Gems & Gemology

A bi-monthly periodical, without paid advertising, supported by subscriptions from Gemologists and other gem enthusiasts, aims to increase the gem merchant's knowledge and ability in order that he may protect more thoroughly his customers' best interests.

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In This Issue:

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EDITORIAL FORUM

Profits from Colored Stones

On page 259 of this issue appears an article by Hubert A. Fischer, an importer of precious stones. Mr. Fischer presents some very interesting points regarding the possibility of profit through sales of colored stones. He strongly urges that every jeweler consider the lesser known gems not as a "drug on the market", but as a live item in the stock of a progressive jewelry establishment.

Diamond Is Still King

Admittedly, diamonds, being a comparatively fast-selling item, are far more important merchandise than colored stones at the present time. It is to be hoped that this situation will continue to exist. But it is unfair to compare colored stones with diamonds in this respect.

The Lure of Genuine Stones

Colored stones offer a field which does not overlap that of diamond sales. At the present time much so-called novelty jewelry selling at but a few dollars per piece is being purchased. A great deal of this trade can be transferred by the clever retailer to more profitable sales of genuine stones. It has been argued that the public today wants cheap novelty jewelry which can be worn a few times and discarded. However, a large portion of the public have become tired of tawdry articles. Inherent in every person is a desire for fine things—a desire especially gratified in the purchase of jewelry.

Colored Stone Engagement Rings

With increasing frequency, reports of the sales of colored stones in engagement rings are being received. If any jeweler will try the experiment of questioning representative young people of his community, we predict that he will find a surprising interest in colored stones on their part. He will probably even learn that many of them would prefer to find some gem other than the diamond which can be used in engagement rings. Recently reported sales of colored-stone engagement rings prove this point.

Gems & Gemology is the official organ of the American Gem Society and in it will appear the *Confidential Services* of the Gemological Institute of America. In harmony with its position of maintaining an unbiased and uninfluenced position in the jewelry trade, no advertising is accepted. *Gems & Gemology* does not intend to overlap the field of any other periodical in America or England.

Contributors are advised not to submit manuscripts without first assuring themselves that the information contained in them is of scientific accuracy. Manuscripts not accompanied by return postage will be held thirty days and destroyed.

Any opinions expressed in signed articles are understood to be the views of the author and not of the publishers.

Gems as a Stock Item

The percent of profit in sales of colored stones is greater than that with diamonds. At the present time diamonds maintain their position as a faster selling item, but a wisely chosen stock of fine colored stones will seldom prove a poor investment. As Mr. Fischer points out in his article, competition in the sale of such stones is practically non-existent.

Range of Qualities and Prices

Finally, these gems offer a much wider choice of colors and qualities than do diamonds. They may be had in any color desired and at prices ranging from a few dollars a carat to values even greater than those of fine diamonds. The jeweler who stocks these genuine stones and sells them to his customers will find that in addition to earning good profits, he will secure "repeat" customers and create for himself an invaluable prestige in his community.

Proposed Gem-Dealer Listings

As an aid to those of its readers who sell, or intend to sell, colored stones, *Gems & Gemology* is planning a listing of dealers and the material which they can furnish. It is hoped that final arrangements can be made with such dealers and the first listing published in an early issue.

Do You Know—

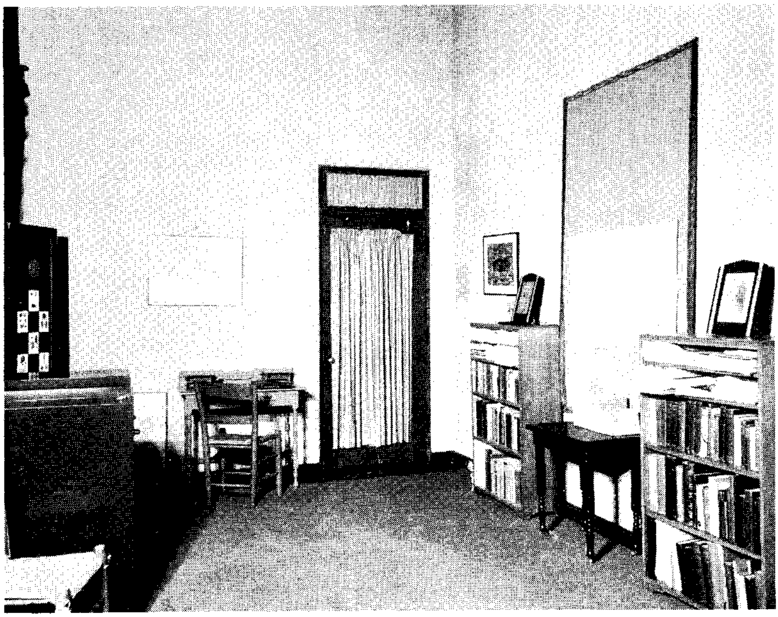
How May a Museum Prove Valuable to a Retail Jeweler?

—See *How the Jeweler Can Use a Museum*, page 245.

JONKER DIAMOND IN U. S.

The Jonker Diamond, a 726-carat perfect gem, has been purchased by Harry Winston, an American dealer, and is now in this country. The gem, it will be recalled, was found near the Premier Mine in South Africa in January, 1934. It was purchased by the Diamond Producers Association from Jacobus Jonker, the finder, for approximately $315,000. News dispatches reported that Winston purchased the Jonker for an amount variously stated to be $700,000 and $750,000. The great gem has just arrived in New York, where it was taken to the American Museum of Natural History. News reels have been released showing its arrival at that institution.

At Headquarters of the Gemological Institute of America



Foyer of the Gemological Institute and American Gem Society

Examinations Completed

The following men have completed examinations for titles since the publication of the last issue of *Gems & Gemology:*

Graduate Members and Registered Jewelers American Gem Society

CONNECTICUT
Stuart G. Wikander, *New Haven*

MASSACHUSETTS
Henry Stevenson, *Boston*

NEW JERSEY
Donald J. Cooper, *Bayonne*

OHIO
Edward F. Herschede, *Cincinnati*
John Z. Herschede, *Cincinnati*
William J. Toensmeyer, *Cincinnati*

WEST VIRGINIA
Frederick Kropff, *Morgantown*

WISCONSIN
Ralph H. Young, *La Crosse*

How the Jeweler Can Use a Museum*

by

EDWARD WIGGLESWORTH

Custodian, Museum of the Boston Society of Natural History.
Instructor, Boston Study Group of the American Gem Society.

The species and varieties of cut stones sold by the average jeweler are very limited in number; in fact the number of species could be counted on one's fingers and the varieties usually sold seldom exceed three or four. Most jewelers are of course thoroughly familiar with these, but very often they are not familiar with the kinds of minerals that are only occasionally used as cut stones. A small collection of about a dozen such gems was recently shown to a group of jewelers in the writer's office and out of the group only two members were able to identify a total of three of them. Many such unusual stones possess great beauty and sales possibilities and should be better known.

In many of the larger cities are museums of natural history which have mineral collections and usually an exhibit of cut gems. Jewelers should make the most of the facilities offered by such museums to add to their knowledge of gemology. They will find the curator in charge of such a collection is only too glad to talk with them and answer questions. In the larger institutions there is often equipment such as powerful binocular magnifiers, microscopes, and other instruments, not available to the jeweler elsewhere. There are also often many more specimens in their reserve and study collections than are on exhibit. This material is available for study and comparison to any properly accredited person.

A jeweler who is really interested in gems should not only be familiar with the cut stones, but should know what the uncut material, from which they are fashioned, looks like. Museums offer the best opportunity to see and study such "rough" material. Many of the uncut stones occur in beautiful crystals, a knowledge of which greatly increases the appreciation of the cut gem.

In the larger collections an effort is made to show the varieties of each species, not only as to crystal shape but also as to color and the characteristics of the species as found in various localities. Ideas will at once occur to the thoughtful jeweler on seeing some of the color varieties not usually found in jewelers' stocks. Many customers are partial to a particular color or combination of colors and can be sold stones of these colors if they are available. The museum label tells where they come from. Other customers can be interested in the rarer gems merely because they are rare and no one else possesses them. Here

*A.G.S. Research Service.

again an enterprising jeweler will get ideas from the unusual gems on display at the museum. In the few highest ranking museums, both in America and Europe, are to be seen some of the finest and largest gems in the world. No jeweler can afford to miss an opportunity to see these. He will never forget them and a description of them to a customer often leads to the customer's visiting the museum and becoming enthusiastic over something. Such enthusiasm may lead to important sales.

In many art museums are collections of old jewelry illustrating the styles of mountings which have been used in the past by earlier artisans, as well as some of the present styles from the far east. Slow indeed would be the jeweler who could not get useful and profitable ideas from such a collection.

Nearly all museums maintain libraries dealing with their respective fields. They are always glad to allow visitors in their reading rooms, where in the larger institutions many books on mineralogy and gemology as well as other works valuable to the jeweler may be consulted.

