

Gems & Jewellery

Winter 2021 / Volume 30 / No. 4

GEM-A'S 2021
PHOTOGRAPHER OF THE YEAR

NEW ONLINE
COURSE OFFERING

PRODUCTION OF
YOGO SAPPHIRE

FABERGE EXHIBITION
AT THE V&A



Gem-A
THE GEMMOLOGICAL ASSOCIATION
OF GREAT BRITAIN

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Gems & Jewellery

WINTER 2021

WELCOME TO GEMINTRO

Gem-A CEO Alan Hart announces the Association's new online accredited Level 2 course!



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YOGO SAPPHIRE OPERATIONS

The first of a two-part instalment looking at current operations and production at the Yogo sapphire mine in Montana, U.S.A.

FABERGÉ AT THE V&A

An opportunity to see the largest display of Fabergé Easter eggs in a generation at London's Victoria & Albert Museum.



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COVER PICTURE

The Christmas Star, photographed by Dr Clemens Schwarzing, and winner of Gem-A's Photographer of the Year 2021 competition. See p12 of this issue for further details.

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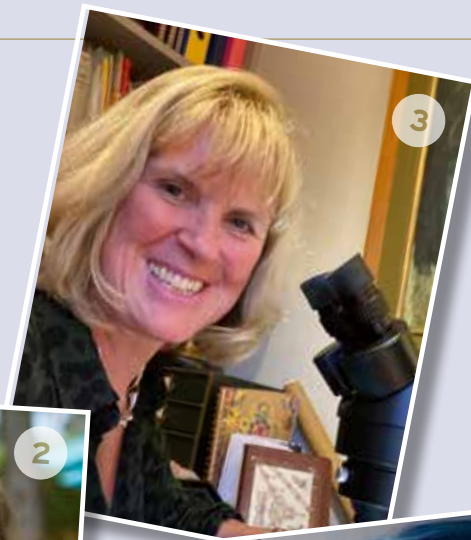
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Gems & Jewellery

Winter 2021 Edition Featured Contributors

1. OLGA GONZÁLEZ

The CEO of Pietra Communications, Olga González has over fifteen years of experience working within the field of gem and jewellery communications. A certified gemmologist (FGA DGA) and appraiser, she specialises in growing companies within the trade, empowering through storytelling. Her clients are designers, manufacturers, trade associations, suppliers, stone dealers and diamond-grading laboratories. Ms González currently serves as the president of the Women's Jewellery Association New York Metro Chapter Board, is a past president of the Public Relations Society of America New York Chapter, chaired the inaugural 15 Under 35 Awards and is a regular and award-winning contributor to trade and consumer publications on gem and jewellery-related topics.

2. AARON PALKE

Aaron Palke started his career in gemology as a postdoctoral research

associate at the Gemological Institute of America (GIA) after earning his PhD in geology from Stanford University. During this time, Dr Palke investigated the geological history of rubies and sapphires by studying minute inclusions in these precious gems. In his position as senior manager of research at GIA, he helps lead colored stone research efforts in order to provide more reliable country of origin determinations and treatment identification for rubies, sapphire, emeralds and other colored stones.

3. JAYNE SAMBROOK SMITH

Jayne Sambrook Smith works at Henry Adams Fine Art Auctioneers; she earned her FGA Diploma from Gem-A London in 2021. She has previously worked as a BBC newsreader and radio journalist, a marketing manager and a university press officer. She holds a Masters in art market & appraisal from Kingston University. Her research project, on Bloomsbury antique jewellery shop 'Cameo Corner' and the role it played in

the emergence of the New Jewellery' of 1960s and 1970s, was accepted by the Metalwork Library at the V&A Museum. A self-described 'perpetual learner', she also has an MA in creative writing from the University of Winchester, a BA Combined Honours in English and American and Commonwealth Arts from Exeter University and a PG Diploma in radio journalism (NUJ approved) from University of the Arts London.

4. SUSI SMITHER

Susi Smither founded the Rock Hound in 2015, dedicating herself to the craft of designing and creating jewellery that is transparent and ethically and responsibly sourced. Her designs show the intersection of her interest in science and her obsession with colour. The Rock Hound's award-winning work has been featured on the pages of *Vogue*, *Professional Jeweller*, and other publications. Ms Smither earned her FGA from Gem-A in 2011; she also holds a JDT from GIA and a BSc in maths and management from Kings College London.

Straight from the heart

Opinion and comment from CEO Alan Hart FGA DGA

As 2021 draws to a close, it is natural to think back on the successes we've had and look forward to the challenges to come. While the COVID pandemic remained a significant hurdle, we at Gem-A feel that we have had many triumphs this year, which we have been able to share with our Members and Students.

We saw in-person graduation resume in November and discovered that we can move our Conference to an online platform to keep our Members engaged and informed. We were also able to keep education, and Students, our priority, by creating a new short course that will help

our Members stay competitive and informed. Gem-A is about to launch our first-ever introductory course, GemIntro. This interactive online curriculum is intended to whet the appetites of those who are considering whether a career in the gem trade is the right choice. We are happy to introduce readers of *G&J* to GemIntro in these very pages.

We are eager to see what 2022 will bring to the Association; that is, besides the implementation of GemIntro. As of this writing, we are preparing for the Tucson gem shows in February. This go-round, we are teaming up with both CGA and AGA to deliver our Gem-A Bash, which will take place on 1 February 2022



at the Tucson Marriott University Park Hotel. I look forward to catching up with many of you then!

Speaking of the new, we have also now opened the window on membership renewals for 2022. You should have already received an email inviting you to renew. We look forward to your continued support, and hope you enjoy the many benefits of being a Gem-A Member, including your subscription to *Gems&Jewellery*.

As always, this latest issue of *G&J* has a little something for everyone. In addition to the GemIntro announcement, our popular Photographer of the Year competition has ended, and our winner, along with the shortlist, graces the cover and a photo spread, respectively. We have a review of the V&A's latest exhibition, a look at the work – including jewellery and *objets d'art* – from Fabergé's London workshop, which is accompanied by 15 Easter Eggs, some of which have never been displayed in the UK before. The first of a two-part series on Yogo sapphire from Montana, announcing resumed production, sets our readers up for the Spring 2022 issue.

We hope you enjoy this last issue of 2021; we look forward to your continued readership and support in 2022.

Alan Hart

Best Wishes,
Alan Hart FGA DGA

We have a review of the V&A's latest exhibition... from Fabergé's London workshop, which is accompanied by 15 Easter Eggs, some of which have never been displayed in the UK before.

Painted enamel rose with nephrite leaves standing in a rock crystal pot, from Fabergé's London stock when the branch closed in 1917. This piece is currently part of the V&A Museum's exhibition Fabergé in London: Romance to Revolution. Photo © Wartski, London.



Gem-A News

A round-up of the latest industry news from Gem-A

SOTHEBY'S LONDON AUCTIONS JEWELS THOUGHT TO BELONG TO JOSÉPHINE BONAPARTE

Two parures that, by tradition, were created for Joséphine Bonaparte, were auctioned by Sotheby's London on 7 December. Each set was said to be created for the empress from engraved ornaments gifted to her by Napoleon Bonaparte's sister Caroline. Part of the 'Treasures' sale, the two sets sold for a combined £576,600. One parure consisted of a diadem, belt clasp and belt ornament made from gold, cameo and enamel. The other lot comprised a diadem, pendant earrings, hair comb and belt ornament, all made from carnelian intaglios, blue enamel and gold. Both sets were created circa 1805 and had previously been on long-term loan to London's Victoria & Albert Museum.



A carnelian, blue enamel and gold diadem thought to belong to Empress Joséphine Bonaparte was among the items auctioned by Sotheby's London on 7 December 2021. Photo courtesy of Sotheby's.

RJC OPENS PUBLIC CONSULTATION ON LAB-GROWN MATERIALS STANDARD

As part of its development of a laboratory-grown materials standard (LGMS), the Responsible Jewellery Council (RJC) opened the first of at least two public consultations on the topic. The RJC welcomes comments from all stakeholders. The LGMS will be mandatory for all RJC members who work with these materials.

The LGMS is under development as per the standard setting code and procedures of the ISEAL Alliance, a body of standards-setting organisations.

EXCAVATION YIELDS JEWELLERY AND GEMS FROM THE AGE OF NEFERTITI

An excavation of two tombs containing 155 human skeletons in the Bronze Age city of Hala Sultan Tekke, Cyprus, also yielded nearly five hundred objects, including jewellery and gemstones. By comparing the items with similar artefacts from Egypt, archaeologists from Sweden's University of Gothenburg were able to date the tombs to 1350 BC – the era of Nefertiti.

The skeletons and objects were found in layers, indicating that the tombs had likely been used over many generations. The precious objects found within indicate that these were the burial sites of a powerful ruling family. Jewellery within was composed of gold, silver, bronze, ivory and gemstones such as carnelian and lapis lazuli, pointing to the importance of the city as a Bronze Age trading centre.

PREHISTORIC SHROPSHIRE TREASURES SECURED BY MUSEUMS

Seven prehistoric findings unearthed in north Shropshire, thought to be about 3,000 years old, have been procured by Shropshire Museums, in part due to successful grants and fundraising efforts. The hoards include jewellery such as lock rings, two of which were wrapped in a lead sheet and may have been a devotional offering.

The objects, which are accompanied by the Shropshire Sun Pendant from the British Museum, will soon be part of a travelling exhibition.

DEEP-MANTLE MINERAL DISCOVERED IN DIAMOND

A previously undiscovered mineral, found as an inclusion in a diamond mined from Botswana, will help scientists to understand the evolution of Earth's mantle. The mineral, calcium silicate perovskite (CaSiO_3), has been named 'davemaoite' after retired experimental geophysicist Ho-kwang 'Dave' Mao. Its existence had been proposed since 1975 but could not be proven since it is only thermodynamically stable in the mantle. Its preservation within the diamond allowed it to travel to the earth's surface. The authors, led by Dr Oliver Tschauner of the University of Nevada, Las Vegas, consider that davemaoite may be the 'most geochemically important phase in the lower mantle'.



Davemaoite within a diamond mined from Botswana. Photo by Aaron Celestian, Natural History Museum of Los Angeles County.

