

Gems & Jewellery

Summer 2020 / Volume 29 / No. 2

SPECIAL
CAREERS
EDITION

DIAMOND
INNOVATION

RINGS TO
REMEMBER

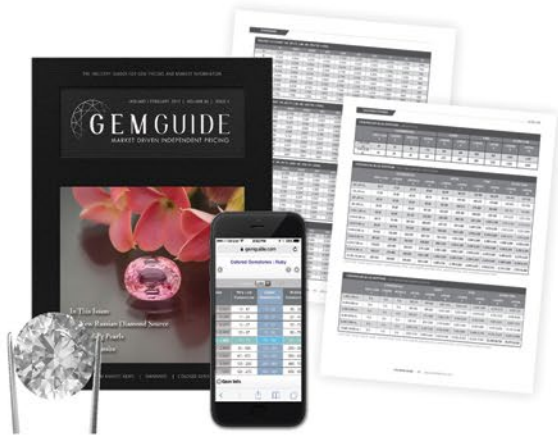
GEMSTONE
ADVENTURERS

MUSEUM
MINERALS



Gem-A
THE GEMMOLOGICAL ASSOCIATION
OF GREAT BRITAIN

Pricing The World's Most Precious Gems

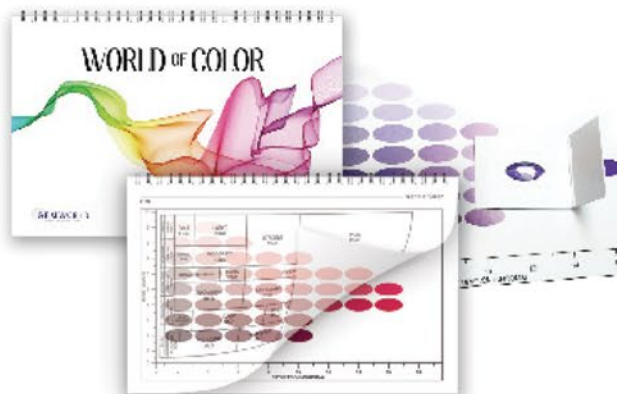
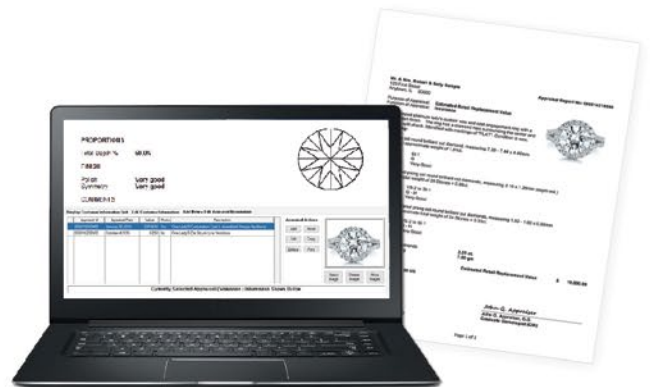


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Gems & Jewellery

SUMMER 2020

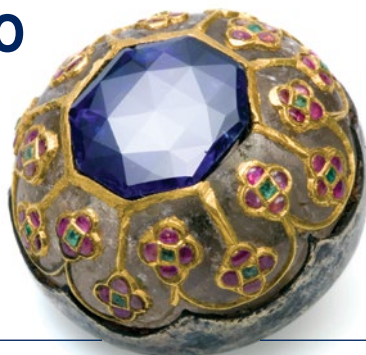
THE EVOLVING GEMMOLOGIST

Dr Daniel Nyfeler, Managing Director at Gübelin Gem Lab, shares his thoughts on how the modern gemmologist can adapt to the age of technology in the gem lab.

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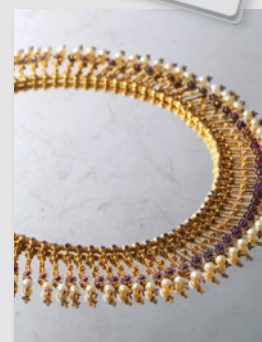
THE BEST OF BRITISH

Gem-A Graduate Liz Bailey FGA DGA shares an abridged version of her Gemmology Diploma project, which investigates two great British gems - Whitby Jet and Blue John.

WHOLE LOTTA' HISTORY

Curator of Minerals and Gemstones at London's Natural History Museum, Robin Hansen FGA discusses the intriguing history of some significant gems in the museum's collection.

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COVER PICTURE

A pearl, ruby and enamel fringe necklace by Carlo Giuliano, circa 1875-1895. Photograph by Darrell Russell, courtesy of Chiswick Auctions.

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Gems&Jewellery

Careers Edition 2020 Featured Contributors

1. DEBORAH CRAIG

Deborah Craig FGA DGA is a mining industry professional, with a focus on mineral exploration. She has a special interest in the mining of gemstones and has previously written for *Gems&Jewellery* about the Chimwadzulu Hill sapphire mine in Malawi and the Aappaluttoq ruby mine in Greenland. Deborah is an advocate for women's increased economic empowerment and transparent and sustainable gemstone supply chains.

2. BARBARA SCOTT SMITH

Barbara Scott Smith has over 40 years of experience in the diamond industry. After completing her PhD, she worked as a Principal Research Mineralogist on diamond-related ventures for De Beers in South Africa. Since 1982, she has been based in Vancouver, Canada as an independent consultant offering specialist services in applied kimberlite petrology.

3. DANIEL NYFELER

A geologist by training, Daniel completed a master's thesis on the Limpopo belt in Southern Africa, before studying for a PhD in Mineralogy at the University of Bern. Daniel took over the position of Managing Director of the Gübelin Gem Lab in 2003, overseeing the expansion of the lab to Hong Kong and New York. He is also in charge of the Provenance Proof initiative which develops a range of technologies to bring transparency to the gemstone industry.

4. ROBIN HANSEN

Robin Hansen FGA is a Curator of Minerals and Gemstones at the Natural History Museum, London, helping to manage and care for the magnificent collection of 185,000 specimens. Originally born in Perth, Western Australia, she obtained an honours degree in Geology, and later her Gemmology Diploma with Gem-A.

5. THOMAS HOLMAN

Thomas Holman is a Director at Wartski, a family firm established in 1865 specialising in antique jewellery, objets de vertu and the work of Carl Fabergé. Thomas recently curated an exhibition of engraved gems entitled 'Mulum in Parvo' and wrote the accompanying catalogue. He also specialises in 19th and 20th Century jewellery design and has lectured widely on various topics, including the life and work of the Arts and Crafts jeweller Frederick Partridge.

6. VINCENT PARDIEU

Vincent Pardieu AG GG is a Consultant Field Gemologist at VP Consulting SPC, a writer and a documentary producer. For the past 20 years Vincent has spent his time between the lab and the field, having completed 148 field expeditions to Asia, Africa, Australia and the Americas.

7. WIM VERTRIST

Wim Vertrist FGA GG is a Supervisor of Field Gemmology at GIA (Gemological Institute of America). Wim has participated in GIA Field Expeditions

to numerous sapphire and ruby mining areas in Asia, Africa and Europe. He has also (co-)authored several articles on new gemstone localities, updates on existing mining localities, in-depth gemmological studies and treatment experiments.

8. LIZ BAILEY

A qualified gemmologist with a master's degree in Antiques, Liz Bailey FGA DGA has years of experience of working at auction houses in both Birmingham and Cheshire and is currently Head of Jewellery at Peter Wilson Fine Art Auctioneers. Liz also combines her love of writing with her gem knowledge through her freelance content writing for leading UK jewellery retailers' websites.

9. STEPHANIE LIGGINS

Dr Stephanie Liggins is a Principal Scientist at Element Six, with over 10 years' experience in materials engineering and diamond synthesis. After completing a PhD at the University of Warwick, Stephanie moved to Element Six as a Guest Lecturer and has been the technical lead on projects including the development of the diamond tweeter dome and now leads the Lightbox research and development programme.

10. JAMIE RICHARDSON

Jamie Richardson is a member of the UKFCG (United Kingdom Facet Cutters' Guild). Jamie runs his own business in his day-to-day work and is a keen amateur faceter and gemmologist.