Museums exist to be useful as well as to preserve valuable objects. As a means to this end they employ specialists in the various departments whose duties are to care for the collections and to help those who wish to study them. I would strongly advise the jeweler who is fortunate enough to be located near a natural history museum to make the acquaintance of the mineralogist. He will be cordially received and surprised to find how eager the museum person is to help him. Access to the study and reserve collections of minerals and gems can almost always be obtained and will be found a gold mine of information, and invaluable in making comparisons for identification. And every time you visit a museum of any kind keep your eyes open for ideas on displaying your goods. Museums are specialists in methods of display and arrangement, to say nothing of lighting—and may I add, in answering questions!

Note: A partial list of collections of minerals which are available for study in various American cities is printed below. If no collection is mentioned in the locality of the reader, *Gems & Gemology* will attempt to place him in touch with one.

An article on the gem-collection of the Field Museum in Chicago appeared in the May-June, 1934, issue of *Gems & Gemology* and articles on gem collections in other museum collections in this and other nations are contemplated in later issues.

A Directory of Mineral Collections

Adapted and condensed from A Directory of American and Canadian Mineral Collections *by Samuel G. Gordon, Associate Curator of the Department of Mineralogy and Geology, Academy of Natural Sciences of Philadelphia, and Instructor of Eastern Pennsylvania Study Group of the American Gem Society. The complete Directory was published in the* American Mineralogist, *July, August, September, October and November, 1933.*

It is important to note that the following are collections of minerals some of which include collections of gem-stones and some of which include only rough minerals.

*Collections marked thus are those in possession of private individuals. Their permission to view collections is therefore essential.

**Not on view except by special arrangement with custodian.

Alabama

Auburn—Alabama Polytechnic Institute.

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

Arizona

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

Arkansas

Conway—Hendrix College, George H. Burr Museum of Natural History.

Fayetteville—University of Arkansas Museum. Dr. Albert W. Giles, Custodian.

California

Barstow—*C. E. Williams.

Berkeley—University of California.

Claremont—Pomona College. A. O. Woodford, Custodian.

Los Angeles—California State Exposition Building. Exposition Park.

Los Angeles Museum, Exposition Park. H. R. Hill, Curator.

University of Southern California.

Pasadena—Pasadena Junior College. Edwin F. Van Amringe, Curator.

San Diego—Natural History Museum (San Diego Society of Natural History), Balboa Park. J. E. Morrison, Curator.

San Francisco—Division of Mines, Formerly California State Mining Bureau, Ferry Building. Walter W. Bradley, State Mineralogist, Custodian.

Santa Barbara—Museum of Natural History.

Santa Clara—University of Santa Clara Museum.

Colorado

Boulder—University of Colorado.

Denver—Colorado Museum of Natural History, City Park. Frank Howland, Curator.

*Arthur G. Pohndorf, 400 17th Street.

State Bureau of Mines, in the Capitol.

Golden—Colorado School of Mines. J. Harlan Johnson, Custodian.

Connecticut

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

Middletown—Wesleyan University. Dr. W. G. Foye, Custodian.

New Haven—Yale University, Peabody Museum of Natural History. Dr. William E. Ford, Curator.

Delaware

Newark—University of Delaware. Fred J. Hilbiber Collection.

Wilmington—*Ireneé DuPont, Rising Sun Lane.

District of Columbia

Washington—Smithsonian Institution, United States National Museum. Dr. W. F. Foshag, Curator of Mineralogy and Petrology.

Florida

Tallahasse—Florida Geological Survey.

Georgia

Athens—University of Georgia.

Atlanta—Georgia State Museum. (Geological Survey of Georgia.)

Hawaii

Honolulu—*Bernice P. Bishop Museum. Hawaiian Hall.

Idaho

Moscow—University of Idaho, Department of Geology. Dr. F. B. Laney, Custodian.

Illinois

Chicago—Field Museum of Natural History.

University of Chicago Walker Museum. Dr. E. S. Bastin, Custodian.

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

Urbana—University of Illinois. Museum of Natural History.

Indiana

Indianapolis—Children's Museum, 1150 North Meridian St. Arthur B. Carr, Director.

Indiana State Museum, State House basement.

Terre Haute—Rose Polytechnic Institute.

Iowa

Cedar Rapids—Coe College.

Grinnell—Grinnell College; Parker Museum of Natural History. H. W. Norris, Custodian.

Kansas

Baldwin City—**Baker University. Museum and Science Hall. E. J. Cragoe, Custodian.

Lawrence—**University of Kansas. Haworth Building. Dr. Kenneth K. Landes, Custodian.

Kentucky

Covington — Baker-Hunt Foundation: Williams Natural History Collection, Museum and Library. G. N. Hobbs, Curator.

Lexington—University of Kentucky.

Louisville—Louisville Public Library Museum.

Louisiana

Baton Rouge—Louisiana State University.

New Orleans—Tulane University. R. A. Steinmayer, Custodian.

Maine

Lewiston—Bates College Museum. Dr. Lloyd W. Fisher, in charge.

Orono—University of Maine.

Paris—Hamlin Memorial Hall. C. E. Sham, Librarian.

Portland—Portland Society of Natural History Museum, A. H. Norton, Curator.

Thomaston—Knox Academy of Arts and Sciences: Knox Museum. Norman W. Lermond, Curator.

Maryland

Baltimore—Johns Hopkins University.
Maryland Academy of Sciences.

Massachusetts

Amherst—**Amherst College. Dr. Frederick B. Loomis, Custodian.

Boston—Boston Society of Natural History, 234 Berkeley Street. Edward Wigglesworth, Custodian.

Cambridge—Harvard University, Mineralogical Museum. Prof. Charles Palache, Curator.

Fall River—Public Library.

Northampton—Smith College.

Salem—Peabody Museum. Mr. Morse, Curator.

Wellesley—*Shelley W. Denton, 24 Denton Road.

Williamstown—**Williams College. Prof. H. F. Cleland, Custodian.

Michigan

Alma—Alma College, Hood Museum of Natural History. H. M. MacCurdy, Director.

Ann Arbor—University of Michigan, Natural Science Building. Dean Edward H. Kraus, Director.

Detroit — Children's Museum, 96 Putnam Street. Gertrude A. Gillmore, Curator.

East Lansing—**Michigan State College, S. G. Bergquist, Custodian.

Houghton—Michigan College of Mining and Technology, Mineralogical Museum.

Kalamazoo—Kalamazoo Public Museum and Art Institute. DuPortal D. Porter, Curator of Minerals.

Saginaw—*Fred Dustin, 705 S. Fayette St.

Minnesota

Minneapolis—University of Minnesota.

Mississippi

Starkville—State College (Formerly Mississippi Agricultural and Mechanical College).

University—University of Mississippi.

Missouri

Jefferson City—Missouri State Museum (Resources Museum Commission). Alfred C. Burrill, Curator.

Rolla — **Bureau of Geology and Mines. State Geologist H. H. Buehler, Custodian.

St. Louis—Educational Museum of the St. Louis Public Schools.
Washington University. Wilson Hall. W. O. Shipton, Custodian.

Montana

Butte—Montana School of Mines. Eugene S. Perry, Custodian.

Missoula—University of Montana.

Nebraska

Hastings—Hastings College. W. J. Kent, Custodian.

Lincoln—University of Nebraska: State Museum. Erwin H. Barbour (Department of Geology), Director.

Nevada

Manhattan—*H. G. Clinton.

Reno—Mackay School of Mines, Mackay Museum. Carl Stoddard, Custodian.

New Hampshire

Keene—Keene Natural History Society. Mr. Hayward, Custodian.

Manchester—Manchester Institute of Arts and Sciences. George I. Hopkins, Custodian.

New Jersey

Newark—Newark Museum Association, 49 Washington Street. Beatrice Winser, Director.

New Brunswick—Rutgers College, Geological Museum.

New Mexico

Albuquerque—University of New Mexico, Museum.

Socorro—**New Mexico School of Mines, Dept. of Geology. Prof. S. B. Talmadge, Custodian.

New York

Albany—New York State Museum (State Education Building). C. C. Adams, Director.

Brooklyn—*Beulah and Maurice Blumenthal, 558 Irving Street.

Buffalo—Buffalo Museum of Science, Humboldt Park.

Clinton—Hamilton College. Nelson C. Dale, Custodian.

Hamilton — Colgate University, Geological Museum.

New York—American Museum of Natural History. H. P. Whitlock, Curator of Mineralogy.

College of the City of New York.

Columbia University, School of Mines: Schermerhorn Hall (Egleston Mineralogical Museum).

Metropolitan Museum of Art. (Contains the famous Bishop Collection of Carved Jades.)

Poughkeepsie—Vassar College.

Rochester—Rochester Museum of Arts and Sciences. Arthur C. Parker, Custodian.

**University of Rochester, Museum of Natural History. E. J. Foyles, Custodian. (Dewey Building.)

Schenectady—**Union College. Prof. E. S. C. Smith in charge.

Troy—Rensselaer Polytechnic Institute. Dr. Joseph L. Rosenholtz, Custodian.

North Carolina

Durham—Duke University, Museum of Natural History.

Raleigh — North Carolina State Museum. Harry T. Davis, Curator.

Ohio

Bowling Green—State College. Prof. Wm. P. Holt, Curator.

Cincinnati—Cincinnati Society of Natural History, Museum, 312 Broadway. Ralph Dury, Curator.