OBITUARIES

Anthony John Allnutt PhD BA FGA (1933-2021)

It is hard to imagine Gem-A without the presence of Dr Anthony John Allnutt, better known to all as Tony. In his role as Chief Examiner, to which he was elected in 2005, he signed many Diplomas for Gem-A. He was the longest-serving examiner by far, having taken on the role of Preliminary Examiner in 1964 soon after obtaining his own FGA. He remained a valued working member of the Foundation Team of Examiners until his sudden death in November 2021, contributing to the draft papers, which are in process for the 2022 examinations. His vast experience in this and other fields, together with his calm and logical approach, was much appreciated. He could be relied on to get to the heart of an issue and propose a sensible and workable solution, always maintaining the essential independence of Examiners. At the same time, he was fun to be with, having a dry wit and a wry sense of humour.

Tony's involvement in gemmology came about as a happy accident.

His wife, Ann, who he met when they were both working at the British Scientific Instrument Research Association (SIRA), was given a silver spoon



featuring a gemstone to add to her collection. Typical of his enquiring mind, Tony investigated the material and decided that the best way to find out about gems was to take a gemmology class. He and Ann therefore enrolled in the class run by Robert Webster at the Northern Polytechnic Institute; both obtained their FGAs in 1962.

Aware of Tony's background as a physics graduate from University College London (UCL), Gem-A recruited him in 1964 as a Preliminary Examiner to ensure a sound foundation of basic science. In this role he set the papers and marked the scripts, one year marking all nine hundred papers.

This work for Gem-A was in addition to his day job, which involved the development of lasers and related instrumentation at SIRA. After obtaining

his physics degree, Tony went into a reserved scientific role with De Havilland while studying part-time for a PhD in mathematics, which he received in 1953. He worked at SIRA in Chislehurst, Kent, until his official retirement in 1993. Thereafter he liaised with SIRA while supervising PhD students at UCL until 2009.

A true polymath, Tony's other interests included the law, local history and restoring his MG TC. He studied part-time for a BA in law, graduating in 1977. Thereafter he joined Middle Temple and was called to the bar in 1979. Tony obtained a diploma in local history from London University. He was a founding member of the Bromley Borough Local History Society, which was formed in 1974, and served as chairman and latterly as membership secretary, a role he still held at his death.

The MG TC, a vintage car from 1947 which Tony bought second-hand, was the Allnutt family car in the 1950s and was used to travel the length and breadth of the UK. It was subsequently renovated twice and finally restored to factory conditions over the last ten years with the help of his son Nicholas. Tony was able to take a short trip around the block during lockdown in 2020.

Tony will be greatly missed by many.

Lynne Bartlett FGA DGA

Pixie Rachael Allen DGA (1980-2021)

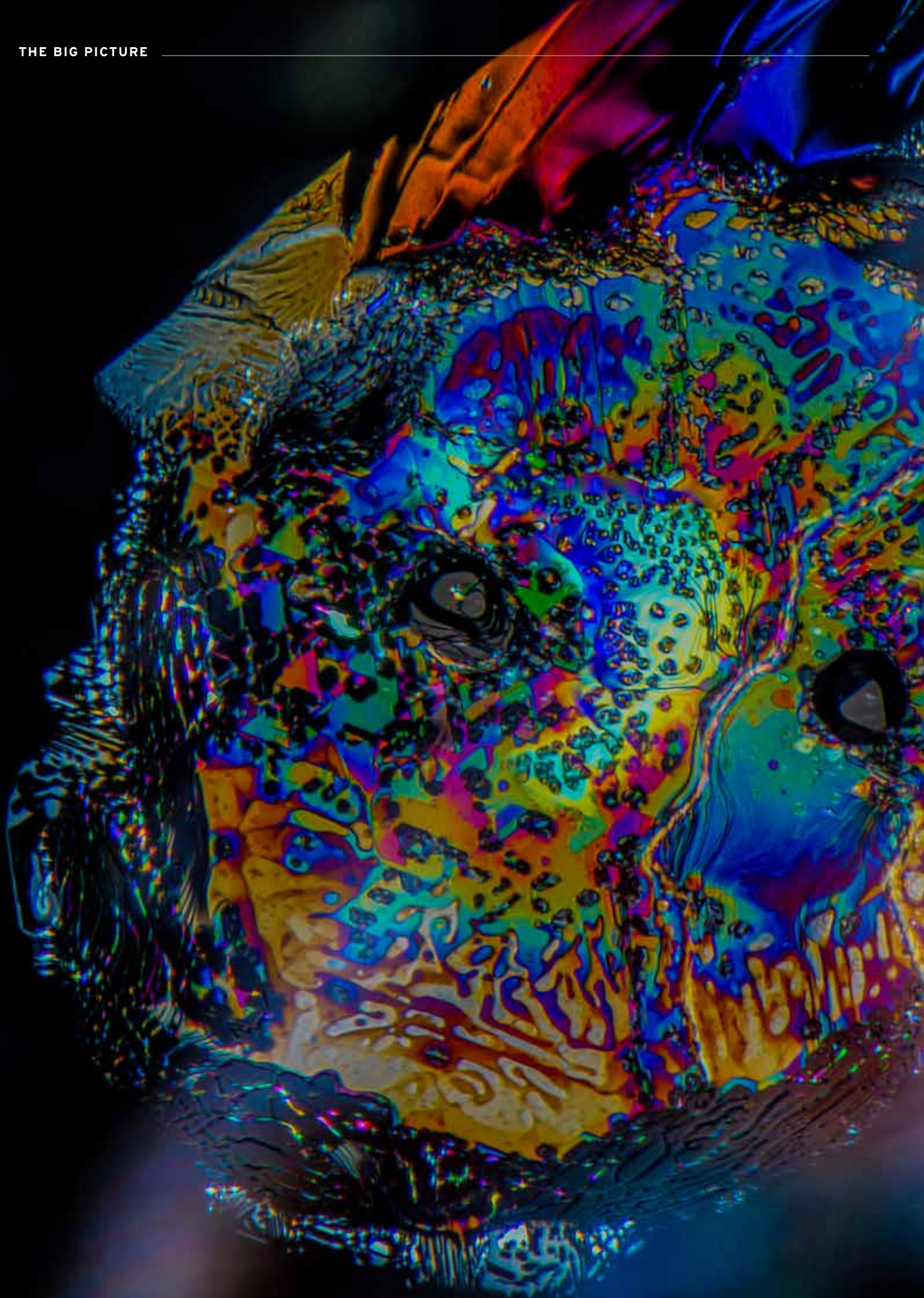
Pixie Rachael Allen always loved gemstones and minerals. In 2014 she decided to pursue her passion by enrolling in the Gem-A evening classes at Birmingham City University. She was delighted to pass her Foundation qualification with an A grade in 2015. In 2017 she passed her Diploma practical, and in 2018 achieved her Diamond Diploma with Distinction.

Starting in 2017, Pixie became a much-valued member of the BCU team, volunteering to help create an inventory of our gemstone collection and generally keeping us all organised! She also

worked as an invigilator for the Gem-A exams and used her own experiences taking the exams to help calm nervous students. In 2019, before the COVID-19 pandemic hit, Pixie took a break from her studies and voluntary work due to health issues. We were looking forward to welcoming her back post-lockdown to complete her Gemmology Diploma and hopefully rejoin our team. Sadly, Pixie lost her life to cancer in October 2021. She left all her gemmology books and samples to BCU to help students in their studies. This kind and thoughtful gesture was typical of her, and she is much missed by us all.

Miranda Wells BA (Hons), FGA, DGA, FHEA





Melt Inclusion in Montana Sapphire

Dr Aaron Palke makes a discovery within a Montana sapphire that sheds a bit of light on the origins of these remarkable gemstones.

I started my life as a gemmologist in 2014. As a geologist studying gemstones, I immediately saw the possibility of using inclusions as geological time capsules, communicating to us about how gemstones formed.

Since entering the field, one of my great loves has been Montana sapphires. There is so much we don't know about these gems because they are in a secondary deposit and much of the geological context of their formation has been weathered away.

Even with this caveat, the first major discovery I made about any gemstones was finding a very particular inclusion in the Montana

sapphires that could speak volumes of their formation. I noticed these negative crystal inclusions that were filled with a solid substance, sometimes in a quenched glassy phase. Cutting into these inclusions, I was able to analyse them and determine they were similar in composition to many igneous rocks we see around the world, such as rhyolites, dacites and andesites. They were melt inclusions; essentially, they were miniature magma chambers representing molten rock trapped by the sapphires as they were growing. This demonstrated the magmatic origin of these sapphires, possibly through a partial melting event

deep in the earth. This was a huge insight into the starting point of these sapphires.

The photomicrograph of the sapphire shows several of these extraordinary negative-crystal-shaped melt inclusions, which have burst out into the host corundum. This extrusion happened at high temperatures close to where the sapphire would have formed, so the fracture that was created partially healed itself according to the underlying corundum crystalline structure. Use of an intense fibre-optic light creates vibrant thin-film interference colours to show the inclusions to their best advantage.

THE 12 GEMSTONES OF CHRISTMAS

We reveal the winner of the Gem-A Photographer of the Year 2021 competition!

Anounced in *G&J*'s Autumn 2021 issue, this year's Photographer of the Year contest saw a major difference. Rather than comprising several categories, as in the past, this year's theme was Christmas. Based on the numerous entries we received, even with the shorter lead time from announcement to competition deadline, it was a topic that resounded with many people. The contest was open to any member of the public with an interest in both gemmology and

photography who had taken the photo in question in the previous eighteen months.

Once the deadline for entries had closed, our dedicated team reviewed and sorted the images, compiling a shortlist of twelve photographs that we turned into 'The 12 Gemstones of Christmas'. This became an 'Advent calendar' of sorts that we posted to our Instagram account. This method allowed us to put the shortlisted images to a public vote while keeping with our theme. Once posted, our social media audience was

redirected to Facebook for the actual voting, with photos earning 'likes' and then progressing to the next stage.