Straight from the heart

Opinion and comment from CEO, Alan Hart FGA DGA

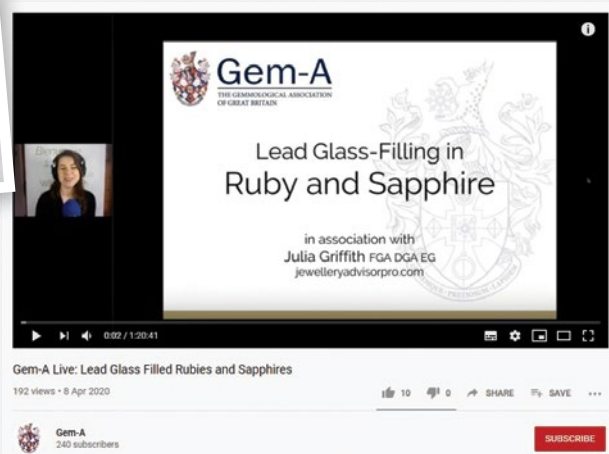
It is safe to say that 2020 has been a challenging year to date. The COVID-19 pandemic has changed the way the world does business across all sectors, including the gemstone and jewellery trades. It was a strange moment when we closed the doors on Gem-A HQ in late March, with no idea when we might open them again. Our priority was, and will continue to be, the health and safety of our staff, students and local community in Hatton Garden.

That being said, we are all continuing to roll up our sleeves and work from home, relying on video conferencing and email to stay in touch with our global network of Accredited Teaching Centres (ATCs), who are all adapting to this unprecedented time in their own ways.

The current climate of social distancing has led to an interesting discovery, however... The Gem-A community is a big fan of webinars! Since the start of April, we have hosted several hugely successful webinars with hundreds of you sitting down at home to learn more about the wonderful world of gemstones. It is galvanizing to know that the current climate hasn't dampened anyone's passion for gemmological learning! Our social media channels should be your first port of call to find out about upcoming webinars and online courses. If in doubt, you can always email education@gem-a.com and e-speak to a member of our team.



Visit the Gem-A YouTube channel to catch up on our webinars. Join Gem-A Guest Lecturer, Julia Griffith FGA DGA, who is one of our former in-house tutors and now teaches our online Gemmology Foundation course, to gather insights on complex topics, like lead glass filling in corundum.



ABOUT OUR CEO

Alan Hart FGA DGA

Education:

Alan started at the Natural History Museum in London aged 16. He undertook A-Levels in Chemistry, Physics and Maths and later went to Birkbeck, University of London, to secure a degree in Geology.

Alan spent 34 years at the museum and completed his Gem-A Gemmology Diploma and Diamond Diploma via online distance learning during this time. As Head of the Earth Sciences Collections, he managed a team of 25 staff across a range of interdisciplinary fields. In 2016, Alan embarked on a new journey as the chief executive officer of Gem-A.

Career Highlights:

"I get such a thrill from seeing our students succeed and the obvious joy and pride they feel when receiving their hard-won Gem-A Gemmology Diplomas. From my time at the museum, a highlight was the Diamonds exhibition in the mid-2000s and curating The Vault Gallery, including spectacular minerals and even meteorites."



This is the second themed issue of *Gems&Jewellery* for 2020. We started with the United States and now we are moving on to 'Careers'. This entire issue has a careers spin, with contributors opening up about their educational backgrounds and career highlights to provide you with inspiration. It never ceases to amaze me how diverse and varied our trade is and how many doors a Gem-A Gemmology Diploma can open (look at pages eight and nine for ideas). Perhaps this extended time at home is an opportunity to reflect on your own career

path and consider new avenues that you might wish to explore in the future? If you have any feedback about this issue or anything you would like to pass on to the editorial team, email editor@gem-a.com.

At the time of writing this letter, the United Kingdom is in the grip of coronavirus and it is becoming increasingly difficult to find the bright sparks in a very dark situation. The impact of this deadly disease on people, business, international trade, creativity and productivity is vast and difficult to quantify at this stage. On behalf of myself and the Gem-A team, I would like to send good wishes to all our Members, students and peers in the trade. I hope that this issue of *Gems&Jewellery* will serve as a welcome distraction and provide you with some insightful reading material at a time when the outside world, and normal life, feels strangely far away.

Best wishes
Alan Hart FGA DGA

Gem-A News

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

DIAMOND RING BUYING GUIDE BY RENÉE NEWMAN

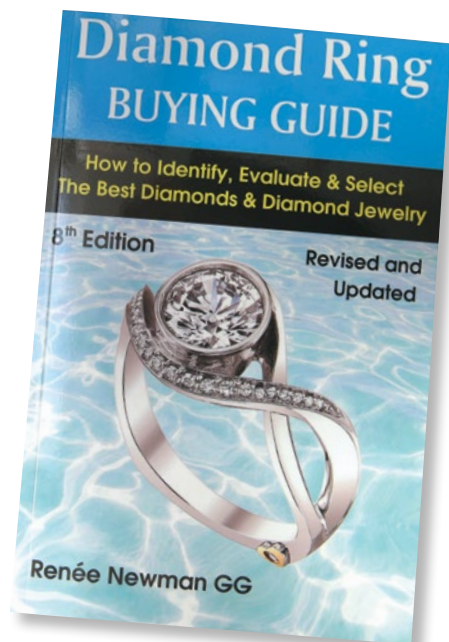
The 8th Edition of Newman's *Diamond Ring Buying Guide* is a highly recommended resource, now available from Gem-A Instruments.

Notable updates include chapters on silver and alternative metals now being used in jewellery, lab-grown diamonds versus natural diamonds and how to judge clarity and cut quality. There are also some handy tests included to help you spot the difference between natural diamonds and their simulants.

The book is aimed at consumers, retail staff and new gemmologists, and is especially useful for staff in training

to guide customers in choosing the diamond jewellery that works best for them and their budget. The sections on diamond quality, selecting jewellery metals and settings and how to get good value for money will ensure confidence in both consumer and retailer.

Please email instruments@gem-a.com for further information. Gem-A Instruments is unable to process orders in-store or online at the time of publishing, but hopes to reopen soon. ■



Retail Price £17.50

Current Gem-A Members and Students receive a 5% discount on books

A THANK YOU TO EWBANK'S

Gem-A President Maggie Campbell Pedersen FGA shares a word of thanks for a donation from Ewbank's Auctions.

Following the workshop on organics that was held at Gem-A HQ in October 2019, Gem-A has received a generous donation through Andrea Macken at Ewbank's Auctions in Woking, Surrey; a bag of ivory bits and pieces that Ewbank's felt unable to sell as the provenance and age could not be verified, and which the owners had not wished to keep.

Items such as these are of immense

value to Gem-A as they are wonderful teaching aids. The only way to save our ivory-bearing animals is to know what exactly we are dealing with, and, as gemmologists, that means being able to recognise it. The best way to learn how to recognise ivory is by examining and handling examples.

It doesn't matter whether they are in good condition or in bits; any ivory, tortoiseshell, coral and so forth that

people don't want to keep can be so useful to us. Rather than throw objects that derive from endangered species into the rubbish, let Gem-A use them for teaching!

A big thank you to Ewbank's Auctions for recognising this, and for the donation which is very gratefully received.

Maggie Campbell Pedersen FGA

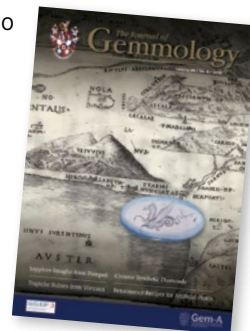


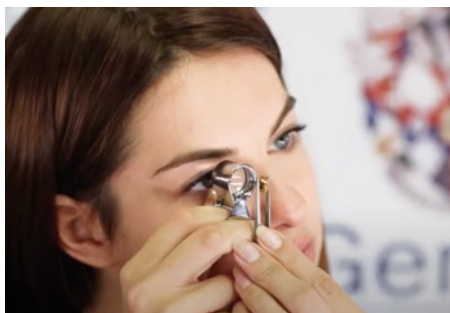
Image credit: Maggie Campbell Pedersen FGA.

JOG INDEX AND BIBLIOGRAPHY LISTS NOW AVAILABLE ONLINE

Gem-A is pleased to announce that *The Journal of Gemmology's* cumulative index and bibliography lists are now available to access on the Gem-A website.

Spanning all issues of *The Journal* from 1947 up to 2019, the cumulative index lists all articles ever featured, while the bibliography lists allow you to quickly access resources on a specific gem material or subject area, and all its related articles. These lists are also updated annually to enable researchers to easily find the most up-to-date academic content. Access the resources here: gem-a.com/news-publications/journal-of-gemmology





TIME TO TUNE IN!

If you follow Gem-A on social media, you may have noticed that we have been running weekly webinars since the beginning of April to continue offering quality gemmology education worldwide. So far, our guest lecturer Julia Griffith FGA DGA has delivered some great webinars on composite gemstones,

flux-healed ruby and lead-glass filled rubies and sapphires. If you missed any, catch up any time by watching on our YouTube channel (@Gem-A).

Keep an eye on on social media for news for news on upcoming webinars. We hope you all stay safe and remember — keep calm and learn gemmology!

