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On the Cover
This diamond necklace plays an important part in the plot of “The Las Vegas Story,” forthcoming RKO picture. Cartier designed, the necklace—featuring five large emerald-cut diamonds surrounded by baguettes and brilliants—is worn here, as in the film, by co-star Jane Russell.
IN THIS YEAR of 1951, the founders of the Gemological Institute of America, and those pioneers who struggled courageously to establish a recognized educational program for jewelers, can look back over the twenty years of its existence with satisfaction and pride of accomplishment.

Few individuals are fortunate enough to live to see the fulfillment of a dream as revolutionary as the introduction of a professional goal based upon comprehensive educational requirements for experienced business men engaged in one of the oldest established trades in the world. Such, however, has been the privilege of Robert M. Shipley, who with a group of outstanding retail jewelers, was responsible for the founding of the Gemological Institute of America in 1931.

Robert M. Shipley, from whose idea the Institute was developed, had had sixteen years experience in the retail jewelry business, the last seven as owner of a large retail jewelry establishment in Kansas. During that time he had also served as President of the Kansas Retail Jewelers’ Association and 2nd Vice President of the American National Retail Jewelers’ Association. He was also instrumental in organizing into research groups a number of progressive minded jewelers in neighboring cities and states. These men were interested in the improvement and stability of the industry and believed its future success depended upon customer confidence which could be gained only through cooperation and greater knowledge. They were the forerunners of the present retail groups in the trade interested in the advancement of the industry through an exchange of ideas and progressive practices.

PREPARATION BEGUN

Since it was not possible to obtain the knowledge he wanted in this country, Shipley went to Europe where he remained for two years. There he visited museums, cutting centers, potteries, jewelry and silverware manufacturing plants, and art centers to investigate all possible sources of information on gemstones and other objects of art. At the same time he studied the only available sources on the subject and received the title of Gemological Diplomate from the Gemmological Association of Great Britain.

In Paris he was able to make his first contribution to adult education when he lectured on painting and other decorative
• Beatrice W. Shipley

arts at the Louvre and the Museum of Decorative Arts.

Planning to apply his newly gained knowledge of gemstones to the operation of a jewelry establishment of his own, he returned to the United States. Finding his country in the throes of the panic which followed the 1929 stock market crash, he decided to open art consulting offices in Los Angeles, while awaiting developments and a more propitious time.

G.I.A. FOUNDERS MEET

It was during this time that the late Armand Jessop, an officer of the California Jewelers' Association, invited Robert M. Shipley to organize and conduct an evening class in gemology at the University of Southern California, should sufficient interest be indicated by the jewelers themselves. Expecting only a few serious students to appear, Shipley was amazed when more than sixty jewelers enrolled for the courses. When the courses were repeated by demand he realized the possibilities of a carefully planned educational course for jewelers.

Accordingly, he invited those who had been interested enough to pass examinations to join him in the founding of the Gemological Institute of America as its first Sustaining Members. Most of those present realized what such a program could mean to them and their industry, and accepted. Today, the voting membership of the G.I.A., which is made up of its Sustaining Members, still includes many of these same men and their firms.

Almost immediately J. E. Peck, a gem collector of Campo, California, who had been driving more than 200 miles each week to attend the evening classes, made a substantial cash payment for a series of correspondence courses. At that moment the Gemological Institute of America became a reality.

The preparation of the first courses was then begun. Since operating income for the struggling new venture came solely from payments for the courses, Robert M. Shipley divided his time between preparing assignments and encouraging others to enroll. In those early years he personally traveled more than 25,000 miles annually to bring his message to jewelers in all parts of the country.

BEATRICE SHIPLEY CONTRIBUTES

As the work of the Institute progressed his wife, Beatrice Shipley, realized her inter-

• Robert M. Shipley
ests centered around her husband's altruistic ambition and from June 1932 until her retirement in June 1943, she was active in the management of the G.I.A. Her previous success in business and educational activities, as well as her experience in church and service work, contributed materially to the rapid growth of the Institute and its ultimate success. While Robert Shipley gave his time to the organization and development of the technical problems of the Institute, she gave hers to the management of finances and personnel.

Great credit is likewise due to the small but enthusiastic staff who worked so loyally with her in these early years. Those inspired
few — Dorothy M. Jasper Smith who came as her secretary in 1932 and remains today as Executive Secretary of the G.I.A.; Dorothy Lovell-Phedus who spent long, arduous hours from 1934 to 1947; and Isabelle Blanchard who remained a part of the staff from 1936 to 1949 — all gave generously of their time and ability and have left their imprint on the Gemological Institute of today.

FIRST STEPS TAKEN
The need for knowledge by jewelers twenty years ago was noticeably imperative. Shipley was well aware of the inadequacies in the trade and seriously undertook the preparation of the necessary courses.

The late T. Edgar Willson, editor of Jewelers Circular-Keystone, long a proponent of education for the jewelry trade, pledged his support as did the publisher P. M. Fahrendorf. So, too, did Francis R. Bentley and George Engelhard of National Jeweler, as well as others connected with the trade press.

The retail Jewelers' Research Group, an influential body of leading jewelers in the country, gave its approval to the proposed educational project and encouraged enrollment of most of its firms for the newly-offered courses. Nationally outstanding members of this group also became members of the first Board of Governors of the G.I.A.

More than any single individual engaged in a retail jewelry business, the late Godfrey Eacret of Shreve, Treat, and Eacret of San Francisco, was responsible for the permanent establishment of the G.I.A. With others, he investigated the plans and work of Robert M. Shipley. Always anxious to be affiliated with anything for the betterment of the trade, he gave of his rare ability, his time, and his counsel. In 1931 he became the first Chairman of the Board of Governors, retaining that post until his death in 1934.

Original research was carried on in a small laboratory. Here the first mail courses were prepared. Much of this material was voluntarily criticized by leading authorities in their specialized fields.

So many individuals and organizations were helpful in these early days of the G.I.A.'s history, that it would be impossible to include the names of all. However, special acknowledgment should be made to the late Warren Larre who expanded the contents of the jewelry assignments—

— to members of the Sterling Silversmiths Guild who furnished valuable contributions to the silverware assignments—

— to the Committee of One Hundred World Gem Authorities who, when the courses were in preparation, answered questionnaires on subjects upon which authors and gem experts had previously disagreed—

— to De Beers Consolidated Mines, Ltd., for the services of its Scientific Director, H. T. Dickinson, who with his assistants carefully examined the diamond assignments and made corrections or suggestions for their improvement—

— to jewelers in the smaller cities and towns throughout the country who studied diligently and whose belief in the Institute, and the principles for which it stood, gave importance and reality to the gemological movement, insuring its recognition as a living, vital force today.

For additional information incorporated in the courses, G.I.A. students and the industry also owe a debt to the authors of important text books in German, French, and English which Shipley used as a source of reference material.

WORK OF ANNA BECKLEY
Anyone who has known the Institute from the time of its early days to the present — has known Anna McC. Beckley by her accomplishments, if not in person.

She came to the Institute with Beatrice Shipley, her friend and associate at the Marlborough School for Girls, at the time of the G.I.A.'s founding. Her passion for accurate detail made her invaluable in her post as head of literary research. She it was who painstakingly verified and coordinated the facts which were incorporated in the courses. In this work she corresponded with authorities all over the world, checking and
seeking to authenticate every bit of information.

She participated actively in the work of the G.I.A. until three years prior to her death in January 1950.

SON JOINS FOUNDER

Early in 1933 Robert Shipley, Jr., fresh from an aeronautical engineering course, came to the G.I.A. to work with his father. First a student, then an instructor, he ultimately became Educational Director of the Institute and an outstanding research man. The younger Shipley assisted in the completion of the courses. Perhaps his greatest contribution to the advancement of the science of gemology has been his develop-

- Anna McConnel Beckley

- Robert M. Shipley, Jr.

ment of many gem testing and diamond grading instruments. Notable among these was his dark field illumination for the examination of gemstones—basic feature of the Diamondscope and Gemolite. Other instruments which were developed and perfected by him include the adaptation of polaroid to the gem polariscope, a universal motion immersion stage for gemstones, an inexpensive gem refractometer, among others.

Although not actively associated with the G.I.A. since, as a reserve officer, he was called to duty in 1941, he has continued since his retirement from the service in 1945 to improve and develop important gemological instruments.

EDUCATORS AND SCIENTISTS COOPERATE

The affiliation of educators and scientists, who had previously regarded jewelers as tradesmen with little concern for accuracy in their representation of merchandise, was an important — though difficult — step forward.

The founder approached university professors who had conducted courses on gems,
AMERICAN GEM SOCIETY
FOUNDED

Instigated by Robert M. Snipley and
under his guidance, graduates and students
of the G.I.A. in 1934 organized and
founded the American Gem Society as an
instrument to further extend the ideals of
the parent organization.

- Diamondscope — early model

as well as museum curators whose depart-
ments included collections of gemstones,
and persuaded many to accept positions on
the Institute's educational boards.

Scientists, with the principal trade asso-
ciations of the United States, selected mem-
bers to serve on an Examination Standards
Board, which prepared examinations for
students of the Institute. Consolidation of
the Educational Advisory Board and the
Examination Standards Board took place in
December 1948.

Today, the educational boards of the Insti-
tute are composed of gem educators,
museum curators, and representatives of the
jewelry industry, as well as scientists in the
fields of gemology, geology, and mineralogy.

- Latest model Diamondscope

While the Gemological Institute is the
educational force within the industry, the
American Gem Society became the profes-
sional organization of the trade. The intro-
duction of titles such as Registered Jeweler

Portion of Board of Governors in 1947. Left to right, Paul S.
Hardy, Geo. Carter Jessop, C. I. Josephson, Oscar Homann, Burton
Joseph, Leo J. Vogt, Myron Everts, Jerome B. Wiss
and Certified Gemologist added to the prestige of jewelers because the industry and public alike recognized the high standards of ethical practice and educational background necessary for the awarding of such honors.

At the time of organization, Robert M. Shipley was appointed Director of the American Gem Society, to serve concurrently with the G.I.A. He continued to serve in that capacity until February 1946, continuing in an advisory capacity after that date only to September 1947 when he withdrew entirely from A.G.S. affiliation. From 1934 until his retirement from active participation in the operation of the American Gem Society, the two organizations were closely associated, sharing both office space and personnel although the governing bodies and officers maintained their separate entities.

G.I.A. BOARD OF GOVERNORS

Officers and the governing body of the G.I.A. have, from the first, served without monetary recompense. From 1932 a group of retail jewelers served as an advisory board under the name of the Board of Governors. This board recommended policies and maintained a close connection with the details of operation, meeting semi-annually and electing its own successors. The G.I.A. is still controlled by this same governing body which today consists of many G.I.A. graduates including representatives of both the wholesale and retail industry in the United States and Canada.

- Edward F. Herschede, Sr.

- Leo J. Vogt

Following the death of Godfrey Eacret, the first Board Chairman, George Brock of Los Angeles was chosen as his successor. He was subsequently succeeded by Edward Herschede of Cincinnati and Leo J. Vogt of Hess & Culbertson, St. Louis.

