From the above data it would seem that in the analysis the CaO determination is probably slightly too high and the MgO value is correspondingly too low.

# DIRECTORY OF AMERICAN AND CANADIAN MINERAL COLLECTIONS

Samuel G. Gordon, Academy of Natural Sciences of Philadelphia

At the suggestion of Drs. Hugh S. Spence and Walter F. Hunt, the desirability of a directory of American and Canadian mineral collections was favorably considered by the Council and the writer was asked to assemble the necessary data. A statement concerning the proposed survey and the nature of the directory appeared in the American Mineralogist, Rocks and Minerals, the Journal of Geology, Economic Geology, the Engineering and Mining Journal, Science, and Nature: to the editors of those journals thanks are here given. As the response to requests for information regarding mineral collections was disappointingly small, a questionnaire was mailed to institutions listed by Merrill, 1 and Rea2 as having mineral collections, as well as to many others in the more extensive lists of Wallace3 and Minerva.4 The privately printed paper by the late Frederick A. Canfield<sup>5</sup> on "The Final Disposition of some American Mineral Collections" was also useful, as was the familiar directory of Cassino.6 Replies were received from about half of the institutions and private collectors to whom the questionnaire was sent.

The present directory, then, is based on first hand information from about half of the collections listed; other institutions are included in the list since Merrill and Rea mentioned them as having mineral collections. The listing of private collections, however, is based almost entirely on first hand information. Under the cir-

<sup>2</sup> Rea, Paul Marshall, A Directory of American Museums: Bull. Buffalo Soc. Nat. Sciences, X (1) 1910.

<sup>4</sup> Minerva: Jahrbuch der Gelehrten Welt (Berlin and Leipzig).

<sup>&</sup>lt;sup>1</sup> Merrill, F. J. H., Directory of Natural History Museums in the United States and Canada: *Univ. N. Y. State Museum*, Report 56 (4), 1903 (Bulletin 62).

<sup>&</sup>lt;sup>3</sup> Wallace, Beatrice L., Directory of Museums: Museum Work, VIII, (5) 129–155, 1926.

<sup>&</sup>lt;sup>5</sup> Canfield, Frederick A., The final disposition of some American mineral collections, 1923.

<sup>&</sup>lt;sup>6</sup> Cassino, Samuel E., The Naturalists Directory. Salem, Mass.

cumstances, it is realized that the directory is not complete, particularly with respect to private collections; but certainly the more important and active collections have been included. Visitors to mining districts will usually find small private collections in the hands of miners, in mine offices, assay offices, in hotels and pool rooms. We will be grateful for corrections and information regarding omissions.

## ALABAMA

AUBURN ALABAMA POLYTECHNIC INSTITUTE.

Collection of 1000 specimens.

SPRING HILL SPRING HILL COLLEGE.

 $\boldsymbol{A}$  small general collection of about 500 specimens which may be seen upon request.

TALLADEGA COLLEGE.

University Alabama Museum of Natural History, Inc., Dr. Walter B. Jones, Director.

A general collection of about 2700 specimens may be seen in Smith Hall from 8 a.m. to 10 p.m. daily and Sunday. An 800 pound mass of celestite crystals, and a 400 pound mass from Magnet Cove containing eudialyte and other rare minerals are prized exhibits. The museum has over 10,000 duplicates. Charles Mohr of Mobile, Alabama, presented his collections of minerals and fossils to the University. Houses the Alabama Geological Survey collections and the Scohwalter collection of minerals and fossils.

#### ARIZONA

HOLBROOK PETRIFIED FOREST NATIONAL MONUMENT MU-

SEUM.

OATMAN FRANK WARNING, P. O. Box 93.

A collection of about 1500 local minerals, ores, and rocks.

Phoenix Arthur L. Flagg, P. O. Box 2246.

A general collection of 5000 specimens (now in storage).

THE ARIZONA MUSEUM.

Tucson

University of Arizona. College of Mines and Engineering, and Arizona Bureau of Mines. Prof. G. M. Butler, Dean and Director.