HELPFUL RESOURCES

The Jeweller Support Network:

During this strange and difficult time, many professionals working in the jewellery industry are worried and have questions. The NAJ (National Association of Jewellers) has initiated 'The Jeweller Support Network', a

coalition of industry associations who have teamed-up to raise awareness of available resources and information sources during the COVID-19 pandemic. Find out more at naj.co.uk/jewellersupportnetwork

Goldsmiths' Company COVID-19

Fund: Professionals working in the jewellery, silversmithing and related industries who are experiencing

financial difficulty during the COVID-19 pandemic will now be able to apply for a special grant or loan from the Goldsmiths' Company. To qualify for this support, individuals must be self-employed, sole-traders or running businesses of five people or less. Eligible individuals or organisations can apply now. Visit the Goldsmiths' Company website for more information: thegoldsmiths.co.uk

AN UPDATE FROM ASIA

COVID-19 has had a profound effect on us at Gem-A, with many of our Asian ATCs (Accredited Teaching Centres) facing challenges since the early stages of the outbreak. Some Gem-A ATCs providing face-to-face education across Asia have had to close and classes have been postponed. Elsewhere, where there have been no imposed shutdowns, some have taken their classes online through virtual meeting platforms. However, in Taiwan, Japan, and

to some extent in Hong Kong, some face-to-face teaching has been possible. ATCs have worked seven-day weeks and opened at all hours to make it possible for their students to come to classes and study.

Asia's experiences since January will – we hope – give valuable insights for Gem-A ATCs whose difficulties have started later. I hope that someday soon, when all ATCs are operating at full strength again, we may have not only survived, but also grown as an education provider.

Anne Carroll Marshall,
Regional Head of Asia, Gem-A



Gemmology studies continue in Kaohsiung, Taiwan.

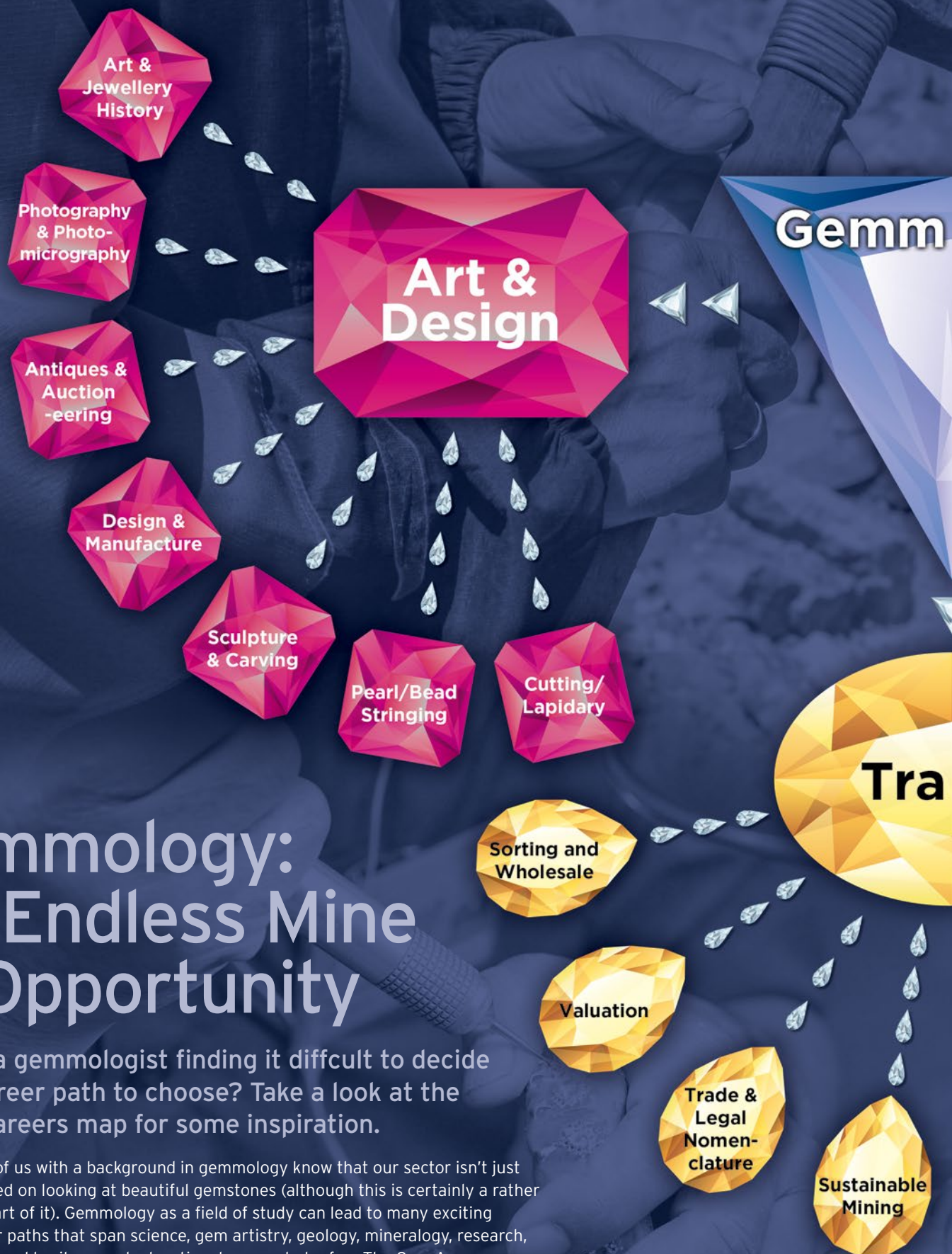


ROBERT WELDON WINS THE 2020 ANTONIO C. BONANNO AWARD

The Accredited Gemologists' Association (AGA) has awarded this year's Antonio C. Bonanno Award for Excellence in Gemology to Robert Weldon, Director of the Richard T. Liddicoat (RTL) Gemological Library & Information Center at GIA. The award was presented during the AGA Tucson Conference 2020, in the presence of previous winners of this esteemed award, AGA members and gemmologists from across the world.

Robert had this to say about his win:

"It is such an honour to be recognised for contributions to the field with the Antonio C. Bonanno Award for Excellence in Gemology. Photography of mineral specimens, gemstones, and jewellery, combined with my years as a trade journalist, have certainly been fulfilling. Through GIA I am setting my sights on helping educate disadvantaged miners at the source. It is an aspect of the gemstone supply chain that is oft forgotten or neglected." ■



Gemmology: An Endless Mine of Opportunity

Are you a gemmologist finding it difficult to decide which career path to choose? Take a look at the Gem-A careers map for some inspiration.

Those of us with a background in gemmology know that our sector isn't just focused on looking at beautiful gemstones (although this is certainly a rather fun part of it). Gemmology as a field of study can lead to many exciting career paths that span science, gem artistry, geology, mineralogy, research, valuation, cultural heritage and education, to name but a few. The Gem-A careers map was constructed, with the assistance of Dr Hanco Zwaan FGA of the Naturalis Biodiversity Center, to outline the wide variety of sectors and professions that are open to qualified gemmologists. We hope that you will find it useful if you are looking to establish or change careers in the gem and jewellery industries.



If we've missed something on this careers map, let us know! We want to highlight the many different possibilities that can be explored with gemmological knowledge and understanding to help all our Graduates achieve career success.

COLOUR CODE FOR THIS ISSUE

Throughout this special careers issue of *Gems&Jewellery* we will be using coloured lanyards to indicate the industry sectors shown above and how each contributor has progressed their career within a particular field. ■





Kigali, the capital city of Rwanda.

A Future in Amethyst

Rwanda is known for some of the finest amethysts in the world, which Deborah Craig FGA DGA witnessed first-hand on a recent trip. Here, she reflects on her visit and considers how gemstone mining and lapidary could pave the way to a prosperous future for Rwanda.

I went to Rwanda to investigate the hundreds of pegmatites which crisscross the nation's countryside. Could they be a source of lithium, a critical input to electric car batteries? Geologist friends advised that the country was safe and welcoming, so I thought I'd take a look. But I went with a heavy heart, thinking of how the people and the country have been marked by the genocide that took place 25 years ago.

What I found was an African success story, a country reborn, open for business and looking to the future. Small, landlocked Rwanda is holding its own against the larger economies that surround it (Tanzania, Kenya, DRC) with its ease of doing business, modern infrastructure and low levels of corruption. Tourists flock to experience the country's wildlife, especially its famous gorillas. Rwanda's renaissance is reflected in its reduced poverty, improved equality and annual GDP

growth rates averaging more than 7% over the past 20 years.

Women were instrumental in rebuilding the country at the community level after the genocide and have taken a leading role in this new society. They have assumed positions of influence in civil society and government, where they currently hold 67% of seats in parliament. Gender equity is a critical parameter in Rwanda's policy-making.