Presently serving as Chairman of the Board of Governors is H. Paul Juergens of Juergens & Andersen, Chicago. He was an
early student of the G.I.A. and the third person to receive the title of Certified Gemologist. Having been in the retail jewelry business for more than half a century, he is a well-known authority and has always worked faithfully for any movement or cause which would bring benefit and advancement to the industry.

PARTNERSHIP DISSOLVED

In 1942 the Gemological Institute of America, which until that time had been financed and legally operated by Robert and Beatrice Shipley as a partnership, was organized as a corporation. Throughout these years the business had been conducted on a non-profit basis, the Shipleys withdrawing only nominal salaries and a reasonable interest on their investment. At the time of incorporation they had been able to recover most of their original investment. Articles of incorporation provided that the G.I.A. continue to operate as a non-profit institution, supervised by a Board of Governors, and that income be spent only for salaries, research, and other operating expenses.

At last Robert M. Shipley’s ambition to develop a successful educational organization for the benefit of the jewelry trade was accomplished. It had been his belief from the first that such an institution should be owned and controlled by the industry. Accordingly, July 1, 1943, the corporation, together with its valuable physical assets, copyrights, trade marks, and good will was transferred to the industry.

Acquisition papers provided that Shipley remain as Director of the Institute, but be permitted to retire or to engage in a more profitable activity when he had trained a successor. At the annual spring meeting of the Board in 1948 he announced his plan to retire in December, 1951.

SOURCES OF INCOME

As an educational institution, the Gemological Institute of America depends today upon income from its courses, small commissions on instruments, and nominal yearly dues from its Sustaining or Library Members.

- H. Paul Juergens

To insure the perpetuity of the Gemological Institute, an Endowment Fund was contributed by graduates and students as well as other interested representatives in the trade. In 1943 the nucleus of this fund had reached approximately $50,000 and was presented to the Institute. The fund has now increased to more than $100,000.

BOOKS PUBLISHED BY G.I.A.

Soon it became evident that books other than those available were needed and the Gemological Institute prepared and published such books. These include Famous Diamonds of the World, Jewelers Pocket Reference Book, and Dictionary of Gems and Gemology by Robert M. Shipley; The Story of Diamonds by Austin and Mercer, revised and supplemented by Shipley with an additional chapter by P. Grodzinski; Handbook of Gem Identification by Richard T. Liddicoat, Jr.; Introductory Gemology by Robert Webster, edited for American use by Virginia Hinton; as well as A Ro-
SAPPHIRE

Figure (A) shows several sapphire crystals embedded in the familiar gem bearing pegmatite typical of Russian deposits. The typical barrel-shaped hexagonal sapphire crystal at (B) is from Ceylon. The three fashioned stones at (C) are Montana sapphires, while the figure of Buddha (D) was carved from an Indian sapphire. The crystal (E) in matrix is typical of Montana stones. By comparing this plate with that of ruby one can easily note the difference between the characteristic crystal forms although both belong to the same system. Specimens from the British Museum (Natural History), London.
EUCLASE, SCAPOLITE, ETC.

The blue gem (A) and the crystal (B) are both euclase. In appearance this stone can easily be confused with aquamarine, but because of its easy cleavage cut specimens are seldom seen. Brazil. Figure (C) shows a cut axinite from Dauphine. This mineral occurs in a wide range of pleasing colors and is very suitable for gem purposes. The yellowish stone at (D) is sphene, a rare gem famous to collectors for its high dispersion and refraction. The pink crystals at (E) are apatite, Mt. Apatite, Maine. Figures (F) and (H) show two scapolites from Madagascar and the Mogok ruby mines respectively. The crystal at (G) showing strong pleochroism is iolite and the cut stone (J) is apatite, also from the Burma ruby mines, Mogok. Specimens from the collection of British Museum (Natural History), London.
man Book on Precious Stones by Dr. Sydney H. Ball which was edited by Kay Swindler and published posthumously.

Since 1943 the Institute has also published a scientific quarterly, Gems and Gemology, which with the appointment of an Editorial Board in 1947 became the official journal of the Gemological Institute of America.

**RESIDENT CLASSES INTRODUCED**

In 1937 the first Resident Class for G.I.A. correspondence course students was presented in Los Angeles. International recognition was attested about this time when Jose Beltri of Mexico City, Leopold Kahn of Manila, Edward J. Gubelin of Switzerland, and Sardha Ratnavira of Ceylon came to the Institute for periods of supervised study and remained to attend resident classes.

Although it was necessary to discontinue this service to students during the war years, in 1946 other resident classes were added to the curriculum. Today, the Institute conducts two resident classes of three weeks each, designed to provide for those students who desire it, grading and testing experience with diamonds and colored stones. Such classes are presented frequently in New York, Chicago, and Los Angeles with students attending from all parts of the North American continent, as well as countries abroad.

During the war years, G.I.A. Graduate Virginia Hinton, C.G., F.G.A., Houston, Texas, came to Los Angeles and assisted in the struggle to keep the G.I.A. function-

Wiglesworth joined the G.I.A. staff, without salary, as Director of its eastern laboratory there. His untimely death in 1945 precipitated the closing of the eastern branch of the Institute, which was reopened in New York City in August, 1948.

DR. KRAUS ACCEPTS PRESIDENCY

Succeeding Dr. Wiglesworth as President of the G.I.A. was Dr. Edward H. Kraus, Dean Emeritus of the Colleges of Art, Literature, and Science at the University of Michigan, who was recently elected G.I.A. President for the sixth consecutive year.

Long recognized internationally as an authority in the field of crystallography and precious stones, Dr. Kraus had conducted a course in gem identification from 1916 to 1933. In the early days of the Institute, more help and encouragement was given by him than by any other educator in the country. With H. T. Dickinson and the late Dr. Sydney H. Ball, Dr. Kraus was made an Honorary Member of the Institute.

- Dr. Edward Wiglesworth. Below Resident Class in Los Angeles Laboratory, 1940. Left to right, Sam Tyack, Jerome B. Wiss, Martin Mager, John Vondey, Dr. Wiglesworth.
in 1943. He had also served as a member of the Examination Standards Board.

**G.I.A. LABORATORIES**

Benefits accruing to the industry through its acceptance of the need of a basic education for trade members had a very great influence on the trade. The growth and expansion of the G.I.A.'s research and testing laboratories was also of considerable importance. The provision of simple, exact means of identification for jewelers trained to use them, as well as reliable testing facilities for others, accelerated industry progress in the last decade.

The first G.I.A. Laboratory opened in Los Angeles in 1931 when Godfrey Eacret, first Board Chairman, donated a pearl endoscope and special pearl testing equipment. Shortly thereafter H. D. Feuer of New York City made a generous contribution for further laboratory equipment. Between 1940 and 1945, while the Boston Laboratory was in existence, rapid advancement was made. This continued with the opening of the New York Laboratory in 1948. Today, the G.I.A. operates two of the leading gemological laboratories in the world.

- Early G.I.A. Laboratory

- Dr. Edward H. Kraus

**GEM TRADE LAB ACQUIRED**

Since 1949 the Gem Trade Laboratory in New York City has been operated in conjunction with its own laboratory by the Gemological Institute. Trade members, who turned over the Gem Trade Laboratory to the G.I.A. in October of that year, are entirely distinct from any other Institute Members.

Since the Gem Trade Laboratory is operated by the Institute's eastern branch and handles more testing than any such laboratory in North America, the staff is constantly aware of any new imitations or frauds, and is in a position to develop and test new identification and grading equipment, as well as new testing procedures.

**THOUSANDS STUDY COURSES**

In the beginning ninety per cent of the G.I.A. students were jewelry store owners more than 45 years of age. Hundreds of them found the new knowledge of gemology of inestimable value in maintaining their leadership, and increasing sales of quality merchandise. These men, who were the early pioneers in the gemological movement, have contributed much to the high standards of the jewelry profession today.
Richard T. Liddicoat, Jr.

They have made the industry and the buying public cognizant of the thoroughly educated and trained jeweler.

Every branch of the industry is represented by students and graduates of the G.I.A. with approximately 10,000 having enrolled for courses since its inception. Not only has it become national in scope in the twenty years of its existence, but international as well with correspondence students currently enrolled from seventeen foreign countries.

COURSES APPROVED BY V.A.

With the approval of the G.I.A. courses by the Veterans Administration in the fall of 1946, the opportunity for an educational background for younger men of the jewelry industry was made possible to great numbers. Since that date, 6600 veterans have enrolled with the G.I.A. for training under the GI Bill of Rights and many hundreds have completed their studies and acquired their diplomas in the Theory of Gemology, or the Theory and Practice of Gemology.

As a result of increased enrollments after the V.A. approval, it became necessary for the Gemological Institute to expand its own operating and teaching staff. To these individuals also must be given credit for the phenomenal success and rapid development of the Institute's activities in the past five years.

PRESENT INSTITUTE STAFF

All courses are prepared and conducted from the international headquarters of the Gemological Institute of America in Los Angeles. Approximately forty persons constitute the regular personnel of the G.I.A. at the present time.

Richard T. Liddicoat, Jr., to whom Robert M. Shipley delegated many of his duties in 1948, came to the Institute in 1940 upon recommendation of Dean Edward H. Kraus, as Assistant to Robert M. Shipley, Jr.

Prior to his connection with the Institute he was Assistant in Mineralogy at the University of Michigan. After almost four years absence while serving with the U. S. Navy, he returned to the G.I.A. early in 1946 as Director of Education.

Today, as the Institute's Assistant Director, he has assumed the general administrative duties of Director Shipley and since 1948 has been responsible for the development, advancement, and successful operation.

Los Angeles Laboratory in 1947. Left to right, Robert Allen, Dr. George Switzer, Lester B. Benson, Richard T. Liddicoat, Jr.
of educational and research departments.

He was instrumental in establishing the eastern headquarters branch and laboratory in New York City although he continued at the same time to give assistance to the Director in administrative and directive matters, and in the formulation of G.I.A. policy.

Dorothy M. Jasper Smith, who will retire from the G.I.A. late this year, has—with the exception of brief periods of absence—worked closely with Robert and Beatrice Shipley since she came to the Institute in 1932. She helped organize the original G.I.A. Study Groups in 1935 and has performed practically every task connected with the Institute.

In 1948, as Executive Secretary, she took over the expediting and coordination of certain definite projects formerly supervised by Director Shipley. She also serves as Secretary to the Board of Governors. Her withdrawal from active participation in the work of the Institute will be a distinct loss and no history of the G.I.A. would be complete without a sincere acknowledgment of her loyalty and her great contribution to the growth and success of the Institute during the almost twenty years of her tenancy.

Clare Verdera, who came to the Institute permanently in 1946—after working for brief periods since 1942—holds the position of Personnel Manager and Purchasing Agent. She also has charge of the Mimeograph Department where assignments and other forms are produced and, in addition, heads the Mailing and Shipping Department.

Lester B. Benson, directing resident class training, came to the Institute in the early part of 1947. Not only has he been responsible in the last few years for the organization, planning, and successful presentation of resident class work, but he has contributed much to recent research and revision of courses. He also acts as director of the Los Angeles Laboratory.