Cleveland—Cleveland Museum of Natural History, 2717 Euclid Ave. J. E. Hyde, Curator.

Columbus—Ohio State Museum (Ohio State Archaeological and Historical Society), High Street at Fifteenth Ave. Howard R. Goodwin, Curator of Mineralogy.

Oberlin—Oberlin College. Professor George D. Hubbard, Custodian.

Toledo—Toledo Institute of Natural Science. Fred F. Bradley, Mineralogist.

Oklahoma

Norman—University of Oklahoma.

Oregon

Eugene — University of Oregon, Condon Building. E. J. Hodge, Custodian.

Portland—Collection of the City of Portland, City Hall.

Pennsylvania

Carlisle—Dickinson College.

Gettysburg—Gettysburg College.

Lancaster—Franklin and Marshall College. Museum. Professor H. Justin Roddy, Curator.

Philadelphia—Academy of Natural Sciences of Philadelphia, Mineral Hall. Samuel G. Gordon, Associate Curator, Department of Mineralogy and Geology.

Pittsburgh—Carnegie Museum.

South Carolina

Columbia—University of South Carolina, LeConte College.

South Dakota

Custer—*Scott Rose Quartz Company.

Vermilion—University of South Dakota.

Tennessee

Nashville—Tennessee Division of Geology. State Geologist, Custodian.

Vanderbilt University, Garland Hall. W. B. Jewell, Custodian.

Texas

Austin—Bureau of Economic Geology. University of Texas: Museum Building.

Houston—Houston Museum of Natural History. C. L. Brock, Director.

San Antonio—Witte Museum, Brackenbridge Park.

Utah

Salt Lake City—University of Utah.

Vermont

Burlington—University of Vermont. E. C. Jacobs, Custodian.

St. Johnsbury—Fairbanks Museum of Natural Science. Mabel A. Shields, Curator.

Virginia

Blacksburg—Virginia Polytechnic Institute.

Charlottesville — University of Virginia, Brook's Museum.

Richmond—State Museum, Capital Square. J. G. Blount, Custodian.

Washington

Seattle—University of Washington, State Museum.

Walla Walla—**Whitman College, Whitman Museum. H. S. Brode, Curator.

West Virginia

Morgantown — West Virginia University, Chemistry Building. Dr. J. H. C. Martens, Custodian.

Wisconsin

Appleton—**Lawrence College, Science Hall. Dr. Rufus Mather Bagg, Custodian.

Milwaukee—Milwaukee Public Museum. Ira Edwards, Custodian.

Wyoming

Cheyenne—Wyoming State Geological Department, 313 Capitol Building. John G. Marzel, Custodian.

CANADA

Manitoba

Saint John—The New Brunswick Museum.

Nova Scotia

Halifax—Provincial Museum of Nova Scotia. Harry Piers, Curator.

Ontario

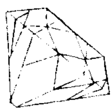
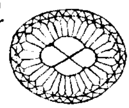
Kingston—Queen's University, Miller Hall.

Toronto—Royal Ontario Museum of Mineralogy, 100 Queen's Park. Dr. T. L. Walker, Director.

Quebec

Montreal—**École Polytechnique, 1430 St. Denis St. A. Mailhiot, Custodian. McGill University, Peter Redpath Museum.

Important Diamonds of the World

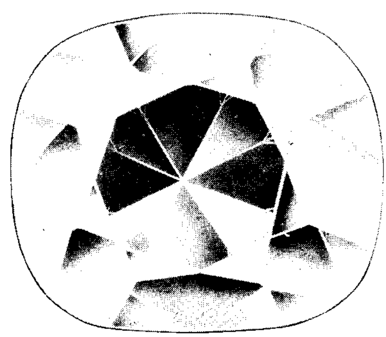




Robert M. Shipley

THE JUBILEE

This stone was found in the Jagersfontein Mine in the Orange Free State, South Africa, in 1895. In the rough, it was a flattened octahedron weighing 650.8 metric carats. It was entirely flawless and perfect in color, transparency, and brilliancy. When the stone was found, it was named the "Reitz Diamond" in honor of F. W. Reitz, then President of the Orange Free State.

In 1897, the year of the Diamond Jubilee (sixty years' reign) of Queen Victoria, the great diamond was cut. At this time, it was renamed the



THE JUBILEE
One of the World's
Largest Diamonds
Weight, 245 Carats

"Jubilee," although it does not seem to have figured in any of the events celebrating Queen Victoria's sixty years on the throne. The gem, however, was shown at the Paris exhibition of 1900.

In many respects, the history of the Jubilee resembles that of the Jonker. The two stones are within 100 carats of the same weight. Both have been in London during a Jubilee year of the Royal Family of Great Britain. Neither the Jubilee nor the Jonker has been one of the Important Diamonds of the World long enough to have made any outstanding history.

It is generally conceded that at the present time (June, 1935) the Jubilee is the third largest cut diamond in existence, ranked only by the two largest Stars of Africa (Cullinan Diamonds). However, the German authority, Dr. Schlossmacher, states that the "Nizam of Hyderabad"—a diamond in the possession of the Indian ruler bearing that title—weighs 277 carats, somewhat larger than the 245 carat Jubilee.

If the Jonker is cut as a single gem, it will probably exceed the Jubilee in size, for the Jubilee lacked some seventy-five carats of the "rough" weight of the Jonker. It has been estimated that a single gem of 400 carats or more can be secured from the rough Jonker.

In 1930, the Jubilee was in the possession of the London firm, Wernher, Beit & Co., at which time negotiations concerning its sale were in progress. No report of a buyer was ever released and it is therefore believed that the diamond either remained unsold or was purchased by an individual who requested secrecy regarding the transaction.

Reminiscences of a South African Diamond Buyer

by
JEAN P. SPITZEL
Diamond Importer, Los Angeles

Fancy Stones Sometimes Appear

Someone asked me if the color of the clay would not determine the color of the stone. If it would, all the mined diamonds would be blue and the alluvial ones red, and that is not the case. I have bought green diamonds. As a matter of fact, I bought one beautiful bottle-green diamond because I like fancy colors. It was rather oblong in shape, and in order to get the best percentage of weight I had to have one of the ends cleaved off and had two stones from it. One weighed 0.96 or 0.97 carats cut, and the smaller one 0.30 carats. They differed in color; there was at least two or three shades difference. The one I sold and the other one I brought to this country. A retired jeweler in San Francisco fell in love with it and wore it for two weeks. By the time I wanted it back he did not want to part with it—so I sold it to him.

It is very hard to get a parcel of stones of uniform color. If I had two or three hundred carats of rough, I tried to assort these into colors, qualities, and shapes. They might produce twelve or fifteen parcels. That was one of the drawbacks of buying by individuals; they never get enough together at one time to make a big parcel.

Buying a Big Diamond

When I went to Africa, I went for my brother-in-law. He wanted large stones principally, so I was naturally on the lookout for these. One day the valuator of one of the small mines called me and asked if I would be interested in a stone weighing close to two hundred carats. Of course, I was very interested and made an appointment. I went there with my partner, who was much older than I was and an experienced South African buyer. While we were on our way to the office of the valuator my companion told me he had seen the stone, which weighed exactly 171 carats. He had made an offer of, I think, £15-10 per carat. He said that as I was a cutter and he was not, he wanted my opinion.

We went to the office where the three diggers who had found the stone were. One brought out his handkerchief and put the stone on the table. It was about one and a half inches long, the same in width, and about one-half inch thick. It was a second or third cape in color. In the center was a nest of imperfections resembling ink spots. The rest of the stone seemed to be clean and clear. It was not a frosted stone and the story could be read comparatively easily. Of course a big stone like that is never an easy thing to buy.

I turned to my side-kick and asked him his opinion first. He slunk into a corner and said he didn't like the stone. Suddenly and reluctantly he said, "You are working for a relative, I am working for a stranger. If I make a mistake I am going to lose my job, but if you make a mistake you can only be called down." Anyhow, in order to be safe and not make any blunders I could avoid, I sat down and drew a diagram on the stone with my pen and visualized how it would be split. Mentally, I visualized how much each piece would weigh after the stone was split. After I got through I totaled my estimate and came within 2.00 or 3.00 carats of the total weight of the stone. Then I did the same thing to find out how much every one of these pieces was worth per carat, and divided that by the total weight of the stone. After I got all through I was satisfied the stone was worth considerably more than the offer. I bought the stone after much arguing.

A "Rogue" Diamond

The diamond cost me about £2200 plus the 10% export duty. Then I had to report the purchase. Mr. Brink said, "Man, why didn't you ask me before buying that stone, it has been on the market for months. Somebody bought it for some Indian prince and resold it because the cutter told them it could not be cut a perfect stone." This made me feel rather worried, but I had the stone. The next time I went to the market everybody knew I bought a lemon. I sent the stone to my firm and asked as a special favor to send me a cable to tell me how they liked it. It took twenty-one days for the stone to reach Antwerp; I spent three uneasy weeks. When the cable came I was told that if I could buy more similar stones at 10% more to do so. When I went to Antwerp later, I asked how the stone had turned out. My brother-in-law showed me a diamond and said "That is the last stone left of it." In a thousand years I would not have recognized that cape. It was almost white, a fine silver cape.