More than 2600 fine mineral specimens are on display in the Mineralogy Museum, which contains also Dr. G. M. Butler's private collection of cut gems. The collections are especially rich in Arizona minerals. The reference series numbers approximately 4600 specimens, while the working collections include 1000 crystals, and more than 20,000 minerals and rocks.

#### ARKANSAS

CONWAY HENDRIX COLLEGE, George H. Burr Museum of Natural History.

A small teaching collection of 800 minerals.

FAYETTEVILLE UNIVERSITY OF ARKANSAS MUSEUM. Dr. Albert W. Giles, Custodian.

The museum, on the fourth floor of the main building, is open daily except Sundays, from 8 a.m. to 5 p.m. The collections, numbering over 6,000 specimens are especially rich in Arkansas minerals, particularly from nearby Magnet Cove, Hot Springs, and Crystal Mountain.

#### CALIFORNIA

BARSTOW C. E. WILLIAMS.

A general collection, including fine silver sulfides from Sonora, Mexico.

Berkeley John Melhase, Geologist, 675 Vincente Avenue.

A large collection comprising (a) 1000 showy crystal groups, rich in western minerals and Death Valley borates, (b) a rather complete "species" series of small specimens, (c) a crystal collection, including twin crystals and pseudomorphs.

## University of California.

Only 1300 mineral specimens and 120 crystals from the extensive teaching collections are exhibited in the Department of Geological Sciences in Bacon Hall. Many California minerals are included in the collection, particularly from the nearby glaucophane schists. They may be seen weekdays from 8 A.M. to 5 P.M.

UNIVERSITY OF CALIFORNIA, COLLEGE OF MINING: Hearst Memorial Mining Building.

Contains the private collection of Frank H. Probert, numbering 2500 specimens.

CLAREMONT J. D. LAUDERMILK.

POMONA COLLEGE.

A general and local collection numbering 2000 specimens. A. O. Woodford, custodian. Open daily 9 A.M. to 4 P.M.

COACHELLA LELAND H. DYKES, Union High School.

LAWS ROBERT SYMONS, Box 118.

Los Angeles California State Exposition Building. Exposition Park.

The Exposition Building, open daily from 10 A.M. to 4 P.M. and on Sundays and holidays from 2 P.M. to 5 P.M., contains an exhibit of California minerals and gems, as part of the exposition of the resources and industries of the state.

HIGH SCHOOL, SCIENCE AND ART MUSEUM. Los Angeles Museum, Exposition Park.

The general collection numbers about 10,000 specimens. Mr. H. R. Hill is curator. The museum is open daily from 10 A.M. to 4 P.M., and on Sundays and Holidays from 2 P.M. to 5 P.M.

MOLCALNO CHAMPION SILLIMANITE, INC.

Collection of minerals in the mine office (andalusite, dumortierite, etc.).

C. D. WOODHOUSE, General Manager: Champion Sillimanite, Inc.

A general collection of 2000 specimens.

MONROVIA NORMAN E. SMITH, 514 So. Ivy Avenue.
A collection of 2000 small specimens.

Union High School.

OAKLAND WILLIAM C. DAY, 3943 Magee Avenue.

Amateur lapidary and gem collector.

OAKLAND PUBLIC MUSEUM.

Joe Russell, 4123 Manila Avenue.

Choice collection of Bisbee copper minerals.

PACIFIC GROVE PACIFIC GROVE MUSEUM ASSOCIATION.

PALO ALTO LELAND STANFORD JUNIOR UNIVERSITY.
R. M. WILKE.

PASADENA CALIFORNIA INSTITUTE OF TECHNOLOGY, West Bridge Building. René Engel, Custodian.

A collection of several thousand specimens including that of the older Throop Polytechnic Institute, which contained the John Dickinson (of Forestville, Conn.) collection, rich in Branchville, Conn., minerals.

PASADENA JUNIOR COLLEGE.

A general collection of 5000 specimens, rich in minerals of the Pacific Southwest. Edwin F. Van Amringe, Curator.

PETALUMA M. VONSEN.

A general collection of 2200 specimens. Destined for the California Academy of Sciences.

RIVERSIDE E. J. BRYAN, 7th and Franklin Street.
FRED. PFAFF, 9th and Riverside St.
MUNICIPAL MUSEUM.