Public Relations Director for the Institute is Kay Swindler who came to the Institute in February, 1947 and heads the Publica-

- Dorothy M. Jasper Smith

tions Department. This department, in addition to preparing Gem and Gemology and the G.I.A. student publication, the Loupe, is also responsible for books published by the G.I.A., the preparation of pamphlets, brochures, educational supplies and various other printed matter—as well as for publicity and advertising used by the Gemological Institute.

In December 1947 G. Robert Crowningshield became a member of the Institute’s staff, as Instructor. With the opening of the New York Branch in the fall of 1948 he was transferred there to assist in its establishment and management. Following the acquisition of the Gem Trade Laboratory in October 1949, he took over the operation of the combined laboratories in New York in February 1950 and is today Director of G.I.A. Eastern Headquarters and the Gem Trade Laboratory.

In March, 1948 Kenneth M. Moore joined the staff of the Institute as an Instructor. Today his responsibility covers supervision of the multitude of details connected with the mechanics of the Education Department’s operation, including the steady flow of assignments to and from students, recording of grades, examinations,
and other special services. He also heads the Instrument Department of the Institute.

Laurence L. Copeland came to the Institute in May 1948. In charge of course revisions, his work of keeping assignments up-to-date necessitates constant correspondence with authorities all over the world and the introduction into assignments of all late developments and changes. Thus, accurate and current information is available to students at the earliest possible moment. He also has charge of the coordination of the G.I.A. Study Groups which are currently active in twenty cities.

In January 1949 present Senior Instructor Joseph A. Phillips, Certified Watchmaker and experienced jeweler, was added to the staff as an Instructor. In addition to grading assignments, he has contributed much to the improvement of the G.I.A. study programs by preparation of photographic illustrations and tape recordings designed for study group and resident work of students.

Among other Instructors of the G.I.A., Bert Krashes, Gene Speitel, and Norman Smith have all had retail jewelry store experience, while James Small is a graduate geologist. John Ellison recently joined the staff at Eastern Headquarters.

Today, the Gemological Institute of America can look with pride upon its accomplishments. With graduates and students in all parts of the world, its story is now one of universal acceptance and recognition among scientists in all lands.

Many of the pioneers of the industry who were instrumental in its early organization and growth have continued to serve faithfully and enthusiastically throughout the years. Others, who have not lived to see the result of their courageous efforts, have been supplanted by a younger generation of jewelers. Into the hands of these many young men and women, who have gained inspiration and knowledge from the courses of the Gemological Institute, will fall the task of carrying on the work which was begun by Robert M. Shipley and carried on so ably by him and his associates for twenty years.

• Early G.I.A. Graduates. Left to right, standing, Willam Glick, Edw. Herschede, Sr., Edward Herschede, Jr., Nolte Ament, Guy Schwartzlander, Carleton Broer, H. I. Rosencrans, C. I. Josephson, Hans Bagge. Seated, Chas. Carolyne, Paul Cohard, H. Paul Juergens, Del Hohenstine, Wm. Johnson
The Diamond Mines of Diamantina—past and present

By

THOMAS DRAPER

Part I

The City of Diamantina takes its name from its diamond mining industry which began more than two hundred and twenty years ago and has been carried on without a break during this entire period. Originally it was known as Tejucu or the "Muddy Place" and its present, more appropriate name was not conferred upon it until 1838 when it was declared a municipality with Diamantina as its capitol.

There has never been a time in its history when someone was not somewhere searching for the coy diamond. Its rivers and minor streams have been dammed and their bottoms stripped down to bedrock. Its hillsides and flats are scarred and huge excavations have sent millions of tons down to the sea. There is hardly any part of its surface, unless covered by its dull gray quartzites, in which diamonds do not occur and that cannot profitably be worked provided there is water within a reasonable distance.

New finds are constantly being made or old workings rediscovered. An amusing incident took place only a few days ago when bulldozers, enlarging the airfield, uncovered gorgulho (diamond bearing gravel) and special precautions had to be taken to prevent its clandestine removal from the depressions that were being leveled. There is prob
ably no other airfield in the world that can be said to be paved (sparsely) with diamond.

However this is merely a diversion from the main theme which is to present a picture of the past and an estimate of the future possibilities of this historical region which, in its early days, played a prominent part in shaping the destiny of Portugal. Wealth derived from its diamonds not only helped to place that country at the zenith of its glory but also contributed, at a later stage, to its release from the French occupation by paying part of the indemnity exacted by France during the Napoleonic wars.

Historical research now tends to discredit the original versions that diamonds were found, but not recognized as such, in the bateas of the gold miners who had reached the region in the closing years of the 17th century. The legend that diamonds were first identified by a priest, who had been to the diamond fields of India, is now also discounted. This does not detract, however, from the fact that the discovery forms one of the most fascinating chapters in the historical annals of Brazil. Indirectly, Diamantina owes its origin to the prolonged search for emeralds which eventually led to the discovery of the Ouro Preto gold field and subsequently extended into the Diamantina region itself.

In his Memorias do Distrito Diamantino of which, unfortunately, no English translation exists, Joaquim Felício dos Santos, a native son of Diamantina, relates the circumstances under which the pioneer bandeirantes arrived. Written nearly 100 years ago by one of the third generation of pioneers, when he had access to official documents now scattered far and wide, it forms one of the most interesting and reliable records of the initial stages of diamond mining in Brazil. In it he describes the harsh conditions under which mining was permitted—subject to restrictions and to penalties out of all proportion to the offenses committed.

Under the Portuguese regime, access to the diamondiferous region was strictly forbidden even to the Portuguese themselves unless they could provide an adequate reason. This ban was due to an effort to suppress clandestine mining and contraband exportation of diamonds which constituted an ideal medium for smuggling. There is said to have been considerable leakage through this practice, but probably not on the scale generally accepted by historians. The arid, rugged, and inhospitable nature of the region, devoid of all commodities except those imported from other sources; the fact that all natural exits were patrolled and that hostile Indians still existed; coupled with

- Rock formation, Lavaras Series, opposite Diamantina
the severity with which infractions were punished, must have rendered contraband mining a very hazardous venture.

During the Portuguese administration, Diamantina suffered varying degrees of fortune or misfortune according to the disposition of the succession of Intendentes (administrators) appointed to enforce the laws promulgated in Portugal. Some of its representatives were tolerant and winked at any infractions. Others were harsh and exacted the utmost obedience to the restrictions and vexations imposed by Portugal.

Except for its official records and the frequent and eloquent protests of its citizens, Diamantina remained a 'closed book' until 1809 when John Mawe, an English mineralogist, was allowed — in fact commissioned — by Prince John, the Regent of Portugal, to visit the region. For this purpose he was given an official escort and authority to consult public archives.

Mawe was followed shortly afterwards by Saint-Hilaire, a French botanist; by Spix and Martius, two Austrian scientists; by Baron W. L. von Eschwege; by Sir Richard Burton, and others whose books threw further light on the dark period preceding their visits.

Mawe's book *Travels in the Interior of Brazil* was published in 1812. It has since been reprinted and also translated into French, Italian, Dutch, Swedish, German, Russian, and Portuguese. He does not express any opinion regarding the origin of the diamonds although he does seem to have made some inquiries and to have been informed that it was not unusual to find both gold and diamond in a conglomerate. No trace of the matrix itself had been found. The conglomerate, locally known as *canga*, of which they gave him a sample containing both gold and a diamond, is not an uncommon occurrence and merely consists of an agglomeration of pebbles and sand with a ferruginous (iron rich) binding usually found on bedrock.

As the first book of its kind to deal with diamond mining in Brazil, *Travel in the Interior of Brazil* describes not only Mawe's journey, which began in the Argentine and ended in Bahia, but also includes sketches of the diamond mining methods used at the time of his visit. One of these, frequently copied by later writers, shows a row of slaves, neatly dressed in white smocks, washing for diamonds below a grass roof under the supervision of *feitores* (overseers), each

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- Discarded massa at the Duro Mine
Map of Diamantina Fields

SCALE 1: 800,000
with a whip in hand, seated on high armless and backless stools to prevent them from falling asleep.

The washing plant consisted of a series of shallow divisions, slightly inclined toward the discharge end, approximately three yards long and three feet wide. The upper end of each division formed part of a covered flume at right angles to the divisions, from which water was received through an aperture six inches wide and one inch high. A slave in each division scraped in the gravel, previously deposited on and behind the main flume, as required and stirred it against the current until the water ran clear. After this the batida (concentrated product) was removed to be washed in a batea. Except a few "old timers," garimpeiros have now substituted the South African sieves for the batea which was both cumbersome and unsafe for diamonds. Many of the old talus heaps of the bandeirantes were subsequently successfully rewashed with sieves. As a matter of practical experience it was found that usually the larger stones escaped detection due, no doubt, to the fact that the oversized material was carelessly scraped out from the batea.

Mawe's journey from Rio took a month and as he passed through Ouro Preto he showed the gold miners how to recover mercury from their gold refining operations. He also included a visit to the topaz mines in Brazil, the best of which are still producing. On his passage through Itabira do Marro Dento he left drawings of furnaces for smelting iron ore.

In Diamantina, Mawe became the guest of the Intendente (administrator) of the district, Manoei Fereira da Camara, who invited him to visit the diamond washings at Mendanha on the Jequitinonha river (pronounced Jequi-tin-no-ni-yo).

Camara was one of the most famous of the Intendentes and was also the first native born Brazilian to be honored with this post during the Extracco period when diamond mining was being done by and for the government. A man of progressive ideas who had studied mining and mineralogy in Europe and was familiar with mechanical appliances, he tried to increase production by installing elevator buckets attached to rawhide rope driven by an overshot waterwheel. Mawe made a sketch of this and it is shown in the first edition of his book. Camara also installed "a system of cylinders" for elevating the cascalho out of the pit. It is interesting to note that these innovations were resented by the slave owners. These men feared their revenues would be affected as the government might reduce the number of slaves hired from them for which it paid at the rate of approximately 356 miliegrams of gold per slave, per day.

Mawe spent five days in Mendanha where he found about 1000 slaves at work in a section of the river which had been diverted into a ditch by damming it "with thousands of sandbags." This also seems to be an
innovation introduced by Camara since there is no previous record of constructing a dam in this way.

At the time of Mawe's visit Mendanha consisted of about 100 round, wattle-and-daub huts thatched with grass resembling the "rondavels" of Africa.

Speaking of the Jequitinhonha itself, Camara informed Mawe that almost any section could be relied upon "to yield 10,000 carats when its turn came, or if at any time there was need of an urgent supply."

In his semiofficial position Mawe was allowed access to the official records of production and estimated that at the time of his visit it reached 25,000 carats. Between 1801 and 1806, both inclusive, 115,675 carats and 17,300 pounds sterling worth of gold were sent to Portugal, produced at a cost of 204,000 pounds sterling.

During his stay in Diamantina, Mawe was impressed by the social graces and luxury of its inhabitants who imported bacon, cheese, butter, beer, and other commodities from England, and who dined off the best Wedgewood and Sevres crockery. While there he taught his host how to make beer and his hostess how to make butter and cheese. The beer, he confesses, was not very successful but he prides himself on the quality of the cheese.