It took close to two months to saw this stone right through with the saws working twenty-four hours a day. They wanted to saw it all through instead of splitting, because the cut could pass through the center of the imperfections and the moment they had it in half they would have two stones to work on.

Life in South Africa

Colored people in South Africa had no right to drive a car, in fact, had no rights at all. They could not be on the street after seven in the evening nor before six in the morning. They had to get a special permission to be on the streets after sunset. That was because the white population was so small in South Africa. The only way to keep up the iron rule was to give the natives no education and absolute prohibition. If they had been educated the British would have had a hard time with them.

I lived in Johannesburg and every Wednesday night I had to take the train to the diamond fields and return Sunday morning. From Wednesday to Sunday I worked, and the rest of the time I didn't do anything because of the gentlemen's agreement. Most of the other diamond buyers in South Africa had lived there for a good many years and had work all week. Monday, Tuesday and Wednesday they tended to their ranches and cattle. As I wasn't there to raise cattle, I had only a three-day week.

It was quite interesting that there never was a holdup in South Africa. When I went there I bought two things, an automatic and a mosquito net. I thought I was going to a very wild country and I had to be protected. I discarded the net because there were no more mosquitoes there than here. Somebody offered me a profit on the gun and I sold it.

The Syndicate's Maintenance of Prices

The alluvial buying was open to the public and not controlled by the syndicate. The only control the syndicate had was that they knew at what prices merchandise was sold. The syndicate usually had two or three buyers in the field and although we knew who they were, the diggers did not. Those people did not do a thing except keep track of prices. It so happened that during my stay there business was bad. My correspondent sent me a cable advising that market prices had dropped—to buy in accordance. Others received similar instructions and first thing you knew everybody wanted to buy a few per cent cheaper. In the course of a few weeks the price levels had dropped about 15% or 20%. The result was that in the open market in Antwerp the alluvial diamonds sold more readily than the syndicate's material. Then the syndicate got busy. They instructed their men to buy at the former prices. Could you imagine a group of diggers who were trying to get £10 for a stone and only getting £8 and suddenly discovering that Mr. Blank is in the market and pays £10? In ten minutes there is a lineup in front of that office. The others had only one of two things to do, either go home without diamonds, or pay £10. Most of the buyers worked on a commission basis and did not want to waste their time. They also paid £10 and prices came back up.

(The End)

A Coated "Emerald"*

by
HENRY E. BRIGGS, Ph.D.
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A ring set with an emerald and several small diamonds was recently brought to me for examination and valuation. The workmanship was very good and the impression received by examination with the unaided eye was that of an exquisite piece. The color of the emerald center stone (which was large, at least 4 carats) was ideal. Test of refraction corresponded to that of beryl. The specific gravity test was of course impossible, and a hardness test is never used on emerald. The dichroscope showed peculiar twin colors, though not far from normal. The variation in color in this test was so slight as to be very easily overlooked by anyone who possessed a poor memory for color shade, or who had had only limited opportunity to make such observations. Therefore while this test might be of some value, and in fact was what first roused my suspicions, yet one cannot be too careful with cases where a swindle has been so nicely done as it was with this stone. Careful examination of the pavilion with a standard diamond loupe (10X Aplanat achromatic) failed to show any of the characteristic crystals of dye-stuff, and it is amazing that the surface luster seemed all right, and even minor imperfections in the polishing of the facets showed normally. However, a drop of water applied with a piece of pegwood quickly flattened out and covered quite an area. Further examination with a needle-point showed the pavilion of the gem to be covered with a backing of a cellophane-like substance containing a dye. After careful removal of this backing the gem proved to be, not a very valuable emerald, but a genuine California aquamarine of rather deep tint.

This calls to mind the old trick of coating the pavilion of an off-color diamond with dye to improve its salability and value, but this trick is infinitely more dangerous since the backing is not dissolved in water, alcohol, ether, or acetone and therefore the color is not changed by these solutions. Certain of the cellophane materials behave something like the material used in this fake.

It strikes me that the person who perpetrated the swindle must possess an appreciable knowledge of physics and chemistry, if not of gemology. It will be noticed that it was applied to a valuable gem of low refractive index and with a vitreous luster. Had the coating been put on the pavilion of a diamond it would have been instantly obvious, due to the difference between the luster of the paint or coating and the adamantine luster of diamond.

*G.I.A. Research Service.

PRICE OF DICHROSCOPE

Through an error, the price of the first dichroscope advertised on the back page of the March-April issue of *Gems & Gemology* was quoted as $7.50. The correct price of this instrument is $8.50.

GEMOLOGICAL GLOSSARY

(Continued from last issue)

(The key to pronunciation will be found in the January, 1934, issue.)

Dendrite (den'drite). An inclusion, as in agate, having a tree-like form.

Dendritic (den"drit'ik). Having the form of a tree.

Dendritic Agate (den"drit'ik). Mocha-stone and moss-agate with tree-like inclusions, usually of manganese oxide.

Density. Refers to the quantity of matter in a given space. See also Specific Gravity.

Determinative Gemology (dee-tur'-mi-nae-tiv). The science of differentiating between the various gem-stones and gem-materials.

Diallage (dye'a-laj). Near diposide in composition. Hardness 4, specific gravity 3.20-3.35, luster pearly, sometimes metalloidal and resembling bronzite. Greenish-gray to bright grass green, deep green and brown.

Diamantiferous (dye"a-man-tif'er-us). Bearing or containing diamonds.

Diamond (dye'a-mund). Carbon crystallized in the isometric system. When transparent and free from flaws highly valued as a gem.

Diamond Cut. A term used by some lapidaries to mean brilliant cut.

Diamond Drill. Cylindrical iron pipe having carbonado or bort set in the edge as teeth, for drilling.

Diamondiferous (dye"a-mund-if'er-us). Same as diamantiferous.

Diaphaneity (dye"a-fa-nee'i-ti). The property of being either transparent or translucent.

Diaspore (dye'a-spore). Hydrated sesquixoide of aluminum, rarely used as a gem stone. Hardness 6½ to 7, specific gravity 3.3 to 3.45, luster brilliant, being pearly on the cleavage face and vitreous elsewhere. Transparent to translucent. Colors white, greenish grey, brown, yellowish, topaz yellow to colorless —sometimes violet blue in one direction, reddish purple in another and pale brownish green in a third direction. Bears some resemblance to topaz but is softer and lighter.

Dichroic (dye-kroe'ik). Pertaining to or exhibiting, dichroism.

Dichroism (dye'kroe-izm). The property of presenting different colors in two different directions by transmitted light. See also Trichroism. See also Pleochroism.

Dichroite (dye'kroe-ite). A gem-stone. Same as Iolite.

Dichroscope (dye'kroe-scope). An instrument designed to exhibit the two colors emerging from most doubly refractive, colored gems.

Diffraction (di-frak'-shun). A modification which light undergoes, as in passing by the edges of opaque bodies or through narrow slits, or when transmitted through or reflected from a diffraction grating in which the rays of white light are broken into a series of colored spectra. Diffraction also takes place upon reflections of light from the sharp, jagged edges of broken glass and from the edges of the minute scales which make up the surface of a nacreous pearl. See also Orient.

Diffraction Grating. A grating of fine parallel lines ruled on glass or metal, used to produce spectra by diffraction. See Grating.

Diffusion Column. Specific gravity test. A long, narrow test tube partially filled with methylene iodide with about five times as much benzol added. The benzol and methylene iodide gradually diffuse and a mixed liquid results whose density increases gradually from top to bottom.

Dike. A vertical or inclined fissure in the earth's crust which has been filled with a mass of igneous material forced upward while molten and become rock by cooling.

Dimorphism (dye-more'fizm). The occurrence of two minerals having the same composition, but differing in crystallization and other physical properties, and often also in chemical properties. Pleomorphism or Polymorphism is the broader term, referring to two or more. See also Polymorphism.

Diopside (dye-op'side). Same as Alalite. Same as Malacolite. (Violan.) A calcium magnesium silicate. Monoclinic system. Hardness 5 to 6. R.I. 1.664 to 1.694. Specific gravity 3.2-3.6. Transparent. Light to dark green, colorless, grey or yellow. Sometimes used as gem. Violan is a variety with a fine blue color.

Diopside-jadeite. A pyroxene (jade from Mexico) intermediate between jadeite and diopside in composition. The jadeite from Burma, being jadeite-proper, is distinguished as soda-jadeite.

Dioptase (dye-op'tase). A mineral of a deep green color approaching, but always darker than, that of emerald. Dioptase is a hydrous silicate of copper with the formula $H_2O.CuO.SiO_2$. Occurs usually in well developed but small crystals. Belong, like crystals of emerald, to the hexagonal system. Hardness approximately 5. Specific gravity 3.28. In spite of fine color, its deficient hardness and imperfect transparency prevent its extensive use as a gem.

Dirigem (trade name). Green synthetic spinel.

Dispersion (dis-pur'shun). The property possessed by a stone which breaks up a ray of white light into the rainbow colors of the spectrum.