However, the country's economy remains largely agricultural and needs

to diversify. Mining has been identified as a key sector, and those pegmatites are already producing the 3Ts – tin, tantalum and tungsten – which are mined by artisanal and small-scale miners and exported in unprocessed form. But guess what else is being mined from those pegmatites? Gemstones!

As gemmologists we know that pegmatites are the magical incubators of some of the most fabulous gems, namely tourmaline, topaz and aquamarine. In addition, it turns out that Rwanda is the source of some of the world's most beautiful amethyst; many specimens are museum-worthy with a deeply saturated colour, shifting from red-purple in indoor light to blue-purple in daylight. The cut material also flashes red and blue. To find out more, I turned to Ivan Raelison, a geologist/gemmologist consultant to the Rwanda Mines, Petroleum and Gas Board. In September 2017, Ivan began mapping the locations of gemstone occurrences



Rwandan amethyst at Deutsches Edelsteinmuseum in Idar-Oberstein.



Kyanite, rough and cut.

in Rwanda. Since then he has identified a treasure trove of gemstone species.

From pegmatites come pink, green and black tourmaline, topaz, kyanite, almandine garnet and aquamarine. Along with amethyst, many of the other quartz varieties, such as citrine, prasiolite, smoky quartz and rock crystal, can be found here. Rounding out the list are the oxides – sapphire, ruby and spinel – as well as common opal and chiastolite, a variety of andalusite.

Active amethyst mining areas are located due west of Kigali in Muhanga district, as well as in Ngororero district where 3T miners also collect green tourmaline. Aquamarine is frequently mined from pegmatites, not as a gemstone, but for the extraction of beryllium. Other gemstone areas are Rubavu in the northwest, where gemstones also cross the border from the DRC, and Nyamasheke and Rusizi districts in the southwest, which host a corundum gemstone zone. Exports of rough gemstones were valued at USD \$150 million in 2017.

Ivan generously offered to arrange a visit to an amethyst mine near the city of Muhanga in Muhanga district. We engaged a driver, Emmanuel Kabonge, left Kigali at daybreak and travelled west for just over an hour. Women swept and cleared the embankments of Rwanda's well-maintained roads as the sun rose.

Rwanda is known as the 'Land of a Thousand Hills' and the landscape is emerald green and rolling. Up and down we went, passing motorcycle tourists and cycling teams, and I was reminded of northern Italy. It was Saturday and villagers walked to market along the side of the road, their arms loaded with matoke (green bananas), beans and cassava. Subsistence farming is the

mainstay of many Rwandans, and while infant mortality rates are down, and school enrollment is up, just over a third of the population continue to live below the national poverty line.

We left the highway and continued along red dirt roads, passing rural communities anchored by small churches. We parked and descended a steep slope, Ivan and Emmanuel on steady feet while I slipped and slid on the wet red soil and loose gravel, those lovely rolling hills quickly losing their charm. We passed small farm allotments and curious children, eventually reaching the floor of the valley and the clear cut where locals have been extracting Rwanda's prized amethyst.

State-owned Ngali Mining extracts amethyst at their large mine in Ngororero district in western Rwanda. The quartz vein was discovered in 2015 and may extend for 1,200 metres. I met Fabrice Kayihura, Ngali's Managing Director, to discuss the future of this precious commodity. Staff at the mine have been trained to separate the material by quality, and there is some limited cutting and polishing on site. Low quality rough is exported or sold to a local Chinese company to be crushed and made into tiles. Fabrice estimates that about 10% of the amethyst is high quality and could underpin a domestic lapidary industry. Another strategic goal of Ngali is creating a Rwandan amethyst 'brand', connecting the beauty of the gemstone to the natural beauty of its home, Rwanda.

Rwanda's gemstone policy aligns closely with other East African countries, with restrictions on the export of rough material and a desire to develop local →



Emmanuel Kabonge holds amethyst rough.

What I found was an African success story, a country reborn, open for business and looking to the future.



Will mining bring riches to the city of Muhanga?



Deeply saturated amethyst from a working in Muhanga District.



beneficiation. But the country would like to see the gemstone markets of East Africa become more integrated, with the free flow of rough and cut stones between countries.

Rwanda would like to develop a 'Kigali Gemstone Market', attracting trade with its good roads and airports, low corruption and ease of doing business. Local value-addition like lapidary and jewellery-making would be developed in tandem, building upon traditional jewellery-making techniques that use plastic and glass beads and organic materials. Locally-made silver and gold jewellery are usually set with synthetic stones, like synthetic ruby and cubic

zirconia, so there is an opportunity to make Rwandans aware of the beautiful gemstones to be found within their borders.

The role of women working in the extractives industries is of special importance to me. As a former Director of a network that linked Women in Mining associations around the world, I was connected with women throughout Africa. So when I landed in Kigali, one of the first people I reached out to was Aline Providence Nkundibiza, a gender and extractives specialist with Rwanda Women In/And Mining Organisation.

As Aline and I got to talking, we had an inspired idea — why don't we try to pull all these threads together? Rwanda's

'open for business' culture, the goal of building up local lapidary capacity and the need to provide women with more economic opportunities; what about establishing a social enterprise, a pilot program to train about 12 women in lapidary and simple jewellery-making skills? The jewellery could be sold to the burgeoning tourist trade as well as the local population. Perhaps we could focus on Rwanda's lovely amethyst to begin with, and then move on to other gemstones as skills improved?

Since that first conversation, Aline and I have had many encouraging meetings with government and local NGOs and we continue to develop our idea. We are now preparing a comprehensive business plan, complete with hard data and financial figures, to be presented to project sponsors and investors.

But what about lithium? I continue to believe there is great potential to find lithium, a metal of the future, in Rwanda, a country of the future. But as a gemmologist, how can I not be dazzled by the potential of the gemstones? ■

All images courtesy of the author.

SUSTAINABLE MINING

ABOUT THE AUTHOR

Deborah Craig FGA DGA
Mining Industry Professional

Education: BSc (Hons) in Chemistry, University of Toronto (1985), Gemmology Diploma, Gem-A (2015), Diamond Diploma, Gem-A (2016)

Career Highlights: For more than 20 years Deborah Craig has worked with mineral exploration companies, including several focused on gold, diamond and copper projects in East Africa. Deborah has also worked as a director of an international network for women in mining. Several years ago, Deborah began studying gemmology with Gem-A for pleasure but her background in African mining combined with recently acquired gemmology credentials, in addition to her interest in women's economic empowerment, soon led her to work on development projects around coloured gemstone supply chains, several with a gender component. Currently, Deborah is developing a lithium exploration project, in addition to a women's lapidary project, in Rwanda.





Expert kimberlite petrologist Dr Barbara H. Scott Smith takes us through the milestones of her career and shares an insight into this fascinating facet of the diamond industry.



Barbara speaking at the 11th International Kimberlite Conference in Gaborone, Botswana.



2020

My life in kimberlite petrology has been incredible; I have visited projects across the world, all with rocks that had stories to tell. Travel adventures included the Arctic in Canada and Siberia, the Kalahari Desert and Lesotho Highlands of southern Africa, the Indian jungle and the Australian outback. I have had the privilege to work with many wonderful people who are what I call my kimberlite family, my second family.

1968

Growing up in northern England with a love of the outdoors and science led me to a BSc in Geology at Edinburgh University which specialised in petrology, the branch of geology that studies rocks and how they form.

A Life in Kimberlite Petrology

2004

To improve the understanding of kimberlites, together with six co-authors, we rationalised the problematic terminology culminating in the publication of *A Glossary of Kimberlite and Related Terms* (2018) which is a comprehensive handbook on how to investigate kimberlites.

1973

My life of rocks and adventures began with remote camping near glaciers in West Greenland to collect my PhD study samples. My petrological research showed that these rocks resemble those that contain diamonds resulting in my first job with De Beers in South Africa in 1977.



Barbara visiting a village near the Letšeng Mine, Lesotho while on a field trip in 1973.

1988

Since arriving in Canada in the early 1980s I have been an independent consultant working for a variety of worldwide exploration and mining companies. At first there were very few local diamond projects but in 1988 that all changed with more than two decades of intense exploration activity resulting in the discovery of hundreds of kimberlites and the opening of the first mine in 1998. All these kimberlites required petrological investigations to ascertain whether the rocks could carry diamonds, if so how much they contain and how each volcano formed.

1977

This amazing start to my career included applying my petrology skills to worldwide diamond projects and research while working with, and learning from, world-class colleagues. I was based at the Anglo American Research Laboratories in Johannesburg and worked in conjunction with the De Beers Kimberlite Petrology Unit based in Kimberley. Kimberlites are unusual and petrology is the key to understanding them through studies of the rock-forming minerals, their type, chemical composition and texture. My specialty is investigating thin sections using a polarising petrographic microscope in a laboratory.