To narrow down the top five entries to a single first-place winner with two runners-up, we turned to our guest judge Robin Hansen, who is the curator of minerals in the earth sciences department of London's Natural History Museum. The quality of the images, even with her keen eye for a specimen, meant she had no easy job in selecting this year's three winning images which are revealed overleaf. →

1

Dalin Wu **Aquamarine Iceberg**

An etched aquamarine crystal from Pakistan, with its reflection reminiscent of the concealed part of an iceberg.



2

Alexandro Tkachenko **Blue Waters**

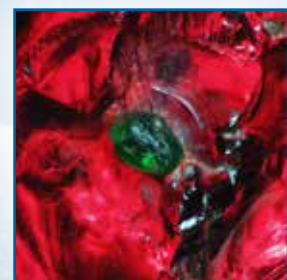
"Working with this natural glass was an extreme pleasure; it has amazing shapes and colours, some of the pieces weigh several kilos so it was not easy to combine them. But as soon as they found their places the scene became deep water and cosmos at the same time."



4

Sammantha MacIachlan FGA **The Colours of Christmas**

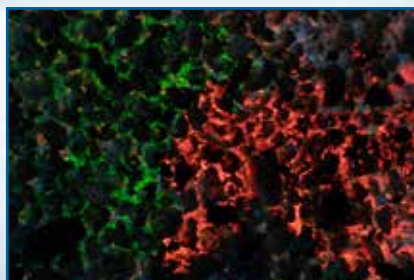
This image is of a rough chrome pyrope and hill garnet from the collection of Sid Turner; the garnet is host to a chrome diopside crystal. This material is found on the Navajo Nation in Arizona and collected by the Navajo women from the tops of desert ant hills.



3

Gary Braun **Andamooka Opal with carbonising treatment**

Carbon-impregnated Andamooka matrix opal. The sugar-acid carbonising technique (i.e., 'sugar treatment') leaves carbon deposits in the porous matrix and creates a dark body colour to accentuate the opal's play-of-colour.



5

Enrico Bonino

Scavenger Beetle in Baltic Amber

This image is calculated from a stack of more than 100 images, acquired with a microscopic objective connected to a tube lens and camera. With the use of a black background and careful positioning, the light transforms these insects into stunning gems.



6

Nathan Renfro

Aquamarine Ice Cave

This aquamarine from Pakistan has been dissolved, leaving delicate spires decorating a void that resembles an ice cave. The colour has been enhanced using modified Rheinberg illumination and the image was focus-stacked from sixty images to increase the depth of field.



8

Dr Clemens Schwarzingher

The Christmas Star

This photo shows rutile needles arranged in the shape of a star in a colour-change garnet from Tunduru, Tanzania. It was taken whilst shooting a horsetail-like inclusion in a similar garnet, which was published in the *Journal of Gemmology* earlier this year.



10

Meng Sun

Frog Egg

A special fluorescent diamond with a blue-green diamond subject to a yellow spherical fluorescent area in the centre. The crystal edge is inert to fluorescence. The overall effect of the fluorescence is very similar to the appearance of frog eggs.



11

Jennifer Gait

Frosted Snowflakes

"My entry was taken on my iPhone 12 Pro Max using Gem-A's microscope. It's a close-up of quartz with hollandite crystals and reminds me of frosted snowflakes."



7

Tyler Smith

Chalcedony Cavity

An open cavity in chalcedony has unidirectional etchings, conjuring the image of a castle or spire. Nebulous brown staining surrounds this opening, likely introduced after the formation.



9

MS W. van der Giessen FGA

The Christmas Tree

This photo of chlorite in quartz resembles a miniature Christmas tree.



12

Gary Braun

Quartz with hematite inclusions

Quartz with hematite inclusions commonly known as 'beetle legs'. This photo was taken with a Wild M420 Apozoom macroscope and a Sony a7RII DSLR camera.





Dr Clemens Schwarzingler secured the winning position in this year's competition with his sparkling 'The Christmas Star', which was used for our cover image.

THE WINNER AND RUNNER-UPS

THE WINNER

The Christmas Star by Dr Clemens Schwarzingler

Our guest judge, Robin Hansen FGA, commented that "The colours and arrangement of this image are both beautiful and festive, having red and green in the background and what looks like Christmas lights twinkling behind the star. The rutile star reminds me of a firework exploding with Christmas cheer and spectral colours, and I can feel people smiling as they look at this image."

Dr Clemens Schwarzingler is Associate Professor for Chemistry at the Johannes Kepler University of Linz, Austria. In 2016 he founded the Center for Scientific Gemmology at the University of Linz; he is also scientific advisor of the Viennese Diamond Bourse. He is owner of a small company

which is dedicated to precision gemstone cutting. His scores at the 2018 and 2019 United States Faceters Guild competitions in the Grand Master category allowed Dr Schwarzingler to be certified as a Grand Master himself.

His academic research focuses on the identification of gem treatments and mineral chemistry, particularly on the use of trace elements for origin determination of garnets and colouration of zoisites/tanzanites, as well as advanced spectroscopy. Dr Schwarzingler is an Associate Member of Gem-A and on being informed his entry was the overall winner said, "By far the best Christmas surprise I have had in many years – thank you so much!"

As our first-place winner, Dr Schwarzingler will receive a £300 voucher to spend at Gem-A Instruments, along with a one-year membership to Gem-A.

RUNNER-UP

The Colours of Christmas by Sammantha Maclachlan FGA

RH: "The bright vivid colours and warm glow of the pyrope immediately gave me a festive feeling. The composition and lighting work well to keep you looking around and noticing the details in the pyrope, with your eye coming back to the contrasting colour of the chrome diopside in the centre."

Sammantha Maclachlan FGA is an independent jewellery valuer and gemmologist with a passion for photomicrography. She gained her Diploma in gemmology in 2019 and is currently completing her diamond diploma in order to obtain the 'gold standard' of industry accreditation.

On being advised of her achievement Ms Maclachlan commented, "I am absolutely delighted to be a runner up in this year's contest. To see my image published in *Gems&Jewellery* is a dream come true. Thank you, Gem-A!"

As a runner-up, Ms Maclachlan will receive a £50 GBP Gem-A Instruments voucher.



GEM-A
PHOTOGRAPHER
OF THE YEAR 2021RUNNER
UP

RUNNER-UP Scavenger Beetle in Baltic Amber by Enrico Bonino

RH: "I think this is a magnificent image of high-quality, excellent composition. The beetle looks like a golden jewel suspended in space. I did not choose this as the winner as I did not think it was as festive as the other images, but it certainly deserves an award."

A geologist, editor, GIS consultant and software trainer at Esri BeLux, Enrico Bonino is an amateur paleontologist specialising in extreme macro techniques, with a particular interest in amber imagery. He holds a degree in earth sciences from the University of Genoa with a specialisation in stratigraphy and paleontology. He told us, "I have a deep passion for the earth sciences, which pushes me to explore the possibilities of extreme macro photography for

microfossils and insects trapped in amber, offering a bright new look at the tiny wonders of nature." Originally from Italy, he currently lives and works in Belgium.

Mr Bonino is a scientific curator of the Back to the Past Museum of Cancun, Mexico, and an author and editor of books and articles on Paleozoic arthropods, fossil lagerstätten and trilobites.

Mr Bonino said that "Gem-A has given me the possibility to discover the absolutely fascinating world of gemmology and the techniques required to develop skills in evaluating the gems."

On hearing the news of his award, Mr Bonino was naturally delighted to be selected in the top three.

He commented, "This is an amazing milestone in recognition of my extreme macro photography work."

As a runner-up, Mr Bonino will receive a £50 Gem-A Instruments voucher.



OUR GUEST JUDGE

Robin Hansen FGA is curator of minerals and gemstones at the Natural History Museum, London. She developed her love of minerals and geology growing up in her hometown of Perth, Western Australia, completing a degree in geology. She worked for three years in the mining sector before moving to London and settling into a position in the private mineral collector business.

During the following decade she complemented this role with a Diploma of Gemmology through Gem-A and was awarded the prestigious Tully Medal. She was thrilled to be offered her dream job as a curator at the Natural History Museum in 2015, and feels privileged to help care and manage the magnificent collection of approximately 185,000 gemstone and mineral specimens.

The Gem-A Photographer of the Year competition is a wonderful demonstration of the talent, skill and creativity of the gemmological community. Thank you to everyone who participated. and to Robin Hansen FGA for contributing her time as a guest judge.

Find us on Facebook @GemAofGB

Gem-A's Conference moves online in 2021

In the face of COVID-19, Gem-A was able to hold the annual Conference by moving – successfully – to an online format.



Gem-A CEO Alan Hart chaired the online Conference.

This year, the Gem-A Conference embraced an online-only format. The Conference, which took place on Sunday, 7 November, included a line-up of ten speakers and covered a range of diverse topics including historic diamonds, international royal collections, jewellery design and the gemmological properties of beryl and tourmaline.

The Conference also focused on a range of 'trending' topics in the UK and international gemstone trade, including issues of responsible and sustainable sourcing, and the screening of laboratory-grown diamonds using portable instruments.

More than three hundred Members registered to attend the ticketed Online Conference, and engagement was high across the talks. Indeed, an encouraging

98% of Members told us that they found the talks engaging and relevant. Further, attendees said that they enjoyed the sense of community fostered by participation in the form of asking questions and getting answers directly from speakers.

We have our knowledgeable speakers to thank for being so generous with their time and expertise – so thank you once again from all of us at Gem-A. Similarly, we also send our appreciation if you joined the various sessions that ran throughout the day.

Missed a talk? Don't worry, we have been making select sessions available on Gem-A's YouTube channel. Receive alerts for future uploads by subscribing at youtube.com/gemaofficialchannel. ■



Speakers included (top to bottom): Wallace Chan, Rui Galopim de Carvalho and Dr Saleem Ali.

Gem-A's Graduation Ceremony and Presentation of Awards

Gem-A honours the 2021 Graduates by resuming the in-person ceremony.

Gem-A has long reserved the first weekend in November to host its most anticipated annual events, including the Gem-A Conference, field trips to the Natural History Museum and Tower of London and its annual Graduation Ceremony. These in-person events have been well-attended by international delegates, speakers and Students alike.

In keeping with this tradition, the Gem-A Graduation Ceremony and Presentation of Awards took place on the evening of Monday, 8 November. It was hosted at the historic venue of Church House, which benefits from balcony views across Westminster Abbey. This was accompanied by a drinks reception for Graduates and guests in Hoare Memorial Hall, where Winston

Churchill delivered key announcements during his premiership.