• Massa at Serrinha Mine

Mawe noted that the slaves were well treated and, although compelled to work from daylight to dark, were given periods of rest during the course of the day, especially those whose stooping positions rendered their work irksome.

Another interesting observation was the absence of any large diamonds in the parcels he saw. He mentions one of 16½ carats,—one carat less than would have awarded the slave finder his freedom. In the parcels sent to Portugal during Camara's administration, only two weighed slightly more than 30 carats. During part of the Extraccao Period, lasting 47 years from its inception, only 115 stones exceeded 17½ carats. There is no authentic record of a diamond exceeding 60 carats in weight from the Diamantina field. During the past thirty years only four have exceeded 50 carats, one of which was found by chance in the tailings of the Boa Vista mine.
Before leaving Diamantina, Mawe was taken on a side trip to the Rio Pardo on the opposite side of the watershed where the Extraccaco had another of its gangs at work. Here he noted the difference in the appearance of the diamonds. He mentions the green coated stones characteristic of the Corrego Novo, Campo Sampaio, and Sao Joao da Chapada mines, discovered at a later date, from which they were probably derived. This green coating does not yield to any acids nor does it affect the quality of the stone, but it does render it difficult to spot any internal defect.

An interesting phenomenon, as regards diamonds, was first noticed at Corrego Novo by the writer's brother, Edward. This, the intergrowth of diamonds and quartz, was subsequently repeated a number of times at the Boa Vista mine. The Corrego Novo specimen was forwarded to the States where it was described by Professor J. B. Colony in the *American Journal of Science, Ser. V; Vol. 5.*

It appears, however, that this peculiar and interesting fact was first described in 1858 by P. Hartig in *Description d’un diamante remarquable contenant des cristaux* in *Verhandlingen der Koniglyke Academie van Wetens Chappen.*

While in Brazil, Mawe made a collection of its semiprecious stones which he described in his *Treatise on Diamonds and Precious Stones including their History,* and in which he shows a colored example of a Brazilian Imperial topaz. "There is no doubt," says an introduction to the Portuguese version by Clado Ribeiro Lessa, "but that the publication of this treatise was the principal factor in popularising the Brazilian gems among the English, especially the Imperial topaz, ... and to no lesser extent crysoberyl and a variety of blue topaz known as 'Brazilian sapphire' which up to that date

- Close up of massa at Serrinha Mine showing pebbles and diamond-heavy matrix. Note orientation of pebbles
had been regarded as a mere scientific curiosity confined to mineral cabinets."

Camara's term as Intendente ended in 1822 when he left Diamantina to assume his position as one of the Brazilian legislators elected after the newly won freedom from the Portuguese regime. He was, as his life *O Intendente Camara* by Marcos Carneiro de Mendonca shows, one of the most enlightened and progressive Brazilians of his time. He was the first to appreciate the importance of the Brazilian iron ores and was responsible for erecting the first smelter of its kind at Morro do Pilar, which Baron von Eschwege was engaged to operate.

Camara's departure coincides with the decline in production of the Extraccao period to a point when it began to incur losses. The number of slaves employed had, by successive stages, been reduced from 5000 to less than 1500; and the armed patrols to such an extent that they were no longer able to control clandestine, if not open, diamond mining.

This state of affairs led to the discovery in 1824, by a *garimpeiro*, of one of the most remarkable occurrences in the region—the Pagao mine from the surface of which 25,000 carats were obtained by Camara's successor. This was the result of surface enrichment of a purely alluvial character in which, apart from a little earth, only two minerals, quartz and diamonds, occurred. The character of the quartz indicated that it had been decomposed *in situ*. The importance of this fact was not appreciated until later, when a *garimpeiro*, Antonio Evarista by name, in 1919, followed the quartz vein down and, in four years, took out more than 5000 carats of even-sized, white, frosted stones such as have not been found elsewhere in this region. This is especially interesting because the district lies between the Campo Sampaio and Sao Joao da Chapada Mines both of which produce the green coated diamonds previously mentioned. The fissure eventually pinched out and is no longer being exploited, but it adds to the many perplexing problems regarding the origin of the diamond in Brazil.

A few years later this problem was complicated by the discovery of the 'High Level' mines which, it is presumed, are responsible for shedding the alluvial diamonds found throughout the region. Up to this point, by

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*Massa at Guinda Mine. At right, weathering of rock in Diamantina*
both the Contract and Extraccao Periods, operations had been confined to alluvial mining in the river beds during the dry season and to the grupiares and higher levels during the wet season. With large numbers of slaves, hired from local residents, to support, diamonds were traced during the wet season to the apex of the watershed and eventually found to extend down the opposite side. Although the areas that could be worked were defined by the government, they were successively extended until finally the entire area of the field, comprising many hundreds of square miles, was proved to be diamondiferous.

Diamond mining had in the meantime passed through successive stages comprising:

1. The Discovery Period, 1728 to 1740, during which various forms of taxation were tried without success.

2. The Contract Period, 1742 to 1771, when the exclusive right to mine for diamonds was sold to the highest bidder. This was subject to certain restrictions including limitations of the number of slaves employed, and the obligation to carry on mining in the Jequitinhonha river or its tributaries by unbroken successive stages upstream, in order to prevent pollution of intermediate areas.

3. The Extraccao Period, 1772 to 1842, when mining was done for and by the Crown of Portugal.

4. The Post-Extraccao Period included the discovery and development of the 'High Level' mines, some of which are presumed to constitute the matrix of the diamond in this region if not elsewhere in Brazil.

To Be Continued

- General view of old workings of Serrinha Diamond Mines near Diamantina

- Canal cut through decomposed basic igneous rock, separating massa outcrop at Daltas Mine
Nomenclature of Gems
ADOPTED BY THE AMERICAN GEM SOCIETY

By
E. H. KRAUS
President, Gemological Institute of America

At the conclave of the American Gem Society held in Boston in 1949 and in Detroit in 1950, it was reported that a standardized nomenclature of gems was being prepared. After much study, correspondence, and discussion the appended nomenclature list was adopted by the American Gem Society on March 18, 1951, at the conclave held in Washington, D. C. In this list, gems are classified in four groups, as follows: A, Important Gemstones; B, Organic Gem Materials; C, Other Gem Minerals; and D, Synthetic Gem Materials.

The standardized nomenclature marks a distinct advance for gemology in the United States and Canada. In the case of a few terms there may be difference of opinion as to the wisdom of the actions taken. It is understood, however, that the list should be given careful consideration by the members of the Society, and that in three or five years some revision may be deemed advisable. During this period the new B.I.B.O.A. list can also be studied. It is hoped that the differences, which exist between these and other lists, can then be reconciled and a truly international nomenclature established.

2. The B.I.B.O.A. list will be published in this journal when it has been received from European authorities.

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>DESCRIPTION</th>
<th>CORRECT NAMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. IMPORTANT GEMSTONES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIAMOND</td>
<td>Transparent. Colorless. All colors, usually in very light tones. Also black</td>
<td>Diamond</td>
</tr>
<tr>
<td>CORUNDUM</td>
<td>Transparent red (not including pink or other light tones of red)</td>
<td>Ruby</td>
</tr>
<tr>
<td></td>
<td>Transparent blue</td>
<td>Sapphire</td>
</tr>
<tr>
<td></td>
<td>Transparent. All colors other than red</td>
<td>Pink sapphire, Yellow sapphire, Purple sapphire, Green sapphire, etc.</td>
</tr>
<tr>
<td>SPECIES</td>
<td>DESCRIPTION</td>
<td>CORRECT NAMES</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Transparent</td>
<td>colorless to pale bluish white</td>
<td>White or colorless sapphire</td>
</tr>
<tr>
<td>Asteria—</td>
<td>6 pointed star in semitransparent to semitranslucent gray and all above</td>
<td>Star sapphire</td>
</tr>
<tr>
<td>Red asteria</td>
<td>colors except red, also gray, black, or brown</td>
<td>Star ruby</td>
</tr>
<tr>
<td>Pink or</td>
<td>pinkish gray — same</td>
<td>Star sapphire</td>
</tr>
<tr>
<td>CHRYSOBERYL</td>
<td>Transparent greenish yellow, green, yellowish green, greenish brown to brown</td>
<td>Chrysoberyl</td>
</tr>
<tr>
<td>Transparent</td>
<td>to translucent. Any of above colors exhibiting chatoyancy (a distinct</td>
<td>Chrysoberyl cat's-eye</td>
</tr>
<tr>
<td>SPINEL</td>
<td>translucent as above, but chatoyant</td>
<td>Spinel, red spinel, etc.</td>
</tr>
<tr>
<td>TOPAZ</td>
<td>Transparent red, pink, blue, yellow to orange-red, green, purple, violet,</td>
<td>Topaz, Yellow topaz, Blue topaz, Pink</td>
</tr>
<tr>
<td>BERYL</td>
<td>colorless, brown, green</td>
<td>topaz, etc.</td>
</tr>
<tr>
<td>Transparent</td>
<td>intense green to bluish green</td>
<td>Emerald</td>
</tr>
<tr>
<td>Transparent</td>
<td>light green</td>
<td>Beryl</td>
</tr>
<tr>
<td>Transparent</td>
<td>yellow</td>
<td>Golden beryl</td>
</tr>
<tr>
<td>Transparent</td>
<td>light blue to greenish blue</td>
<td>Aquamarine</td>
</tr>
<tr>
<td>Transparent</td>
<td>light red (rose or pink), light purple (rose)</td>
<td>Morganite</td>
</tr>
<tr>
<td>ZIRCON</td>
<td>Other colors</td>
<td>Beryl</td>
</tr>
<tr>
<td>Transparent</td>
<td>colorless, yellow, blue, green, orange to orange-brown, violet, etc.</td>
<td>Zircon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blue zircon, Green zircon, etc.</td>
</tr>
<tr>
<td>SPECIES</td>
<td>DESCRIPTION</td>
<td>CORRECT NAMES</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>TOURMALINE</td>
<td>Transparent. All colors and colorless</td>
<td>Tourmaline</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green tourmaline,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Colorless tourmaline,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Red tourmaline,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Colorless tourmaline cat’s-eye, etc.</td>
</tr>
<tr>
<td>GARNET GROUP</td>
<td></td>
<td>Garnet</td>
</tr>
<tr>
<td>ALMANDITE</td>
<td>Transparent red to purple</td>
<td>Almandine garnet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or almandite</td>
</tr>
<tr>
<td>PYROPE</td>
<td>Transparent red to reddish brown</td>
<td>Pyrope garnet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or pyrope</td>
</tr>
<tr>
<td>RHODOLITE</td>
<td>Transparent light to medium red-purple to violet</td>
<td>Rhodolite garnet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or rhodolite</td>
</tr>
<tr>
<td>GROSSULARITE</td>
<td>Transparent yellow to orange-brown</td>
<td>Hessonite garnet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or hessonite</td>
</tr>
<tr>
<td></td>
<td>Transparent yellow-brown to reddish brown</td>
<td>Hessonite or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cinnamon stone</td>
</tr>
<tr>
<td></td>
<td>Translucent to semitranslucent yellowish green</td>
<td>Grossularite or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>green garnet</td>
</tr>
<tr>
<td>ANDRADITE</td>
<td>Transparent green</td>
<td>Demantoid Garnet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or demantoid</td>
</tr>
<tr>
<td>PERIDOT (Olivine)</td>
<td>Transparent light to dark yellowish green, brown, light yellow-green to yellow</td>
<td>Peridot</td>
</tr>
<tr>
<td>QUARTZ</td>
<td>Transparent violet to purple</td>
<td>Amethyst</td>
</tr>
<tr>
<td>Crystalline</td>
<td>Transparent to translucent light red (pink) or light purplish red (rose)</td>
<td>Rose quartz</td>
</tr>
<tr>
<td></td>
<td>Asteriated (exhibiting 6 pointed star) in pale tones of same color</td>
<td>Star rose quartz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or star quartz</td>
</tr>
<tr>
<td>SPECIES</td>
<td>DESCRIPTION</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>Transparent yellow, orange, yellow-brown, red-brown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transparent grayish brown to almost black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Translucent grayish green, light gray, greenish yellow, brownish, brownish red, or bluish with moving band of light</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Translucent yellowish to brown with silky sheen as stone is moved. Also dyed brownish red and gray</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Translucent bluish with silky gray sheen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Translucent grayish, yellowish, brownish, or brownish red glittering with red spangles. Green with silver spangles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semitranparent to translucent white to bluish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sometimes dyed blue, green, yellow, brown, etc. Dyed Chalcedony long known in trade as “onyx” with color prefix</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opaque black (usually dyed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Translucent red to brownish red, orange to orange-brown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Translucent red-brown or yellowish brown to brown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Translucent to opaque. Flat parallel layers of gray or black or any color but red, orange or brown alternating with white. (Often used in trade to denote dyed color)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Translucent to opaque. Flat parallel layers of carnelian or sard alternating with white or black chalcedony</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semitranparent dark green with red spots</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semitranparent to translucent light yellowish green (apple green)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Translucent. Curved bands alternating in various colors</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CORRECT NAMES**