The Kimberley Mine open pit, one of the first volcanoes recognised to contain diamonds.



Barbara at the Fort à la Corne kimberlite project field camp, Saskatchewan, Canada.



Remarkable Rings

Gem-A Gemmology Tutor, Dr. Juliette Hibou FGA, explores the 4,000 years of history captured in the Alice and Louis Koch Collection, an exceptional array of 1,500 rings now on display at the Swiss National Museum, Zurich.



View of the new gallery showcasing the Koch collection of rings at the Swiss National Museum in Zurich.
Image: ATELIER BRÜCKNER / Daniel Stauch.

Rings are probably the most popular, personal and symbolic of all jewels. Evolving through history with new techniques, styles and trends, we have seen rings worn as love tokens or a fashion accessory; as a sign of mourning; as a symbol of faith, superstition, political belonging and power. Rings can often reflect the many stylistic, artistic, economic, social or spiritual environments of their times.

The vast ring collection initiated by Alice and Louis Koch is now on display and on permanent loan to the Swiss National Museum. After a recent major refurbishment of the west wing of the museum, 1,500 rings from the Koch collection are displayed in a new gallery. They are presented in a vast showcase in the shape of a ring in which 4,000 years of history unfold through a thematic and chronological display.

The Koch family descends from successful Jewish jewellers in Frankfurt am Main who quickly counted amongst their clientele the rich and famous of Europe. In 1907, the company was described as the Cartier and Fabergé of Germany.

Louis Koch (1862-1930) was the

brother of the founder and court jeweller, Robert. He took over the business in 1902 and together with his wife, Alice, became a generous patron of the arts and passionate collector. Known for their connoisseurship and great eye, they collected widely, from autographs of famous musicians, to curiosities of the Napoleonic era.

Over a short period, Alice and Louis assembled a large collection of rings which ranged from antiquity to around 1900. The collection counted no less than 1,722 rings in 1909. The successive generations of the family managed to preserve the collection despite the 1929 crisis and the expropriation of the business by the National Socialist regime in 1933.

The great-granddaughter of Alice and Louis Koch, Catherine Dreyfus, and her husband Bernard Soguel, decided to expand the collection picking up from the Art Nouveau period. They added 610 rings from around the world, featuring creations by well-known designers together with up-and-coming artists.

Bringing the collection up to the modern day, these rings show how artist

jewellers developed through the 20th and 21st centuries. The use of traditional materials is challenged with the possibilities of more unusual materials, such as wood, paper, glass, fabric, plastic, sugar cubes or even compacted smog from China.

Focusing on just six highlights from the extensive collection, we can see a showcase of daring and innovative designs, and traditional craftsmanship along with new technologies in rings that appear almost like minute, wearable sculptures.

The gimmel ring (below) – from the Latin *gemma*, meaning twin – is made of two rings that join to form one. It is most likely a wedding ring as suggested by the Latin inscription inside the hoop: 'What God has joined, Man cannot undo', a phrase traditionally used during wedding ceremonies.



Gimmel ring, Germany, end of the 16th C. Gold, enamel, ruby, diamond. 23 x 27mm. Inscription: 'Quod Deus conjuxit, homo non separet'.
©The Alice and Louis Koch Collection.
Swiss National Museum.



The two hands on each side of the bezel are a symbol of union and also form the mechanism that allows the rings to be clasped together as one. The bezel is set with a ruby and a diamond. The red of the ruby symbolises life and love, the diamond is a symbol of virtue and constancy. Inside each half-bezel a miniature enamelled baby and a skeleton are set. They are *memento mori*, symbols of the transience of life.

These rings were usually worn on the fourth finger on the left hand due to the belief that a fine nerve or a vein links it directly to the heart. Many Ancient Greek and Latin authors explained that wearing a ring on this finger, also known as the medical or healing finger, could enhance vital force and creativity.



René Lalique (1860-1945), Paris, 1900. Gold, paste, blister pearl. 24 x 21mm. ©The Alice and Louis Koch Collection. Swiss National Museum.

Lalique was recognised as the moderniser of the art of jewellery in France following his display at the 1900 *Exposition Universelle* in Paris. His style is recognisable in the asymmetric and sinuous composition of the ring, which is also typical of Art Nouveau design. A snake, its jaws wide open, coils to form the ring and curls around the naked female body. The discreet eroticism which emanates from this composition is typical of the period. In front of Eve, a pearl symbolises the forbidden fruit.

Mixing glass, a non-precious material, with gold and pearl was a radically new approach with which designers were

Jean Després (1889-1980) France, 1931-2. Gold, topaz. 30 x 19mm. ©The Alice and Louis Koch Collection. Swiss National Museum.

experimenting at the end of the 19th century. As a result, the artist could work more freely with materials and effects, paving the way for the designers of the following century.

Trained as a goldsmith, Jean Després drew his inspiration from the avant-garde works of his artist friends Georges Braque, Pablo Picasso and Amadeo Modigliani. He became one of the most innovative jewellers of the inter-war period. The geometric and asymmetric design of this ring is in keeping with the Art Deco style. Having once stated that "I am not a jeweller, I work with force, not with finesse", the hammered, planished gold surface refers to traditional goldsmith techniques which were intrinsic to his approach.

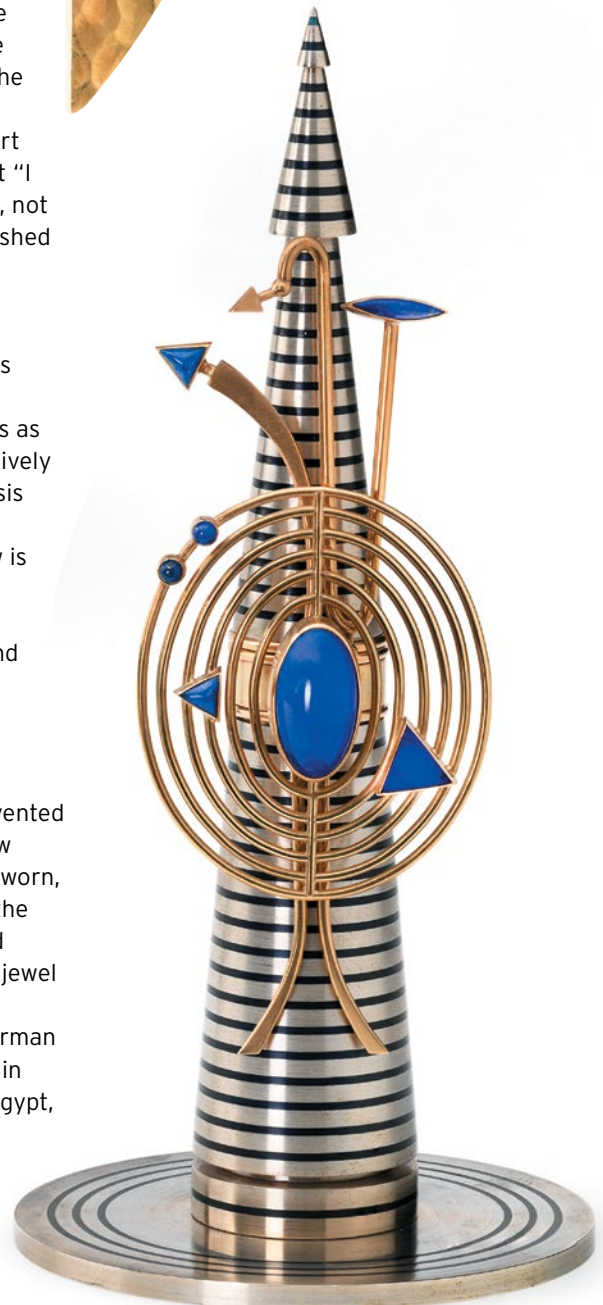
Després' choice of a topaz for this ring, follows his principle of using gemstones considered less precious as it allowed his jewels to remain relatively affordable during the economic crisis of the 1930s.

British designer Wendy Ramshaw is represented with three rings in the collection. She designed a series of rings that questioned the nature and versatility of the jewel. These rings can be worn stacked on one finger, or separately on different fingers, allowing the wearer to add to the overall design. Wendy Ramshaw invented the stacking of rings, which has now been copied by so many. When not worn, the rings can also be displayed on the specifically designed pyramid stand which has the effect of turning the jewel into a miniature sculpture.