"COVID-19 restrictions did force our hand with our annual in-person events, but we are slowly reintroducing the Gem-A Conference and Graduation Ceremony in ways that are safe, effective and for the benefit of our Members and Students," explains Alan Hart FGA DGA, Chief Executive Officer of Gem-A.

"This year's Online Conference included a fantastic line-up of speakers, and our Graduation Ceremony was once again a fitting tribute to our Students, many of whom achieved their Gemmology Foundation, Gemmology Diploma and Diamond Diploma qualifications in 2020. It was important to all of us that we recognise the achievement of all of our students who



have tackled our courses in unusual and challenging global circumstances."

This year's keynote was delivered by Gem-A alumnus and jewellery specialist Kate Flitcroft FGA. She delivered a rousing and inspirational graduation speech that illuminated the many possibilities open to our talented graduates. Thanks again to Kate, and congratulations to each of our graduates, who worked diligently even in the face of the pandemic to achieve their goals. We appreciate the support of everyone involved in making the event happen! ■





Welcome to GemIntro

Gem-A's CEO Alan Hart FGA DGA announces the Association's new online accredited Level 2 course!

As readers of *Gems&Jewellery* are well aware, Gem-A is world-renowned for its Diplomas that, in their turn, prepare our Students for the Fellowship of the Association (FGA); at the same time, the Diplomas themselves involve coursework that provides a strong background in gemmological practices in their own right. Yet, while we know our course offerings are first rate, we found that we had still more to offer in terms of educating those with an interest in gemstones, particularly those Students who thrive on fast-paced, internet-based content. This led us to create GemIntro, a short online course that is designed to give a broad introduction to the wonderful world of gems and gemmology. No formal background in gemmology is required to enrol or pass the course, though certainly we welcome anyone who has an interest in the subjects covered.

GemIntro has been specially designed for gemstone enthusiasts, retailers or anyone seeking of progressing their career in the diverse and exciting gemmological industries. Since the

dawn of the gem trade, there has been confusion over the identification of some gemstones. Being able to properly identify the materials used in jewellery and precious objects is even more of a necessity in today's market, where transparency and trust are key to a wholesaler or retailer's business operations. Identification helps sellers make informed (and profitable) decisions when sourcing stones, ensuring their authenticity.



Today, understanding gems and gemmology impacts many related industries including retail, manufacture, jewellery design, science and mining, to name only a few. For these reasons, it is important to understand gems and have the basic insights necessary to talk confidently about gemstones. GemIntro is one way we can help our Members and Students contribute to that conversation.

This new course offering will introduce you to simple gemmological tools and techniques, how to observe and identify gems, and how gemmology is applied in the wider industry. Indeed, luxury industries like ours need educated sales professionals who both know their products and can engage with clients. Understanding gem concepts and the principles of gemmology, as well as other gem-related topics such as responsible sourcing and sustainability, is becoming increasingly important. To properly represent these beautiful objects and inspire consumer confidence, we need to be able to communicate clearly, effectively and knowledgably with clients. GemIntro enables our Students to do this.

“The understanding of gems and gemmology impacts many related industries, and it is important to have the basic insights necessary to talk confidently about gemstones. GemIntro is one way we can help our Members and Students contribute to that conversation.”

There are eleven chapters to work through, with lots of videos and interactive content. Topics covered include gemmology, gem materials, properties of gems, observation, identification, cutting, the mine-to-market chain, science and geology, lore and so much more. There is a mini-quiz at the end of each chapter to test your knowledge and ensure that you are getting the most out of the course information.

As you move through the course, you will gradually unlock ‘gemstones’ that provide enhanced access, such as

interesting facts on select gem materials and additional reading on the topic at hand. By the end of the course, you will have collected thirty-two gemstones, all as you learn about gemmology in an efficient and entertaining manner. Finally, after completing all the chapters you will be able to take a final assessment; once passed, you will be able to download and print a certificate to keep. Once successfully completed, you will have a Level 2 qualification, accredited by Ofqual.

We encourage everyone who is intrigued by this new offering to let us



Covers of some of the modules covered by the Association's new Level 2 course.

know of your interest at the web page set aside solely for that purpose. We hope you are as excited as we are about GemIntro; we know it will be a great starting point for the gemmological educations and careers of so many people. We believe it will not only inspire you to learn and share more about the fascinating and beautiful world of gems, but also lead you to a rewarding and further progression in the many related career paths that an understanding in gemmology can provide. Good luck! ■

Readers are invited to register their interest in the GemIntro course at www.gem-a.com/GemIntro.

Yogo Sapphire Production

Reviving the American Dream

Sapphires have been mined, with varying levels of success, in Montana since the late nineteenth century. In the first of this two-part instalment, Olga González FGA DGA and Jerod Edington, interim president of Yogold USA – the current operator of the Yogo mine – discuss the transition, current operations and production.

Rarely does an opportunity come about to achieve prosperity in the way that it seemed within reach to the American pioneers of the nineteenth century. During the gold rushes that began in California in 1848, miners moved west, in a frenzy to discover the precious metal. In the mid-1880s, at the forgotten gold camp in what was then known as Yogo City, Montana, blue pebbles were unexpectedly unearthed. From the

of support. Jerod Edington, interim president of Yogold U.S.A., provides some context in this first part of a two-part series on current sapphire mining near Utica, Montana.

What inspired you to lease the mine and put it back into operation?

JE: The inspiration for this project was my father, Jay Edington. With a background in geology and mining, he always had a great appreciation for the mine itself, and he understood its potential. The fact that the Yogo mine is currently the largest known deposit of natural sapphires that do not require heat treatment is a major factor.

After Intergem's bankruptcy, the property reverted back to Roncor Inc., which was open to buyers. My father told my brother, Ryan, and I that if we were motivated to take on the Yogo deposit, he would come out of retirement and act as a senior consultant. We wrote a formal proposal to Roncor to lease the mine with an

option to buy, and the board accepted our offer. My father then helped us build a management team and facilitate implementation of a capital formation plan to fund the project.

My brother and I then formed Yogold USA to acquire the mine and bring it back into production. We approached this project on a multi-phase basis. After we negotiated and entered into formal agreements with Roncor, we spent our first two years in business doing bulk testing and small-scale mining of the available surface material. Currently, we are securing all the necessary equipment and supplies needed to undertake the rehabilitation of the 3,000 ft (914.4 m) Kunisaki haulage way – also known as the 'Kunisaki Tunnel'. We are also securing all of the required permits and approvals from numerous state and federal agencies. Finally, we are recognising key professions and hiring people in those capacities. These people have many years of experience in opening and operating an underground mine.



Blue Yogo sapphire rough in hand.

gemstones' discovery by prospector Jake Hoover – who collected enough sapphires to fill a cigar box – through the successful English Mine period with Charles Gadsden at the helm, to Intergem and Kunisaki's ownership, sapphire production at Yogo is picking up again after a 40-year hiatus. Now a new era for the mining and distribution of this stunning North American gemstone is upon us with Yogold USA, a family-owned and operated company with a passion for cornflower blue, a background of industry experience and a great deal



Tray of blue Yogo sapphire rough.

The mine has been through many owners, and some were more successful than others. How does your vision for the future of the mine differ to what has been done in the past?

JE: Historically speaking, there has been very little produced by the Yogo mine for over 40 years. To make the mine a financial success, it cannot be operated in the way a traditional mining operation, such as a precious metals mine, would operate. To achieve economic viability and generate a profit, one cannot simply mine and sell sapphire rough. The mine economics demand that, at a minimum, the operator must correctly mine and extract the sapphire rough. Then the rough must be sorted, graded, faceted or shaped, polished and then taken to market and sold as loose finished gems for jewellery. The optimum from a future profitability perspective would be to transition into the manufacturing and marketing of fine jewellery.

In your words, what does this mine mean to you? What makes Yogo sapphires exceptional?

JE: I view my role in operating the mine as a once-in-a-lifetime opportunity for a variety of reasons. If you look back at the period when the British syndicate operated the mine, from the early 1900s until 1928, the middle section of the Yogo dike produced anywhere from 18 to 23 million carats of very high-quality natural sapphires. This was accomplished with antiquated mining equipment and mining techniques. There are alluvial mining operations that have produced more gross carats, but not comparable and consistent quality.

Even more remarkable is the fact that the British did all their mining out of a shaft that was only 250 ft (76.2 m) in depth and then mined along the dike for only about 1,200 ft (365.76 m). That is a very small area to produce those millions of carats of high-quality cornflower blue sapphires that do not require enhancement with heat or chemicals. Using conservative estimates, the English mined less than three percent of the dike, which is documented to extend 25,000 feet (7,620 m) in length. Until additional drilling is accomplished, the depth of the dike cannot be determined with certainty. From a geologic perspective,



Author Olga González (centre) with Jerod Edington, Ryan Edington, Jay Edington and George Lind of Yogold USA. Photo by Matthew Yeung.

this igneous dike is similar in nature to kimberlite pipes that are known to be deep-seated and generally extend to depths of many thousands of feet. Therefore, the depth of the Yogo dike could be many thousands of feet, similar to diamond pipes.

In addition, the size and location of the deposit makes it amenable for mining, and the sapphire is naturally occurring, not requiring any artificial heat or enhancement. With no colour zoning and few inclusions, the even, beautiful cornflower blue of the Yogo sapphires makes them exceptional. From a sustainability standpoint, the sapphires are locally and ethically mined, with no link to conflict situations nor child labour, and with safe working conditions. Stable jobs are offered to miners, and the surrounding community is passionate about the history and brilliance of the stones, offering a supportive environment for all.



Under incandescent light, colour-change purple Yogo sapphire rough turns from pink to red.

Right now, Yogold is a private operation; you and your brother, Ryan Edington, each manage separate parts of the business. How is the division handled, and who is ultimately responsible for what tasks regarding your proposed business model?