Disseminated. Scattered through a rock or other mineral aggregate in the form of grains or pebbles.

Disthene (dis'thene). Same as Cyanite.

Distorted Crystals. Crystals whose faces have developed unequally, some being larger than others. Some crystal forms are drawn out or shortened, but the angle between the faces remains the same.

Divergent (dye-vur'jent). Extending in different directions from a point; radiating.

Dodecahedral (doe"dek-a-hee'dral). Pertaining to the rhombic dodecahedron, a form with twelve faces in the cubic system.

Dodecahedron (doe"dek-a-hee'dron). A geometrical crystal form in the cubic system.

Dolomite (dole'oe-mite). Carbonate of calcium and magnesium. Hexagonal-rhombohedral. H.3.5-4. Specific gravity 2.85. Transparent to translucent. Color usually some shade of pink, or flesh color. May be colorless or white, gray, green, brown or black. Sometimes used as a building or ornamental stone.

Dolomitic (dole"oe-mit'-ik). See Dolomite.

Domatic (doe-mat'ik). Relating to a dome, a horizontal prism.

(To be continued)

A GEMOLOGICAL ENCYCLOPEDIA

(Continued from last issue)

HENRY E. BRIGGS, Ph.D.

Isotropic Substances Under Polarized Light

Isotropic substances when examined with polarizer only will show up in an evenly illuminated field. With both polarizer and analyzer if the directions of polarization be crossed with isotropic substances the field is always dark in all positions. This will serve to distinguish between isotropic and anisotropic substances, unless the former had an internal stress which causes the elasticity to vary with the different directions.

Anisotropic Substances Under Polarized Light

Uniaxial substances will behave differently according to their orientation with respect to the optic axis, when observed in polarized light. If we cut a section perpendicular to the optic axis, from one of these crystals and place it on the stage of a polarizing microscope we will note: That with the analyzer removed from the tube, but with the polarizer in use, such crystal sections show up in a well illuminated field in all positions of the stage; with the analyzer also in use and with the cross-hairs of the Nicols set at right angles, we find that the field is dark in all positions. This is true of sections cut directly across the optic axis only. Sections cut parallel to or inclined to the optic axis will look entirely different. Such sections, when observation is made with both polarizer and analyzer, will be four times dark and four times light during the complete rotation of the stage, when the light is parallel. The positions of greatest darkness are called the positions of extinction. The cross-hairs of the Nicols are parallel to the vibration direction of the prism, and are used to determine the vibration or extinction directions of crystals or sections of them. With crossed Nicols in convergent polarized light, uniaxial sections cut perpendicular to the optic axis (across the optic axis at right angles) present an interference figure which will serve to distinguish them from any biaxial crystal. When such observations are made in white light (day light) the figure will consist of a series of concentric colored rings with a dark cross super-imposed upon them. The arms of the cross will be parallel to the cross-hairs of the Nicols and will remain so throughout the rotation of the stage, although the cross will move back and forth across the stage as the stage is rotated and will move in the direction of stage movement. In monochromatic light the rings will be light and dark and the cross will act the same as stated. If the section is inclined to the optic axis then the interference figure will be eccentric instead of concentric; otherwise the observation will be much the same. With the use of a selenite-mica plate or a quartz wedge in the tube slit of the microscope one can easily determine whether the crystal is optically positive or negative.

Biaxial substances will usually appear four times light and four times dark during the complete rotation of the stage, with crossed Nicols and parallel light. Sections cut perpendicular to the optic axis will remain well illuminated in all directions when polarizer only is used as stated of uniaxial sections similarly cut. In triclinic crystals the extinction is always inclined. In orthorhombic crystals the extinction may be either parallel or symmetrical. Monoclinic crystals may show either parallel, symmetrical or inclined extinction. Thus we may distinguish between the various systems in biaxial minerals.

Interference figures of biaxial crystals will differ widely from those of the uniaxial substances. The figures in biaxial minerals will vary with the direction in which they are cut with respect to the optic axes. The dark cone-shaped spot in these figures will not remain stationary as with the uniaxial crystals but will move in a direction opposite to that of the movement of the stage. With the aid of selenite-mica test plates or the quartz wedge the optical character of these minerals can be determined.

Enantiomorphous Crystals

Crystals which exhibit circular polarization, that is which rotate the plane of polarized light are called enantiomorphous. This may be clearly observed in some quartz crystals in the crystalline structure without the use of optical instruments. It may be observed with the polarizing microscope with the aid of test plates in the tube slit or by cutting two slices one of a right hand and one of a left hand crystal and then super-imposing these sections one upon the other.

Measuring the Indices of Refraction

There are several methods of measuring the refractive indices of substances, but for our use the reflecting type of refractometer or the goniometer will probably be the best. In either event it is a simple matter and can be easily done with very little experience.

With the reflecting type of refractometer we take advantage of the fact that every different index has its own critical angle. In these instruments we really measure the index by the critical angle, although the instruments are equipped with a scale so that the indices are directly read without calculation. However, the range of the instrument is limited and usually does not go higher than 1.90 and often the limit is lower. However, it is one of the quickest methods known, and the limits will take in by far the greater share of the gems. The mineral to be tested must have a plane polished surface, as the table of a faceted gem, which can be put into immersion contact with the glass hemisphere of the instrument, which might be called an objective. Some liquid of high index is used for making the immersion contact such as methylene iodide. A drop of the liquid is placed on the glass objective of the instrument near the center, the flat portion of the mineral or gem is then applied to the glass so that the liquid will displace all air from between the objective and the specimen. The reflectors are then adjusted to reflect the light properly and the index can at once be read directly from a scale through the eyepiece. By using monochromatic light the refractive index of any of the spectrum can be read and with white light the observer can read from an intermediate color and thus avoid the necessity of using monochromatic light.

(To be continued)

Popularity of Colored Stones

Colored Stones Don't Sell? Mr. Fischer Says They Do.

by
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At the Century of Progress, in Chicago, a little shop in one of the villages illustrated a number of facts very forcibly — that a display of colored stones always seems to attract maximum attention—that they create interest in the customer, proven by repeated visits and, in many cases, repeated sales—that there are some people who are always looking for something unusual in colored stones—that many jewelers are neglecting a vital phase of their business that will yield a profit in most cases very much greater than the regular mark-up. For instance, a customer visits a store and prices are quoted on silverware and watches. If the merchandise is of well known manufacture the profit is fixed by the producer. On quality merchandise this is usually adequate, but it is well known that every legitimate jeweler in town also can quote the same price, and some that are not so legitimate may under-cut. The same holds true of a diamond. A customer can get a quotation on a carat diamond from every jeweler in town. On colored stones it is different. If a prospective customer calls for, say, a fine Black Opal, or Star Sapphire, or Cats Eye, a substantial price can be asked without the fear of another dealer "under-cutting." There is not nearly the competition in this class of merchandise.

Gems in the Smaller Establishment

The small store cannot tie up too much of its finances in colored stones, no doubt, but the jeweler who can intelligently discuss them can create enough confidence in his client to induce him to return. In the meanwhile, he *can* secure a selection of those gems in which he has become interested.

There are many instances where a customer has returned two or three times or even more often to view a selection of merchandise in which he was interested. A customer who does this is pretty certain to buy. It is absolutely necessary, however, to know and discuss with some knowledge the merchandise in order to gain and hold a person's confidence.

A Lost Sale

In contrast, here is an incident which happened this summer. A gentleman walked into a first class jewelry store. He approached the salesman at the diamond counter and told him he was interested in an Alexandrite—and "Had they any in stock to show him." The customer was directed to another part of the store where he was shown a tray of white gold rings mounted with various synthetic stones, among which were several synthetic Alexandrite Spinels. He shook his head, smiled and left the store. That was that. Here was a customer whose appearance bespoke his ability to pay a thousand dollars or more for a gem stone and he was directed to a twenty dollar item. The interesting part of the story is that the salesman *did not know* that the twenty-dollar "*Alexandrite*" was not genuine.

To get back to the little shop at the Century of Progress. Here was a space hardly any larger than the diamond room of the average jewelery store. Their display consisted mostly of high grade antique jewelery and genuine colored stones.

Men Like Star Sapphires

Black opals sold well. They always attracted attention. On two different occasions, special orders were taken for ear drops—several were mounted into scarf pins. Both the above are usually considered dead items. One fine large specimen was mounted in platinum, surrounded with diamonds. Some were set into inexpensive gold rings and many were sold unmounted. Star Sapphires sold well. The majority were mounted into gentlemen's rings. They are ever increasing in popularity as a man's stone. One man made the remark, "I believe I'd wear one of them myself." His wife returned the following week and bought a ring for him, set with a large "Star." She was delighted to finally find a piece of jewelry he cared for. He never would wear it before.

It was interesting to note how many stones were bought unset. Mostly out-of-town people bought them. This is undoubtedly accounted for by the fact that in smaller towns jewelers do not stock them or make an effort to get this business.

The sale of numerous items set with Cameos showed that they are still desired by many people and not to be ignored. This is especially true of the finer sorts.