- Citrine or topaz quartz
- Cairngorm or smoky quartz
- Quartz cat’s-eye
- Tiger’s-eye
- Hawk’s-eye
- Aventurine or aventurine quartz
- Chalcedony, white chalcedony, etc.
- Black chalcedony
- Carnelian
- Sard
- Onyx
- Sardonyx
- Bloodstone or heliotrope
- Chrysoprase
- Agate or a banded agate
<table>
<thead>
<tr>
<th>SPECIES</th>
<th>DESCRIPTION</th>
<th>CORRECT NAMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPODUMENE</td>
<td>Translucent white with green, black, brown, or reddish moss-like inclusions</td>
<td>Moss agate</td>
</tr>
<tr>
<td></td>
<td>Opaque, red, yellow-brown; sometimes green or white</td>
<td>Jasper</td>
</tr>
<tr>
<td></td>
<td>Transparent light yellow to greenish yellow, bright yellowish green</td>
<td>Spodumene</td>
</tr>
<tr>
<td></td>
<td>to bright green</td>
<td>Kunzite</td>
</tr>
<tr>
<td></td>
<td>Transparent rose pink or violet</td>
<td>Jadeite</td>
</tr>
<tr>
<td>JADE GROUP</td>
<td></td>
<td>Nephrite</td>
</tr>
<tr>
<td>JADEITE</td>
<td>Semitransparent to opaque, green, white, white with green inclusions, also</td>
<td>Opal, white opal</td>
</tr>
<tr>
<td></td>
<td>brown, orange, reddish pink, violet, bluish, dark green to almost black</td>
<td>Black opal</td>
</tr>
<tr>
<td>NEPHRITE</td>
<td>Semitransparent to opaque green, also gray, brown, reddish, bluish,</td>
<td>Opal, white opal</td>
</tr>
<tr>
<td></td>
<td>light bluish violet, yellow, black or white</td>
<td>Black opal</td>
</tr>
<tr>
<td>OPAL</td>
<td>Transparent to semitransparent, white to colorless with play of color</td>
<td>Fire opal</td>
</tr>
<tr>
<td></td>
<td>Transparent to translucent, black or very dark gray, blue or green with</td>
<td>Orthoclase</td>
</tr>
<tr>
<td></td>
<td>play of color</td>
<td>Moonstone or adularia</td>
</tr>
<tr>
<td></td>
<td>Transparent orange-yellow to red (May show play of color)</td>
<td>Amazonite,</td>
</tr>
<tr>
<td></td>
<td>Transparent colorless to light yellow</td>
<td>amazon stone</td>
</tr>
<tr>
<td>FELDSPAR GROUP</td>
<td></td>
<td>Moonstone</td>
</tr>
<tr>
<td>ORTHoclASE</td>
<td>Colorless to milky with billowy bluish light</td>
<td>Moonstone</td>
</tr>
<tr>
<td>MICROLINE</td>
<td>Semitranslucent bluish green to yellowish green</td>
<td>Labradorite</td>
</tr>
<tr>
<td>ALBITE</td>
<td>White to nearly colorless with moving light</td>
<td>Andradite garnet</td>
</tr>
<tr>
<td>OLIGOCLASE</td>
<td>White to nearly colorless with moving light</td>
<td>or andradite</td>
</tr>
<tr>
<td>LABRADORITE</td>
<td>Semitranslucent grayish with overall flashes of bluish, greenish,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>yellowish, reddish orange or bronze. Also transparent yellow</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transparent yellow or opaque black</td>
<td></td>
</tr>
<tr>
<td>SPECIES</td>
<td>DESCRIPTION</td>
<td>CORRECT NAMES</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>Lapis Lazuli (A combination of minerals)</td>
<td>Opaque, intense greenish blue to violet-blue usually with brassy specks of pyrite</td>
<td>Lapis Lazuli</td>
</tr>
<tr>
<td></td>
<td>Light blue with veins of white matrix and often tinged or spotted with green</td>
<td>Lapis Lazuli</td>
</tr>
<tr>
<td></td>
<td>Light blue to blue with large proportion of matrix</td>
<td>Lapis matrix</td>
</tr>
<tr>
<td>Turquoise</td>
<td>Opaque light blue to light blue-green, sometimes with tracery of veins of brown limonite</td>
<td>Turquois or turquoise</td>
</tr>
<tr>
<td></td>
<td>Same colors with larger amounts of limonite or other matrix</td>
<td>Turquois matrix</td>
</tr>
<tr>
<td>B. ORGANIC GEM MATERIALS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearl</td>
<td>Semitranslucent white, creamy, pinkish, and light yellow, green, blue, violet, gray, etc.</td>
<td>Pearl</td>
</tr>
<tr>
<td></td>
<td>Semitranslucent mother of pearl ball covered with layers of pearl nacre of above colors</td>
<td>Cultured pearl</td>
</tr>
<tr>
<td></td>
<td>Semitranslucent purplish red, blue—almost black; also light grayish yellow</td>
<td>Clam pearl</td>
</tr>
<tr>
<td></td>
<td>Semitranslucent dark metallic, blue, green, brown, etc.</td>
<td>Black pearl</td>
</tr>
<tr>
<td></td>
<td>Semitranslucent pink or white without nacre</td>
<td>Conch pearl</td>
</tr>
<tr>
<td>Amber</td>
<td>Transparent to opaque pale yellow to reddish brown to dark brown. Also tinged with green or blue. Also whitish or cloudy</td>
<td>Amber</td>
</tr>
<tr>
<td></td>
<td>Translucent pale yellow to dark brown, reconstructed by softening small pieces and bonding by pressure</td>
<td>Pressed amber</td>
</tr>
<tr>
<td>Coral</td>
<td>Semitranslucent to opaque white to dark red, cream, brown, blue and black</td>
<td>Coral</td>
</tr>
<tr>
<td>Jet</td>
<td>Opaque black</td>
<td>Jet</td>
</tr>
</tbody>
</table>
### C. OTHER GEM MATERIALS

