Same as 61024, " " " " " .~~ " "

61027 ~~Calcite crystal " " " " " .~~ D 9/18/34

61028 ~~Sphalerite on chert " " " " " .~~ Recat. LO 9304.

61029 Brecciated quartzite, Ablemans, Wis, "Davy" R. H. B. Jones.

61030 Case 7 2 specimens calcite in sand, Interior, S. D., Selden M. Clark.

61031 2 specimens of gneiss from drift near Madison.

61032 666 Emerald (beryl) with albite in slate, Chivor Mines, Somondoco, Boyaca, Colombia, South America. Don. by Brossard, Jr. (Missing Sept, 1936, RW) Found

61033 Case 22 Ellipsoidal basalt, Ely, Minn., Micky Hahn.

61034 Serpentine from top of Austin chalk, Bastrop Co., Texas.

61035 Intrusion in upper Cretaceous (basalt), Uvalde Co., Texas.

61036 Serpentine from top of Austin Chalk, Medina Col, Texas.

61037 Same from Caldwell Co., Texas.

61038 Case 9 Zeophyllite, Idaho. E. E. Fairbanks, Reno, Nevada.

61039 Case 10 Feberite (?Wolframite) $FeWO_4$, Boulder Co., Colo. Harbaugh. X-Ray Film 942

61040 Case 9 Crestmoreite, White Mt., Inyo Co., California. E. E. ~~Fairbanks~~, Reno, Nevada

61041

61042

61043

Rock collection from Braden Copper Co., Rancaqua, Chili, A. R. Colburn.

61044 1 Braden Tuff - at contact with Teniente Breccia.

61045 2 " " - surface phase.

61046 3 " " - original phase.

61047 4 Breccia - Phase of andesite or tourmalinized Teniente Breccia.

61048 5 Andesite breccia.

61049 6 Teniente Breccia - Fine decomposed phase.

61050 7 " " -m " " " with evident phenocrysts.

61051 8 Silicified andesite porphyry.

61052 9 Felsite.

61053 10 Lamprophyre - from dike.

61054 11 Quartz diorite.

61055 12 " " altered.

61056 13 Dacite porphyry.

61057 14 " " altered.

Miscellaneous

61058 Case 14 Galena showing erosion, Joplin, Mo. C. K. Leith.

Canada - British Columbia - Texada Island

Swanson, C. O. 61063-61066

Contact magnetite specimens

Economic Lab. Collection, R 210

Miscellaneous

61059 Snake Butte, South Dakoata, A. T. Newman, Bloomer, Wis.

61060 Casehardened sandstone, Bancroft, Wisconsin.

61061 Barite, "Barite Rose" or Sand Barytes, Six miles east of Norman Oklahoma in Clear Fork and Wichita formation of the Permian Redbeds. Geo. E. Wood. Analysis: SiO_2 45.20, Al_2O_3 .86, Fe_2O_3 .93, H_2O .36, SO_3 18.15, BaO 34.50. Sp. Gr. 3136.

61062 Olivine from volcanic rocks in the Hilo breakwater, Hilo Hawaii, G. Stuart Hamilton, 1923

61063 El R 11 and R 25, Specimens from ore lenses. Contact Metamorphic Magnetite deposit. Texada Island, B. C. R. H. B. Jones.

61064 El R7 and Q 85, Magnetite garnet rock. Contact metamorphic magnetite deposit. Texada Island, B. C. R. H. B. Jones.

61065 El R 1, R 28, R 47 and Q 22, Sulphide rock, contact metamorphic magnetite deposit. Texada Island, B. C. R. H. B. Jones.

61066 El L 3, Magnetite-pyrosene sill? in volcanics, Texada Island, B. C. R. H. B. Jones

61067 El Contact altered Espanola greywacke, Ontario. R. C. Emmons.

61068 El Hematite in Mississagi quartzite. Ontario. R. C. Emmons.

61069 El A-1, Manganese sulphide ore replacing limestone. Bisbee, Arizona, Copper queen mine, M. D. Harbaugh. Analysis: SiO_2 7.00, Al_2O_3 2.5, Fe 2.5, MgO and CaO 13.30, S 15.$, Cu .36, Mn 33.3, Ag .28 oz. per ton.

61070 El A-2, Manganese sulphide ore replacing limestone. Bisbee, Arizona, M. D. Harbaugh. Analysis: SiO_2 10.4, Al_2O_3 2.5, Fe 2.0, MgO and CaO 5.4, S 16.8, Zn .1, Mn 39.1. (Copper Queen Mine)

61071 El C1 and C2 Feberite. Boulder Co. Colorado. M. D. Harbaugh. (2 specimens)

61072 El C3, Feberite in 1 and one half inch vein, Boulder Co., Colorado M. D. Harbaugh.

61073 El C4-8 Tungsten ore breccia, Boulder Co. Colorado. M. D. Harbaugh. [5 specimens]

61074 Ferberite. Reade.

61075 ~~El~~ ~~Sphalerite with chalcopyrite.~~ ~~Zinc-lead, Vacheresse Claim, Ontario. R. C. Emmons~~ Recat. L 0 / 9373 10/16/34

Zinc-Lead ores collected by R. H. B. Jones from British Columbia

61076 ~~El J 51 Ore and fragments of wall rock (bleached andesite)~~ Mamie, B.C. Recat. L 392 / 9368

61077 ~~El J50 2nd tunnel, Mamie, B. C.~~ Recat. L 392 / 9365 10/16/34

61078 ~~El J 52 Banded ore, Mamie, B. C.~~ Recat. L 392 / 9366 "

61079 El ~~J 13 Vein at surface, Mamie, B. C.~~ " L 392 / 9367 "

61080 ~~El V 7 Victoria Mine, B. C.~~ Zinc-lead L 392 / 9369 "

61081 ~~El V 1 Victoria Mine, B. C.~~ Recat. L 392 / 9369

61082 El V 2 Victoria Mine, B. C. Recat. L 392 / 9370

61083 ~~El V 4 Victoria Mine, B. C.~~ Zinc-lead L 392 / 9371 Recat.

61084 ~~El V 3 Victoria Mine, B. C.~~ " " L 392 / 9370 Recat.

61085 ~~El V 5 Victoria Mine, B. C.~~ " " L 392 / 9372 "

61086 ~~El V 6 Victoria Mine, B. C.~~ " " L 392 / 9369 Recat. 10/16/34

61087 ~~El C9-11 Sphalerite and barite, Chaffee Co., Colorado. M. D. Harbaugh.~~ L O / 9374

Pb-Zn ores

61088 El ~~C12-14 Chaffee Co., Colorado, M. D. Harbaugh.~~ Recat. L O / 9375, 10/16/34

61089 El ~~C15-16 Fissure filling, Chaffee Co., Colorado, M. D. Harbaugh.~~ L O / 9376 L O / 9377

Specimens from southwest Wisconsin Zinc-Lead District
M. D. Harbaugh W1 to W16.

61090 El ~~Oil rock, James Mine~~ W 1 Recat. L O / 9329.

61091 ~~El Dolomite porous and containing marcasite, James Mine.~~ W 2 D 9/19/34

61092 ~~El Ore--sphalerite and galena with marcasite, James Mine.~~ W 3 L O / 9335.

61093 ~~El " " "

61112	El	Cherty ore--sphalerite	Tr 7	
61113	~~El~~	~~Cherty ore--galena.~~	~~Tr 8~~	Recat. 10 9308.
61114	~~El~~	~~Sphalerite~~	~~Tr 9~~	Recat. 10 3349
61115	~~El~~	~~Sphalerite~~	~~Tr 10~~	D 9/19/34
61116	~~El~~	~~?~~	~~Tr 11~~	D 9/19/34

Silver-Lead ores from British Columbia
R. H. B. Jones Canada

61117	El	Victory, B. C.	J 53
61118	El	Victory, B. C.	J 34
61119	El	Empire, B. C.	J 89
61120	El	Dorothy, B. C.	J 271
61121	El	#3 stope, #1 level, Henderson Mine, B. C.	
61122	El	Brecciated galena-sphalerite vein, Silver Creek Group, B. C.	J 97
61123	El	Brecciated rhyolite and ore, surface, Henderson Mine, B. C.	J 7
61124	El	Freibergite, Thompson Tunnel, Henderson Mine, B. C.	J 250
61125	El	Brecciated ore, surface, Henderson Mine, B. C.	J 251
61126	El	Ore near J 251, Henderson Mine, B. C.	J 252
61127	El	Vein at surface, Henderson Mine, B. C.	J 253
61128	El	Ruby silver ore #2 stope, Henderson Mine, B. C.	J 254
61129	El	Lower tunnel Henderson Mine, B. C.	
61130	El	Small vein in diorite dike, NW of Henderson, B. C.	J 54
61131	El	Prospect NE of Henderson, B. C.	J 270
61132	El	Henderson Mine,B. C.	

Silver-Lead ore from Idaho
M.D. HARBAUGH

61133	El	Hecla Mine, Burke, Idaho	H 1
61134	El	Hecla Mine, Burke, Idaho	H 2
61135	El	Hecla Mine, Burke, Idaho	H 3
61136	El	Hecla Mine, Burke, Idaho	H 4
61137	El	Principal vein follows this dike, first on one side then on the other, Hecla Mine, Burke, Idaho.	H5
61138	El	Hecla Mine, Burke, Idaho	H 6
61139	El	Hecla Mine, Burke, Idaho	H 7
61140	El	Hecla Mine, Burke, Idaho	H 8

61141	El	Hecla Mine, Burke, Idaho	H 9
61142	El	Found in assay office of Morning Mine supposedly from Mine. Morning Mine, Idaho	H 10
61143	El	Morning Mine, Idaho	H 11
61144	El	From Morning Mine assay office, possibly from mine Morning Mine, Idaho	H 12
61145	El	Morning Mine, Idaho	H 13
61146	El	Morning Mine, Idaho	H 14
61147	El	Morning Mine, Idaho	H 15
61148	El	Morning Mine, Idaho	H 16
61149	El	Morning Mine, Idaho	H 17
61150	El	From assay office, probably from mine, Morning Mine, Idaho	H 18
61151	El	Morning Mine, Idaho	H 19
61152	El	Breast in Morning Mine, Idaho	H 20
61153	El	Bunker Hill & Sullivan Mine, Kellogg, Idaho	H 21
61154	El	" " " " " " "	H 22
61155	El	" " " " " " "	H 23
61156	El	" " " " " " "	H 24
61157	El	" " " " " " "	H 25
61158	El	" " " " " " "	H 26
61159	El	" " " " " " "	H 27
61160	El	" " " " " " "	H 28
61161	El	Galena ore, Paymaster, Wood River Dist., Idaho. M . D. Harbaugh.	I 1
61162	El	Sphalerite ore, Wood River Dist., Idaho. "	I 2
61163	El	Pb-Zn-Ag ore, Lucky Boy, Wood River Dist., Idaho "	I 3
61164	El	Smithsonite ore, West Lake, Wood River Dist., Idaho "	I 4
61165	El	Granite-sandstone contact, Wood River Dist., Idaho "	I 5