JE: Ryan and I are heavily involved in day-to-day operations, with Ryan as our gem manager and head of security. Yogold has a seasoned board of directors, consisting of a mix of professionals in the mining industry, and other directors that have expertise in gemmology, gemstone cutting, jewellery manufacturing and marketing. Our management team and the board of directors have a combined 250 years of exploration, mine development, and mine operation experience. We also have outside consultants that bring another 200 years of mining experience to the table. Ultimately, all major business, operational and financial decisions must be ratified by the board of directors. ■

Look for the second part of our interview with Jerod Edington, in Gems&Jewellery's Spring 2022 issue, to learn about Yogold USA's vertical integration, the violet and purple sapphires found at Yogo Gulch alongside the cornflower-blue material and the future of the mine as it transitions towards underground production. In the meantime, visit them at yogoldusa.com.

Photos by Olga González unless otherwise indicated. All sapphires courtesy of Yogold USA

Fabergé in London: Romance to Revolution

Could there be a more perfect name for an extraordinary new exhibition of Fabergé masterpieces at London's Victoria & Albert Museum? This is an opportunity to see the largest display of Fabergé Easter eggs in a generation while learning more about the Russian powerhouse's lesser-known London branch. *G&J* goes behind the scenes and reveals some of the treasures that await museumgoers.

In 1903, against the backdrop of Edwardian Britain, Carl Fabergé opened a branch of his eponymous business in London. This Anglo-Russian facet of Fabergé metamorphosed into something altogether greater than simply an outpost on the other side of Europe. Instead, what emerged was a bridge between British royalty and aristocrats, American heiresses, exiled Russians, Indian maharajas and new-moneyed society climbers of all nationalities with the famed workshops of Fabergé in Russia, which listened and responded to the tastes of its new audience, shaping output considerably.

Now, we can find out more about these creations with the arrival of *Fabergé in London: Romance to Revolution*, a new exhibition at the Victoria & Albert Museum (V&A). This event has been meticulously planned since 2017 and can now boast the largest display of Fabergé Easter Eggs in a generation – some fifteen treasures many of which have either

never been shown or never been in England before – plus another 200 objects of masterful artistry and lapidary skill.

Kieran McCarthy, the curator of Fabergé in London and joint-managing director at London-based Fabergé specialist Wartski, told us that “This exhibition is an ambitious roller coaster ride of Fabergé. We see the collision of Fabergé’s immense skill, genius and craftsmanship with the most enabling and eager patronage of British high society. Where those two collide is where the sparks of creativity fly.”

He continued, “London has always been in the shadow of Russia when it comes to Fabergé and to some extent, this is correct, but we shouldn’t diminish the success and the power of the London branch solely because of the fascination with Russian history.”

It is true that the Fabergé name is merged with the romance, glamour and tragedy of the Russian Imperial family. In fact, the first section of this exhibition highlights the important patronage



1: Miniature replica of pieces from the Russian Imperial Regalia. Workmasters August Holmström and Julius Rappoport, Fabergé, 1900, St Petersburg. Crafted in gold, silver, platinum and diamonds.



2: Aquamarine and diamond tiara in gold and silver. Workmaster Albert Holmström, Fabergé, about 1904, St Petersburg. This tiara belonged to the Grand Duchess Alexandra, first cousin of Emperor Nicholas II and niece of Empress Maria Feodorovna of Russia and Queen Alexandra of England.

of the Romanov family, culminating in a miniature of the Imperial Regalia (1), lent by the Hermitage Museum and made for the 1900 Paris Exposition Universelle. Within this portion of the exhibition, there is a chance to view some of the intimate Fabergé gifts exchanged between Russian royalty – figurines,



3: Chelsea Pensioner, portrait figure. Chief Workmaster Henrik Wigström, Fabergé, c. 1909, St Petersburg. Carved in purpurine, aventurine quartz, jasper. King Edward VII bought this figure on 22 November 1909. Fabergé's hardstone human portrait figures are complex mosaics assembled from coloured Russian hardstones. The figures are among Fabergé's most valuable and rarest creations, with fewer than 50 thought to exist.

King Edward VII and Queen Alexandra were already avid collectors, which made royal patronage a likely bet for the business, and exchanges of Fabergé gifts between Emperor Nicholas II, Empress Alexandra Feodorovna and Queen Victoria can be dated to Christmas 1896.

"In many respects, the London branch was given free rein to serve its customers and it wasn't an entirely subservient outpost," McCarthy explained. "The London branch then began to influence production in Russia, so the demands, wishes and wants of customers in London were communicated back to the workshops in Russia and they began to tailor their output to match this English inspiration."

The second section of the exhibition explores this impact and demonstrates

Easter Eggs, rock crystal flowers and family portrait miniatures – while also learn more about the 'culture of creativity' that Fabergé fostered within his workshops.

According to the V&A, "Carl Fabergé's restless imagination inspired daring material choices and designs, while the integration of designers, craftsmen, and retailers under one roof galvanised creative collaboration. The dazzling beauty of Fabergé's work is shown by a sparkling aquamarine and diamond tiara – a token of love from Frederick Francis IV, Grand Duke of Mecklenburg-Schwerin to his bride, Princess Alexandra of Hanover and Cumberland, on their wedding day (2). The only known example of solid gold tea service crafted by Fabergé is also on display, one of the most magnificent items to emerge from the firm's Moscow branch."

With the context achieved through this opening portion of the exhibition, we are next invited to explore the London era of Fabergé. A huge success at the 1900 Paris Exposition made it clear that Fabergé would have a keen customer base outside Russia.



"Fabergé was the popular gift of the day within the Romanov family and this gifting spread throughout the royal families of Europe, who were closely connected. Alexandra, Empress of Russia was the granddaughter of Queen Victoria. It therefore made perfect sense for the Fabergé company to open premises in London.

"The ingenuity, creativity and craftsmanship on display at this exhibition demonstrate the breadth of Fabergé's offerings, from the miniature but exquisite snail to the automaton peacock within a crystal egg, there is something to delight in every showcase."

**Sarah Fabergé,
Founding Member of the
Heritage Council
at Fabergé**



4: The Moscow Kremlin Egg (workmaster unknown), 1906, St Petersburg. Crafted in gold, silver, onyx, glass and enamel. Given by Emperor Nicholas II to his wife Empress Alexandra Feodorovna for Easter. A music box inside plays the melody of Nicholas II's favourite Russian hymn, 'Izhe Kheruvimy' ('Song of Cherubim').

how Fabergé gifts became a 'social currency' amongst the cosmopolitan elite who gathered in London at the turn of the twentieth century. Undoubtedly one of the rarest objects on display is also one of the most obviously British in inspiration: a carved figurine of a Chelsea Pensioner in purpurine, aventurine, jasper, gunmetal, gold, enamel and sapphires (3). Dating from 1909, the figurine is now part of the Royal Collection owned by Queen Elizabeth II.

"Russia occupied such a mystical place in the British imagination and Fabergé was part of that," noted McCarthy. "Fabergé contributed to the perception of this luxurious, magnificent country producing unparalleled works of art.

[Fabergé's presence in London] coincided with the Ballets Russes, which presented this seductive, ephemeral and beautiful view of Russians, male and female, coming





5: *The Alexander Palace Egg*. Chief Workmaster Henrik Wigström (1862–1923), Fabergé, 1908, St Petersburg. Crafted in nephrite, gold, silver, diamonds and rubies. Given by Emperor Nicholas II to his wife Empress Alexandra Feodorovna for Easter. Its shell is inlaid with oval miniature watercolour portraits of the couple's five children. The paintings display each child's initial in diamonds and are engraved with their names and dates of birth on the reverse. The surprise inside the egg is a miniature table topped with an enamelled gold and silver model of the Alexander Palace, the Imperial family's favourite residence.



6: *The Romanov Tercentenary Egg*. Chief Workmaster Henrik Wigström, 1913, St Petersburg. Crated in gold, silver, steel, diamonds, turquoise, purpurine and ivory. Given by Emperor Nicholas II to his wife Empress Alexandra Feodorovna for Easter. Its translucent white enamel shell is mounted with circular portraits of Russia's 18 Romanov rulers and encased with gold double-headed eagles and crowns. The surprise inside is a revolving steel globe showing the extent of Russia's territory in 1613 and 1913 using gold and blue enamel.

to London. The two combined to produce an image of a seductive Russia populated by brilliant artisans and goldsmiths."

The final section of the exhibition celebrates the legacy of Fabergé through their iconic Imperial Easter Eggs, with a kaleidoscopic display of fifteen of these famous treasures. This is the largest collection of eggs on public display for over 25 years. McCarthy described the sensation of curating these Easter Eggs as 'like a firework going off in your soul'. He pointed out that "to get fifteen is a remarkable phenomenon. We know the whereabouts of 43 Easter Eggs and have over a third of them in the exhibition, but they are so closely guarded. With every film, book, fictional plot and fantasy focusing on these iconic treasures, getting them to London was very difficult indeed."

Of those that have never been on display in the UK before, the largest is the Moscow Kremlin Egg (4), inspired by the architecture of the Dormition Cathedral, on loan from the Moscow Kremlin Museums, crafted in gold, silver, onyx, glass, enamel and decorated with oil paintings. Next, there's the Alexander Palace Egg (5), featuring watercolour portraits of the children of Emperor

EDITOR'S PICK

Although you can feast your eyes on more than 200 Fabergé objects included in the exhibition, there is a particular piece that caught the attention of the *Gems&Jewellery* editorial team. Here's a closer look at the Mosaic Egg, designed by Alma Pihl (one of two female designers at Fabergé) and brought to life by workmaster Albert Holmström (St Petersburg, 1914).

Provenance: Given by Emperor Nicholas II to his wife, Empress Alexandra Feodorovna, for Easter 1914.

Materials: Gold, platinum, enamel, diamonds, rubies and emeralds

Significance: This egg demonstrates mastery in gem setting and mounting. The tiny cells of its curved platinum shell were meticulously cut to create a lattice, which is mounted with individually cut gemstones to imitate petit-point embroidery. The surprise inside the egg is a frame with painted enamel portraits of the emperor's five children. It is signed on the underside 'G. Fabergé' in tribute to Carl's late father, Gustav. The year 1914 was the one-hundredth anniversary of his birth.



Nicholas II and Empress Alexandra, and the Tercentenary Egg (6), created to celebrate 300 years of the Romanov dynasty, only a few years before that same dynasty crumbled.