SACRAMENTO CALIFORNIA MUSEUM ASSOCIATION.

SAN DIEGO NATURAL HISTORY MUSEUM (San Diego Society of Natural History), Balboa Park.

Two thousand specimens are in the Museum, of which J. E. Morrison is curator. Although the collection is a general one, some local semi-precious gems, particularly from nearby Pala are well represented. The museum is open every-day from 9 A.M. to 5 P.M.

SAN FRANCISCO CALIFORNIA ACADEMY OF SCIENCES.

A general collection of several thousand specimens. Mr. Vonsen writes that his collection is destined for the Academy.

DIVISION OF MINES, Formerly California State Mining Bureau. Ferry Building. Custodian: Walter W. Bradley, State Mineralogist.

Over 18,000 specimens, principally from California. Crystallized gold is a feature of the display, which is open daily, except Sundays and Holidays, from 9 A.M. to 5 P.M., and Saturdays from 9 A.M. to 12 M.

H. C. FORNEY, Mining Engineer. 665 Pine Street.

Small general collection.

MEMORIAL MUSEUM. Golden Gate Park.

Stated to contain the Max Braverman (San Francisco) Collection of California minerals.

ERNEST SCHERNIKOW. 2240 Hyde Street.

Collection of small specimens mounted for the microscope.

C. N. Schuette, Mining Engineer. 306 Call Building.

Specializes in quicksilver ores and minerals.

SANTA BARBARA MUSEUM OF NATURAL HISTORY.

SANTA CLARA UNIVERSITY OF SANTA CLARA MUSEUM.

THERMAL JOHN W. HILTON, Avenue 66, Highway 99. Specializes in agate and quartz.

University (Los Angeles) University of Southern Cali-

UPLAND M. P. YAECKEL, R.F.D. No. 1.

A general collection, specializing in the gem minerals of the California pegmatites.

WILMINGTON W. S. LIVINGSTON (Coast Fishing Company).
A small collection.

YOSEMITE VOSEMITE NATIONAL PARK MUSEUM.

### COLORADO

BOULDER

J. Henderson.

R. D. GEORGE.

University of Colorado.

The Simon Guggenheim systematic collection of minerals is displayed in the Museum open daily (except Sundays) from 8 A.M. to 5 P.M. Extensive collections are also housed in the Department of Geology (Hale Building).

COALMONT F. DE LYNDON.

A collection of cut and polished rocks showing geologic structures, and of minerals and ores.

COLORADO SPRINGS

LAZARD CAHN.

COLORADO COLLEGE MUSEUM.

CREEDE

BEN A. BIRDSEY.

ALLAN CAPLAN, c/o Ben A. Birdsey.

PARSON POOL HALL.

DENVER

COLORADO MUSEUM OF NATURAL HISTORY, City

More than 5500 specimens are exhibited, including spectacular crystallized gold, in the basement floor of the main section of the museum. Mr. Frank Howland is curator. The museum is open weekdays from 9 A.M. to sunset, and on Sundays from 12:30 P.M. to sunset.

COLORADO SCIENTIFIC SOCIETY. COLORADO STATE MUSEUM.

The John F. Campion collection.

ARTHUR G. POHNDORF, 400-17th Street. STATE BUREAU OF MINES, in the Capitol.

Minerals and ores of the State. Contains the John Elsner Collection.

University of Denver.

FORT COLLINS COLORADO AGRICULTURAL COLLEGE.

The mineral collections, which include the private collection of Prof. R. G. Coffin (Custodian) number 8000 specimens, may be seen daily in the chemistry building.

GOLDEN

COLORADO SCHOOL OF MINES. J. Harlan Johnson, Custodian.

The collections, especially rich in Colorado minerals (Clear Creek, Gilpin County, Georgetown, Pikes Peak, and Table Mountain) number 8000 specimens and are housed in Guggenheim Hall. They may be seen daily except Sunday.

J. Harlan Johnson.

A general and local collection of 2000 specimens.

GREELEY COLORADO STATE TEACHERS COLLEGE.

PUEBLO EDWIN OVER, JR. 2528 Pine Street.