Silver ore from Chihuahua Mexico
M. D. Harbaugh

61166	El	Dolores Mine	CM 1
61167	El	Dolores Mine	CM 2
61168	El	Dolores Mine	CM 3
61169	El	Dolores Mine	CM 4

Lead ore from Chihuahua Mexico
M. D. Harbaugh

61170	El	San Bartola Mine	CM 5
61171	El	San Bartola Mine	CM 6
61172	El	San Bartola Mine	CM 7
61173	El	San Bartola Mine	CM 8
61174	El	San Bartola Mine	CM 9
61175	El	San Bartola Mine	CM 10
61176	El	Banding in replacement of bedding, San Bartola Mine	CM 11

Miscellaneous

61177	El	Miargyrite, Randesburg Dist., California	
61178	El	Chalcopyrite, pyrite, East Grey Rock, Butte, Montana	S 5
61179	El	Enargite, Leonard Mine, Butte	S 4
61180	El	Native Silver, Gray Rock Mine, Butte	S 2
61181	El	Bismuthinite, Jumbo Extension, Butte. A. N. Winchell	
61182	El	Last Chance, B. C. R. H. B. Jones (Copper ore)	
61183	El	Canadian Citizen, B. C. R. H. B. Jones (Copper ore)	
61184	El	White Heather, B. C. R. H. B. Jones (Copper ore)	J 125
61185	El	Ducktown type of copper deposit, NW corner of North Carolina. W. J. Mead.	
61186	El	Sylvanite	
61187	El	Gold ore, Bristol Tp. Ontario, J. E. Hawley.	
61188	El	Gold ore and chrome mica, Ogden Tp. Ontario, J. E. Hawley	
61189	El	Gold ore, Hollinter reserve, Ontario. J. E. Hawley	

Gold ore from Red Lake, Ontario.
61190-6204

61190	El	Smith claim.	
61191	El	Quartz porphyry intrusive into Keewatin schist and which has been greatly fractured. Fractures are filled with gold bearing veins. Specimen shows hydrothermal alteration.	
61192	El	Quartz porphyry highly sericitized with biotite and chert lenses. The latter may be an inclusion or a complimentary dike.	
61193	El	Contact of an intrusive diorite and Keewatin schists. Harvey Gold Mines. Diorite is pre-quartz-porphyry in age.	
61194	El	Ore in greenstone lenses which were included in quartz-porphyry and partly replaced by quartz. Harvey Gold Mines.	
61195	El	Tourmaline, pyrite and quartz, Harvey Gold Mines	

61196 E1 Brecciated pyrite in quartz. Harvey Gold Mines

61197 E1 Drill cores from Harvey Gold Mine. Showing contact of quartz porphyry and Keewatin.

61198 E1 Typical gold ore. Harvey Gold Mines.

61199 E1 Chalcopyrite in quartz, McIntyre Mine

61200 E1 Gold ore, Harvey Gold Mines, (Look for tellurides)

61201 E1 Gold ore, gold in sphalerite. McIntyre Mine

61202 E1 Sphalerite and gold in schist and quartz, Harvey Mines.

61203 E1 Pyrite in schist lenses in quartz, Harvey Gold Mines.

61204 E1 Ore--carbonates and quartz with pyrite and greenstone schist. Harvey Gold Mines.

MISCELLANEOUS

61205 E1 Stibnite, New Bruhswick, T. B. Williams

2 spec 10 (+ in mineral series) 9746

#61206 ↓ 61327 (January 1938)

No data available. apparently numbered sometime previous to August 1929 (see #61531), but data not now in catalogue (1937).

Numbers include specimens in Metamorphic collection for which some information was furnished by CK Leith and RC Emmons.

RW

61206 Contact of a finegrained basic dike with the pyroxenite within the pyroxenite stock. Ollala Creek, Similkameen Valley, B.C. (D 1)

61207 Pyroxenite 5 feet of contact with volcanics. Ollala Creek, Similkameen Valley B.C. (D 2)

61208 Pyroxenite 12 feet from contact with volcanics. Ollala Creek, Similkameen Valley, B.C. (D 3)

61209 Pyroxenite 15 feet from contact with volcanics. Ollala Creek, Similikameen Valley, B.C. (D 4)

61210 Pyroxenite about 12 feet from contact with volcanics. Ollala Creek, Similkameen Valley, B.C. (D 5)

61211 Pyroxenite over 70 feet from contact in mineralized zone. Ollala Creek, Similkameen Valley, B.C. (D 6)

61212 Pyroxenite over 70 feet from contact with volcanics in mineralized zone. Ollala Creek, Similkameen Valley, B.C. (D 7)

61213 Pyroxenite over 100 feet from the volcanics and not in the fractured zone. Ollala Creek, Similkameen Valley, B.C. (D 8)

61213 Sand cementation Iron cemented vein-St. Peter Sandstone Loc: unknown Specimen donated to Dick Paull Dept. of Geology U.W. Milwaukee (E 2)

61214 Pyroxenite over 100 feet from the contact with volcanics and not in the fractured zone. Ollala Creek, Similkameen Valley, B.C. (D 9)

61215 Sandstone with limonite cement along joints. (E 2)

61213 Sand cementation Iron cemented vein St. Peter Sandstone Specimen→ R.A Paul
Dept. of Geology
U.W. Milwaukee

61218 Sand cementation St. Peter Sandstone No locality (E 5)

61219 Granulated schistose quartzite (F 15)

61220 Arkose (brown sandstone) Hummelstown, Pa. Spec.→ donated to John Tinker (H 15)

61221 Recomposed greywacke-conglomerate Mississippi (Sudbury?) Specimen H.16 61221 with label: (!Bruce conglomerate Near Espanola, Ontario, Coll. R.C Emmons) donated to John Tinker, Fond du Lac. 1970 (H 16)

61222 Andalusite - Schist Extreme dynamic metamorphism of Graywacke (!) Republic, Michigan John Tinker, Fond du Lac (donated to) (I 9)

61225 Argillite showing bedding and clevage (J 3)

61226 Ordivician limestone Pennsylvania (L 1)

61227 Silicious dolomite Minnesota (L 6)

61228 Stained shell limestone (L 8)

61229 Stained shell limestone (L 9)

61248 Coarse marble (N 13)

61250 Contact metamorphosed limestone Long Lake, Ontario (O 13)
61251 Contact metamorphosed limestone Long Lake, Ontario (O 14)

Sudbury Suite S 1-16

S 1 61253 donated to Norris Johnes, 1970.
S 2 61254 to Norris Johnes
S 3 61256 to L. Pray (Alteration of tremolite to talc, New York, slide says: S 3 65124)
S 5 61257 ?
S 6 61258 to L. Pray
S 7 61259 to L. Pray
S 8 61260 to N. Johnes
S 9 61261 to L. Pray
S 10 61262 ?
S 11 61263 to N. Johnes
S 12 61264 to N. Johnes
S 13 61265 to N. Johnes
S 14 61266 to N. Johnes
S 15 61267 to N. Johnes
S 16 61268 to L. Pray

(Sometimes there were only specimens, sometimes only thin sections)

61269 Chalcopyrite in limestone at outer edge of magnetite lense Texada, B.C. (W 1)
61270 Tongue of garnet in limestone with magnetic specularite and jasper (at the tip of the tongue) Texada, B.C. (W 2)
61271 Magnetite vein in limestone Texada, B.C. (W 3)
61272 Replacement of limestone containing magnetic specularite, characteristic of the outer zone against the limestone Texada, B.C. (W 4)
61273 Garnet rock (near andradite) Texada, B.C. (W 5)
61274 Garnet-hornblende zone near limestone. Texada, B.C. (W 6)
61275 Rosette form of amphibole-pyroxene in limestone. Texada, B.C. (W 7)
61276 Outer amphibole-pyroxene fringe against limestone. The characteristic zoning is magnetite-garnetite-amphibole rock-limestone. The Hornblende is nearite. gruneriteThe pyroxene is 70% Hedenbergite. 30% Diopside. Texada, B.C. (W 8)
61278 Inclusion of diorite with magnetite- pyroxene vein cut off by quartz diorite. Texada, B.C. (W 10)
61279 Intrusive with epidote vein Texada, B.C. (W 11)
61280 Intrusive replaced by garnet with preservation of texture. Texada, B.C. (W 12)
61281 Intrusive replaced by vesuvianite Texada, B.C. (W 13)
61282 Magnetite with limestone residual impregnated with hornblende. Texada, B.C. (W 14)
61283 Magnetite with limestone residual impregnated by pyrite. Texada, B.C. (W 15)

61284 Massive magnetite of orebodies. Texada, B.C. (W 16)

61305 Bauxite, Arkansas? (A 2)
61306 Bauxite, Arkansas? (A 10)

61308 Fresh monzonite with 17437 Butte, Montana (ML 1)
61309 Weathered syenite (two slides) (ML 1)

61311 Basic sand Lake Superior (ML 10)
61312 Quartz sand Texas (ML 10)
61313 St. Peter sandstone Wisconsin (ML 10)
61314 Baraboo quartzite grading into schist along joints. Baraboo, Wisconsin (ML 11)
61315 Argillite showing bedding and clevage (ML 12)
61316 Clay (kaolin) Oregon (ML 12)
61317 Bottle of Baraboo clay Baraboo, Wisconsin (ML 12)
61318 Bottle of clay Racine, Wisconsin (ML 12)
61319 Bottle of loess Idaho (ML 12)
61320 Kona dolomite Marquette, Michigan (ML 13)
61321 Bottle of residual soil from cherty limestone. (ML 13)
61322 Calcite vug (ML 14)
61323 Marls (ML 14)
61323 Aragonite in pipe Georgetown, Colorado
61324 Aragonite in pipes Colorado (ML 14)

61326 Marble (ML 14)
61327 Drill core of marble New England (ML 14)

Samples from 1540' level, Victor shaft, and were taken at 100' intervals throughout 1800' of crosscut. Number 1 came from immediately over the Merger vein and the others came in order, the crosscut being approximately at right angles to the vein. A. N. Winchell. Tonopah Extension.
See A. N. Winchell's Profession Reports (1906-1919) pp 301-314

Box 8

61328 1 Andesite

61329 2 Probably andesite

61330 3 Probably an altered andesite

61331 4 Probably an altered andesite

61332 5 Andesite

61333 6 Altered andesite

Box 9.

61334 7 Andesite

61335 8 Andesite

61336 9 Andesite

61337 10 Andesite, related by its mode of alteration to Spurr's calcite-basalt.

61338 11 Andesite

61339 12 Andesite

61340 13 Probably an andesite related to Spurr's "calcite basalt"

61341 14 Andesite approaching an auganite in character.