The title refers to the novel of Norman Mailer, *Ancient Evenings*, published in 1983 which takes place in Ancient Egypt,

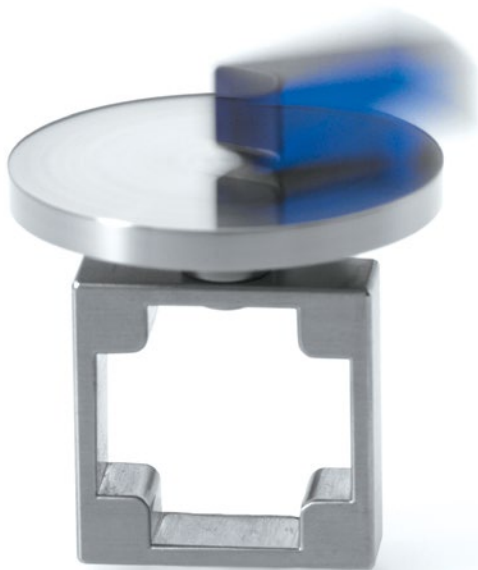
Wendy Ramshaw (1939-2018), 'Ancient evenings', Britain, 1988. Gold, lapis lazuli, blue resin, brass. 155 x 74mm. ©The Alice and Louis Koch Collection. Swiss National Museum.

hence the use of gold and lapis lazuli in reference to the Ancient Egyptian civilisation. Gold was strongly associated with the sun, as well as with immortality in Ancient Egypt, and was revered as the flesh of the gods. Lapis lazuli is linked to the night sky, especially when associated with speckles of pyrite appearing like stars. It is considered as a symbol of renaissance and linked to the primordial waters. →





Friedrich Becker, who trained as an aeronautical engineer, was the inventor of kinetic jewellery in 1964 and recognised as a sculptor and designer. He is known for his clear-cut constructivist language of form and playful approach to design. Many of his rings feature synthetic gems which he cut in geometric shapes such as cylinders, prisms or cubes. Hidden weights and ball-bearings create the illusion of movement and two-point settings cause the gemstones to float invisibly within the settings.



Friedrich Becker (1922-97), Germany, 1993. Stainless steel, synthetic sapphire. 36 x 30mm. ©The Alice and Louis Koch Collection. Swiss National Museum.



Bruno Martinazzi (1923-2018), 'Kaos', Italy, 1991. Gold. Ring 1: 33 x 22mm. Ring 2: 33 x 20mm. ©The Alice and Louis Koch Collection. Swiss National Museum.

Bruno Martinazzi was one of the pioneers of Italian contemporary jewellery. His creations often feature designs based on body parts, such as eyes, lips, fingers and navels. This ring is formed of two separate parts forming a broken mouth. The irreparably divided mouth becomes the representation of a lack of understanding, a metaphor for a world in crisis and hope for a better

future. It belongs to a series created during the 1991 Gulf War symbolising the self-destruction of mankind caused by insatiability. Martinazzi was also a sculptor and transposed his designs into monumental marble works. ■

The author wishes to thank Beatriz Chadour-Sampson for her support in writing this article.

MUSEUMS & CURATION

ABOUT THE CURATOR

Beatriz Chadour-Sampson
Jewellery Historian, Author and Lecturer

Education: PhD in Art History,
Westfälische Wilhelms-Universität, Münster, Germany

Career Highlights: Beatriz Chadour-Sampson's publications range from the classical world to the present day and include her doctoral thesis on the Italian goldsmith Antonio Gentili da Faenza (1980); catalogues for the jewellery collection of the Museum für Angewandte Kunst, Cologne (1985) and for the historical rings in the Alice and Louis Koch Collection, Switzerland (1994). She was Consultant Curator for the redesign of the William and Judith Bollinger Jewellery Gallery at the Victoria and Albert Museum, London and Guest Curator of its Pearls exhibition (2013-14). The descendants of Alice and Louis Koch have entrusted her as Curator of the collection for the past thirty-five years and she has assisted the present collectors with new acquisitions from the 20th and 21st centuries. Today she continues to advise the Swiss National Museum, Zurich, where the collection is kept currently.



Further reading

More information on The Alice & Louis Koch Collection can be found in *Rings of the 20th and 21st centuries: The Alice and Louis Koch Collection* by Beatriz Chadour-Sampson (Arnoldsche Art Publishers, October 2019).



Under the Loupe: The Educator

Helen Molesworth FGA tells *Gems&Jewellery* about her extraordinarily varied career and reveals some key pieces of advice to ensure professional success.

Tell us about your role at Gübelin Academy.

I joined Gübelin in 2013 to create and launch a gemstone academy, and today I manage brilliant teams in Hong Kong, China and Switzerland, and continue to develop the business through international shows, lectures and partnerships. In addition to the exciting aspects of business management, it's also been a wonderful intellectual experience where I have researched and designed all our courses, from mining to markets, and comprising gemmology, history, and more. Today I continue to teach, research, publish and lecture as much as possible.

Can you tell us about your career journey?

I always loved gems and jewellery – I broke my leg at age six climbing a wall after an amethyst geode – and realised after university that I had a rare opportunity to try something different. In my final year at Oxford I studied art and archaeology, including ancient gems, which led me to think about a career in gemstones and jewellery. The summer after finals, I knocked on doors on Bond Street asking for advice, received an unexpected batch of job offers, and started my Gemmology Diploma within a fortnight. I worked by day and studied at night, and before I had finished the course I was accepted onto the Sotheby's Graduate Training Scheme.

Are there any particular experiences you can recall from your education or that have helped to inform your career in gemmology and jewellery?

The Gemmology Diploma at Gem-A was probably the single most influential and enjoyable thing I have ever done

Name:

Helen Molesworth
FGA BA (Hons Oxon)

Current role:

Managing Director
at Gübelin Academy

Education Background:

- *Literae Humaniores (Classics)*
BA (Hons Oxon), Oxford University,
1995–1999
- *Gemmology Diploma, Gem-A,*
1999–2000

Professional Experience:

Helen's career has spanned many aspects of the jewellery trade for 20 years, including 10 years' experience as a jewellery specialist at auction houses, Sotheby's and Christie's; several years of working as a private advisor on jewellery while teaching History of Jewellery at HEAD Genève and she has spent the last seven years setting up and managing a school for coloured gemstones, Gübelin Academy, in Switzerland.

professionally. A close second was running the sale of the jewels of Princess Margaret in 2006, where I was privileged to handle and research a collection of extremely personal royal jewels.

How do you keep up-to-date with the latest developments in the trade?

Because I research and write our course material, I read as many gemmological journals as possible, both current and backdated. *The Journal of Gemmology*

and *Gems and Gemology* are both essential. I regularly attend conferences, which are a super way of keeping updated, and I feel it's important to be 'on the ground' as much as possible, so I try to visit mine sites, important auctions and international shows, and to keep connected to different people and different branches of our industry in general.

You co-authored *The Complete Content Cameos*, a catalogue which documents the largest private collection of cameos in the world, alongside Dr Martin Henig in 2018. How did you approach that project?

It was an enormous and very academic project, which took well over ten years. Martin had written the first volume, but when a second volume comprising double the number of ancient gems was proposed, he asked me to co-author. Martin is a leading expert on ancient gems, while I could read all the Latin and Greek inscriptions, and (unusually for a historical publication) also had gemmological training. I also had experience producing auction sale catalogues, so we could lay out the catalogue thematically, and by new typologies, and I learned an incredible amount from Martin's brilliant world-renowned glyptic expertise.

What would you say to someone who would like to pursue a career in gem and jewellery education?

My first advice would be to pursue what you love and what will motivate you for the rest of your working career, no matter what field. Find your natural passion and strive towards it. Never forget to value what you learn from the people you meet as well as the things you see on your journey. And most of all, very little will beat hard work, continual study and a spirit to make the world a better place. ■





A gemmologist analysing a gemstone under the microscope at Gübelin Gem Lab.



The Evolving Gemmologist

New technologies have significantly enhanced the accuracy and efficiency of gem testing, however, these innovations can also bring challenges for gemmologists. Dr Daniel Nyfeler, Managing Director at Gübelin Gem Lab, shares his thoughts on how the modern gemmologist can adapt to the age of technology in the gem lab.

The history of gemmology is the history of famous gemmologists. We remember names such as Robert Webster, George F. Kunz, Robert M. Shipley, G. Robert Crowningshield, Richard T. Liddicoat, Alan Hodgkinson, or Eduard J. Gübelin, to name just a few. By virtue of their work, their knowledge and passion, these experts have shaped what we today understand as gemmology.

Many of these gemmologists have not only studied thousands of gemstones, but have also invented novel analytical instruments and methods, made extensive travels to remote mining areas and performed treatment experiments themselves. Their expertise made them true gurus in their field, and inspired generations of young gemmologists.

The famous pioneers mentioned above were succeeded by a significant number of more recent individuals that populate the industry, many of them working in gem labs.