SPICER J. C. McNamara.

Collection of ores.

#### CONNECTICUT

Branford A. E. Hammer, M. I. F. Co.

BRIDGEPORT BARNUM INSTITUTE OF SCIENCE AND HISTORY.

DANBURY WILBUR J. ELWELL, Route 4, Box 20.

A general and local collection of over 1000 specimens. Not open to the general public.

GREENWICH BRUCE MUSEUM.

HARTFORD TRINITY COLLEGE. Museum of Natural History.

Stated to have the John H. Caswell collection.

Wadsworth Athenium. Mrs. Florence Paul Berger, General Curator.

The museum, open daily from 10 A.M. to 4 P.M., and Sundays from 2 P.M. to 5 P.M. exhibits the Henry D. Miller (Plainville, Conn.) collections of 3492 specimens in the basement.

MIDDLETOWN WESLEYAN UNIVERSITY. Dr. W. G. Foye, custodian.

The collections are rich in minerals from the Connecticut pegmatites (Haddam, East Haddam, Portland, and Middletown), including many collected by Prof. John Johnston. The more than 17,000 specimens include the Franckfort collection.

NEW BRITAIN NEW BRITAIN INSTITUTE MUSEUM.

NEW HAVEN FREDERICK S. EATON, 85 Laurel Road.

A collection of several hundred Connecticut minerals.

H. M. Lehman, 1705 Springfield Avenue. Yale University, Peabody Museum of Natural History.

Dr. William E. Ford, Curator. The Yale collections were begun in 1804 by Prof. Benjamin Silliman, and were later developed by Professors James D. Dana, Edward S. Dana, and Samuel Penfield. The nucleus of the collection was the George Gibbs cabinet. Later acquisitions included the collections of Hubert A. Newton, Baron Lederer, E. R. Beadle, Frederick B. Leonard, and the Blum collection of pseudomorphs. Another comprehensive collection, that of George J. Brush, is housed in the Department of Mineralogy in the Sheffield Scientific School. The meteorite collection is particularly noteworthy.

PORTLAND

FRED. E. STRICKLAND.

STAMFORD

SAMUEL C. BROWN.

STORRS

CONNECTICUT AGRICULTURAL COLLEGE.

WALLINGFORD

THE CHOATE SCHOOL.

The collection of Ray Wentworth Tobey is exhibited in part.

#### **DELAWARE**

NEWARK

University of Delaware. Fred. J. Hilbiber Col-

lection.

WILMINGTON

IRENEÉ, DUPONT Rising Sun Lane.

Dr. Otto Runge, 1315 Delaware Avenue. Society of Natural History of Delaware.

#### DISTRICT OF COLUMBIA

WASHINGTON BUREAU OF MINES.

Mr. R. M. Santmyers is in charge of an exhibit of economic ores and some of their products, and of building materials of mineral origin.

CATHOLIC UNIVERSITY OF AMERICA.

COLUMBIAN COLLEGE (of GEORGE WASHINGTON

UNIVERSITY).

GEORGETOWN UNIVERSITY, Coleman Museum.

HOWARD UNIVERSITY MUSEUM.

MR. ELRA C. PALMER, 5608-14th Street.

A variety of minerals, including flint, jasper, chalcedony, and other types of pebbles from the bed of the Potomac.

SMITHSONIAN INSTITUTION, United States National Museum. Dr. W. F. Foshag, Curator of Mineralogy and Petrology.

Exhibited are (1) a series of 2500 specimens representing 750 species, (2) about 500 large and striking specimens, (3) the Isaac Lea collection of 5000 cut gems and carved stones, (4) the collection, in part, of Bolivian minerals loaned by Jack Hyland. In 1926 the Museum received the famous collection of the late Colonel Washington A. Roebling with an endowment, from his son Ferdinand. The Roebling collection was noteworthy because of the extraordinary number of species and varieties included in it, as well as for a number of particularly choice specimens. It was followed by the bequest, with an endowment, of the collection of the late Frederick A. Canfield, which included the cabinet of his father, Frederick Canfield (who probably inherited the earlier collection of his uncle Mahlon Dickerson). This collection contained many extraordinary specimens from Franklin, New Jersey, and Bolivia. Other collections received by the Museum were those of John T. Abert, William S. Disbrow, in part (New Jersey zeolites),