61342 15 Andesite

61343 16 Andesite

61344 17 Andesite

61345 18 Andesite

ROCK SAMPLES FROM TONOPAH EXTENSION MINING CO.
A. N. WINCHELL. (1906-1919) pp 315-317

61346 1260 Pyritized porphyry, probably originally an andesite

61347 1350 Extremely altered, possibly originally an andesite.

61348 1450 Porphyry, probably an andesite.

61349 1540 Porphyry, probably an andesite.

61350 1680 Altered rock

Specimens from Utah Consolidated Mining Company, Utah Metal and Tunnel Company, and Utah Apex Mining Company, and Adjoining Territory. Bingham, Utah. A. N. Winchell. Professional Reports 1919, pp 5-181.

Box 9

61351 14 Quartzite. Highland Boy Mine, 4 level. 4-26 crosscut. 32' south E. wall.

61352 20 Silicated quartzose limestone. Highland Boy Mine. 4 level. 4-26 crosscut, 132' south on east wall.

61353 42 Calcareous quartzite. Highland Boy Mine. 4 level, 4-25 cross-cut. 219' north on W. wall.

61354 43 Siliceous limestone. Highland Boy Mine. 4 level, 4-25 cross-cut, 248' north on west wall.

61355 44 Intermediate type between quartzite and limestone. Highland Boy Mine. 4 level. 4-25 crosscut. 277' north at face.

61356 91 Silicated quartzite. Utah Metal Co. 3 level. 145' W. survey point 67. So. wall.

61357 105 Lime silicate rock, probably from a quartzose limestone. Utah Metal Co. 3 level, 56' W. first raise in 63 crosscut. N. wall. 5 1/2 feet above floor in white rock.

61358 111 Silicated quartzite. Utah Metals Co., 3 level. 16' N. in 10 S. crosscut, E. wall.

61359 119 An intermediate type silicated. Utah Metals Co. 3 level, 88' W. of 10 S. crosscut in drift W. from 63 stope. S. wall. White rock.

61360 180 Serpentine limestone. Utah Metals Co. 102' up raise at E. end 40' floor. W side of raise.

61361 208 Silicated calcareous quartzite. Utah Metals Co. 15' S. W. and 25' above 1st S. drift on 40' floor, E. face of stope and E. of "Big" fault.

61362 249 Lime-silicate rock. Utah Met als Co. 2nd floor above A level. 70' W of 123 raise, S. of E-W fault.

61363 265 Lime-silicate rock. Utah Metals Co. A level. 173' N. in corss-cut N. from 123 drift.

61364 285 Silicated quartzose limestone. Utah Metals Co. A level. 48' W. of crosscut at foot of raise #2. Just N. of fault, N wall at face

61365 291 Lime-silicate rock. Utah Metals Co. A level. 130' E. of raise 15. S. wall.

61366 293 Calcareous lime-silicate rock. Utah Metals Co. A level. 25' up raise about 120' E. of raise 15. S wall.

61367 299 Silicated limestone. Utah Metals Co. A level. 70' E. of survey point 1255, 2 1/2 floors up, just W. of Ball fault. S.wall

61368 303 Pure quartzite. Utah Metals Co. Seek-No-More level. 148' N. 55' dike. W. wall.

61369 305 Quartzose limestone. Utah Metals Co. Seek-No-More level. 292' N. 55' dike. W. wall.

Box 9.

61370 308Q Quartzite. Utah Metals Co. Seek-No-More level. 18' N. in first NE crosscut. W. wall.

61371 312 Silicated limestone. Utah Metals Co. Seek-No-More level. 48' N in first NE crosscut. W. wall.

61372 341 Silicated limestone. Utah Metals Co., Seek-No-More level. 451' N. 55' dike. W. wall.

61373 347 Silicated quartzose limestone. Utah Metals Co. Seek-No-More level. 510' N. 55' dike. W. wall.

61374 379 Calcareous quartzite. Utah Metals Co. Seek- No- More level. 100' W. survey point 15. S. wall

61375 389 Lime-silicate rock. Utah Metals Co. Washington Tunnel. 100' N. and 15' NW up incline. Face.

61376 401 Lime-silicate rock, probably from quartzose limestone. Utah Metals Co. A level. 206' E. of raise 15. N. wall

61377 404 Limestone. Utah Metals Co. A level. 163' E. of raise 15. N wall.

61378 414 Lime-silicate rock. Utah Metals Co. Magazine Tunnel. 23' above track up raise 125' from portal. W.wall.

61379 426 Lime-silicate rock. Utah Metals Co. 3 level. Raise 85' E. of 123 crosscut. 97' floor 40' E. of raise. N. wall.

61380 429 Lime-silicate rock. Utah Metals Co. 3 level. Raise 85' E. of 125 crosscut. 53' floor. W. end of stope, 10' W. of raise. Footwall of fissure.

61381 457 Lime-silicate rock. Utah Metals Co. 50' floor. 20' W. of crosscut in drift on fault. 4' N. of fault. N wall.

61382 703 Limestone. Highland Boy. 5 level. 990' N. survey point 231 W. wall Black Yampa lime, 4' above contact.

61383 748 Lime-silicate rock. Highland Boy. 16 level. In drift several hundred feet W. of shaft. ~~xxxxxxxxxxxxxx~~

Samples collected by N. H. Winchell during the summer of 1903. From the Hellgate Valley Montana.

Box 8. Some missing

61384 27 Diabase, Bearmouth. Rises in a hill about 200 feet.

61385 29 Conglomerate, probably Cretaceous. One mile south of Bearmouth

61386 30 Kidney iron ore. 3/4 mile east of Bearmouth. North side of river.

61387 31 Volcanic tuff. Probably contemporary with phonolite. It is stratified by water in some portions. Near Bearmouth

61388 32 Flow layers in No. 31. Near Bearmouth

61389 33 Brecciated flowage in No. 31. Near Bearmouth

61390 34 Basal breccia below phonolite. Near Bearmouth.

~~61391 35 Fossils (Devonian?) From limestone NE 1/4, NE 1/4 Sec. 15, 11-13~~

61391 36 Same rock as No. 26, phonolite. NE 1/4 Sec 10, 10-12.

Box 8

Some missing.

61392 37 Breccia contact flow with No. 36. NE 1/4, Sec. 10, 10-12

61393 38 Artificial chippings from top of great gravel terrace. NE 1/4 Sec. 10. 10-12.

61394 39 Fossils (Cretaceous) near lignite openings. SW 1/4 Sec. 22, 10-11

61395 40 Gabbro (?) Dike conincident with bedding, 10-40 feet thick. NW 1/4 Sec. 26, 10-11 in Cretaceous.

61396 42 Rhyolite, Sw 1/4 Sec. 25. 10-11. Slaty, reddish-weathering black inside, Slatiness nearly vertical.

61397 43 Hard rock lying in whitish clay; probably igneous. Clay probably volcanic ash. SE 1/4 SW 1/4 Sec. 23, 10-11. 1 1/2 miles from Gold Creek station.

61398 44 Trachyte (?) near same locality.

61399 45 Probably contact phase of an igneous rock, underlying No. 44.

61400 46 Gray "phonolitic" rock constitutes bulk of the hill, may be sedimentary. At mouth of Goff Gulch

61401 48 Gryphea from Cretaceous (?) forming divide at source of Goff Gulch

61402 50 Lignite from Hoover coal shaft. NE. 1/4 Sec 20. 10-11.

61403 51 Supposed Jura-Trias coal. Sec. 20, 10-11.

61404 53 Lava rock, slaty and contorted from top of conspicuous hill NW 1/4 sec. 30, 11-10. Seems to form crater a little farther west.

6 Specimens from Slocan District. British Columbia.
Uglow

61405 Sphalerite, pyrrhotite and pyrite, Big Ledge Prospect, Arrow Lakes.

61406 Sphalerite and galena, Monarch Mine, Field, B. C.

61407 Smithsonite and hydrozincite, Hudson Bay Mine, Salmo, B. C.

61408 Sphalerite, Galena Farm, Silverton, B. C.

61409 Sphalerite, Star Mine, Sandon? B. C.

61410 Sphalerite and Ankerite, Glengarry Mine, Ainsworth, B. C.

61411 Sphalerite, Lucky Jim, Sandon, B. C.

61412 Lead-zinc ore, Blackwell Mine, Riondel, B. C.

61413 Filled fissure, Bosin Mine, New Denver, B. C.

61414 Silver Lead ore, B. N. A.? B. C.

61415 Antimony ore, Three Forks, B. C.

61416 Silver-lead ore, Ainsworth, B. C.

61417 Filled fissure, B. C.

61418 Miscellaneous zinc-silver ore, B. C.

Miscellaneous specimen

recatalogued reg. Series

+ ~~Garnet in marble~~

Miscellaneous specimens collected by Uglow.

2 Sphalerite + pyrrhotite LO 9380

3 Sphalerite in marble LO 9378

4 Galena in " LO 9379

61419 (3) ~~Zinc ore, New England Claim, Northport, Washington~~. Recatalogued.

61420 ~~Covellite and chalcopyrite~~ Bornite, Elm Orlu Mine, Butte, Montana.

Miscellaneous specimens

61421 ~~Oolitic pyrolusite, Tchiatouri, Russia, C. O. Swanson~~ LO 9575

61422 Cave formation (quartz), Wind Cave, S. D., Elva J. Lyman, Madison.

Specimens collected by A. N. Winchell

61423 30 Pure limestone, Highland Boy Mine, 4 level, 4-25 crosscut, 40' N on east wall. Utah

61424 341 Carbonate-silicate rock, Utah Metals Co., Seek-No-More level. 451' N 55' dike, W wall. Utah

61425 922 Quartzose black lime. Utah Apex Co., 1000' level. "Bullard Lime" in N crosscut. Utah

Boxed

61426 24 Kaolin, malachite, Copper Queen Mine, 2nd level, Bisbee, Arizona - F. L. Ransome

61427 25 Kaolin, Copper Queen Mine, 2nd level, Bisbee, Ariz., F. L. Ransome

61428 27 Clay, Lowell Mine, 1000' level, Bisbee, Ariz. F. L. Ransome.

61429 Section Rhyolite from Tonopah Nevada, A.N.Winchell

61430 " Metamorphosed Sandstone "A" of D. M. Barringer (Floor of Crater-Main shaft) Meteor Crater, Ariz. A. F. Rogers, December 1926

61431 Artificial Fulgerites

61432 Carborundum

~~61433 Glauconite~~ } disposed

~~61434 Glauconite~~

Petrographic Notes on Samples of Tin Ores and Associated Rocks from Bolivia, received from F. S. Turneaure.