A NEW IMAGE

However, that image of the quasi-infallible gem expert has started to crumble in recent decades. Lab reports with conflicting or undeterminable origins are known from all major gem labs, as are cases of cultured pearls getting reports stating natural provenance and vice versa. Treated green diamonds get lab reports stating natural colour, and some types of treatments remain undeterminable, or even go completely unnoticed by gem labs.

The reason for such gem lab errors are manifold. One is the increasing complexity of the matter: new types of synthetics, sophisticated and hard to detect treatments (such as low-temperature heating applied to corundum), new origins producing gemstones which were previously considered as unique from one location only (such as some types of blue sapphires from Madagascar with properties confusingly similar to Kashmiri sapphires).

To keep abreast of such developments, gem labs have been forced to upgrade

their arsenal of analytical tools. This expansion of analytical weaponry has triggered an explosion of the amount of data collected on a single stone, for instance with the application of mass spectroscopy and computer tomography.



The state-of-the-art LA-ICMPS facility at the Gübelin Gem Lab collects a huge amount of chemical data on each stone.



These photomicrographs show dust bands in three different blue sapphires from Kashmir (left), Sri Lanka (centre) and Madagascar (right), exemplifying the similarity of microscopic features that can be found in sapphires from different origins. Such similarities of microscopic properties forced gem labs to reach out to more sophisticated analytics, to keep up the origin determination service.

Human brains, however brilliant, can only consistently process a small number of observations at once. The larger the amount of data, the less consistent the processing is by the human brain. But consistency of results is of the utmost importance for gem lab clients.

FROM EXPERTS TO ALGORITHMS

Gem labs that want to grow, and/or ensure long-term consistency for their clients have to say farewell to the guru-concept. They need to embrace a new working model, adopting the more systematic approach of laboratories in other industries.

We propose a model based on multi-disciplinary standardised data gathering and automated data interpretation. This type of standardised data gathering comprises of three types of data; microscopic, spectroscopic and chemical data. In short, the gemmologist is working down a long checklist of features. They are checking for the presence or absence of specific features in the microscopy (such as specific crystal inclusions), specific peaks or bands in a spectrum (such as the presence, size and ratio of 3309 series in corundum), and the concentration of a range of chemical trace and ultra-trace elements. This approach provides more structured sets of data, as it also includes what is absent.

The data gathering is also distributed to multiple specialists, meaning that the respective knowledge is dispersed over differently skilled and educated people. Most of the gathered data is structured and computable, i.e. knowledge that can be stored in databases and processed by software, rather than only in the head of individuals. Replacing the intuition of the guru, data interpretation is taken care of by software running empirically-derived algorithms.

In recent years, the capabilities of computer models and algorithms to read and process variable types of data simultaneously has grown exponentially. It goes beyond the crunching of structured, quantitative data, extending into auto-evaluation of imagery and other less structured data. Interpretation of such heterogeneous sets of data by powerful pattern-recognition software allows new insights, independent of existing wisdom.

Today's gemmologists need to adopt a new role of a specialist working in a multidisciplinary team on the same level as other specialists such as spectroscopists and chemists. They have to follow strict testing protocols, standardised methods and a system of checks and balances.

THE GEMMOLOGIST'S NEW ROLE

We believe that model-based results are more repeatable and consistent over time than the expert's results. It allows for more transparency in the way a gem lab does its work and such transparency would ultimately result in a more robust and resilient system.

This does not mean the end of gemmology, and gemmologists will not become obsolete, nor will they vanish into anonymity. There is a type of knowledge beyond the one contained in databases and sophisticated algorithms.

A machine cannot instill the enthusiasm and passion for gemstones as human experts can. Their gut feeling to spot the new, unknown and out-of-the-ordinary is still unmatched by any algorithm. And it remains advisable to test the plausibility of machine-generated results with the critical eye of the human expert.

The judgment and wisdom of experienced gemmologists is still an invaluable asset needed in every gem lab, but it should be applied differently. Integrated in a team, gemmologists can shift to other, more rewarding tasks, such as studying samples from new sources, maintain the databases that underlay the algorithms, oversee the quality of the results and share their knowledge with younger generations of gemmologists. And by spending more time on research and development, they can also have the opportunity to achieve visibility and personal fulfillment. ■

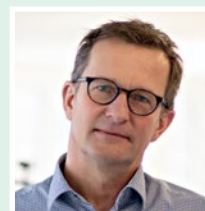
INDUSTRY

ABOUT THE CONTRIBUTOR

Dr Daniel Nyfeler
Managing Director, Gübelin Gem Lab

Education: PhD in Mineralogy, University of Bern, Switzerland (1994-1997)

Career Highlights: Following the completion of his PhD on steric and electronic stress in the atomic structures of minerals (1994-1997), Daniel went on to work on a joint research project on high-temperature superconductors at the IBM Research Lab Zürich in Rüschlikon, together with Georg J. Bednorz (recipient of the Noble Prize for Physics in 1987). Daniel then spent several years working as a strategy consultant in an international management consultancy before securing the role of Managing Director at Gübelin Gem Lab in 2003, where he has guided the expansion of the lab to Hong Kong and New York.



All images courtesy of Gübelin Gem Lab.



WHOLE LOTTA' HISTORY

Robin Hansen FGA, Curator of Minerals and Gemstones at London's Natural History Museum, delves into some of the most significant historical gemstone collections housed at the museum and shares some of the highlights and challenges that come with working with such special artefacts.

I have been working as a curator at the Natural History Museum in London for five years now, which I means I am still 'quite new'. This is a job with longevity; most curators at the museum spend the majority of their careers looking after and researching its wonderful collections.

The Natural History Museum began with Sir Hans Sloane, who bequeathed his collection to the nation in 1753; this

was the founding collection of the British Museum. The Natural History portion was separated in 1881 and formed its own museum in the wonderful building we know today. Over the past quarter century, the Mineral collection has grown to more than 180,000 specimens, which includes around 4,000 faceted gemstones and over 1,000 worked objects.

Following the history of a large collection is a fascinating ride. We can trace some gem specimens back to Sir

Hans Sloane, including faceted quartz of different varieties, or worked objects such as bowls, archer rings and other decorative items. Two of the most spectacular include a faceted aquamarine in mogul style, and a 31.5 carat sapphire inlaid in a rock crystal button (1a & 1b).

Investigating the history of individual specimens is also an incredibly interesting and rewarding experience. For example, we have a significant collection of gems from Mr A.C.D. Pain who was manager of the Ruby Mines, Burma in the mid-1900s. His collection of 130 gems and rough minerals was acquired in 1973 and contains a wide selection of gem minerals found in Myanmar, including many rare materials.

A second notable collection is that of Mr Charles R. Mathews, which comprises 268 gemstones donated in 1993. Mr Mathews, and his father Charles Mathews, were lapidarists in Hatton Garden famed for cutting and providing gems for celebrities and royalty (2).

The downside to working with historical collections is that there can be a lack (or loss) of information. A challenge with gemstones is that the provenance was not always known, or



1a: A faceted aquamarine in mogul style.



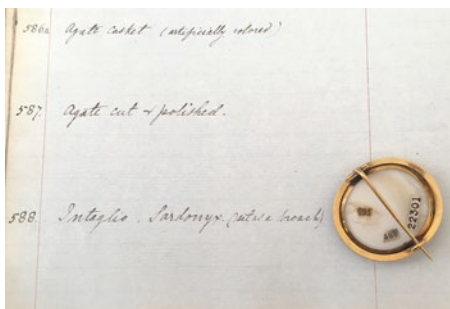
1b: A 31.5 carat sapphire inlaid in a rock crystal button.



2: Part of the impressive Mathews collection of gemstones.

recorded, by the previous owner. As such, nearly 50% of the gem collection does not have locality information. This is something that we hope, with the wealth of information available today, to be able to add to going forward.

Tracing the history of a specimen can also be challenging. There have been several different cataloguing systems used over the centuries. The Geological Museum (originally The Museum of Practical Geology) opened in 1835. Its collection is accompanied by its handwritten 'Mineral Inventory' catalogues, which began in 1862, and we have retained the numbering system within the NHM registration numbers. These registers refer to an 'old catalogue' or 'museum series' number, which links to a printed catalogue from 1864, published to accompany the specimen displays in the museum. We have also managed to link an even earlier set of catalogues with a different numbering system. It can take some detective work, and sometimes a pinch of luck to trace these numbers (3).



3: The oldest catalogue in the Natural History Museum contains handwritten records of specimens.

The NHM gem collection holds many specimens of scientific importance. Within the museum's collections we have what are known as 'type collections'. These are the first known example(s) of a species — whether it is a mineral, an animal or a plant. As well as proof that this species exists, they are used to characterise the species' properties. Within the mineralogical type collections we have nine gemstones which are types for magnesioaxinite, ekanite, taaffeite and sinhalite.