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>DESCRIPTION</th>
<th>CORRECT NAMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANDALUSITE</td>
<td>Transparent, yellow-green, brown-green, red-brown. Also gray, nontransparent</td>
<td>Andalusite</td>
</tr>
<tr>
<td>APATITE</td>
<td>Transparent, green, blue, violet, purple, pink, yellow or colorless</td>
<td>Apatite</td>
</tr>
<tr>
<td>AZURITE</td>
<td>Translucent to opaque blue</td>
<td>Azurite</td>
</tr>
<tr>
<td>BENITOITE</td>
<td>Transparent, blue to colorless</td>
<td>Benitoite</td>
</tr>
<tr>
<td>CHLORASTROLITE</td>
<td>Semitranslucent, dark green with white markings. Chatoyant</td>
<td>Diopside</td>
</tr>
<tr>
<td>DIOPSIDE</td>
<td>Transparent, light to dark yellowish green to nearly black</td>
<td>Enstatite</td>
</tr>
<tr>
<td>ENSTATITE</td>
<td>Transparent, yellowish green</td>
<td>Euclase</td>
</tr>
<tr>
<td>EUCLASE</td>
<td>Transparent colorless, light blue, light green</td>
<td>Fibrolite</td>
</tr>
<tr>
<td>FIBROLITE</td>
<td>Transparent, colorless, grayish blue, dull green</td>
<td>Fluorite</td>
</tr>
<tr>
<td>(Sillimanite)</td>
<td>Translucent to opaque, colorless, grayish blue, dull green</td>
<td>Hematite</td>
</tr>
<tr>
<td>FLUORITE</td>
<td>Transparent, all colors</td>
<td>Idocrase</td>
</tr>
<tr>
<td>HEMATITE</td>
<td>Metallic, dark gray to black</td>
<td>Iolite</td>
</tr>
<tr>
<td>IDOCRASE</td>
<td>Translucent to transparent, yellowish green to greenish brown</td>
<td>Kyanite</td>
</tr>
<tr>
<td>(Vesuvianite)</td>
<td></td>
<td>Malachite</td>
</tr>
<tr>
<td>IOLITE</td>
<td>Transparent grayish blue, blue, blue-violet</td>
<td>Moldavite</td>
</tr>
<tr>
<td>(Cordierite, Dichroite)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KYANITE</td>
<td>Transparent light to dark blue. Also colorless gray, green and brown</td>
<td></td>
</tr>
<tr>
<td>MALACHITE</td>
<td>Opaque, banded dark and lighter green</td>
<td></td>
</tr>
<tr>
<td>MARCASITE</td>
<td>See Pyrite</td>
<td></td>
</tr>
<tr>
<td>MOLDAVITE</td>
<td>Transparent, yellowish green to slightly brownish green</td>
<td></td>
</tr>
<tr>
<td>(Natural glass)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPECIES</td>
<td>DESCRIPTION</td>
<td>CORRECT NAMES</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>OBSIDIAN (Volcanic glass)</td>
<td>Transparent to opaque, gray to black, brown, red-brown, green, etc.</td>
<td>Obsidian</td>
</tr>
<tr>
<td>PREHNITE</td>
<td>Translucent, light yellow-green to greenish yellow</td>
<td>Prehnite</td>
</tr>
<tr>
<td>PYRITE</td>
<td>Opaque, metallic, pale brassy yellow, incorrectly called marcasite in trade</td>
<td>Pyrite</td>
</tr>
<tr>
<td>RHODONITE</td>
<td>Semitranslucent, light red</td>
<td>Rhodonite</td>
</tr>
<tr>
<td>SCAPOLITE</td>
<td>Transparent to translucent, light red, yellow, blue, violet, may be chatoyant</td>
<td>Scapolite</td>
</tr>
<tr>
<td>SERPENTINE</td>
<td>Translucent to semitranslucent. Green to yellow-green mottled</td>
<td>Serpentine</td>
</tr>
<tr>
<td>SILLIMANITE</td>
<td>See Fibrolite</td>
<td></td>
</tr>
<tr>
<td>SMITHSONITE</td>
<td>Translucent, yellow, blue, green, brown</td>
<td>Smithsonite</td>
</tr>
<tr>
<td>SPHENE</td>
<td>Transparent, yellow to green, brown, reddish brown to light purplish red</td>
<td>Sphene</td>
</tr>
<tr>
<td>STAUROLITE</td>
<td>Opaque to translucent, black to brown</td>
<td>Staurolite</td>
</tr>
<tr>
<td>STEATITE (Soapstone or Talc)</td>
<td>Opaque, gray, brown, grayish green</td>
<td>Steatite, soapstone, talc</td>
</tr>
<tr>
<td>THOMSONITE</td>
<td>Translucent to opaque, white to red-brown, green. Mottled, often with &quot;eye&quot; markings</td>
<td>Thomsonite</td>
</tr>
<tr>
<td>VARISCITE</td>
<td>Semitranslucent, yellow-green</td>
<td>Variscite</td>
</tr>
<tr>
<td>ZOISITE</td>
<td>Translucent to opaque, purplish red, greenish gray to pale yellowish green</td>
<td>Zoisite</td>
</tr>
<tr>
<td>SPECIES</td>
<td>DESCRIPTION</td>
<td>CORRECT NAMES</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td>---------------</td>
</tr>
<tr>
<td>SYNTHETIC CORUNDUM</td>
<td>Red (Medium orangy red to purplish red)</td>
<td>Synthetic ruby</td>
</tr>
<tr>
<td>Pink</td>
<td>Synthetic pink sapphire</td>
<td></td>
</tr>
<tr>
<td>Blue</td>
<td>Synthetic sapphire</td>
<td></td>
</tr>
<tr>
<td>Orange</td>
<td>Synthetic orange sapphire or synthetic padparadsha</td>
<td></td>
</tr>
<tr>
<td>Yellow</td>
<td>Synthetic sapphire golden sapphire</td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td>Synthetic green sapphire</td>
<td></td>
</tr>
<tr>
<td>Violet</td>
<td>Synthetic amethystine sapphire</td>
<td></td>
</tr>
<tr>
<td>Alexandrite-like</td>
<td>Synthetic sapphire alexandrite-like sapphire</td>
<td></td>
</tr>
<tr>
<td>Colorless</td>
<td>Synthetic white sapphire</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Names such as "synthetic zircon," "synthetic tourmaline," "synthetic kunzite," "synthetic topaz," "synthetic aquamarine," etc., should not be used as these materials are not made synthetically. These names refer to either synthetic spinel or synthetic corundum.

Asteriated stones

(1) Star due to inclusions of rutile
   red (light to dark)
   blue (light to dark)

(2) Star due to etching and coating back of transparent synthetic corundum. Not to be confused with star quartz
   red
   blue

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>DESCRIPTION</th>
<th>CORRECT NAMES</th>
</tr>
</thead>
</table>
| Asteriated stones | | Synthetic star ruby
| | | Synthetic star sapphire |
| | | Synthetic ruby foilback
<p>| | | Synthetic sapphire foilback |</p>
<table>
<thead>
<tr>
<th>SPECIES</th>
<th>DESCRIPTION</th>
<th>CORRECT NAMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNTHETIC SPINEL</td>
<td>Light purplish red</td>
<td>Synthetic rose spinel</td>
</tr>
<tr>
<td></td>
<td>Light red</td>
<td>Synthetic pink spinel</td>
</tr>
<tr>
<td></td>
<td>Violer-red</td>
<td>Synthetic almandine spinel</td>
</tr>
<tr>
<td></td>
<td>Yellow</td>
<td>Synthetic yellow spinel</td>
</tr>
<tr>
<td></td>
<td>Light green</td>
<td>Synthetic chrysolite spinel</td>
</tr>
<tr>
<td></td>
<td>Green</td>
<td>Synthetic green spinel</td>
</tr>
<tr>
<td></td>
<td>Blue</td>
<td>Synthetic blue spinel</td>
</tr>
<tr>
<td></td>
<td>Violet</td>
<td>Synthetic amethystine spinel</td>
</tr>
<tr>
<td></td>
<td>Alexandrite-like</td>
<td>Synthetic alexandrite-like spinel</td>
</tr>
<tr>
<td></td>
<td>NOTE: See comment under Synthetic corundum</td>
<td></td>
</tr>
<tr>
<td>SYNTHETIC EMERALD</td>
<td>Only material on market is green to bluish green in medium to dark tones</td>
<td>Synthetic emerald</td>
</tr>
<tr>
<td>SYNTHETIC RUTILE</td>
<td>Yellow (very light to dark tones)</td>
<td>Synthetic rutile or synthetic yellow rutile</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>Synthetic red rutile</td>
</tr>
<tr>
<td></td>
<td>Blue</td>
<td>Synthetic blue rutile</td>
</tr>
<tr>
<td></td>
<td>Green</td>
<td>Synthetic green rutile</td>
</tr>
<tr>
<td></td>
<td>NOTE: The name Titania is also acceptable in place of synthetic rutile. It should be prefixed by the proper color in stones of other than very light to light yellow</td>
<td></td>
</tr>
</tbody>
</table>
Endowment Members of the Gemological Institute of America

To insure the perpetuation of an educational institution for and by jewelers, an endowment fund of more than $50,000 for the Gemological Institute of America was established in 1941. This amount was raised through voluntary contributions solicited by a committee of the American Gem Society from G.I.A. students and graduates, and from a related group of importers, manufacturers, and wholesalers.

Both retail and wholesale divisions of the industry are represented among the donors, as can be seen from the following list of G.I.A. Endowment Members. Listing of firm names indicates contributions made by the company, whereas smaller donations were individually made by those whose names are listed.

To these men and to those firms who contributed a total of more than $50,000, the jewelry industry owes a debt of gratitude for their interest, sincerity, and foresight. The establishment of such a nucleus, as part of the reserves necessary to guarantee continuance of the G.I.A. when, and if, funds are needed to meet operating expenses, gave stability and permanency to the institution.

Since 1941 additional voluntary contributions, plus additions from operating surplus, have raised the endowment to more than $100,000. No attempt has been made, however, to increase this reserve to a sum sufficiently large that interest would materially assist in the operation of the Institute, as is the purpose of most endowment funds.

RETAILERS*

Anderson Brothers
Lubbock, Texas

Appel — Jewelers, Inc.
Allentown, Pennsylvania

Argo and Lehne
Columbus, Ohio

Constant J. Auger
San Francisco, California

Webb C. Ball Company, Inc.
Cleveland, Ohio

Barclay and Sons
Newport News, Virginia

Basinger's Jewelry Store
Lima, Ohio

Harry F. Berg
South Bend, Indiana

Juell M. Bie
Brooklyn, New York

Henry Birks and Sons, Ltd.
Edmonton, Canada

Halifax
Hamilton
London
Montreal
Quebec
St. Johns
Saskatoon
Sudbury
Toronto
Vancouver
Winnipeg

Bloedel's Jewelry, Inc.
Milwaukee, Wisconsin

Blumer's
Hazleton, Pennsylvania

Barney Bobek
Hackensack, New Jersey

*This list comprises G.I.A. students, graduates, or their firms.
Henry Bockstruck & Company, Inc.
St. Paul, Minnesota

Adam H. Bolender
Rockford, Illinois

J. J. Bookout Jewelry Co.
Atlanta, Georgia

John B. Bowman
Palmyra, Pennsylvania

Bramley & Company, Inc.
White Plains, New York

Raymond Brenner, Inc.
Youngstown, Ohio

Brock & Company, Inc.
Los Angeles, California

George T. Brodnax, Inc.
Memphis, Tennessee

Clayton A. Brodt
Auburn, New York

Broer-Freeman Co., Inc.
Toledo, Ohio

Bromberg & Company, Inc.
Birmingham, Alabama

C. B. Brown Company, Inc.
Omaha, Nebraska

Brumer-Fischer
Clinton, Iowa

J. A. Buchroeder & Co., Inc.
Columbus, Ohio

W. W. Bugg, Inc.
Jackson, Michigan

W. Joe Burns
Circeville, Ohio

J. W. Butz, Jr.
Houston, Texas

Carl's Jewelers
Santa Ana, California

Axel E. Carlstrom & Son
Minneapolis, Minnesota

Carter Brothers Company, Inc.
Portland, Maine

Cave's Jewelers
Little Rock, Arkansas

Chase Jewelry Company
Holdrege, Nebraska

R. Edgar Clarke, Inc.
Middleton, New York

Emil L. Clay
Webb C. Ball Company, Inc.
Cleveland, Ohio

Eugene V. Coontz
W. J. Frank Company
Akron, Ohio

Corrigan, Inc.
Houston, Texas

Charles P. Coster
Rochester, New York

Cowell and Hubbard Co., Inc.
Cleveland, Ohio

Glynn Cremer
La Crosse, Wisconsin

Darrow-Davis
Binghamton, New York

Davis and Hawley, Inc.
Bridgeport, Connecticut

Leslie E. Dewey
J. B. Hudson Company
Minneapolis, Minnesota

Alfred H. Dickinson
Buffalo, New York

Diehl's
Belleville, Illinois

Claude H. Dietrich
Mr. Vernon, Ohio

George A. Doering
Wright, Kay and Company
Detroit, Michigan

Drosten Jewelry Co., Inc.
St. Louis, Missouri

Elebash Jewelry Company
Pensacola, Florida

Elebash Jewelry Company
Columbus, Georgia

Sylvester Engle Company
Hazelton, Pennsylvania

Arthur A. Everts Company
Dallas, Texas

Basil B. Felts
Banning, California

H. D. Feuer
New York City

Lester V. Forsyth
Klamath Falls, Oregon

Fort and Goodwin, Inc.
Trenton, New Jersey

J. A. Foster Company, Inc.
Providence, Rhode Island

W. J. Frank Company, Inc.
Akron, Ohio
Richard Fraser  
Webb C. Ball Company, Inc.  
Cleveland, Ohio

P. A. Freeman, Inc.  
Allentown, Pennsylvania

Edmond Frisch  
New York City

Alf. W. Fuchs, Inc.  
Milwaukee, Wisconsin

Galt and Brother, Inc.  
Washington, D. C.