61435 No. 1. The sample resembles cassiterite in appearance and high density. In thin section it has high relief, strong but not extreme birefringence, and is uniaxial and positive. It shows very sharply defined zones of varying color; these are parallel with tetragonal crystal forms. The color varies from nearly white through yellow and orange to dark brown. Many crystals show little if any pleochroism, but others of a reddish brown tint show marked absorption from pale to dark reddish brown. Twinning is not rare. The chief gangue mineral is quartz.

61436 No. 2. The sample shows cassiterite associated with pyrite and quartz. In thin section the cassiterite shows all the characters observed in the preceding sample. It seems to be replaced in some places by a sulphide, although the reverse condition might be expected. In this section and also in No. 1 there is a colorless mineral which resembles barite, since it has good cleavage, moderate relief, no color, birefringence a little stronger than quartz and biazial character with (+) 2V=moderate. It occurs in veinlets of late origin cutting through the other minerals.

61437 No. 3. The sample shows evidence that the pyritic ore has been sheared and sliced, and the planes thus produced have been cemented with galena and a white mineral. The thin section shows only galena and pyrite. The galena occurs in nearly parallel veinlets through the pyrite.

61438 No. 4. The sample shows veins of cassiterite in gangue. In thin section there are several interesting features. Veins of barite (?) are present as well as scattered quartz, and there are also nearly colorless to dark brown colloidal concretions showing concentric banding of the color and numerous shrinkage cracks, some being radial and others (nearly parallel and more nearly concentric). Further, there is a golden yellow mineral forming granular aggregates showing no extinction between cross nicols except by observing a tiny portion along the edge. This mineral resembles epidote.

61439 No. 5. The sample is a fine-grained volcanic rock of very light color in which some quartz is visible. In thin section the quartz is conspicuous it forms phenocrysts which show partial resorption; it contrasts strongly with the rest of the rock because it is unaltered while all other constituents are altered completely to a felt-like mass of scales, needles and granules. In this mass it is possible to distinguish parts which represent phenocrysts presumably of feldspar in a groundmass of granular quartz (and feldspar?). It is impossible to identify any feldspar either in the phenocrysts or groundmass, because it is completely altered to sericite and similiar material. Some of the altered phenocrysts contain needles of a brown color which may be cassiterite. I think it probable that these phenocrysts were originally a ferromagnesian mineral. The rock is probably an altered rhyolite or quartz porphyry.

61440 No. 6. The sample looks like a piece of vein material on all surfaces except where a fragment was broken off for the thin section. Here it is dense and apparently quartzose, but too fine-grained for satisfactory megascopic study. In thin section the chief constituent is quartz of fine to very fine grain in a mosaic pattern resembling an impure quartzite; the other constituents include sericite, pyrite, tourmaline, and probably zoisite. The texture is not like that of vein quartz, but I did not feel sure this was not vein quartz until I found a rounded grain of zircon in it. The sample is therefore a fragment of quartzite (representing fault breccia) com pletely enclosed in ore.

Since this cannot be the material which was intended to be examined I broke off a piece that clearly represented the ore and gangue; this was lost in grinding the section. Another piece was ground to a thin section, but this is merely a somewhat coarser sandstone or quartzite with some ore introduced into it. As in the preceeding case, a rounded zircon is decisive regarding the nature of the material. This section also shows some rounded quartz grains of good size.

61441 No. 7. The sample is highly siliceous and apparently coarse, but has some colorless needles and some yellow stains on the surface. In thin section the sample is much like the second section of No. 6. It contains quartz pebbles in a matrix of fine quartz sand. Into this conglomeratic sandstone (there is very little evidence of recrystallization) the orebearing solutions have brough cassiterite, tourmaline, pyrite, etc. The tourmaline is in part colorless, and in part brownish; it has a tend ncy to form radial aggregates.

61442 No. 8. The sample contains fine to coarse quartz grains; it is yellow to brown in spots, due to formation of limonite by oxidizing solutions. In thin section one part is a typical quartz conglomerate and another part shows more angular fragments of quartz and some evidence of recrystallization. The limonite seems to be due to introduction rather than oxidation. It is hard to find any cassiterite in the section, but a (nearly +) colorless mineral resembling tourmaline is not scarce.

61443 No. 9. The sample shows a slightly curved layer or fragment of a dark gray very dense rock in a white coarsely silicious aggregate. This gray rock contains some cubes of pyrite and some cubic cavities from which pyrite has been removed by solution. Along a vein next to the gray rock there is evidence of depostion of quartz and pyrite, The thin section represents the gray rock and shows that it is a very fine grained sandstone quartzite now much altered by the introduction of tourmaline, quartz, pyrite, etc.

61444 No. 10. The sample consists of a fragment of a dark gray siliceous rock in which quartz grains are readily visible and very abundant. In thin section the detrital nature of the material is distinct; some of the quartz grains are well rounded; others are rather angular. The fact that the tourmaline has been introduced into this rock after its formation is well shown by the way in which some tourmaline needles extend from the matrix into rounded quartz pebbles; this condition is not common, but it certainly exists. The section contains very little pyrite, biotite and cassiterite.

61445 No. 11. The sample is a piece of ore containing quartz, pyrite, galena(?), cassiterite and perhaps sphalerite. The cassiterite and galena seem to be late introductions. In thin section there is very little quartz and cassiterite, the chief constituent being pyrite, There seems to be a little galena between the cassiterite and the pyrite, I find a mineral resembling sphalerite present in small amount. One part of the section shows that the pyrite may grow by concentric layers or shells. The rare vein quartz present shows clear evidence of shatterin.

61446 No. 12. The sample shows green fragments cemented by abundant vein quartz, pyrite and cassiterite. In thin section I find that the green parts are colored by tourmaline so that the whole mass is vein material. In some places tourmaline seems to be replacing quartz. There is so little pyrite and cassiterite in the section that the relations of those minerals to the others are not determinable.

61447 No. 13. The sample shows a fine-grained siliceous rock apparently in fragments cemented by pyrite with a little quartz and cassiterite. The tin mineral seems to have been deposited next to the rock fragments In thin section the cassiterite can be found (with some vein quartz) next to the rock all along one edge. The section shows little, if any, pyrite. The rock is permeated by tourmaline, as usual; it contains abundant detrital quartz, some sericite, rare zircon, and apparently cassiterite,

61448 No. 14 The sample is a gray fine-grained quartzose detrital rock which may be called a quartzite. In thin section the detrital nature of the rock is very plain as it is composed largely of rounded quartz grains. The matrix consists of finer quartz and tourmaline. I find one anhedron resembling cassiterite.

61449 No. 15. The sample is another piece of gray quartzite which shows limonite stain on much of the surface. In thin section the rounded quartz grains are abundant in a matrix of some finer quartz and much tourmaline. The tourmaline evidently replaces all parts of the rock except the quartz before it replaces that mineral. One small mass of cassiterite is entirely surrounded by tourmaline, which is very abundant.

61450 No. 16. The sample looks as if it might be a conglomeratic phase of the quartzite decidedly coarser than any other sample at hand. In thin section I find that the quartz pebbles are indeed larger than in any other samples, and also the tourmaline is concentrated in much larger crystals and groups of crystals than in other samples. The groundmass, on the contrary, is as fine-grained as in other samples and more exclusively quartz; the tourmaline in this case must replace quartz. As usual, the tourmaline encloses cassiterite. I think rutile is also common, and zircon rare.

Miscellaneous specimens by M. D. Harbaugh

61451 Gold bearing quartz veins in volcanic tuff. Big Missouri Mine, Salmon River Dist., B. C.

61452 High grade silver and gold ore containing native and ruby silver. country rock porphyry. Premier Mine, Salmon River Dist., B. C.

61453 High grade pyritic gold ore about $150.00 per ton. Premier Mine, Salmon River Dist., B. C.

61454 High grade ruby silver ore. Premier Mine, Salmon River Dist., B. C.

Miscellaneous specimens by H. G. Hymer.

61455 1-Yellow ground. Tanganyka Diamonds Ltd., Tanganyka Territory.

61456 2-Volcanic Crater. Aden Rock through which the Persians tunneled some 3000 years ago. They built their city in the crater for protection and used the tunnel for the city entrance. sent to historical museum

61457 3-Libethenite. N'Kana Mine. Northern Rhodesia. H. G. HYMER

61458 4.Tarbuttite. Broken Hill Mine, Northern Rhodesia

61459 5- Cerussite Broken Hill Mine, Northern Rhodesia

61460 6- Vanadium Ore, Broken Hill Mine, Northern Rhodesia.

61461 7- Gneiss surrounding the Kimberly pipe

61462 8- Phases of blue ground, Kimberely pipe

61463 9- Dikes in Kimberly pipe

61464 10- Chert. Float in desert between Port Suez and Cairo. Used by ancient Egyptians to make ornaments, knives, razors, etc. To hist. mus.

61465 11- Fragments found near the Temple of the Sphynx. Gateway of the temple is of the same rock.

61466 12- Debris at base of the pyramid of Cheops. Pyramids are constructed of this rock, called alabaster by the Egyptians.

61467 13- Malachite. King Leopold Mine, Kipushi, Belgian Congo.

Collected by Olaf N. Rove, April 1929
Cananea District, Sonora, Mexico. (Room 210)

61468 1. Tourmaline silica pyrite cementing porphyry fragments. Relationship to ore not yet known. Not from Colorado pipe.

61469 2. Primary (hypogene) chalcocite from 1300 level, Capote Mine, Cananea, Occurrence described by Mitchel.

61470 3. Surface fragment of quartz-porphyry plug. Note tourmaline. Colorado Orebody.

61471 4. Breccia from near inside edge of horseshoe shaped orebody. 700 level. Fragments probably quartz porphyry. Colorado orebody.

61472 5. Breccia from near outside edge of horseshoe shaped orebody. 500 level. Fragments probably Henrietta diorite, Colorado orebody.

61473 6. Silica breccia. 700 Level. The silica is more massive on the lower levels (1000) and below). Colorado orebody. (In the lower levels the silica occurs as a closed pipe or plug, not as an open ring).

61474 7. Quartz-mica (pegmatite?) from 1100 level. Colorado orebody.

61475 8. China like silica cementing ore and pegmatitic silica, 1100 level. Very little of this material is as yet known to occur in the mine, and probably is more of a freak than of any real significance. Colorado orebody.

61475A 9. Ore breccia from 900 level. This type usually occurs very close to the silica borders. Colorado orebody.

61476 10. Massive sulphide ore from 1100 level. This massive ore occurs in the hollow of the silica ring just as the level where the open ring ceases and the closed plug continues downward. Colorado orebody.

61477 11. Diorite (?) with molybdenite from just outside ore ring on 700 level. Molybdenite is present on all levels; in general most prevalent close to the silica--both inside and outside the ring. Colorado ore body

61478 12. Massive pyrite from outside edge of silica on 500 level. In general the orebody does not contain much pyrite in proportion to the copper iron sulphides. Colorado orebody.