Other eggs that feature include the recently rediscovered Third Imperial Egg of 1887 (7). This is one of the 'missing' eggs created by Fabergé that was lost for many years before it was found by a scrap dealer in 2001. The Peacock Egg of 1907-8 – on public display for the first time in over a decade – contains an enamelled gold peacock automaton (8), while Empress Alexandra Feodorovna's Basket of Flowers Egg (9) was lent by Her Majesty The Queen from the Royal Collection.



7: *The Third Imperial Easter Egg. Workmaster August Holmström, 1887, St Petersburg. Created in gold, sapphires and diamonds. Given by Emperor Alexander III to his wife Empress Maria Feodorovna for Easter. The egg still contains its surprise – a pocket watch by skilled Swiss maker Vacheron Constantin.*



8: *The Peacock Egg. Chief Workmaster Henrik Wigström, 1908, St Petersburg. Crafted in rock crystal, silver gilt, enamel and diamonds. Given by Emperor Nicholas II to his mother, Dowager Empress Maria Feodorovna, for Easter. This engraved egg contains a surprise of an enamelled gold peacock automaton perched on a coloured gold flowering tree. The peacock can be removed and wound up to walk and fan its tail feathers.*

The outbreak of the Great War and the Russian Revolution certainly changed the landscape for Fabergé and yet, in London especially, demand for the firm's creations remained. The V&A explained this market: "From the 1920s, dealers and auction houses in London acquired confiscated Fabergé objects sold by Soviet Russia. In the 1930s, the art dealers Wartski purchased several Imperial Eggs, which it sold to Fabergé's London clients and to new generations of collectors in Europe and the United States. Lately, motivated by patriotic repatriation, Russians have become significant collectors of Fabergé's work."

Although Carl Fabergé's firm ceased to exist, the lore around its artistry and output has never been forgotten. This new exhibition is a testament to the enduring fascination with Fabergé's

works, the romanticism and mystery of its 'missing' Easter Eggs, and the remarkably dextrous designs that occupy a unique place in history. Perhaps this explains why, at the time of writing, tickets have already sold out until March 2022. Such is the appetite for a glimpse at Fabergé! ■

Fabergé in London: Romance to Revolution runs until 8 May 2022.

Find out more via vam.ac.uk/exhibitions/faberge.



9: *The Basket of Flowers Egg (workmaster unknown), 1901, St Petersburg. Crafted in gold, silver, parcel gilt and enamel. Given by Emperor Nicholas II to Empress Alexandra Feodorovna for Easter. Queen Mary bought the egg for her Fabergé collection in 1933, after it had arrived in England following the Russian Revolution.*



A Gem-A Graduate with a Passion for Colour... and Responsible Practices

The rings on the left- and right-hand side of this image are part of the Molten Muzo collection, which dropped in December 2018 and uses 18K yellow Fairtrade gold and tumbled, ethically sourced emeralds from Muzo, Colombia.

Susi Smither BSc FGA JDT grew up surrounded by her parents' mineral collection, never dreaming that she would find her adult calling among gemstones and jewellery.

As the child of mineral collectors, I grew up with a deep respect for gemstones and minerals, running the gamut from beryl to quartz to desert rose, which my father displayed beautifully under glass to show to their best advantage. My parents have an outstanding British mineral collection, including a beautiful Blue John chalice and specimens of calcite and botryoidal hematite from Cumberland. We also have many American specimens; my mother is American, and I am a dual citizen. Whenever we would go on holiday, we would bring home new specimens; I remember a framed edition of distinct types of turquoise from different states that made a huge impression on me; we went and gold panning in the Yukon when I was 13, and I still have flakes from that trip in a locket.

Even surrounded by such variety and beauty, I never considered working with gemstones as a viable option. If only the careers' advisor who had recognised by aptitude for spatial awareness had given me that choice! After school I went on to study maths and management at King's College London, followed by a career in events. It all changed when I took a short course in jewellery making at

Central Saint Martins, part of University of the Arts London, in 2007. That is when I started delving into the world of silversmithing. For four years I spent one day a week honing my craft in Hatton Garden, where I suddenly found myself earning bespoke commissions for which, of course, I needed to buy gemstones. While I knew what I personally was drawn to, I felt intimidated buying gem-grade

material from the dealers in Hatton Garden. The next logical step was to educate myself on gemstones to make better purchases and give my clients the best-quality pieces possible.

I signed up for the full-time FGA program at Gem-A and fell in love with the blend of beauty and scientific knowledge right from the start. My gemmology instructors were so deeply inspiring that it was easy to become drawn into the subject myself. Their enthusiasm for the work we were doing set a tone that I have tried to emulate when I pick up a gemstone, even if I have worked with that particular type of stone dozens of times. The opportunities for networking with working gemmologists was also a revelation: here were people putting what I was learning directly into practice, and willing to talk to me and answer all my questions! Their delight in their work and their kindness to a novice made the whole field feel so welcoming.

Even with all this encouragement, I struggled at times, but I knew my determination would only strengthen my gemmological knowledge and help me to achieve my goals... and it has! My knowledge further held me in good stead when studying jewellery design



Susi Smither earned her FGA in 2011 and has been known as the London-based jeweller The Rock Hound since 2015.

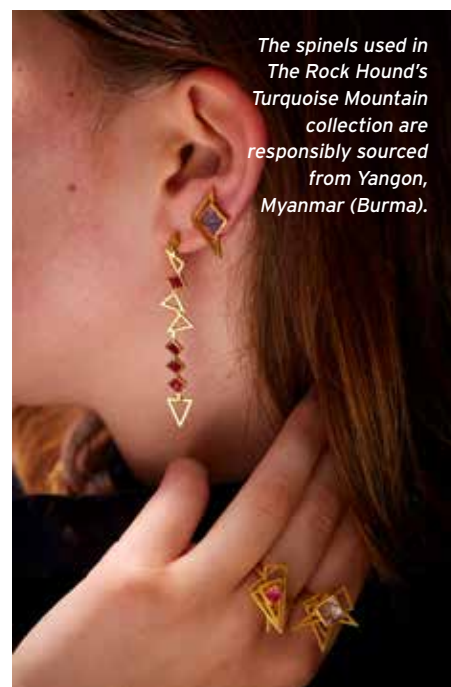
at GIA, I was able to bring all I had learned about light, tone and colour during my FGA studies into my hand-rendered design coursework. In fact, I do not design and then find a gem to match what I have created. For me, the gemstone is the primary focus, the building block, of each piece of jewellery. When using my nano-ceramics technique, as in my Chromanteq collection, the purpose is to frame the gemstone and make it 'pop'. The ideas germinate with the 'seed' of the gemstone; only after that do the roots sprout with the design.

My first job after obtaining my FGA, at Holts Gems in Hatton Garden, further broadened my knowledge. Besides working with so many types of gems in a practical setting, Holts cuts their own material, and being around large blocks of rough gem material and seeing it cut and finished on-site was an education in itself. I enjoyed my job at Holts, but my time at Gem-A left me with the desire to really understand where the gemstones I was using in my work were sourced from. This led me to the Scottish Gemmological Association, an organisation I had first encountered through their conference when I was a Gem-A Student, where I was warmly welcomed with a heady mix of gemstones and ceilidh. I have been lucky to travel on field trips with them twice, the first time in 2012, to Sri Lanka. Once there, it was impossible to avoid seeing the deep disparity between the worlds of mine and market. This is where the idea for The Rock Hound, with the key foundations of sustainability, transparency and responsibility was generated. My second field trip with SGA was to Tanzania in 2015. I will never forget mining with the artisanal miners in the Umba Valley for sapphires (perfect

tabular specimens), stopping at Merelani to visit a tanzanite mine nor trekking up into the Usambara Mountains in search of their legendary tourmalines. These were all humbling experiences that gave me insight into the mining communities and a drive to raise awareness.

I am totally obsessed with colour, and I have been able to indulge that passion while using ethically sourced materials. When I was first starting out, getting answers about sourcing was no easy feat, but the FGA after my name lent me legitimacy while giving me enough of a gemmological background to know what questions to ask. I have been able to find the ethically sourced coloured gemstones I sought – Brazilian heliodor, Tanzanian spessartite, Afghan peridot and spinel from Myanmar, to name a few. I have also been able to source both recycled and Fairtrade gold – becoming a Fairtrade Licensee in 2015; these are the only types of gold I use in my work. And I have gained the attention of people who are looking for jewellers with responsible practices; in December 2018, I launched Molten Muzo after I was one of thirty-three designers selected by Muzo Emerald Colombia to use their responsibly sourced emeralds in a collection. My five-piece collection brings together tumbled Muzo emeralds literally dripping with Fairtrade 18K yellow gold artisanally mined in Peru.

I have spent the past two years condensing the ethos of The Rock Hound and proudly finished 2021 with my current collections in Autelier on New Bond Street, a pop-up supporting independent designers. I am looking forward to what 2022 has in store. I will be adding to my current collaboration with Nature's Geometry, using their

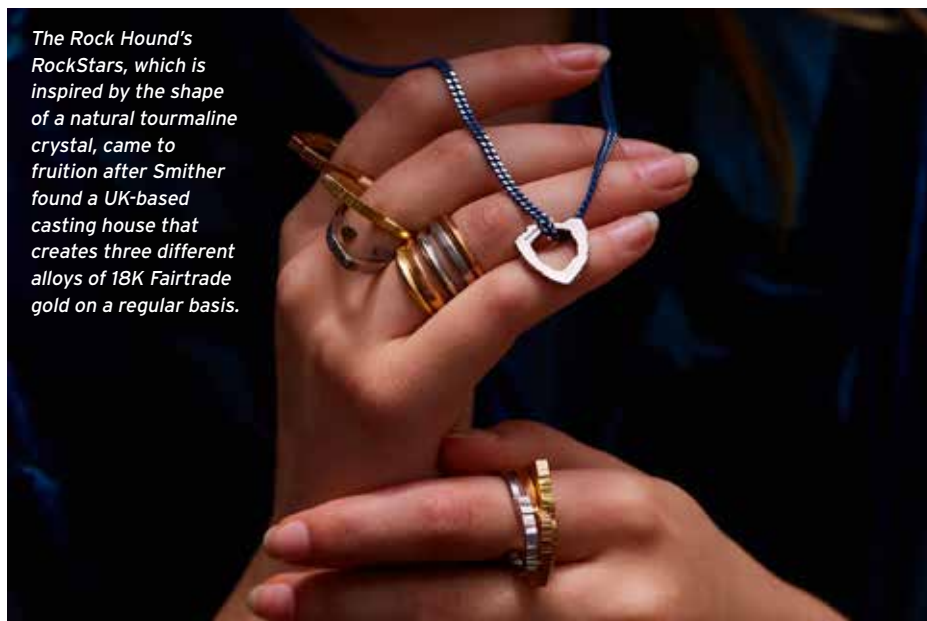


The spinels used in The Rock Hound's Turquoise Mountain collection are responsibly sourced from Yangon, Myanmar (Burma).

golden rutilated quartz from Bahia, Brazil, in pieces launching in Spring 2022. Whilst continuing with responsible sourcing over the past year it has felt increasingly important to send money upstream, as I feel we have a duty of care towards those in our supply chain. And so, a percentage of The Rock Hound's profits have been donated to Crystal Clear Collective, a Community Interest Company dedicated to mine-to-market supply chain transparency and empowering artisanal miners. Currently they have active community-based projects in Kenya, Brazil and Malawi. I will continue to dig deeper into matters of sustainability and sourcing within our industry as part of Fair Luxury, a group of industry change-makers.