Leo Gardner  
Los Angeles, California

Geiger and Ament, Inc.  
Louisville, Kentucky

Gillam's Jewelry Store  
Marshalltown, Iowa

Nellie Gilmore  
Paterson, New Jersey

E. H. Goulding Sons Co., Inc.  
Alton, Illinois

Grady's Jewelry Store  
Jackson, Tennessee

Ralph B. Grammer  
Williamsport, Pennsylvania

A. Graves & Steuwer Co., Inc.  
Memphis, Tennessee

Spencer W. Greene & Son  
Rochester, New York

The Green Company, Inc.  
Kansas City, Missouri

Roy Groom & Sons, Inc.  
Flint, Michigan

Oscar P. Gustafson Co., Inc.  
Minneapolis, Minnesota

Gullicksen Jewelers  
Detroit, Michigan

Dr. Edward J. Gubelin  
Lucerne, Switzerland

Gurney Bros. Company, Inc.  
Brockton, Massachusetts

Hackett's Jewelry Store  
Rochelle, Illinois

Haertl's Jewelers  
Neenah, Wisconsin

Hale's Jewelers  
Greenville, South Carolina

J. Herbert Hall Company  
Pasadena, California

Hamilton Jewelry Store  
Kalamazoo, Michigan

Hampton-Fortner Co., Inc.  
Mattoon, Illinois

Hands Jewelry Store  
Iowa City, Iowa

Harding Jewelry  
Cadiz, Ohio

Hardy and Hayes Co., Inc.  
Pittsburgh, Pennsylvania

Hardy's, Inc.  
Seattle, Washington

Haseroth Jewelry Company, Inc.  
Elyria, Ohio

W. H. Hartfeldt  
Milwaukee, Wisconsin

Heffern-Neuhoff Jewelry Co., Inc.  
St. Louis, Missouri

Henebry's of Roanoke, Inc.  
Roanoke, Virginia

R. G. Henne  
Pittsburgh, Pennsylvania

Frank Herschede Company, Inc.  
Cincinnati, Ohio

M. Herzog  
Wm. H. Herzog  
Chicago, Illinois

Hess & Culbertson Jewelry Co., Inc.  
St. Louis, Missouri

Ernest Hills  
Hartford, Connecticut

Virginia Hinton  
Houston, Texas

Hodgson-Kennard & Company  
Boston, Massachusetts

C. F. Hoffman & Sons, Inc.  
Gadsden, Alabama

Holt's  
Sturgis, Michigan

Holzman's  
Atlanta, Georgia

Hood & Hoover, Inc.  
Akron, Ohio

L. P. Jackson  
Jackson, Tennessee

M. Jaeger and Sons  
Queens Village, New York

Jenkins and Company  
Richmond, Indiana
C. A. Jensen
La Salle, Illinois

J. Jessop and Sons, Inc.
San Diego, California

Jones Jewelry Store
Cortland, New York

Jones Brothers, Jewelers
Pekin, Illinois

S. Joseph and Sons, Inc.
Des Moines, Iowa

C. I. Josephson Jewelers
Moline, Illinois

J. F. Kahl Company, Inc.
Pittsfield, Massachusetts

Myer J. Kassner
Laconia, New Hampshire

Keller and George
Charlottesville, Virginia

William P. Kendrick Jewelers, Inc.
Louisville, Kentucky

John Kennard and Company, Inc.
Boston, Massachusetts

Jesse N. Kerr
New Castle, Pennsylvania

S. Kind and Sons, Inc.
Philadelphia, Pennsylvania

Clarence E. Knorpp
Wright, Kay & Company, Inc.
Detroit, Michigan

Knudson’s Jewelers
Roseburg, Oregon

Robert Koerber, Inc.
Fort Wayne, Indiana

J. F. Krumrich Company
Oshkosh, Wisconsin

Jule W. Kueck
Boone, Iowa

Albert H. Kull
Columbus, Ohio

Kuppler’s Jewelry, Inc.
Gary, Indiana

Eugene P. La France
New Bedford, Massachusetts

H. G. Larson
Kewanee, Illinois

Frank Lauder Jewelers
South Norwalk, Connecticut

C. F. Lauterbach Sons, Inc.
Petersburg, Virginia

Lemon and Son
Louisville, Kentucky

L. Blaine Libbey
Milford, Massachusetts

Carl E. Lindquist
Rockford, Illinois

Thomas Long Company, Inc.
Boston, Massachusetts

Vic Lorch and Sons
Louisville, Kentucky

Loring Andrews Company, Inc.
Cincinnati, Ohio

Percy K. Loud
Wright, Kay and Company, Inc.
Detroit, Michigan

Robert G. Luecke
Freeport, Illinois

W. J. Lukens Company, Inc.
Wheeling, West Virginia

Maier and Berkele, Inc.
Atlanta, Georgia

Mappin’s, Ltd.
Montreal, P.Q. Canada

James S. Martinke’s
Traverse City, Michigan

Mayfair Jewelry Company, Inc.
Albany, Georgia

Maynard-Page, Inc.
Miami, Florida

W. J. McNeil
New York City

Mermod-Jaccard-King Jewelry Co., Inc.
St. Louis, Missouri

Metropolitan Chapter of A.G.S.
Chicago, Illinois

Mrs. Harry O. Marcy
Newton, Massachusetts

George L. Metz
Klamath Falls, Oregon

August Meyer and Sons
Grand Island, Nebraska

Middleton’s Jewelers
Ft. Lauderdale, Florida

W. J. Miller
Chicago, Illinois

Ray Moore
Billings, Montana

Allyn S. Morgan, Jr.
Winona, Minnesota
E. N. Smith
Birks, Ellis, Ryrie, Ltd.
Toronto, Ontario, Canada

Howard S. Smith
Redlands, California

Smith-Patterson Co., Inc.
Boston, Massachusetts

Stanley Smith
Schwanke-Kasten Company, Inc.
Milwaukee, Wisconsin

Giddens Jewelry Store
Goldsboro, North Carolina

Brewster B. Stearns
Carlisle, Pennsylvania

Philip H. Stevens Co., Inc.
Hartford, Connecticut

A. Stowell and Company
Boston, Massachusetts

Jean R. Tack
Newark, New Jersey

Harry Thiele Jewelers, Inc.
Alliance, Nebraska

C. L. Thomas
Kennett Square, Pennsylvania

Edward B. Tiffany
Henry Birks & Sons, Ltd.
Ottawa, Ontario, Canada

Tilden-Thurber Corp.
Providence, Rhode Island

Tilghman Company
Annapolis, Maryland

Traub Brothers & Company, Inc.
Detroit, Michigan

Trefry and Partridge, Inc.
Boston, Massachusetts

True Bros., Inc.
Springfield, Massachusetts

Underwood Jewelers
Jacksonville, Florida

Van Cott Jewelers
Binghamton, New York

Van Horne and Company, Inc.
South Bend, Indiana

Vondey's
San Bernardino, California

Von's
Cincinnati, Ohio

John W. Ware
San Diego, California

Wm. Wellentin and Son
Madison, Wisconsin

J. Wetherell and Son
Parkersburg, West Virginia

Edgar Wight
Ontario, California

Wiss Sons, Inc.
Newark, New Jersey

Wood-Abbott Company, Inc.
Lowell, Massachusetts

J. Arnold Wood
Poughkeepsie, New York

Harry L. Woodruff
Washington, D. C.

Kenneth Woodward
Attleboro, Massachusetts

Wright, Kay and Company, Inc.
Detroit, Michigan

Zerweck's Jewelry Co., Inc.
East St. Louis, Illinois

WHOLESALERS*

Allsopp-Stellar, Inc.
Newark, New Jersey

Knut H. Andersen Co., Inc.*
Worcester, Massachusetts

Baker and Company, Inc.
Newark, New Jersey

Baldwin-Miller Company, Inc.
Indianapolis, Indiana

B. A. Ballou & Company, Inc.
Providence, Rhode Island

Bickson, Inc.*
New York City

* Student enrolled with G.I.A. from these firms.
The A. H. Ficken Company, Inc.
Cleveland, Ohio

Hubert A. Fischer
Chicago, Illinois

Forstner Chain Company
Irvington, New Jersey

Louis Franklin Company, Inc.*
New York City

Fulmer and Gibbons*
Philadelphia, Pennsylvania

Frank T. Genova
New York City

The Gerwe-Brown Company, Inc.*
Cincinnati, Ohio

The Gorham Company
Providence, Rhode Island

Frederick M. Gottlieb & Co., Inc.*
Chicago, Illinois

Jean R. Graef, Inc.
New York City

Gray-Kamsley, Inc.
New York City

R. Haeflinger and Company, Inc.
Chicago, Illinois

Hamilton Watch Company, Inc.
Chicago, Illinois

Handy and Harman, Inc.
New York City

J. & L. Hertzberg
New York City

T. G. Hawkes and Company, Inc.
Corning, New York

William S. Hedges & Co., Inc.
New York City

Helm & Hahn Company
Pittsburgh, Pennsylvania

Bernard J. Hersch
F. J. Essig and Company, Inc.*
Chicago, Illinois

Hickok Mathews Company, Inc.
Newark, New Jersey

Oscar Heyman and Bros., Inc.
New York City

International Silver Company
Meriden, Connecticut

Jabel Ring Mfg. Company, Inc.
Newark, New Jersey
Jacobson Bros. Diamond Corp.
New York City

Jones & Woodland Company, Inc.*
Newark, New Jersey

Juergens and Andersen Co., Inc.*
Chicago, Illinois

L. & M. Kahn Company
New York City

Lazare Kaplan & Sons, Inc.*
New York City

C. A. Kiger Company, Inc.*
Kansas City, Missouri

Samuel Kirk & Son, Inc.
Baltimore, Maryland

Koke, Slaudt & Company, Inc.*
Los Angeles, California

Krementz and Company, Inc.
Newark, New Jersey

Larter and Sons, Inc.*
Newark, New Jersey

Jack W. Lees
Toronto, Ontario, Canada

Lester and Company, Inc.
Newark, New Jersey

Leys, Christie & Company, Inc.
New York City

Simon Lieberman
New York City

Lunt Silversmiths
Greenfield, Massachusetts

Walter H. McKenna & Company
Providence, Rhode Island

J. Milhening, Inc.*
Chicago, Illinois

Miller and Veit*
New York City

Norman M. Morris, Inc.
New York City

Movado Watch Agency, Inc.
New York City

Napier Company
Meriden, Connecticut

S. Nathan & Company, Inc.
New York City

Patek Phillippe & Company, Inc.
New York City

D. C. Percival & Company, Inc.*
Boston, Massachusetts

Reed & Barton, Corp.
Taunton, Massachusetts

Reichman Brothers
New York City

Arthur G. Rider*
Binghamton, New York

Robinson & Sverdik, Inc.
New York City

Harry C. Schick, Inc.
Newark, New Jersey

George Schuler & Co., Inc.
New York City

A. G. Schwab and Sons, Inc.
Cincinnati, Ohio

Schenck & Van Haelen
New York City

Sloan and Company, Inc.
Chicago, Illinois

Son & Prins Company, Inc.
Chicago, Illinois

Taylor and Company, Inc.
Newark, New Jersey

Charles Thomae and Son, Inc.
Attleboro, Massachusetts

Maurice Tishman, Inc.
New York City

Towle Manufacturing Company, Inc.
Newburyport, Massachusetts

Traub Mfg. Company, Inc.
Detroit, Michigan

Carl Van Dam, Inc.
New York City

Van Dam Diamond Corp.
New York City

Wallingford, Connecticut

Wefferling Berry Company, Inc.*
Newark, New Jersey

Whiting and Davis Company, Inc.
Plainville, Massachusetts

J. R. Wood & Sons, Inc.*
New York City

I. Woogaf, Inc.
Los Angeles, California

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ANALYSIS MADE OF
MINING ACTIVITY
IN TANGANYIKA

In the August issue of the Diamond News a detailed analysis of diamond production and exports in Tanganyika for the years 1948 and 1949 is made from the annual report of the Department of Lands and Mines.