Collected by Olaf N. Rove., April 1929
Bisbee, Arizona Room 210

Minerals

61479 Malachite crystals after azurite. Czar Mine.

Economic set

61480 Collapsed gossen and limestone cemented by calcite. Orebodies oxidized sulphide body. Described by Wisser in Economic Geology. Southwest Mine.

61481 Banded chalcopyrite ore replacing cherty Escabrosa Limestone along fissure zone. In this stope there is a border of $\frac{1}{2}$" to several inches of sphalerite at the top of the chalcopyrite against the limestone (which is marbleized) 1600 level. Sacramento Mine.

61482 Cuprite surrounded by ring of malachite. *melaconite. 5th SW level; Southwest Mine. (Note. 5th SW level is 400 feet above 1st SW)

61483 Chalcopyrite being replaced by chalcocite. 1st Southwest level; Southwest Mine.

61489

Highgrade ore from
1800' level

61484 "Cracked" fine grained pyrite replacing middle or lower Martin Limestone. This is quite typicalof a number of our primary sulphide stopes. 1800 level Sacremento Mine.

61485 Same as specimen 61484 but showing "horseflesh" bornite and chalcopyrite. 1800 level Sacramento Mine.

61486 Supergene siderite. Boxwork from 1500 level, Sacramento Mine.

61487 Alabandite from Trench Mine, Horshaw District, Patagonia Mts. Arizona.

61488 Hypogene sulphides (brecciated)cemented by supergene siderite. 1500 level Sacramento Mine.

61489 Highgrade ore from 1800 level. Sacramento Mine (same stope as other 1800 sac (?) specimens) Banding may be in part due to original bedding of limestone.

61490 Silica breccia from Southwest Mine. Considered as probable example of Mineralization stoping by Locke. Second brecciation is due to oxidation and collapse of ore below, and sulphides with silica.

61491 Cave sediment from 200 levelof Czar Mine.

61492 Malachite needles from Shattuck Mine. Probably about 400 to 600 level.

61493 Alabandite from main Tunnel level of Higgins Mine.

61494 Malachite replacing azurite. 200 Czar level. Czar Mine. Bisbee, Ariz.

61495 Cuprite altering to native copper. 300 level. Czar Mine.

61496	Diamond	(D1)		near Luderitz Bay, Southwest Africa	$2.50
61497	"	(D1)	unusual form	" " " "	8.00
61498	"	(D1)	" "	" " " "	10.00
61499	"	(D1)	twin	" " " "	8.00
61500	"	(D1)		Kimberly, Griqualand West, South Africa	3.00
61501	"	(D1)	octahedron modified	" " " "	4.00
61502	"	(D1)	unusual form and color	Lichtenburg, Transvaal	5.00
61503	Beryl	(D344)	var. emerald, crystal	Bom Jesus dos Meiras, Bahia, Brazil	1.25
61504	"	(D344)	" " "	" " " "	.10
61505	Beryl	(D344)	Var. aquamarine, crystal	Adun Chqlon Mountains, Siberia	
61506	"	"	" " "	" "	
61507	"	"	" " "	" "	
61508	"	"	" " "	" "	
61509	"	"	" " "	" "	
61510	"	"	" " "	" "	
61511	"	"	" " "	" "	
61512	"	"	" " "	" "	
61513	"	"	" " "	" "	
61514	"	"	" " "	" "	
61515	"	"	" " "	" "	
61517	"	"	" " "	" "	
61518	"	"	" " "	" "	
61519	"	"	" " "	" "	
61520	"	"	" " "	" "	
61521	"	"	" " "	" "	
61522	"	"	" " "	" "	
61523	"	"	" " "	" "	
61524	"	"	" " "	" "	
61525	"	"	" " "	" "	
61526	"	"	" " "	" "	
61527	Apatite	(D549)	small violet xls. with quartz.	Ehrenfriedersdorf, Saxony	.35
61528	Willemite	(D381)	var. trossite, crystals	Ogdensburg, New Jersey (6 specimens)	
61529	"	"	" " crystal in calcite	" " (1 specimen)	
61530	Vanadinite	(D552)	group of small xls.	North Dominion Mine, Globe, Ariz.	.15

61496-61530 = 1040

1040 Minerals for crystallographic and gem study collections.
Purchased from Wards Natural Science Estab. Selected by Dr. R. C. Emmons
Received Jan. 1930 40 specimens Nos. 61496-61530

61531 Series to show occurence of chromite ore. Bear Tooth Mts. near Absarokee, Montana.
(10 specimens)

61531.1 Wall Rock of vein (Peridotite pyroxemite)
61531.2 Wall Rock of vein " " ,often bearing chromite, less commonly magnetite
61531.3 The ore (Four foot vein of Chromite), minute granular but well formed crystals
61531.4 " " " $FeCr_2O_4$ " " " " "
61531.5 Ore and Rock (Chromite, granular, in peridotite-pyroxenite)
61531.6 Gangue minerals (Stringer of chromite, calcite, and marcasite from main ore body)
61531.7 Serpentine-like mineral associate of ore (also present elsewhere in vicinity)
61531.8 Chromite stringer in hanging wall about 4 feet from main chromite vein
61531.9 Chromite and calcite stringer in hanging wall about 4 feet from main chromite vein
61531.10 Pyrrhotite " dike " about 700 feet s. of the chromite vein, and at contact of Post-Cretaceous Peridotite-pyroxenite dike and pre-Cambrian Granite

Received by Dr. C. K. Leith from M.H. Hawkins, August 1929

1041

I. SERIES OF ENGLISH IRON ORES (SEDIMENTARY)

1042

The set consists of 20 hand specimens, averaging 3" x 3" x 4" in size, and is representative of the main types of ore mined in England. In order to preserve the natural fracture the pieces have not been trimmed to a special size or shape. They are packed in cardboard boxes, the loose friable ores being contained in cotton bags.

A list with short labels and comments is attached. The references are to pages in 'Special Reports, vol.29' (Mem.Geol. Survey) where similar ores are described.

Exchange Collection of 20 Specimens of English Bedded Iron Ores.

No.	Label	Description (ref. to pages in 'Special Reports, Vol.29.').
	Class A. Ferrous Ores.	
	Nos.1-6 represent a series of types taken in descending order in the Main Seam at North Skelton Mine, Cleveland, Yorkshire.	
61532 ~~1.~~	Cleveland Ironstone (M.Lias) 'Top Dogger' Siderite-chamosite mudstone. North Skelton Mine, Yorks.	1. Compact mudstone rich in minute grains of siderite with chamosite pp.46-7.
61533 ~~2.~~	Cleveland Ironstone (M.Lias) 'Sulphur Band' Oolitic pyrite. North Skelton Mine, Yorks.	2. Ooliths of chamosite zoned with pyrite in a chamositic mud. pp.53,54.
61534 ~~3.~~	Cleveland Ironstone (M. Lias) 'Middle Band' Siderite-chamosite mudstone. North Skelton Mine, Yorks.	3. A band of hard shale or dogger which divides the seam from this point southwards, becoming thicker and more shaly. Similar to No.1. p.47.
61535 ~~4.~~	Cleveland Ironstone (M. Lias) 'Bottom Block' Oolitic siderite-chamosite mudstone. North Skelton Mine, Yorks.	4. Typical ironstone; greyish chamosite ooliths, in a matrix similar to the dogger stone (No.1) pp.44, 45.
61536 ~~5.~~	Cleveland Ironstone (M.Lias) 'Grey Mottled' Oolitic chamosite-siderite mudstone. North Skelton Mine, Yorks.	5. Typical ironstone, greyish chamosite ooliths in bunches in a matrix similar to the dogger stone. p.44.
61537 ~~6.~~	Cleveland Ironstone (M.Lias) 'Black Hard' Chamosite mudstone. North Skelton Mine, Yorks.	6. The underlying shale, rich in chamosite. p.44.

61538. ~~8.~~	Low. Jurassic Marlstone Ore (M.Lias) 'Green Stone' Crinoidal limestone with chamosite ooliths. Redlands Quarry, Hook Norton, near Banbury, Oxon.	7. An aggregate of small fragments of crinoids, shells, etc. with chamosite ooliths weakly cemented with calcite and siderite. p.56.
61539. ~~9.~~	Lower Jurassic Marlstone Ore (M.Lias) 'Brown Stone' Weathered 'Green Stone' Redlands Quarry, Hook Norton, near Banbury, Oxon.	8. The chamosite of 'green stone' has been converted into clay stained with limonite, while calcite is partly removed by solution. p.108.

No.	Label.	Description.
61540 ~~0.~~	Lower Jurassic Marlstone Ore (M.Lias) Core of green & brown stone. Due to weathering along joints. Redlands Quarry, Hook Norton, nr. Banbury, Oxon.	9. The junction of the weathered and the unaltered stone is marked by a band of dense limonite. p.109.
61541. ~~10.~~	Marlstone Ore (M.Lias) 'Limy stone' Sideritic limestone. Burkes Pit, Caythorpe, Lincs.	10. An aggregate of shell fragments, etc. cemented with calcite, with interstitial siderite. pp.56, 58, 69.
61542 ~~11.~~ ~~Report~~	Coal Measures Ironstone 'Red Shagg' Siderite mudstone. Wolstanton Colliery, Etruria, Staffs.	11. Very fine-grained siliceous clay, heavily impregnated with minute grains of siderite. pp.62 et seq.
61543 ~~12.~~ 2 spec	Coal Measures Ironstone 'Red Mine' Shelly siderite mudstone. Wolstanton Colliery, Etruria, Staffs.	12. Similar to 11, with shells.

Class B. Ferric Ores.

61544. ~~13.~~	Llandegai ironstone (Ordovician) 'Red Stone' Ferric chamosite oolite. Penrhyn Mine, Llandegai, N. Wales.	13. No.4 in section, p.71. Opaque pisoliths of red oxide cemented with chlorite or oxide.
61545. ~~14.~~	Llandegai ironstone (Ordovician) 'Black Stone' Ferric chamosite oolite. Penrhyn Mine, Llandegai, N. Wales.	14. No.3 in section, p.71. Very similar to the 'Red Stone' but containing a black oxide.
61546. ~~15.~~	Llandegai ironstone (Ordovician) 'Pebbly Stone' Ferric oxide with pebbles of shale, etc. Penrhyn Mine, Llandegai, N. Wales.	15. No.5 in section, p.71.