It is fair to say that obtaining my FGA was a pivotal point in my career and my professional outlook. Understandably, it made me a better jewellery designer and goldsmith, truly appreciating the essence and structure of the material I work with helps me to make better choices in sourcing, design and execution. My education has taught me to ask the right questions, to seek out the materials that allow me to design fine jewellery that is both fun and ethical, and to collaborate with like-minded people on projects that move me deeply. It has been ten years since I was awarded my FGA from Gem-A and I'm excited to see what challenges and opportunities await me over the next ten years. ■

The Rock Hound's RockStars, which is inspired by the shape of a natural tourmaline crystal, came to fruition after Smither found a UK-based casting house that creates three different alloys of 18K Fairtrade gold on a regular basis.



FROM CURIO TO DESIGNER GEM...

RISE OF THE TRAPICHE

Trapiche emeralds from Colombia have earned a glamorous reputation and raised the profile of similar gems from other localities. Jayne Sambrook Smith reviews the material's history and formation, along with scientific efforts to define the 'trapiche' nomenclature.

Colombian trapiche emeralds, from Muzo as well as neighbouring mines, have experienced a significant rise in demand within the last decade (Vertriest, 2020; Bergman, 2020). Instantly recognisable due to their vibrant yellowish and bluish green tones, superior transparency and six-point radial patterns, for many collectors they have become the ultimate beryl acquisition. Created by changes in geothermal and tectonic conditions over sixty-five million years ago, much about trapiche emeralds remains a mystery (Pignatelli et al, 2015). Research is ongoing into these gems, which are highly prized by investors and gem enthusiasts alike.

Partly due to an ethical initiative from Muzo Mines, there appears to be increasing interest in trapiche emeralds from within the luxury industry, where they are proving to be sources of inspiration for a whole new generation of designer-jewellers (Taylor, 2018). It now seems hard to imagine that only fifty years ago Colombian emerald miners discarded these stones as waste, or at best cut them up "for the usable gem-grade emerald they may contain" (Nassau et al., 1970).

A Colombian emerald trapiche crystal, with the view perpendicular to one of six prism faces. Photo by K. Schmetzer.



This fine Colombian trapiche emerald cabochon (10.80 ct, 16.2 x 14.5 x 5.0 mm) sold at Bonhams on 27 October 2020 for £4,596 inc. premium. Photo © Bonhams.

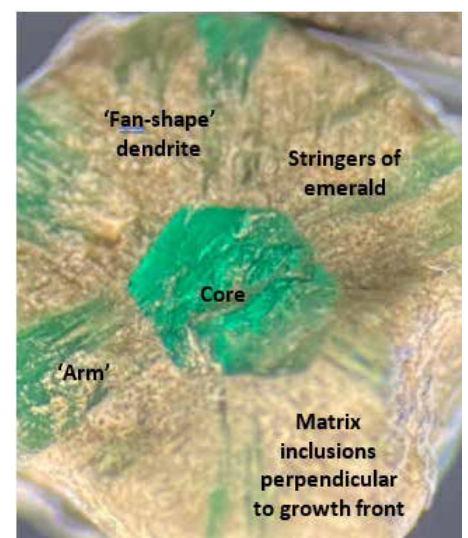
More ironic still is that the name 'trapiche' (pronounced 'tra-pee-CHAY' in South America), now synonymous with elegance and glamour, was first used by locals disparagingly, to liken the emeralds' appearance to the cogwheels used to crush sugar cane (McKague, 1964).

COLOMBIAN TRAPICHE EMERALDS

Emerald, a gem variety of the beryl species with a hexagonal crystal system, is a beryllium aluminium silicate $[\text{Be}_3\text{Al}_2(\text{SiO}_3)_6]$. Colombian varieties contain metallic trace elements of chromium and vanadium, with some iron. It is vanadium that gives Colombian emeralds their characteristic vivid-green colour (Nassau and Jackson, 1970; Saeseaw et al., 2014).

The "Curious crystals of emerald ... from Muso, New Granada" were first mentioned in 1879 by French mineralogist Emile Bertrand at a meeting of the Société Géologique de France (Bergman,

(2016), although 'trapiche' was not coined as a mineralogical term until nearly a hundred years later (McKague, 1964). Sometimes called a 'skeletal' or 'dendritic' trapiche (Steinbach, 2017), the complex growth structure of these specimens is often hard to define. Pignatelli et al. (2015) offers this explanation: A section cut perpendicular to the c-axis should display a core (which is often hexagonal), six radiating 'arms' containing dendritic impurities (or 'protogenetic' inclusions) such as albite, graphite or other carbonaceous material. These arms should branch out, around the core and between the (typically trapezoidal) secondary growth sectors. Yet there is even further classification of the growth structures. (Bergman, 2016; Rice, n.d.). 'A-type' (traditional) trapiches have inclusions radiating from a central core, while in the much rarer 'B-type' or 'reverse' trapiche, emerald itself forms the six arms, rather than the inclusions (Mindat, 2009).



Photomicrograph of cross-section of Colombian trapiche emerald crystal with albite inclusions. Photo courtesy of the author.



'Type B' reverse 6.97ct trapiche emerald from Muza, Colombia, with dendrite and overgrowth removed. Photo by Jeffrey Scovil, © Jeffery Bergman.

Trapiche Emerald Formation.

Colombian trapiche emeralds are found in Boyacá, in the black calcareous shales of the Eastern Cordillera Basin. They formed in metamorphic and hydrothermal conditions, when movement by tectonic plates and volcanic forces caused hot fluids to penetrate cracks and pores under heat and intense pressure (Le Parc, 2016).

During their formation, impurities from the host rock entered the mix, and filled in at the crystal junctions. The hexagonal prism faces of the core crystal continued to grow, producing pure emerald; however, the impurities filled the areas growing from the edges, between the prism and faces. This resulted in displacement growth, as the emeralds continued to grow, pushing the impurities away from the growing faces (Pignatelli et al., 2015). On some trapiche emeralds an overgrowth of gem quality has been found, restoring the crystal to its euhedral hexagonal form (McKague, 1964).

Are Trapiche Emeralds 'Star Stones'?

Often referred to misleadingly as 'star stones' (Bergman, 2016; Steinbach, 2017; Bohannon, 2019), it is worth noting that trapiche emeralds, whilst star-like, do not generally display the optical effect of asterism. In a trapiche gem, the star is fixed and does not appear to 'float' above the surface of the gemstone under a transmitted pinpoint of light, nor is its rigid star caused by internal reflection effect.

It is worth noting, however, that chatoyancy or a 'cat's eye effect', caused by hollow growth-tube inclusions in the beryl, has been known to occasionally occur across some of the 'pie-shaped' sections of trapiche gems (Gering, 2021).

Non-Colombian Trapiche Emeralds and Non-Emerald Trapiche Beryls.

Over the last few decades, laboratory reports in gemmological journals have started to feature emeralds from global sources with similar properties as Colombian trapiche material. To date, these have included stones found in Goiás, Brazil (DelRe, 1994) and Pakistan's Swat Valley (Gao et al, 2019). Greyish-green beryls with a similar trapiche pattern from Mananjary,

(Bergman, 2020). Some trapiche morganite has also been reported from Myanmar and Pakistan (Steinbach, 2017).

TRAPICHE VS. TRAPICHE-LIKE GEMS

As previously noted, a trapiche emerald is formed by a central core, radial arms, dendritic inclusions (including matrix of host) and sometimes overgrowth. Yet over the years, the classification 'trapiche' has erroneously been applied to other minerals showing similar star-like patterns. It was not until 2011 that Schmetzer et al. proposed two distinct separate groups, 'trapiche' and 'trapiche-like', to resolve this confusion.

In 'trapiche' stones, the presence of organic matter or black shale matrix is a prerequisite. These stones grow

More ironic still is that the name 'trapiche', now synonymous with elegance and glamour, was first used by locals disparagingly, to liken the emeralds' appearance to the cogwheels used to crush sugar cane.

Madagascar (DelRe, 1998) have also been reported. It is worth noting that these do not convey the same beauty or sense of admiration as the Colombian stones.

Further specimens have also been documented in other beryl varieties, with repeating hexagonal habits and displaying the same six-spoke wheel. Finds include red beryl (bixbite) from the Wah Wah Mountains in Utah, USA

from the centre, with separate primary and secondary growth sectors. Also, as further defined by Giuliani & Pignatelli (2016), 'the formation of trapiche minerals is controlled by the geological environment and the crystal symmetry'. Specimens not conforming to this definition fall under the classification of 'trapiche-like'. These stones, whilst not new varieties of species, are still unique and rare, as well as often spectacular. →



Victorian-era ring with trapiche emerald (25 x 13 x 14mm). Photo courtesy of the V&A Museum.