The usual remark regarding a display of Sapphires of various colors was, "I thought Sapphires were always Blue." This makes one realize how much educational work is necessary among the public to get the maximum appreciation of these fine gems.

Sapphire Chosen as Engagement Ring by Royal Couple

Colored stones in general are much more appreciated in Europe than here. The engagement ring which the Duke of Kent, Prince George of Great Britain, gave to his fiancée, Princess Marina of Greece, was a fine Kashmir Sapphire. The gem, which was purchased from Cartier's in London, was a large, square-cut stone, of a fine, deep blue color. It was mounted with a baguette diamond on either side. The Kashmir Sapphire is generally considered the finest of all, and gems of this grade are becoming very scarce.

Recently in Chicago the engagement ring of a prominent society couple was a large Ceylon Sapphire of gem quality, over twenty carats in size. It was mounted with two large triangle diamonds on the sides. The stone was of very deep cutting and though artistically mounted the ring seemed rather cumbersome.

This merely proves that the tendency is toward larger stones. The desire for larger stones naturally will mean greater use and appreciation of colored gems. The parental wedding gift to the bride, of the above couple, was a ring set with a large Emerald.

The time is not far distant when the engagement ring is just as apt to be a colored gem as a diamond. The diamond expert who does not understand colored gem stones (and a great majority do not) will be at a decided handicap.

BOOK REVIEWS

Elementary Crystallography, by John W. Evans and George M. Davies. London. 1924. Thomas Murby and Co.

This is a brief description of symmetry in crystals. The authors state in their preface that the book is intended as an elmentary text and "to afford such information as will assist in the recognition of mineral species." The material is presented in a simple manner, easily understood by the beginner. The involved technical discussions which appear in many Crystallography texts have been avoided.

An unusual arrangement of material is followed. The orthorhombic system—held by the authors to be the most readily understood—is described first. Then follow in turn the monoclinic, triclinic, tetrogonal, cubic and hexagonal systems. The description of twin crystals appears in the usual position, after the discussion of the six crystal systems.

The methods of describing crystals and crystal faces by reference numbers (indices) or letters are explained without excessive mathematical presentation. A knowledge of these indices is of value to the gemologist, since it enables him to understand the meaning of descriptions of cleavage directions as expressed in standard mineralogy texts. This knowledge should be particularly useful to the lapidary.

Elementary Crystallography also furnishes a foundation for recognition of natural crystals by their form. Although this knowledge is not required of *Certified Gemologists*, several students have become interested in the subject and have done independent additional reading.

The Story of Chemistry, by Floyd L. Darrow. New York. 1927. Bobbs-Merrill. Published in reprint by Blue Ribbon books. $1.00. May be secured from G.I.A. book department.

The book, as its title indicates, is written for popular reading. While intended primarily to interest the mass of readers, it presents much of the theory of present-day chemistry. Recent theories of the structure of atoms and molecules are discussed in simple, readable language.

The economic importance of scientific discoveries is always stressed. That industry is slow to accept the improvements suggested by scientists the author regards as unfortunate; but he points out that the eventual exhaustion of natural resources will force industry to utilize the more efficient processes and the synthetic substances which are now regarded as scientific "stunts."

Throughout the book particular attention is given to American achievements in the field of chemistry. Each successful attempt to produce in this country material which formerly had to be imported is roundly praised.

The gemologist should find a reading of *The Story of Chemistry* a valuable addition to his study, for chemistry is an important subject in the understanding of any present-day science.

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(To be continued)

Gemological Spectroscopy

Recent scientific developments have brought the term "spectroscope" before the general public. The gemologist will find this instrument of value in determination of fashioned gems.

As a gem testing instrument the spectroscope has yet to receive the full credit due it. In a number of determinations it furnishes a very easily applied and definite test. In some cases it enables determinations to be made which could be effected otherwise only through the use of expensive and complex equipment. This is especially true in the case of colored zircons and garnets whose refractive indices are too high to be read on the refractometer.

The spectroscope is, furthermore, a fascinating instrument to use, giving a new insight into the color of various gems. The recent rise in importance of this instrument in chemical analysis has caused the name "spectroscope" to become known to a surprising number of people, and the possession of a model of this instrument by a jeweler cannot fail to impress his customers.

The spectroscope itself is a comparatively simple instrument. It consists principally of a narrow slit through which a thin beam of light passes, a prism or grating which breaks the beam into a spectrum, and an eyepiece for focusing clearly each part of the spectrum. Spectroscopes are of various types, the majority of them, however, employ glass prisms. Diffraction gratings are also sometimes used, but no satisfactory gem-testing spectroscope seems to be available at present in the American market employing this principle.

A scale is often included in the optical system of a spectroscope in order that absorption effects may be definitely located. Such scales are usually calibrated in m mu units (millionths of a millimeter); the wave-length of red light is approximately 650 m mu units. The Angstrom unit, which is one-tenth of a m mu unit (or one ten millionth of a millimeter) is finding increasing favor. The wave-length of red light in Angstrom units is about 6500. A wave-length scale, while it is an aid in making observations, is not necessary in spectroscopic differentiation of gem stones.

The spectroscope is easily used. It is first adjusted by allowing white light to pass through the slit and focusing the instrument until the spectrum viewed is as clear as possible. The gem to be tested is then placed between the light source and the slit. The light source should be quite brilliant in order that the absorption effects be as pronounced as possible. A 150-watt frosted bulb has been found very satisfactory. A "daylight" filter or a "daylight" blue globe is desirable since an electric lamp ordinarily passes more red and yellow light than blue and violet. The daylight filter equalizes, to a certain extent, the amount of transmission at both ends of the spectrum.

With the stone in position, the slit is adjusted until any absorption effects are as sharply defined as possible. It is then usually necessary to move a faceted stone from one side to the other with respect to the slit in order that it may transmit as much light as possible. The ability to observe absorption effects increases with practice. When the spectroscope is first used, it is advisable to employ a ruby, an almandine garnet, or one of the other stones which shows very distinct absorption bands.

When white light passes through a colored substance, certain components of the white light are absorbed. For instance, when light is passed through a red glass, other portions of the spectrum are absorbed more than the red. Red glass, however, often transmits all the colors of the spectrum. Its hue is due (1) to the blending of the various hues thus transmitted into a sensation which is seen by the eye as *red* or (2) to the transmission of many more of the red waves than of waves of the other colors.

In several colored substances, however, not only are certain wave lengths partially absorbed, but some portions of the spectrum are cancelled completely. When a colored stone possesses this property it gives very characteristic effects in the spectroscope. The absorbed areas may be either very narrow, such as are shown by the majority of zircons or they may extend over a considerable area as does the band in the yellow and green shown by ruby. The very narrow absorption areas are known as absorption lines, while the larger areas are known as absorption bands. Often a colored gem shows both absorption lines and absorption bands. It is with gems which show pronounced and comparatively invariable effects that the spectroscope is of greatest value. Outstanding examples of such stones are ruby, emerald, garnet, and zircon.

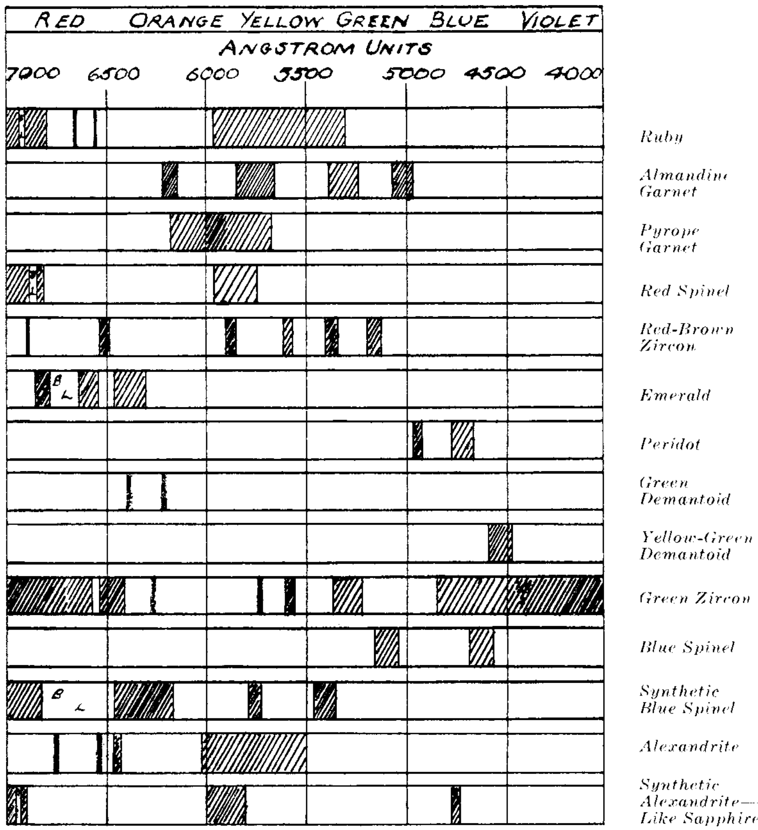
The accompanying illustrations are sketches of several characteristic absorption effects shown by important gem stones. The strength of the lines and bands is indicated as far as possible. It is apparent that the spectra of zircons are very characteristic. Although an occasional zircon may show no absorption lines, the majority of specimens of this species can be readily distinguished by the spectroscope. In this case, the spectroscope furnishes a very important test, since zircon is too high in refractive index to be read on the refractometer. A mounted stone can often be identified without removing it from its setting as would be necessary in order to make a specific gravity test.