No.	Label.	Description.
61547 ~~16.~~	Frodingham Ironstone (L.Lias) 'Clayey Ore' Limonite oolite (clayey). Yarborough Pit, Frodingham, Lincs.	16. Small limonite ooliths in a matrix of chamositic clay with rhombs of siderite. p.77.
61548. ~~17.~~ ~~8 spec.~~	Frodingham Ironstone (L.Lias) Lower Jurassic 'Limy Ore' Limonite oolite (calcareous) Yarborough Pit, Frodingham (Scunthorpe) ~~Lincs.~~ Lincolnshire	17. An aggregate of shell and crinoid fragments and limonite ooliths cemented with calcite. p.77.
61549. ~~18.~~ ~~3 spec.~~	Westbury Ironstone (Corallian) 'Blue Ore' Limonite oolite (clayey). Beckett's Pit, Westbury, Wilts.	18. Clusters of limonite ooliths in a matrix of chamosite mud with rhombs of siderite. p.80.
61550 ~~19.~~ Set in Tray	Westbury Ironstone (Corallian) 'Brown Ore' Beckett's Pit, Westbury, Wilts.	19. Weathered 'Blue Ore' deeply stained with limonite. Used for gas purification. p.80.
61551. ~~20.~~ 2 spec.	Cheadle Ironstone (Lower Coal Measures) Nodule in Coal Measures Clay. Consall Station, N. Staffs.	20. Finely vermicular turgite in Coal Measures clay. pp.85, 86.

61552 Typical jaspery hematite, unaltered. Pre-Cambrian. Province of Bihar and Orissa, India, .40

61553 Jaspery hematite showing leaching of hematite to produce "soft Ore". Pre-Cambrian, Province of Bihar and Orissa, India .40

61554 " " " " " " " " " " " .40

9302 61555 Oolitic hematite-hard ore, Pre-Cambrian. Province of Bihar and Orissa, India .40

9303 61556 Conglomeratic hematite ore with pebbles of jaspery hematite, Pre-Camb. Gua, Province Of Bihar and Orissa, India .40

9304 61557 Pre-Cambrian Quartzite (probably overlies the conglomeratic ore) Gua, " " " .05

9305 61558 Rubble and lateritic iron ore (from exposed surface of the ore deposit) " " " .40

9306 61559 " " " " " " " " " " " " " .40

9307 61560(2) " " " " " " " " " " " " .40

9308 61561 Hematite, massive, laminated - hard ore Noamundi, " " " .40

9309 61562 (2) Rock forming footwall of ore body at Noamundi " " " " .40

1043 British Indian Pre-Cambrian iron ores from Province of Bihar and Orissa; obtained by Dr. C. K. Leith , 1930 from the Tata Iron and Steel Co., Ltd. of Jamshedpur, India

9310 61563(2) Itabirite - poor ore of iron. Miao-erk-kou Iron Mine, near Nau-fen, 60 miles southeast of Mukden, Manchuria

9311 61564 Poor iron ore(-roasted (magnetized) and ready for crushers) Anshan Dressing Plant, Anshan, Manchuria

9312 61565 Tuffaceous Sandstone - footwall of "big coal seam"; open pit mine at Fushun, Manchuria. Remarks: a clay seam in this tuffaceous sandstone causes landslides.

1044 Manchurian economic specimens. Collected by Dr. C. K. Leith, Nov. 1929

1043 and 1044 are economic study specimens for Dr. Leith

61566	Vauxite (D-N593) Xls. on wavellite encrusting cassiterite		$10.00
61567	" " " " " "		$10.00
61568	"(Missing) " " " " "		5.00
61569	" " " " " "	(2 specimens)	4.00
61570	" " " " on cassiterite	(3 ")	3.00

61566-70 Dallagua, Bolivia

61571	Stannite (D-84) Xls. on marcasite	10.00
61572	Aramayoite(D -) with marcasite	10.00
61573	" ( ) " "	10.00
61574	Elaterite (D-H) On altered marcasite	5.00

61571-4 Aramayo Mine, Quechisla , Bolivia (61571-3 are from"Colorado Vein")

1045 Rare Minerals from the tin district of Bolivia.
Donated by J.S. Turneaure
Received March 15, 1930
12 specimens Nos. 61566-74 Value $ 67.00

61575 Tufaceous rock. Small sample with thin section. Ruins of Ankor, Indo-China .55
Remarks; the "common brick" of the ruins

61576 Slickensides on bedding plane. Limestone of Middle Devonian, Dundee Age.
Quarry at Calcite near Rogers City, Mich. Presque Isle Co. .50

1046 Tufaceous rock (with section) from ruins of Ankor, Indo-China.
Collected by Dr. C.K. Leith 1929
Received March 17, 1930 1 specimen No. 61575 Value . 55

1047 Slickensides in Devonian limestone from Calcite, Mich.
Donated by H.G.Heedy Received May 8, 1929
1 specimen No. 61576 Value . 50

61577 Folded and metamorphased iron formation and green schist, showing large mashed garnets. Huronian. Michigammee, Mich. Value 10,00
Remarks: large specimen

61578 Slatey phase of Great Smoky Conglomerate showing relation of cleavage to bedding Chilhowee, Tenn. Value $10.00

1048 Specimens illustrating phases of structural geology.
Collected by W. J. Mead
Received March 1930 2 specimens Nos. 61577-8 Value $20.00

61579 Sulphide ore of copper, with some zinc. Chalcopyrite (finely xline-granular) with intimate admixture of sphalerite. Mandy Mine, Northern Manitoba $1.00

61580 (2) Smaller specimens similar to # 61579 .30

61581 (2) Sulphide ore of copper. Chalcopyrite in schist. Mandy Mine, Northern Manitoba. .70

61582 Sulph~~ide~~ ide ore of zinc. Sphalerite (finely xline-granular (.25

61583 Sulphide ore of zinc and copper. Sphalerite, chalcopyrite, and pyrite, crystalline granular, banded and intermingled. Flin Flan Mine, Northern Manitoba 1.00

61584 (7) Similar to # 61583 1.75

1049 Specimens of copper-zinc ore from Northern Manitoba,
Secured by R. C. Emmons
Received April 1,1930
14 specimens Nos. 61579-84
Value $5.00

Collections made by W. J. Mead,
65000 - 69999

Care in hall

65000) Fresh and altered greensand conglomerate, Ableman, Wis.
)
65001)

65002 Hall Quartzite conglomerate, Ableman, Wis.

65003 Hall Weathered breccia, Ableman, Wis.

65004 Hall Fresh breccia, Ableman, Wis.

65005 Hall Mineral from breccia, Ableman, Wis.

65006 Fold in slate (mud flowage), Amasa-Porter Mine, Amasa, Mich

65007 Hall Crushed Palmer gneiss, Michigan.

65008 Hall Oolitic chert, Madison.

65009 Weathered chert, Boscobel.

65010 Hall Platy mineral from veins near contact with igneous rock, Panama.

65011) Hall
) Series from altered dike rock, Mesabi District.
65016) Hall

65017 Hall Hornblende Schist, 63-73 Hole 171, Sec. 29. 41-6W, Wis.

65018 Hall Conglomerate drill core, Birmingham Ala.

65019 Hall 5 cores showing faults in coaly slate, Birminghamn Ala.

65020 Hall Altered Berlin rhyolite, Berlin, Wis.

65021 -65107

W.J. MEAD

Bauxite ores and associated Rocks, Bauxite, Ark., 1911.

65021 Syenite, first stage of weathering.

65022 Hall Syenite, weathered surface.

65023 Hall Syenite, NENE Section 25.

65024 Hall Syenite, fresh.

65025 M| Syenite, weathered.

65026 Hall Syenite, weathered surface.

65027 M| Syenite,

65028 Syenite, center of boulder of weathering.

65029 Hall Syenite, zones of weathering.

65030 Hall Syenite, disintegrated.

65031 Hall Syenite, "

65032 Hall Syenite, "

65033 Hall Syenite, "

65034 Hall Waste from syenite outcrop.

65035 M| Dense kaolin associated with bauxite.

65036 Hall White kaolinitic material.

65037 Hall Kaolin.

65038 Hall Kaolinized syenite.

65039 Hall Kaolinized syenite and bauxite.

65040 Hall Kaolinized syenite.

65041 Hall Kaolinized syenite.

65042 Hall Kaolin with moulds of dissolved bauxite.

65043 Hall Kaolinized syenite.

65044 M| Altered syenite with original texture.

65045 Hall Kaolinized syenite.

65046 Hall Kaolinized syenite.

65047 M| Kaolinized syenite.

65048 Hall Kaolinized syenite, 1 ft. from fresh- Tank Mine.

65049 Hall " " " " " " " ".

65050 Hall " " 3 " " " " "

65051 Ml Kaolinized syenite, original texture.

65052 Hall Kaolinized syenite, showy halloysite.

65053 Hall Soft altered syenite, outer part of boulder of weathering 65028.

65054 Hall Gradational phase between bauxite and clay.

65055 Hall Very coarse kaolinitic bauxite.

65056 Hall Bauxite with iron carbonate.

65057 Ml Fine grained Oolitic bauxite.

65058 Hall Coarse pisolitic bauxite.

65059 Ml Pisolitic bauxite.

65060 Hall Vein of amorphous bauxite.

65061 Hall Coarse pisolitic kaolinitic bauxite.

65062 Hall Sponge and pisolitic texture in same specimen.

65063 Hall Cemented Oolite.

65064 Hall Vein like 65060.

65065 Hall Bauxite with incrusting gibbsite.?

65066 Hall Nodules of bauxite.

65067 Hall Sponge ore.

65068 Hall Surface boulder of sponge bauxite - high grade.

65069 Hall Gradation from sponge to Oolite ore.

65070 Hall Gradation from kaolinitic syenite to sponge bauxite.

65071 Hall Small boulder of detrital bauxite.

65072 Hall Coarse pisolitic bauxite of inferior grade, detrital.?

65073 Hall Bauxite, Oolite, detrital.?

65073a Hall Detrital bauxite with bands of heavy minerals. Lantz Mine.

65074 Hall Very coarse detrital bauxite.

65075 Hall Very ferruginous coarse pisolitic bauxite, detrital.

65076 Hall Detrital bauxite with peculiar granular ferruginous material.

65077 Hall Detrital bauxite, Lantz Mine.

65078 Hall Very coarse kaolinitic pisolitic bauxite, detrital.?

65079 Hall Pisolitic detrital bauxite showing bands of heavy minerals.

65080 Hall Detrital bauxite with coating of iron carbonate.

65081 Hall Unusually dark pisolitic bauxite with iron carbonate.

65082 Hall
to
65104 Hall Oolite iron oxide deposit of overlying Tertiary.

65105 Hall Detrital bauxite pebbles.

65106 Hall Detrital material above bauxite.

65107 Banded clay.

65108 Carl? Potash salts, Alliance, Neb. (mine)

Collection from Flint or Diaspore Clay District
Near Owensville, Mo., May 1919. W.J.MEAD

Hall 65109 Diaspore nodules stained to show diaspore and clay.
65110 Diaspore rock from near surface of deposit showing concretionary.
65111 Surface float of diaspore rock.
65112 Iron stained diaspore rock.
65113 Diaspore clay showing characteristic crazy fractures.
Hall 65114 Cream colored flint clay.
65115 Typical flint clay from Travis mine.
65116 Typical smooth cream colored flint clay.
65117 Good grade diaspore rock.
Hall 65118 Flint clay containing sand grains.
65119 Diaspore clay--large specimen.
65120
65121
65122

Series of four specimens showing development of schist from massive diorite, from Sudbury district, Ont. W.J.MEAD

65123 #1
65124 #2 Specimens in metamorphic collection--anamorphism of basic rocks.
65125 #3
65126 #4

Some Specimens (c. 24-26) to Dr. PRAY, 1970

Collection from Talc District, St. Lawrence Co.,
N. Y., May, 1919.