George W. Hawes, Joseph Leidy (in part), Charles U. Shepard (including his meteorites), and Walter R. Johnson (who had purchased some minerals from the collection of Henry Stephen Fox). The National Museum is the depository of the United States Geological Survey. Exhibited in another hall is the remarkable series of meteorites brought together under the curatorship of the late George P. Merrill. The mineral collection of James Smithson, founder of the Institution, was destroyed by fire, before the present museum was organized.

#### FLORIDA

DE LAND JOHN B. STETSON UNIVERSITY.

GAINESVILLE UNIVERSITY OF FLORIDA.

St. Augustine The Crichlow Museum of Natural History.

TALLAHASSEE FLORIDA GEOLOGICAL SURVEY.

A general collection is exhibited on weekdays in the Martin building.

WINTER PARK ROLLINS COLLEGE MUSEUM

**GEORGIA** 

ATHENS UNIVERSITY OF GEORGIA.

ATLANTA ATLANTA UNIVERSITY.

GEORGIA STATE MUSEUM. (Geological Survey of

Georgia.

BOWDOIN BOWDOIN (NORMAL AND INDUSTRIAL) COLLEGE.

MACON MERCER UNIVERSITY.

Small collection of meteorites.

Oxford Emory University Academy Museum.

## HAWAII

HONOLULU BERNICE P. BISHOP MUSEUM, Hawaiian Hall.

A collection of minerals and rocks of Hawaii and other Pacific Islands, numbering 1100 specimens. Open weekdays 10 A.M. to 4 P.M., and Sundays 2 P.M. to 5 P.M.

UNIVERSITY OF HAWAII. Department of Geology.

KILAUEA HAWAHAN VOLCANO OBSERVATORY, Kilauea Na-

tional Park Museum.

#### IDAHO

Moscow University of Idaho, Department of Geology.

A general collection, for teaching purposes, in custody of Dr. F. B. Laney. It may be seen daily from 8 A.M. to 5 P.M. except Saturdays and Sundays. Unusual specimens of cerussite, covellite, and zeolites (from Challis, Idaho) are in the collection.

## ILLINOIS

ABINGTON HEDDING COLLEGE.

BLOOMINGTON ILLINOIS WESLEYAN UNIVERSITY POWELL MU-

SEUM.

CARLINVILLE BLACKBURN COLLEGE.

CARTHAGE COLLEGE.

CHICAGO CHICAGO ACADEMY OF SCIENCES.

FIELD MUSEUM OF NATURAL HISTORY. Oliver C.

Farrington, Curator.

The principal exhibits include the H. N. Higinbotham collection of gems and gem minerals, the Chas. M. Higginson Collection (3240 specimens, 400 species) presented by Mrs. Higginson in 1928, rich in New England minerals, the William F. Chalmers crystal collection, and the Ward-Coonley collection of meteorites.

UNIVERSITY OF CHICAGO WALKER MUSEUM. Dr. E. S. Bastin, Custodian.

The collections, now numbering 3000 specimens, and exhibited in Rosenwald Hall, contain the Henry A. Ward Collection of the Chicago World's Fair of 1893 and the cabinet of W. C. E. Seeboeck. Many fine calcites are included. The collection is open to visitors on weekdays.

DECATUR THE JAMES MILLIKAN UNIVERSITY.

Two cases of 500 minerals and rocks are exhibited on the second floor of Liberal Arts Hall.

ELGIN SCIENTIFIC SOCIETY.

EVANSTON NORTHWESTERN UNIVERSITY.

GALESBURG E. MITCHELL GUNNELL, 595 East Losey Street.

A general collection of 1500 attractive specimens.

KNOX COLLEGE.

Hanover T. D. Shipton.

A general collection of 2000 specimens.

LAKE FOREST LAKE FOREST COLLEGE MUSEUM.

LINCOLN COLLEGE (of JAMES MILLIKAN UNIVER-

SITY).

Naperville Northwestern College.