The geometric patterns can be caused by a variety of other factors, including differential colour zoning and inclusions within the crystal (Rice, 1993). Examples have been discovered not just in beryl, but ruby (Wongrawang, 2019), sapphire (Bonhams, 2016), garnet (Steinbach, 2017), quartz (Wang, 2019), spinel (Bergman, 2016), rhodochrosite (Behnke, 2016), and even diamond (Schmetzer et al., 2011; Pignatelli et al., 2015; Bergman, 2016). Although, in the case of diamond, a hydrogen gas cloud within the structure of the octahedral crystal is thought to create the effect (Salimi, 2019).

OTHER TRAPICHE GEMS AND MINERALS

Trapiche growth structures, as defined by Karl Schmetzer above, have been found in only a handful of other gem materials worldwide. These examples have only occurred in crystal systems with high symmetry (e.g., hexagonal for emerald, trigonal for corundum and tourmaline, cubic for garnet; see Giuliani, 2016). The only exception is



While emeralds are the most famous trapiche gemstones, other varieties are also known to form the telltale pattern under the necessary conditions, albeit rarely. Left: Trapiche tourmaline from Zambia measuring 13.4 × 10.6 mm; Photo by Thomas Hainschwang/GIA. Right: A 8.30 ct gem-quality trapiche sapphire from Mogok, Myanmar. Photo by Arjuna Irsutti, © Jeffery Bergman.



trapiche andalusite (variety chiastolite) which, though orthorhombic, presents itself as a pseudomorph in tetragonal form.

Most true trapiche specimens are found in corundum. Laboratory reports have featured examples of trapiche rubies from Luc Yen, Vietnam, as well as Mong Hsu, Myanmar (Schmetzer et al.,

1996), which exhibit the same growth features. A rare 'flower-shaped' trapiche ruby from Mong Hsu was previously detailed in *Journal of Gemmology* (Pignatelli et al, 2020). Trapiche sapphires have also been reported, yielding cabochons of 5 to 11 carats, from Mogok, Myanmar (Schmetzer, 1996; Bergman, 2020). The majority of these sapphires are light grey, in colour with dark-greyish blue arms. Skeletal growth in groups of tourmaline crystals found in Zambia have also confirmed true trapiche structures (Hainschwang et al, 2007). Reports reveal, however, that facetable material is extremely rare due to the dark colour of the tourmaline, so it is rarely seen in the gem markets.

Two or three trapiche andradite garnets have also been recorded from Mogok, displaying their crystallographic growth (rhombic dodecahedron) down the length of their core (Steinbach, 2017; Bergman, 2020). Much debate about the trapiche nature of these last stones still exists, as the unusual growth pattern seems to be caused by (partially dissolved) rutile needles (gemologyonline.com, 2007).

Chiastolite, a variety of andalusite found in graphitic schists in Brazil and Sri Lanka, in its *common* form, also conforms to the trapiche definition. Graphite particles, pushed aside during growth, become concentrated at crystal interfaces (as protogenetic inclusions), forming a cross-shape which runs down the length of the crystal. However, since chiastolite has four 'arms' (rather than six), this has also caused some to question its form as 'trapiche' (Vertriest, 2020; Bergman, 2020).



A flower-shaped trapiche ruby from Mong Hsu, Myanmar, measuring approximately 6 mm in diameter. Photo reproduced from Liu (2015).

Finally, there are the inevitable trapiche-like artificial alternatives that have appeared on the market (Zwann, 2020; McCure, 1998). Whilst interesting, this subject merits a research paper all its own.

FASHIONING OF TRAPICHE GEMS

Trapiches are often cut as cabochons or slices to display their geometric form to the best effect. The earliest known example of a trapiche emerald in jewellery (cut *en cabochon*, but re-fashioned later with a table facet) can be found set in a ring currently at the V&A Museum in London. According to the museum's records, it was allegedly owned by Henry Philip Hope, who formed an illustrious gemstone

collection that included the now-infamous 45.52 ct 'Hope Diamond' (V&A, 2021). The V&A's trapiche emerald is especially interesting to gemmological researchers, as it pre-dates many artificial emerald treatments and enhancements.

Due to their brittle nature, cutting trapiche emeralds can create huge challenges for lapidaries, old and new. Since emeralds only have a Moh's scale hardness of 7.5, they are now generally impregnated with epoxy or resin to give them increased durability. Add to this the careful precision in which a trapiche stone needs to be cut across its hexagonal bipyramidal crystal (see Pignatelli et al., 2015; Schmetzer, 2019) and the results can be disastrous.



While trapiche-like in appearance, these gems lack the characteristics (geological conditions, organic black shale and/or crystal symmetry) that allow them to be categorised as trapiche.

Top: Trapiche-like features were identified as part of an ongoing study of aquamarine from the Mourne Mountains of Ireland. Image © The Trustees of the Natural History Museum, London, All rights reserved.

Bottom Left: This trapiche-like ruby weighs 63.8 ct; photo © Bonhams.

Bottom Right: Trapiche-like pattern in a faceted diamond octahedron. Photo by Diego Sanchez/GIA.



The AGTA Spectrum Award-winning Razzle Dazzle earrings feature 30.94 taw trapiche-like rubies alongside 2.40 taw diamonds. Photo courtesy of Sean Smokovich.

Mistakes can be costly, especially as, according to a 2020 Bonhams catalogue, emerald trapiches are graded on a few factors aside from clarity, colour saturation and size, 'the most important (factor) being definition, completeness and centering of the "rays"'.

CONCLUSION

Due to recent advances, more is now known about the geological origins and formation of trapiche emeralds. This has led to a better appreciation worldwide about the phenomenon, not just with gemmologists and gem collectors, but amongst jewellery retailers and designers, as well as the gem trade.

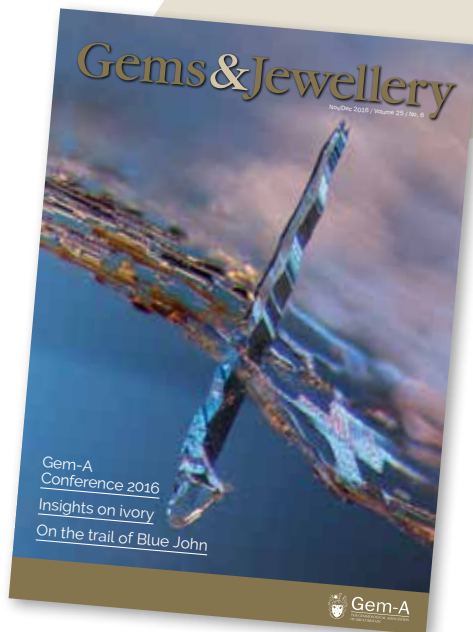
Trapiche varieties other than emerald, though still rare, are now being recorded from outside Colombia, with scientific journals increasingly describing new findings. While new localities and species are being discovered, trapiche and trapiche-like gemstones, much admired for their natural beauty (though often enhanced and treated for durability) have come to epitomise luxury. This has resulted in the use of trapiche gems in designer jewellery pieces that are truly one-of-a-kind. ■

A list of references is available upon written request to the editor.

Looking Back at Gems&Jewellery

A glance at some of our lead stories over the years.

While *Gems & Jewellery* was originally delivered to members as a newsletter, it evolved over time to the more traditional magazine format we know today, with dedicated sections, cover photos and full-colour images throughout the magazine. Over the past 30 years, it has retained its focus and fulfilled its mission to Gem-A Members and to the industry by running articles of historical interest, retail topics, book and museum reviews, and other information that would be of interest to people across the gem trade. Here is a listing of the lead articles from five, ten, fifteen and twenty years ago.



Winter 2016 (above)

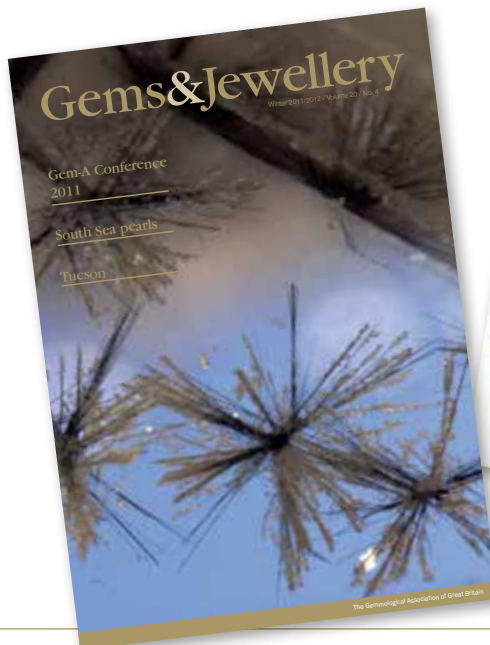
A Burning Question: Organics expert Maggie Campbell Pedersen FGA ABIPP takes a look at the recent changes to ivory laws in the U.S., and reports on the recent CITES meeting held in South Africa.

Winter 2011 (right)

Star Ruby: Karl Schmetzer and Thomas Hainschwang investigate a star ruby of 5.98 ct. The stone had been offered in the gem trade in France as natural and could be traced back to a local gem merchant in Afghanistan, but the first inspection showed no natural inclusions, growth structures, concentrations of rutile needles, or any of the commonly observed curved striations of Verneuil synthetics.

Winter 2006 (right)

Vanadium- and Copper-Bearing Tairus Synthetic Emerald: Identification and an Update on Chemical Properties
When making an initial examination of some new synthetic emeralds obtained from the trade for teaching purposes, one of the authors (AH) inspected one stone which did not show the gemmological properties that he expected for a chromium-bearing synthetic emerald. In particular, the sample was greyish green under the Chelsea filter, appeared greenish blue under the Hanneman/Hodgkinson filter, and did not show any chromium absorption lines with the hand spectroscope. Consequently, authors Karl Schmetzer, Dietmar Schwarz and Alan Hodgkinson performed a more detailed examination to determine the nature of this particular synthetic emerald.



Winter 2001 (below)

Blue John Tiara Wins Award: A stunning Blue John and blue steel tiara, exhibited at the London Guildhall University's summer exhibition, won the BJA's Marcia Lanyon Prize for Gemstone Use. The piece was designed and created by Victoria Harper as a special commission for a client living in Derbyshire. ■





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