Hall 65127 Tremolite
M 65128-34 Seven specimens showing alteration of tremolite to talc.
65135 Flint grinding pebble from mill showing percussion marks.
Hall 65136-7 Specimens from nearby zinc mine.

65138 Development of spherules in bauxite, Bauxite, Ark.
65139 Heavy minerals marked from bauxite.
65140 High grade sponge bauxite showing original texture.

Collection from Flint Clay District of Missouri,
Sent by C. R. Schicyer, Dec. 1918, W.J. MEAD
See letter filed under "M"

65141 #1 "Talcum powder" clay 75% Al.
65142 #2 "Ashy clay" Al up to 74%to 76%.
65143 #3 Enriched clay showing distinct oolitic structure.
Several specimens showing stages of enrichment.
Hall 65144 #3
65145 #3
65146 #4 Nodules from residual clay above a flint clay deposit.
65147 #5 Varying types of unaltered flint clay.
65148 #5 One specimen showing slight alteration.
65149 #5
65150 #5
65151 #5
65152 Drag fold, polished, S. Dunn Mine, Crystal Falls, Mich. (Structural Coll.).
Hall 65153 Magnetic concentrates from black sand of upper Kootenay valley, B. C. (W. L. W. glow).

~~MLZ~~ 65154-65157 Series showing alteration of volcanic glass, Siver Cliff, Colorado (metamorphic collection) MEAD, W.J.

Specimens donated to Norris Johnes, Oshkosh, 1970

MLZ 65154-5 Weathering of Volcanic Glass California

MLZ 65156-7 Weathering of Volcanic Glass Germany

Specimens from Japan, 1921.
W. J. MEAD

65158 Serpentine with white network, Kunigami, Chichibu, Province of Musashi.

65159 Hall Serpentine with figures of bamboo leaves, Province of Hitachi.

65160 Hall Piedmontite schist.

65161 Hall White spotted green chlorite amphibolite.

65162 Hall Black spotted gray graphite sericite schist. Last three from same region as 65158 which is a laccolite among them.

65163 Hall Diaspore nodule in agalmatolite derived from an eruptive rock, Mitsuishi, Province of Bizen.

65164 Black mica clay slate with cordierite trillings, contact zone of the Paleozoic with granite, Ashio copper mine.

65165 Hall Japanese giant barleycorn (German: Gerstenkoerner), a pseudomorph of an apparently monoclinic mineral, Tondo in Aoki-mura, near Ueda, Province of Shinano. The more smooth side is marked, showing the upper surface of the body which usually lies parrellel to the stratification.

65166 Hall Silicified spherule in a pearlite. Formation of a crack of contr ction right through the center and subsequent filling up of the hole thus produced. The chalcedony as well as opal casts there formed are in the shape of one volcanic cone with the central crater, attached on the base to another cone with the crater filled with a new outpouring of lava. The specimen is from the opal mine in Hosaka, Province of Iwashiro. Other localities are known in Japan.

65167 Hall Native Arsenic. Called Kompeito on account of its resembalnce to a kind of candy. A crystal concretion formed of grouping of rhombohedral subindividuals. Carries a variable number of horns, which have more or less tendancy to arrange themselves on the end of the diagonal, trigonal and tetragonal axes of symetry of the Cubic system. Akatani, Province of Echizen.

65168 Hall Japenese mineral hailstone, Arare-ishi. See Beitraege zur Mineralogie von Japan, No.4.

Miscellaneous specimens, 1921.

65169 Schist showing fracture and flow cleavage, Ableman.

65170 Graywacke showing cotemperaneous deformation, Caldewood, Tenn.

65171 Hall Material from vug in quartzite, breccia, Ableman, Wis.

65172 Sheared quartzite, Ableman, Wis.

65173 Hall White mineral from breccia, Ableman, Wis.

65174 Hall Pyritiferous black slate, Crystall Falls, Mich.

65175-65181 Hall Cretaceous clay from masses in drift, Red Wing, Minn.

Collection from Butte.

65182 Hall Fresh granite, Anaconda Mine.

65183 Hall Slightly altered granite, Do.

65184 Hall Norite inclusion in granite.

65185 Hall Granite near contact with norite showing basic segrgation.

65186 Hall Fault gouge in blue vein.

65187 Hall Sulphide intrusive granite and norite remnants at contact of granite, Black Exploration.

65188

Collection showing alteration of dike rock and relation to fluorspar.

M.D. Harbaugh, 1924 Crysta Mine, Ky.

65188-65202 In metamorphic lab.

65203 Fluorite schist

70 000 — Wisconsin, Well samples

~~[illegible]~~

86947 (Harvard #)
Lepidolite
Loc: Greenlaw's Quarry, Auburn, Maine

88005 (Harvard #)
Cryophyllite
Loc: Rockport, Mass.

94314 ~~(~~(nat. mus. #)
Polylithonite
Loc: Kangerd Warsuk, Greenland.

LOT NUMBERS:

Lots 1001 to 1027; and 1040 to 1049; used in this catalogue, are recorded in the lot catalogue of the new card system. Originally they were symbolized thus: ◇1001◇ and not written on the specimens but only on the labels. Where such specimens have been recatalogued under the new card system they are symbolized thus: |1001 and the symbol is written on the specimen above the individual specimen number.

◇1001◇ Invertebrate fossils from chert gravels of unknown age.
Collected by Lawrence Martin, August 1916 at summit of, and track up, East Bluff, Devils Lake, Section 24, 11-6E, Sauk Co., Wisconsin.
Identified by W. H. Twenhofel, 1916. Serial numbers 3882-3896

◇1002◇ Invertebrate fossils and rocks of Silurian age.
Collected by W. H. Twenhofel at Gotland, Sweden, summer 1914.
Donated, in part by W. H. Twenhofel, in part by Yale University Museum.
Identified by W. H. Twenhofel. Serial numbers 3897-3910

◇1003◇ Invertebrate fossils of Tertiary age.
Collected and donated by Roy A. Reynolds, spring 1918. From Lower Peachtree Anticline, in Alabama. Serial numbers 3911-3929

◇1004◇ Belemnites specimen of Jurassic age. From England.
Donated by Mrs. A. J. Edmonds. Serial number 3930

◇1005◇ Invertibrate fossils of Pennsylvanian and Permian age.
Collected and donated by W. H. Twenhofel, 1918. From Southern Kansas and Northern Oklahoma. Serial numbers 3931-3946

◇1006◇ Receptaculites oweni of Middle Ordovician age--Decorah? shale.
Collected and donated by S. Weidman, 1919. From near Ellsworth, Wisconsin. Serial number 3947

1007 Collenia kona Twenhofel of Huronian age--Kona dolomite. COTYPES.
Collected by W. H. Twenhofel, 1918, at Marquette, Mich. Serial No. 3948.

1008 Invertebrate fossils of Upper Cambrian--Eau Claire formation
Collected by W. O. Hotchkiss, 1919, at Colfax, Dunn Co., Wis.
Serial Number. 3949.

1009 Fossils of Upper Cambrian age--Madison Sandstone.
Collected by F. T. Thwaites, S. Weidman, and M. G. Mehl, 1915 at
Paunacks quarry, Madison, Wisconsin Serial numbers3950--4052

1010 Fossils of Upper Cambrian age--Black Earth Dolomite.
Collected by F. T. Thwaites, S. Weidman, and M. G. Mehl, 1915 at
1¼ miles west of Black Earth, Wis. Serial numbers4053-4120

1011 Fossils of Upper Cambrian Age--Mendota dolomite (upper layers)
Collected by F. T. Thwaites, S. Weidman, and M. G. Mehl, 1915 at
Maple Bluff, Madison, Wis. Serial numbers 4121-4130

1012 Fossils of Upper Cambrian Age--Devils Lake Sandstone
Collected by M. G. Mehl, 1915? from Woods or Cahoon quarry,
southwest of Baraboo, Wis Serial numbers 4131-4135

1013 Fossils of Upper Cambrian age--Mendota Dolomite
Collected by M. G. Mehl, 1915? from Woods or Cahoons quarry,
southwest of Baraboo, Wis. Serial numbers 4136-4140

1014 Fossils of Upper Cambrian age--"Devils Lake Sandstone".
Collected by M. G. Mehl, 1915? from the Alps Farm, north of
Devils Lake, Wis. Serial numbers 4141-4161

1015 Fossils of Upper Cambrian age--Mendota Dolomite
Collected by M. G. Mehl, 1915? from near "toadstool", Maple Bluff,
Madison, Wis. Serial numbers 4162-4183

1016 Fossils from gravels of Cretaceous??age--Windrow gravels.
Collected by W. H. Twenhofel and F. T. Thwaites, 1917 at
Summit, Monroe Co., Wis. Serial numbers 4184-4200

1017 Fossils of Jurassic age.
Collected by W. H. Twenhofel, 1921 at Pryor Mts., West Foothills,
Carbon Co., Montana. Serial numbers 4204-4205

1018 Invertebrate fossils of Pennsylvanian age.
Collected by W. H. Twenhofel, near Toronto, Kansas. Serial No. 4206-4218

1019 Corals of Silurian age--Niagaran
Door Co., Wis. Donor: Grant Fitch Serial numbers 4219-4223

1020 Ostracods of Paleozoic age From various localities
Donor: U. S. N. M.- by Bassler Serial numbers 4224-4289
This series partially recatalogued)

1021 Fossil plants etc. from coal shales of Cretaceous age.
Nordegg and Saunders Creek Area, Alberta, Canada.
Donor: R, T. Rutherford. Serial numbers 4290-4297

1022 Triplicia anticostiensis of Silurian age-Jupiter River (base)
Brook 1 mile west of Jupiter River, Anticosti Island.
Donor: W. H. Twenhofel, 1919 Serial number 4298

1023 Fossils of Lower Cretaceous age--Comanchean
Fredricksburg and Ft. Stockton, Texas.
Donor: H. J. Weeks, 1924 Serial numbers 4299-4311

1024 Belemnites densus of Jurassic age--Sundance formation, Montana.
Donor: R. N. Bramlette, 1924 Serial number4312

1025 Atikohama lawsoni of Huronian age. Steep Rock Lake, Ontario.
Donor: C. K. Nixon, 1921 Serial number 4313

1026 Fossils of Devonian age--Milwaukee formation, Milwaukee, Wis.
Donor: G. O. Raasch, 1924 Serial numbers 4314-4377

1027 Fossils of Upper Cambrian age--Trempealeau Formation, Southwestern Wis.
Donor: G. O. Raasch, 1925 serial numbers 4378-4431