PEORIA WILLIAM C. McKINLEY.

ROCK ISLAND AUGUSTANA COLLEGE.

Springfield State Museum. Centennial Building. A. S. Coggeshall, Curator.

A general collection of 20,000 specimens. Open weekdays 8:30 to 5; Saturdays 8:30 to 3; Sundays 2 to 5  $_{\hbox{P.M.}}$ 

STERLING WHITESIDE COUNTY HISTORICAL SOCIETY.

URBANA UNIVERSITY OF ILLINOIS. Museum of Natural History.

A general collection of 3000 specimens.

WHEATON WHEATON COLLEGE.

## INDIANA

BLOOMINGTON INDIANA UNIVERSITY MUSEUM.

Brazil R. T. Phillips, 439 Leavitt Street.

Brookville Society of Natural History.

CRAWFORDSVILLE WABASH COLLEGE, HOVEY MUSEUM.

Franklin College of Indiana.

Mr. Charles A. Deppe is custodian of a collection of minerals in the main building.

Hanover College.

Indianapolis Butler College

CHILDREN'S MUSEUM, 1150 North Meridian Street.

Two thousand specimens are exhibited in this children's museum. Open daily, and on Sunday's from 2 to 5 p.m. Mr. Arthur B. Carr is director.

JOHN EALY, North Jefferson Avenue. INDIANA STATE MUSEUM, State House basement.

Mr. Verne Patty is Custodian of the state collections, which may be seen daily, except holidays.

LAFAYETTE PURDUE UNIVERSITY.

NEWCASTLE HENRY COUNTY HISTORICAL SOCIETY MUSEUM.

NEW HARMONY WORKINGMEN'S INSTITUTE.

Some minerals and rocks of Maclure, Say, Lesueur, and Owen may be seen in the Library daily from  $8\ \text{A.M.}$  to  $8\ \text{P.M.}$  and on Sundays from  $3\ \text{P.M.}$  to  $8\ \text{P.M.}$ 

NOTRE DAME NOTRE DAME UNIVERSITY.

RICHMOND EARLHAM COLLEGE.

TERRE HAUTE ROSE POLYTECHNIC INSTITUTE.

The Second Collection of George Frederick Kunz (1879).

UPLAND TAYLOR UNIVERSITY, WALKER MUSEUM.

## IOWA

CEDAR FALLS IOWA STATE TEACHERS COLLEGE.

A general collection of several thousand specimens is in the library building; Mr. E. J. Cable is Custodian.

CEDAR RAPIDS COE COLLEGE.

About 1000 specimens are contained in Science Hall, Mr. S. W. Stookey, Custodian.

COLLEGE SPRINGS AMITY COLLEGE.

DAVENPORT ACADEMY OF SCIENCE.

DES MOINES RAYMOND SEEBURGER.

DUBUQUE HERMANN MUSEUM OF NATURAL HISTORY.

FAYETTE UPPER IOWA UNIVERSITY.

GRINNELL COLLEGE; PARKER MUSEUM OF NAT-

URAL HISTORY, Mr. H. W. Norris, Custodian.

A small general collection of about 200 specimens may be seen daily except Sunday.

INDEPENDENCE PUBLIC LIBRARY.

IOWA CITY STATE UNIVERSITY OF IOWA.

A small collection of 200 specimens.

MOUNT VERNON CORNELL COLLEGE.

MUSCATINE MUSCATINE ACADEMY OF SCIENCE. Earlier collec-

tions were destroyed by fire.

SIOUX CITY SIOUX CITY ACADEMY OF SCIENCES AND LETTERS.

TOLEDO WESTERN COLLEGE.

WATERLOO CLYDE D. ALLAN, 1221 West Fourth Street.

A general collection of 500 specimens, emphasizing "mineral freaks."

H. W. GROUT, 603 First National Bank Building.

Collection is at present in the Court House, and will be placed later in the new Y.M.C.A. building.

WAVERLY WILLIAM COOK, 500 W. Bremer Avenue.

WARTBURG NORMAL COLLEGE

A general collection Aug. Englebracht, Custodian.

May be seen Thursday afternoons.

(To be continued)