Demantoid garnet is also outside the range of the refractometer. The position of the absorption band in a demantoid evidently indicates the nature of the coloring matter. Intense green demantoids may exhibit several absorption lines similar to those of emerald. The coloring agent in these stones—as in emerald—is probably chromium. Lighter and more yellowish green demantoids show a single absorption band in the blue portion of the spectrum. It is supposed that this band is due to iron, which may also be the cause of the yellowish green color.

The spectroscope distinguishes between red spinel and garnets, a determination sometimes very difficult to make by other means, since in some few cases spinel may overlap red garnets in physical and optical properties.

The absorption effects shown by synthetic gems are generally more

Absorption Effects of Gem Stones



These are sketches of the lines and bands seen in the spectroscope when various gems are viewed through it. The drawings are not to be regarded as actual photographs.

The position of any line or band in the illustrations may be located approximately, by reference to the colors indicated above, and more accurately by reference to the scale in Angstrom Units. (See text on accompanying pages.) The "bright lines" or lines of brilliant transmission referred to in the accompanying article are indicated by the letters "BL" in the above sketches. As far as possible the relative strength of absorption lines or bands have been indicated by shading.

pronounced than those shown by their genuine prototypes, — a fact which can be ascribed to the greater proportion of coloring matter in the synthetic. But as the intensity of the absorption bands varies with the depth of color of the specimen, the spectroscope can serve only as an *indication* in detecting synthetic stones whose coloring agent corresponds with that of the genuine material—as is the case of sapphire and ruby. However, synthetic blue spinel* shows a spectrum entirely different from that of the genuine stone, and the spectroscope can be used (although it is rarely necessary) to detect this synthetic.

Both genuine and synthetic rubies show a line of brilliant transmission ("bright line") at approximately 7000 Angstrom units. It has been shown that this bright line is due to fluorescence. As a rule, synthetic ruby fluoresces more strongly than the genuine stone; the bright line in the spectrum of the synthetic is therefore usually—but not always—more pronounced than that of the genuine. This test must be regarded as an indication, only, *not* as a proof.

*Strictly speaking, this is not truly spinel synthetically prepared, but is a synthetic stone isomorphous with spinel.

SPECTROSCOPES FOR GEM TESTING*

A number of spectroscopes have been tested in the G.I.A. laboratory. The three listed below are those which have been found most satisfactory for gem testing, a distinction based upon both cost and results obtained in the observation of cut gems:

Winkel-Zeiss. Model A. Direct vision hand spectroscope. Price $20.00.

Bausch and Lomb. Prism spectroscope on tripod. With wave length scale. Price $50.00.

Gaertner. Model L-201. Prism spectroscope on tripod. With wave length scale. Price $50.00. Some with tangent screw for shifting telescope to view entire spectrum (L-201A). Price $55.00.

*G.I.A. Confidential Service.

NEW POLARIZING MATERIAL

A new substance, named "Sheet Polarizer" has been developed by American scientists. The material is a plastic film of cellulose acetate, in which—it is reported—is dissolved a colloidal substance which polarizes the light which traverses the film. Samples of the new sheet polarizer have been received for testing in the G.I.A. Laboratory. As *Gems & Gemology* goes to press, preliminary work has been done, indicating that the material will prove of great value in several of the gem-testing instruments which require polarized light.

GUILDS

Devoted to News and Activities of Educational Organizations and of Vocational Study Groups and Their Members.

FIRST CERTIFIED GEMOLOGIST EXAMINATIONS

The Examination Standards Board have approved examination questions for the Certified Gemologist Examinations and several candidates have already arranged to stand for their examinations during June, July and August.

The C. G. examination will be given in three portions. The first portion is written by the candidate with free access to reference books and consists of questions, which by requiring discussion on the part of the candidate, are designed to reveal the extent of his knowledge regarding various important subjects, as well as questions the answers to which require only a thorough familiarity, with the use of reference material as a source of information regarding gems and metals. The second portion of the examination is conducted without the access to reference material of any kind and consists of questions upon subjects with which the gemologist should be familiar in his daily activities of buying and selling during which access to reference material is not practical. The third portion consists of the actual identification of unknown stones (genuine, synthetic, assembled and imitation) by the use of gem testing instruments. These stones are sent in individual unmarked diamond papers and this third portion as well as the second portion is sent directly to a Proctor appointed by the Institute. The candidate appears for examination under observation of the Proctor upon an appointed date. Members of the mineralogical or geological departments of universities and curators of museums will act as Proctors in many of the larger cities. Also in many localities members of the Gemological Institute, officers of A.G.S. Guilds or Certified Gemologists who are equipped with the necessary laboratory equipment will be appointed proctors.

The examinations are not limited to candidates who have pursued the courses of the Institute. A reasonable fee, of an amount to be decided by the Boards of the Institute, will be charged for candidates who prepare for examination in some other manner.

NEWS OF GUILDS AND CHAPTERS

Central New England Guild

A meeting of the C.N.E. guild occurred at the Hotel Bancroft, Worcester, Mass., on the evening of June 3. The educational feature of the evening was a talk by Robert M. Shipley on the subject of the Cutting and "Make" of Diamonds.

Plans for regular quarterly meetings to begin in the fall were discussed and these members of an organization committee were appointed:

Douglas Nathan of Fitchburg, Mass.; Robert Franks of Worcester, Mass.: and Cyrus Gidley of New Bedford, Mass.

Wisconsin A.G.S. Guild Officers and Meetings

At a meeting of the Wisconsin Regional Guild of the A.G.S. on May 20, the following officers were elected for the ensuing year:

President . . . . . . Wm. H. Schwanke, Milwaukee
Vice-President . . . . . Chas. E. Kasten, Milwaukee
Secretary . . . . Henry Bloedel, Milwaukee
Treasurer . . . . Henry Stecher, Milwaukee

Robert M. Shipley, of the National Society, addressed the meeting on the subject of the make of the brilliant cut diamond and its effect upon brilliancy and fire.

Southern California Inland Guild

This Regional Guild has been organized to include retail jeweler members of the American Gem Society in San Bernardino, Riverside and Orange counties. At an organization meeting on May 15 the following officers were elected for the year 1935:

President . . . . . . John Vondey, San Bernardino
Vice-President . . . . . . Howard Smith, Redlands
Secretary-Treasurer . . . Paul Noack, San Bernardino
Members of the Executive Committee . . . .
Clarence Fisher, Riverside
Chas. M. Hanf, San Bernardino

Cleveland Chapter

At a meeting of the Cleveland Gem Society at the Statler Hotel the evening of May 24 it was voted that that Society be dissolved and the members present then reorganized as the Cleveland Chapter of the American Gem Society. The constitution and by-laws were adopted and the following officers elected:

President . . . . . Frank Bromley, Shaker Heights
Vice-President . . . . . Bruce McCague, Cleveland
Secretary . . . . Clayton Allbery, Cleveland
Treasurer . . . . V. E. Chittenden, Akron
Member Executive Committee John B. Hudgeon, Bedford

The next meeting of the Chapter will occur in October. The Executive Committee will determine the regular evening each month which will be devoted to either the quarterly meeting of the Guild or the meeting of the Northern Ohio study group which will be directed by the Guild.

Tri-State Guild

(Headquarters, Pittsburgh, Pa.)

Upon the evening of June 15 at the Metropolitan Club, Pittsburgh, the Tri-State Guild elected the following officers for the ensuing year:

President . . . . Paul Hardy, Pittsburgh
Vice-President . Frederick Kropff, Morgantown, W. Va.
Secretary-Treasurer . D. R. Cochran, Wheeling, W. Va.

Plans were completed for the quarterly meetings at which educational features will be presented beginning in October. The Executive Committee were authorized to set the permanent meeting date for the second

Tuesday or Thursday of each third month. Upon the same day of intervening months will occur the meeting of the vocational study group, which the Guild is to direct for the coming year.

Founder Members of the Tri-State Guild include:

Chas. W. Baum, Wheeling, West Va.
H. A. Caplan, Clarksburg, West Va.
William Caplan, Clarksburg, W. Va.
D. R. Cochran, Wheeling, West Va.
Miss Helen G. Craddock, Wheeling, West Va.
Norman B. Hardy, Pittsburgh, Pa.
Paul S. Hardy, Pittsburgh, Pa.
R. G. Henne, Pittsburgh, Pa.
James Herron, Pittsburgh, Pa.
Francis Keating, Pittsburgh, Pa.
Frederick Kropff, Morgantown, W. Va.
A. B. Powell, Wheeling, West Va.
Thaddeus B. Reese, Johnstown, Pa.
R. W. Rehn, Pittsburgh, Pa.
Leon Rubin, East Liverpool, Ohio
Alvin J. Schallus, Pittsburgh, Pa.
Raymond F. Smith, Indiana, Pa.
J. P. Sommer, Pittsburgh, Pa.
Geo. A. Spies, Steubenville, Ohio
Robert E. Stone, Meadville, Pa.
Herman L. Turk, Etna, Pa.
Gordon L. Uhl, Pittsburgh, Pa.