1040 Minerals for crystallagraphic and gem study collections.
Purchased from Wards Natural Science Estab. Selected by Dr. R.C.Emmons
Received Jan. 1930 40 specimens Nos. 61496-61530

1041 Economic series of specimens to show occurrence of a four-foot vein of chromite ore in a peridotite-pyroxenite dike of post-Cretaceous age cutting pre-Cambrian Granite.
From Bear Tooth Mts., near Absarokee, Montana
Received by Dr. C.K. Leith, from M.H. Hawkins, August, 1929
40 specimens Nos. 61531.1-61531.10

1042 Economic series of English Iron Ores.
Received from Geological Survey of Great Britian, July 6,1929
22 specimens Nos. 61532-61551

1043 Economic series of British Indian pre-Cambrian Iron Ores
From Province of Bihar and Orissa
Obtained by Dr.C.K. Leith from Tata Iron and Steel Co. Ltd., of Jamshedpur, India.
Study material, for Dr. Leith
Received March 1930 13 specimens Nos. 61552-62

1044 Economic specimens from Manchuria
Collected by Dr. Leith in Nov. 1929
Study material for Dr. Leith
Received March 1930 4 specimens Nos. 61563-5

1045 Rare minerals from the tin district of Bolivia
Donated by J.S.Turneaure
Received March 15, 1930
12 specimens Nos. 61566-74 Value $67.00

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Collected by Dr. C.K. Leith 1929
Received March 17, 1930 1 specimen No. 61575 Value .55

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Collected by W.J. Mead
Received March 1930 2 specimens Nos. 61577-8 Value $20.00

1049 Specimens of copper-zinc ore from Northern Manitoba
Secured by R.C.Emmons
Received April 1. 1930 14 specimens Nos. 61579-84 Value $5.00

University Rock Collection.

Order of Arrangement.

Red Number.	Class.
1	Granite.
2	Alkali-granite.
3	Nevadite (granite porphyry)
4	Alkali-granite porphyry.
5	Pegmatite-aplite.
6	Alkali-aplite.
7	Rhyolite.
8	Alkali rhyolite.
9	Rhyolitic obsidian and pumice.
10	Pantelleritic obsidian and pumice.
11	Syenite.
12	Alkali syenite.
13	Nepheline syenite.
14	Syenite porphyry.
15	Alkali-syenite porphyry.
16	Nepheline porphyry.
17	Syenite-aplite&minette.
18	Bostonite&natronminette.
19	Tinguaite.
20	Trachyte.
21	Alkali-trachyte.
22	Phonolite.
23	Trachytic obsidian and pumice.

University Rock Collection, #2.

24	Phonolitic obsidian and pumice.
25	Tonalite.
26	Quartz monzonite.
27	Tonalite-porphyry.
28	Quartz-monzonite porphyry.
29	Plagiaplite.
30	Quartz-monzonite-aplite.
31	Dacite.
32	Quartz latite.
33	Dacitic pitchstone and pumice.
34	Diorite.
35	Monzonite.
36	Nepheline monzonite.
37	Esterellite.
38	Monzonite porphyry.
39	Nepheline monzonite porphyry.
40	Malchite - Kersantite.
41	Monzonite-aplite.
42	Allochetite.
43	Andesite.
44	Latite.
45	Latite phonolite.
46	Andesitic perlite and pumice.
47	Latitic perlite and pumice.
48	~~Perlite.~~ Latite-phonolite, perlite and pumice
49	Gabbro.

University Rock Collection, #3.

50	Essexite.
51	Theralite.
52	Gabbro-porphyry.
53	Essexite porphyry.
54	Gabbro-aplite & beerbachite.
55	Essexite-aplite & camptonite.
56	Fourchite.
57	Auganite.
58	Trachydolerite.
59	Tephrite.
60	Doleritic trachylyte and scoria.
61	Tephritic trachylyte and scoria.
62	Olivine-gabbro.
63	Olivine-essexite.
64	Olivine-theralite.
65	Olivine-gabbro-porphyry.
66	Olivine-essexite porphyry
67	Garewaite.
68	Olivine essexite aplite.
69	Basalt.
69a	Diabase
70	Olivine-trachydolerite.
71	Basanite.
72	Baslitic trachylyte and scoria.
73	Pyroxenite.
74	Alkali-pyroxenite.
75	Augitite (part?)

University Rock Collection, #4.

76 Augitite.

77 Peridotite.

78 Alkali-peridotite.

79 Picrite.

80 Limburgite.

KATAMORPHIC ROCKS.

A. Derived from igneous rocks by hydration, weathering, etc.

81. Serpentine, etc.

82. Iron oxide.

83. Bauxite.

84. Laterite.

85. Weathered rocks.

86. Residual clay.

B. Derived from igneous rocks by hydro-thermal alteration.

87. Sericitized rocks.

88. Other altered rocks.

C. Derived from sedimentary rocks by oxidation, weathering, etc.

89. Residual gravels (from groups 102, 105, 108).

90. Residual arkose, etc. (111, 114).

91. Residual sand (117, 126).

92. Residual clay from shale (123, 129).

93. Residual iron oxide, oxidized iron formation (132, 133, 135, 136).

94. Residual clay from limestone (120, 136, 139, 144).

95. Residual or pebble phosphate (147).

D. Derived from sedimentary rocks by hydro-thermal alterations.

96.

E. Derived from previously anamorphosed rocks by hydration, weathering, etc.

97. Serpentinized rocks, ophicalcite, etc.

98. Weathered rock, and residual clay.

F. Derived from previously anamorphosed rocks by hydro-thermal alteration.

99.

SEDIMENTARY ROCKS.

Fragmental or Clastic Rocks.

101. Rubble, (talus, fault, volcanic.)
102. Breccia, (talus, fault, volcanic.)
103. Meta-breccia (talus, fault, volcanic.)
104. Gravel, till.
105. Conglomerate, tillite.
106. Conglomeratic quartzite.
107. Grit (unconsolidated).
108. Grit (consolidated), volcanic grit.
109. Indurated grit and tuff.
113. Femic sand.
114. Wacke (femic sandstone).
115. Greenwacke.
116. Feldspathic sand.
117. Arkose (feldspathic sandstone).
118. Graywacke.
119. Sand.
120. Sandstone.
121. Quartzite.
110. Lime sand.
111. Fragmental limestone and dolomite.
123. Marble.
122. Volcanic ash, fault gouge, etc.
123. Volcanic tuff, etc.
124. Indurated tuff, etc.
125. Quartz mud.
126. Novaculite and very fine sandstone.

Sedimentary Rocks, Cont.

127, Very fine quartzite.

128. Mud, clay.

129. Shale.

130. ~~Meta~~-shale. Indurated shale

131. Ex-solutional rocks. Bog ore

132. Sedimentary iron oxide.

133. Hematite.

134. Glauconite and greenalite sand.

135. Glauconite and greenalite rock.

136. Taconite, etc.

137. Infusorial earth.

138. Siliceous sinter.

139. Chert and flint.

140. Peat.

141. Lignite.

142. Bituminous coal.

143. Lime mud, marl.

144. Limestone, dolomite, and iron carbonate formation.

145. Marble.

146. Guano, etc.

147. Phosphate rock.

148. Apatite rock.

149. Gypsum, anhydrite.

150. Rock salt, etc.

ANAMORPHIC ROCKS.

A. Derived from sedimentary rocks by regional anamorphism.

151. Conglomerate gneiss (from 103, 106).

152. Greenwacke gneiss or schist, mica schist (109, 112), except from tuffs (see 155).

153. Graywacke schist, hornblende schist, chlorite schist, etc. (115).

154. Quartz schist (mica schist), (118, 127).

155. Tuffaceous schist (109, 124).

156. Slate, talc schist, hornblende schist, chlorite schist, etc. (130).

157. Amphibole magnetite rocks, itabarite, etc. (133, 134, 135, 136).

158. Anthracite, graphite (142).

159. Marble and calcium-magnesium carbonate, and silicate rocks (121, 145).

160. Apatite rock (148).

B. Derived from sedimentary rocks by contact ~~me~~ anamorphism, (Sub-groups according to nature of intruding rock).

161. Meta-conglomerate (102, 105, 108).

162. Meta-sandstone (111, 114, 117, 126).

163. Aluminum silicate rocks (123, 129).

164. Magnetite and amphibole magnetite rocks (133, 134, 135, 136).

165. Anthracite, graphite, natural coke (142).

166. Marble and calcium-magnesium carbonate and silicate rocks (120, 121, 144, 145).

167. Other sediments altered at igneous contacts.

C. Derived from igneous rocks by regional metamorphism. (Sub-groups according to variety of igneous rock).

168. Gneiss.

169. Mica schist.

170. Hornblende and other schists.

Anamorphic Rocks, Cont.

D. Derived from igneous rocks by contact metamorphism.
(Sub-groups according to nature of intruded and intruding rocks).

171.

E. Derived from unknown rocks by regional metamorphism.

172. Gneiss.

173. Mica schist.

174. Hornblende schist.

175. Talc schist.

176. Chlorite schist.

177. Other schists, etc.

F. Derived from unknown rocks by contact metamorphism.

178.

G. Rocks subjected to both regional and contact anamorphism.

179.

H. Derived from previously katamorphosed rocks by regional metamorphism.

180. Jasper, magnetite, hard iron ores, (82, 93).

181. Corundum, emery (83).

182. Derived from other katamorphic rocks.

I. Derived from previously katamorphosed rocks by contact metamorphism.

183. Jasper, etc.

ABBREVIATIONS INDICATING DISPOSITION OF SPECIMENS.

B Boxed, number following

C Case, number following (stored specimens)

Cr, Collection of crystals (not shown in special list

D Drawer, number following, indicates location of stored specimens

E Collection of economic minerals, letter following indicates special collection

- a - aluminum
- co cobalt and nickel
- cu copper
- cl coals
- g gold
- ¢ iron
- l- lead and zinc
- m manganese
- n non-metallic, general
- r rare metals
- s silver and silver lead

El Economic Labaratory collection

D Display collection of minerals. Number following indicates classification in table. Letter not given in special list of this collection 19001-19600.

G Collection of gem and ornamental minerals (not shown in special list)

M University mineral collection (not including display minerals). Letter not given in special list 19601-20000, 20501-

Numbers following indicate classification in table.

Me Metamorphic collection.

Ml " Labaratory Collection

M Missing.

P Collection of pseudomorphs (not shown in special list).

S Thin sections (not given where an entire collection is sectioned)

Se Sedimentary structure collection

T Collection showing textures of igneous rocks (not shown in special list)

V University rock collection. Number following indicates classification in table.

W Collection of Wisconsin rocks.

Wm Collection of Wisconsin minerals and ores.