It is interesting to note that Williamson Diamonds, Limited, exported four times as much as the next producer, Alamas, Ltd. in 1948 but that this figure had increased to more than ten times as much in 1949.

In 1949 Williamson Diamonds, Limited, treated 722,524 loads of gravel from which 177,394 carats were recovered. This is an average recovery of 24.5 carats per hundred loads, compared with 43.8 in 1948.

During the year more than 76,000 carats of cuttable diamonds were exported by the Williamson firm and 97,000 carats of industrial diamonds. The cuttable diamonds averaged 312 s. or about $44.00, per carat.

If the export figures given in the report indicate correctly the nature of the production, the percentage by weight of industrial diamonds given previously for Tanganyika is incorrect in that instead of 20 per cent of industrial stones, the figure is closer to 60 per cent. Earlier figures which indicated that 80 per cent of the production was cuttable, must have given percentage of cuttable stones by value rather than by weight.

One would gather from reading the analysis in the Diamond News that the figures are accurate to the last stone exported, for one producer is listed with the following figures: Weight of diamonds exported — industrial, 2 carats; value 3 pounds, total number of diamonds exported, 1; total weight of diamonds exported, 1.75; total value of exports, 3 pounds.

OUR APOLOGIES TO
AUSTRALIAN READERS

In the winter issue of Gems & Gemology two errors have been noted in reporting information from Australia.

First, we erroneously stated that the sale of the Pandora Opal was handled by Jack S. Taylor of Sydney. We cannot explain how this misinformation crept in, but it is just one of those things which occasionally occur in even the best edited publications. Our apologies to Jack Taylor for reporting something which was apparently only an editorial hallucination!

Likewise, adding coals to the fire, in the same issue order was reversed in listing the three first positions of those who qualified in the 1950 diploma examination for Fellowships awarded by the Gemological Association of Australia. These should have been listed in the following order: K. N. S. Hall, G. A. Tombs, and B. J. Skinner.

Kay Swindler

CALIFORNIA JADE DEPOSITS
REPORTED IN DETAIL
BY DIVISION OF MINES

Review of Nephrite Jade and Associated Rocks of the Cape San Martin Region. Monterey County, California (Special Report 10-A), Jadeite of San Benito County, California (Special Report 10-C), and Nephrite in Marin County, California (Special Report 10-B), Division of Mines, Department of Natural Resources, State of California.

Although jade has been an important gem for centuries, the material first used by the Chinese was nephrite, apparently originating chiefly from Chinese Turkestan.

Slightly more than 150 years ago, the fine Burmese jade deposits came to light and from that time provided the major
source of fine material used by the Chinese.

Nephrite jade is a variety of the isomorphous tremolite-actinolite series occurring in the amphibole group of minerals. Tremolite is usually white in color and like actinolite occurs in bladed crystals. Actinolite contains ferrous iron, replacing a portion of the magnesium of tremolite. Tremolite is a calcium magnesium silicate, whereas actinolite is a calcium magnesium iron silicate. A characteristic of the amphibole group is its hydrous nature in contrast to the pyroxene group of which jadeite is a member.

Nephrite is known in a number of occurrences throughout the world. In addition to the original source in Chinese Turkestan, it is also found in New Zealand; Alaska; Lander, Wyoming; Siberia; and Europe. Until recently jadeite has been known in gem quality only in Burma. However, the presence of jadeite artifacts in Mexico and Central America have long interested scientists because of the failure to find original sources.

Jadeite is a sodium aluminum silicate—a member of the pyroxene group. As in the case of amphiboles, pyroxenes tend to grade into one another in an isomorphous relationship.

Nephrite jade of good quality was discovered in Lander, Wyoming, for commercial purposes at least, less than twenty years ago. Since that time in the last few years, reports of jade discoveries in California have been frequent. Nephrite jade of particular interest scientifically and to amateur lapidaries has been reported from the coast of southern Monterey County, near Porterville, in Tulare County, near Petaluma in Marin County, and also from Mendocino County as well as from other localities.

According to the report on the jadeite of San Benito County, the occurrence was first noted in an unpublished thesis submitted by R. C. Mielzen to the University of California in 1936. Jadeite was reported in 1950 in the Clear Creek area by Bolander who was unaware of the work of Mielzen.

In all jade occurrences in California reported in the three California Division of Mines publications, jade has not been of fine gem quality. In all cases, both California nephrite and jadeite have been associated intimately with serpentine deposits which fact has led, because of the widespread occurrence of serpentine in California, to the conclusion that many more jade discoveries are likely to be made in the years to come.

The jadeite of San Benito County was first noted by Bolander in boulders in Clear Creek. Soon discoveries of jadeite in place were reported by prospectors. The serpentine of the area lies in an oval body approximately four by twelve miles. While eight large exposures were found in canyons in Clear Creek, it is assumed that there are many more. Some of the outcrops are large masses, in one case reported to be 50 x 200 feet.

An interesting sideline on the toughness of jadeite is contained in the following quotation from the report: "Although an effort was made to secure representative samples, some outcrops did not yield samples, even to heavy sledging." The report states that in close proximity to a jadeite body, the serpentine is "... extremely sheared, dark in color, the surface dull, and appears to have been altered." The jadeite rock is reported to crop out as isolated knobs and although most of it is massive, in places it is blocky, sheet-jointed or cavernous.

From the geology of the area and the
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mineralization, the authors infer that the serpentine was either emplaced in the solid state or formed by alteration of a previous basic rock. Later deformation took place with most intense fracturing and brecciation taking place at the contact between the serpentine and schist. Fluids that were probably residual from the process which formed serpentine entered the brecciated zones, forming many mono- or bi-mineralic bodies in the serpentine, of which jadeite is one.

The San Benito jadeite in most cases is banded in dark and lighter green with a tendency toward white, coarsely crystalline jadeite in the center of the masses. The authors conclude that "the jadeite deposits studied in San Benito County, California, will probably not yield high quality gem material but will be a source of attractive and interesting specimens for collecting and polishing."

There have been several other jadeite discoveries announced in California from Mendocino, San Luis Obispo, and Sonoma counties, but complete reports on them have not been published as yet.

The first of the two nephrite occurrence reports concerns deposits along State Highway No. 1 on the coast about midway between Monterey and Morro Bay. The nephrite was first noted as boulders and pebbles on the beach at that point and then discovered in rock at several places in the seaworn cliffs within a two mile stretch of coast. The Marin County occurrence, also in serpentine, is on the east side of Massa Hill about five miles southwest of Petaluma.

In Monterey County, the nephrite occurs as pods in a gray schist in contact with serpentine. In Marin County the nephrite occurs in two types of deposits; in thick short lenses in sheared serpentine and in contorted lens-veins and veins up to about one inch in sheared and massive serpentine. The nephrite in the latter deposits varies from "pale olive green through pale bluish green to dark blue-green."

The large interest developed in the jade of California in the past few years is due largely to the interest in gems and minerals developed in the many amateur lapidary and gem and mineral groups in California. In all probability many more deposits will be discovered in the next few years, some of which may produce fine gem material.

Richard T. Liddicoat, Jr.

JADE ARTIFACTS FOUND IN CALIFORNIA BY ARCHAEOLOGICAL SURVEY

The discovery of jade artifacts in a jade shellmound in California was recently reported by Dr. Robert Heizer, Director of the University of California Archaeological Survey during an investigation by an expedition from the University.

The ancient village site, or shellmound, was found to have two levels and it was estimated that the deeper was occupied approximately 2,000 years ago and the one on the higher level about 1,000 years later.

In the earlier occupied excavation, only one jade tool was unearthed. Occupants of the later shellmound were, however, well acquainted with the useful properties of the local nephrite. From approximately 4,000 cubic feet of excavated midden, 46 nephrite hammerstones and hundreds of nephrite cooking stones were removed. The hammerstone, being of tough material, could withstand the shock of battering better than any other stone found in the vicinity, and the fist-size cooking stones apparently could also withstand heat better than any other local stone.
UNGAVA CRATER NOT SOURCE OF DIAMONDS

According to a statement in the Journal of Gemmology, published by the Gemmological Association of Great Britain, the world's largest crater recently discovered in Ungava Territory, in the extreme northwestern part of the Province of Quebec, has been proved by competent scientific examination to have resulted from the impact of a meteorite striking the earth approximately 3,000 years ago.

This disproves the original assumption that this huge crater is similar in nature to the diamond pipes of South Africa and that it might be the source of diamonds found in various sections of the United States, presumably carried from their source during the Ice Age. Although the theory that diamond pipes exist in Canada has not been discounted, their location still remains a mystery.

QUESTIONABLE CLAIMS MADE FOR SYNTHETIC RUTILE

The fantastic advertising claims made for synthetic rutile, under an endless variety of names, are becoming increasingly annoying. On its own merits, synthetic rutile is a beautiful material when properly cut. To claim, as many periodical advertisers have done, that it is nearly as hard as diamond and that it is much more brilliant than diamond, is not only incorrect but totally unnecessary.

Other factors being equal, the refractive indices of 2.61 and 2.90 for synthetic rutile, compared to 2.42 for diamond, would make synthetic rutile more brilliant. However, a simple comparison of a well cut diamond with a well cut titania will show the other factors are not equal, and that the diamond gives more brilliancy.

The factors that determine brilliancy of a material include in addition to refractive index, its transparency as well as cutting proportions and the optical flatness of the polished surface.

Synthetic rutile, even in its palest yellow form, absorbs a significant proportion of the spectrum so that it does not return to the eye of the observer the high proportion of white light returned by diamond. Furthermore, the tremendous dispersion of titania means that much of the light totally internally reflected does not return to the eye as white light but as spectral colors. In addition, it is difficult, if not impossible, to polish surfaces on titania to produce a luster approaching that to be expected from a material of such high refractive indices. Diamond takes a higher polish.

The highest claim by the actual manufacturers of synthetic rutile place the hardness of annealed boules as near that of quartz. We have yet to encounter one not easily scratched by chalcedony. It is our contention that titania has a sufficient beauty to become an important gem material in its own right if properly sold and not consistently compared to diamond, in comparison to which in many respects it falls far short. We are at a loss to understand why an individual summarization of its good points — without the obnoxious and false comparisons — would not do much to add to its importance as a gem material.

R. T. L.

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