New York Chapter, A.G.S.

The following report of May meeting of the New York Chapter is reprinted from The Jewelers' Circular for June:

Dr. Paul F. Kerr, gemologist and associate professor of mineralogy, Columbia University, spoke before the New York Chapter of the American Gem Society at a meeting held May 23 in the Jewelers 24 Karat Club Room, 608 Fifth Ave., on the methods of distinguishing synthetic from genuine gems. About 25 members of the retail and wholesale trades were present. The jewelers showed intense interest in Professor Kerr's remarks, and applauded with vigor at the close of his lecture and demonstration.

Following the address, Kenneth I. Van Cott presided, while the constitution suggested by the national organization for use by local bodies was adopted. Election of officers was then held, the following men being chosen to serve:

President, K. I. Van Cott (Marcus & Co.); vice president, Richard H. Van Esselstyn (Mirabeau C. Towns); treasurer, Jack Gordon (Avvocato & Tuch, Inc.); secretary, J. Arnold Wood (Poughkeepsie); member of executive board, Frank L. Spies (Handy & Harman).

Mr. Van Cott spoke briefly to outline in tentative form the activities in which the Society will engage. A minimum of four meetings a year are planned, with the next one scheduled for October. Dues are to be $6 annually, $3.50 of which covers membership in the national organization, the American Gem Society, which includes subscription to the bi-monthly publication, *Gems & Gemology*, while the remainder will be used to defray expenses of the local chapter.

ROBERT M. SHIPLEY TALKS TO DALLAS JEWELERS

A dinner meeting of the Dallas Jeweler's Association was held June 20 at the University Club of Dallas, Texas. Miss Cecil Lowenstein, Secretary, was chairman of the evening. Robert M. Shipley was speaker of the evening. His subject was the Grading of Diamonds. The possibility of organizing, with Dallas as headquarters, a Regional Guild of the American Gem Society to embrace Northern Texas and Southern Oklahoma was discussed.

A.G.S. VOCATIONAL STUDY GROUPS

Cleveland

A study group composed of new and advanced students of both the American Gem Society and of the Gemological Institute of America has been arranged by the American Gem Society for monthly discussion, review and gemological practice under the direction of its Cleveland Chapter. The present personnel of this group consists of students and will be under the leadership of Dr. Furcron of Western Reserve University. An initial meeting of the group under the direction of Dr. Furcron was held June 5, 1935, in the mineralogical laboratory of the University, where succeeding meetings will also probably be held. Prof. Theodore Braasch, well known as a scientific student and collector of gems, has offered the group the use of several valuable gem-testing instruments and of his counsel and experience. The first regular monthly meeting will occur in September, and thereafter meetings will be held upon the same day of every month. Prospective students in the Northern Ohio region may enroll and take advantage of all group meetings at any time before September 10. Information may be obtained from Clayton Allbery, Secretary, Cleveland Chapter, 1641 E. 85th St., Cleveland, Ohio, or from American Gem Society, 555 So. Alexandria, Los Angeles.

Pittsburgh

A study group for recently-enrolled and prospective students of the A.G.S. and G.I.A. has been arranged by the American Gem Society to begin monthly meetings in September. The meetings will be conducted by a member of the Geological Department of the University of Pittsburgh, probably in the mineralogical laboratory of that University. Jewelers and others in West Virginia, Eastern Ohio and Western Pennsylvania may form this study group. It will be under the direction of the A.G.S. Regional Guild in that area and applications for enrollment may be sent to D. R. Cochran, Secretary of that Guild, at 1314 Market Street, Wheeling, West Virginia. Detailed information is obtainable from national headquarters of the Society, 555 South Alexandria, Los Angeles, Calif.

Cincinnati

Prof. Otto Von Schlichten, head of the Geology Department of the University of Cincinnati, whose radio talks on gems are well known, will conduct monthly meetings of a vocational study group to begin in September. Newly-enrolled and prospective students as well as advanced students of the A.G.S. and G.I.A. in Kentucky, Eastern Indiana, and Southern Ohio, will be eligible to attend these meetings. Applications may be addressed to Edward F. Herschede, Chairman A.G.S. Regional Certification Board, c/o Frank Herschede Co., Cincinnati, or to Nolte C. Ament, member of that board, c/o Geiger and Ament, Louisville, Kentucky. Further information is obtainable from the American Gem Society under whose direction the work will be conducted.

The following new and advanced students are already enrolled in this group: from Cincinnati—Ed. Herschede, John Z. Herschede, Lawrence Herschede and Wm. J. Toensmeyer of Frank Herschede Co.; James Chapman and Mr. Laemle of Loring Andrews Co., Tudor Newstedt of Geo. H. Newstedt Co., and Holland Q. Saunders; from Louisville, Nolte C. Ament.

Washington, D. C.

A vocational study group has been arranged by the national society for both recently enrolled and prospective students of the A.G.S. and G.I.A. in Maryland, Eastern Virginia and the District of Columbia. Study groups will be conducted by the internationally known mineralogist, Dr. W. F. Foshag of the Smithsonian Institution, and will take place monthly during this fall and the coming spring. Applications for enrollment in this group may be addressed to Mr. W. H. Wright, 607 Thirteenth Street, Washington, D.C., Chairman of the Certification Board of this Region, or inquiries regarding this study group courses, or applications for enrollment may be addressed to the national Society at Los Angeles.

Chicago

Plans are being completed by the American Gem Society for the organization of a study group of its new and advanced students and for students of the Gemological Institute under the direction of the Chicago Chapter of the A.G.S. The group will meet for discussion, review and gemological practice under the leadership of Dr. A. J. Walcott of the Field Museum. The first of these meetings to be held upon a regular date each month will occur in September. The group will be open to students in Chicago, Northern Illinois and Indiana, and Southern Wisconsin. Prospective students in this area may enroll and take advantage of all group meetings by enrolling before September 10, and may receive full information by writing to the American Gem Society, 555 So. Alexandria, Los Angeles.

Milwaukee

The last meeting of the spring study group occurred upon the evening of June 25 at the Pfister hotel with a majority of its twenty-one members in attendance. Dr. A. J. Walcott discussed pleochroism and the use of the dichroscope in distinguishing gems. The members of the group experimented with the use of dichroscopes in testing unknown stones.

A resumption of the study group beginning a systematic review of elementary gemology, is planned by the American Gem Society to begin in September with Dr. A. J. Walcott as leader and instructor. Monthly meetings are contemplated for students just beginning its courses, and applications for entrance or for information may be addressed to William H. Schwanke, President, Wisconsin Guild, 322 E. Wisconsin Street, Milwaukee, or to national Headquarters.

REDUCED INSURANCE COST MAY STIMULATE THE WEARING OF GEMS

In the past years, insurance protection developed so rapidly that premiums mounted to such a point that many people put their jewelry away because of the high cost of protection.

The trouble as I see it is that the premium on insuring jewelry is not so high but the protection premium on carelessness *is* very high. I think this thought is substantiated by the demand for "all risk" policies. Bearing in mind what the term "all risk" means, this coverage must naturally command a very high premium because of its wide scope. In the "all risk" policy on jewelry alone, the yearly premium on a $5000.00 policy is $125.00, and there is no coverage on any other personal effects or household articles. This latter policy offers *less* protection for *more* money and the excessive premium is merely for the privilege of being careless.

Through the efforts of Mr. Bruce Davis of the Lumberman's Mutual, Lloyds of London have agreed to write a policy which protects the public against robbery, hold-up, larceny, etc., for a premium just one-half of the "all risk" policy. This you must bear in mind, does not insure breakage, loss of a stone, and unexplained loss or mysterious disappearance or any "careless protection". Any London Lloyds agency can write the policy and it has found favor in a great many instances.

If the public demands insurance on their own carelessness, the premium should be high but with ordinary precaution and care to which jewelry of great values is certainly entitled, the premium is just one-half.

My interest has not been in a policy which would *take the place* of any other policy, as the people who want the all risk coverage are certainly entitled to it, and it is a wonderful form of insurance. The newer policy I think is for people who are a little older and very much more reserved in their mode of living, and it will enable them to take the jewelry out of the vault and wear it with the protection that they want against all forms of robbery and not against a careless loss.—Note by H. Paul Juergens, Qualifying Certified Gemologist, Chicago.

NEW RULING

Special arrangements for additional Associate Members from one firm.

Where one member of a firm is either a Graduate Member or an Associate Member (and therefore a subscriber to *Gems & Gemology)*, and other members or employees of the firm wish to attend Guild meetings but do not wish to subscribe to *Gems & Gemology*, they may become Associate Members of the American Gem Society (so long as they are employed by that firm) upon the payment of $1.50 yearly as dues to the National Society. This does not apply to additional Graduate Members. All Graduate Members must subscribe to *Gems & Gemology* and if also Registered Jewelers, must answer yearly questionnaires upon all subjects in Gemology marked (in footnotes) "A.G.S. Research Service."