Taaffeite is a rare gem mineral which was first discovered in 1945. It was found by Count Taaffe, a gemmologist in Dublin, when purchasing gemstones scavenged from old jewellery. Whilst inspecting a 'spinel', he noticed that it showed double refraction. He sent the specimen to Basil Anderson (one of the original founders of Gem-A), who worked with scientists at the NHM, where it was discovered to be a new mineral. Interestingly, to remove a small portion of the gemstone for testing — a critical procedure as this was the only known example — the gemstone was sent to Charles Mathews who skilfully recut it into a smaller gemstone.

A second specimen, also a cut gemstone, was later found in a parcel sent for testing in Hatton Garden in 1949. In 1967 only four examples of taaffeite were known. These first two gemstones have since been donated to the NHM collection and we are proud to hold such historical and rare specimens.

Sinhalite has a similar history. This dark greenish-brown gem was thought to be peridot, however testing by museum

scientists in 1951 determined that it was in fact a new mineral. Twenty different specimens were used to characterise it, including nine from the Natural History Museum and Geological Museum collections, of which eight were faceted gemstones. Some first entered the museum as chrysoberyl or diopside, then were determined to be olivine, before finally being discovered as sinhalite (4). This history can be seen captured on the beautiful handwritten registers and paper labels and are now recorded in our collection management database. ■

4: A faceted sinhalite from the Natural History Museum's collection.



A bibliography is available upon request.

MUSEUMS & CURATION

ABOUT THE CURATOR

Robin Hansen FGA
Curator, Minerals and Gemstones,
Natural History Museum, London

Education: BSc in Multidisciplinary Science with Honours in Geology, Curtin University of Western Australia (1998); Gemmology Diploma, Gem-A (2011)

Career Highlights: Following her university studies, Robin worked as an iron ore exploration geologist, undertaking drilling programs in the red dust of remote Western Australia. Robin then moved to London where she worked for a partnership of mineral dealers selling mineral specimens to collectors and museums, based both in the UK and USA. To advance her knowledge in gems and minerals, Robin completed her Gemmology Diploma with Gem-A in 2011 and was awarded a Distinction along with the prestigious Tully Medal. Soon after, Robin secured her dream job as Mineral Curator at the Natural History Museum.



Multum in Parvo

Thomas Holman, a Director at legendary fine jewellery, art and antiques dealership, Wartski, shows us the sublime in the minute as he investigates a carving by master cameo cutter, Tommaso Saulini.



A three-layered sardonyx cameo of Aurora riding her Biga by Tommaso Saulini. Rome, c.1860. On the top edge of the chariot we can see the natural bleeding of colour in the sardonyx.

During the first week of October 2019, Wartski hosted an exhibition built around a collection of over one hundred engraved gems dating from classical antiquity to the 19th century. Entitled 'Multum in Parvo' (a Latin motto which translates as 'much in little'), the display was designed to encourage visitors to take a moment out of their hectic lives to focus on a miniature world.

With the unprecedented readjustment we are currently experiencing – the shutdown of the global markets and necessity to self-isolate – the ethos of 'Multum in Parvo' seems even more poignant. The time to truly appreciate the beauty of small things. To this end, I am going to take the opportunity in this brief article to pass a magnifying glass over one of the cameos that featured in the exhibition and reveal its remarkable history.

THE ART OF GEM CARVING

Unlike a painter, who applies colour to a blank canvas, the palette available to the gem engraver is set in stone. The location of a vivid spot of red, or perhaps a band of pure white, can be predicted through the careful study of a rough specimen, but it is certainly not known until excavations begin (unexpected surprises almost certainly will occur).

It is understandable that, in the ancient and medieval worlds, it was often thought that engraved gems were the product of nature — images placed there by divine forces, to be revealed by the hand of the lapidary. At the heart of gem engraving is a philosophical spirit which embraces the 'happy accidents' which can occur during the carving process; the touches provided by nature which can make a gem particularly beautiful and unique.

It does not, however, make that first move with the tool any less daunting. When the Roman cameo cutter Tommaso Saulini (1793-1864) made his first incision into a piece of orange and white sardonyx in the late 1850s, it was no doubt with some degree of trepidation. The extraordinary cameo of the goddess Aurora riding her Biga across the sky, the result of Saulini's mastery over that piece of stone, is a testament to his skill and vision as an artist.

THE SAULINI STORY

Saulini was born in Rome and received his training in the studio of the Danish master sculptor Bertel Thorvaldsen (1770-1834), who had settled in the Palazzo Barberini and was particularly famous for his reliefs in marble. By 1836, Saulini is registered as a cameo cutter,



A cameo by Neapolitan artist Filippo Rega, measuring only 3.5cm in length, which was displayed at the *Multum in Parvo* exhibition.

no doubt profiting from the fashion for visitors on the Grand Tour to have their portraits cut in shell or hardstone.

A highly respected and notable member of the artistic community in Rome, Saulini became well acquainted with the numerous painters and sculptors working in the city, including Joseph Gott (1786-1860) and John Gibson (1790-1866). It was thanks in part to Gibson that Saulini obtained an important Royal commission in 1856, to complete a series of double portraits of Queen Victoria and her husband Prince Albert.

THE AURORA CAMEO

The composition of the Aurora cameo would have been derived from Classical antiquity. Two ancient cameos of this composition resided in the collection of George Spencer, 4th Duke of Marlborough and were published as engravings by Francesco Bartolozzi (1727-1815) and Baptista Cipriani (1727-85) between 1780-83. Saulini was a scholar of engraved gems and would have consciously chosen to reinterpret an ancient subject, to make a clear association between his own skill and that of the highly lauded ancient engravers.

The cameo was likely created to exhibit at one of the 'International Exhibitions' which were so popular during the late 19th century. It would certainly explain the gem's theatrical scale (it measures approximately 12cm in length), as well as the superlative quality of the carving. A cameo of this subject, in a three-layered hardstone, is in fact listed among the pieces shown by Saulini at the International Exhibition of 1862 in London.

Few people would have been able to afford a gem of this exceptional quality. Hardstone cameos were

incredibly time-consuming and difficult to accomplish. In the collection of the British Museum is a gold brooch mounted with a shell cameo of this composition signed 'Saulini' (Museum Number: 1978, 1002.293). It was likely completed by Tommaso's son Luigi and would have been sold as a souvenir for visitors to the exhibition. Having seen the exceptional hardstone original on display, a shell reproduction provided a much more affordable alternative.

The desire to acquire jewels in the Classical style was certainly strong in 1860s London. A curious cartoon published in *Punch* magazine in 1859 shows a lady on the Grand Tour bedecked in jewels in the archaeological taste. It was a satirical comment on the mania for the Classical style. Fascinatingly, adorning the breast of this lady, is what appears to be a large cameo of a lady riding a chariot.

But let us finish by taking a closer look at the cameo in question. The way in which Saulini located his composition within the three distinct coloured bands of the stone is miraculous. The musculature of the red horse is illuminated as the thickness of this layer undulates above the white. The strong and dynamic silhouettes of the two horses are undisturbed by blemishes or the bleeding of colour between layers. The spokes of the wheels have been carefully excavated and illuminated by the translucent base



Also featured in *Multum in Parvo* was this brown sard intaglio of the goddess Diana by Giovanni Pichler. Rome, c.1770.

layer. It is perfection... or is it?

Look carefully and one can find one small 'imperfection', a spot where Saulini has been unable to avoid the bleeding of one colour into the next. For me, this is a crucial part of this work of art, something which only goes to further enhance the beauty of this incredible cameo. For it acts as a pertinent reminder of the entirely natural origin of this material and the genius required to navigate it. ■

A full bibliography is available upon request. All images courtesy of Wartski.

RETAIL



ABOUT THE CONTRIBUTOR

Thomas Holman
Director, Wartski

Education: Politics, Cambridge University (2009)

Career Highlights: After graduating from university in 2009, Thomas worked with Sotheby's jewellery department as an intern in London before becoming the silver and jewellery specialist for a regional auction house. He started working at Wartski in 2010, becoming a company Director a few years later.

Copies of the *Multum in Parvo* catalogue are still available and can be purchased from Wartski. All proceeds go to the charity, Heads Together.



THE GEMSTONE HUNTERS



Vincent Pardieu fossicking for sapphires in a stream near Weldborough, Tasmania (Australia). Photo courtesy of Chris Hood.

Is field gemmology the coolest career in the industry? We'll let you decide. Two eminent field gemmologists, Vincent Pardieu AG GG and Wim Vertriest FGA GG, share their most memorable experiences with *Gems&Jewellery*.



Vincent Pardieu

A FIRST TRIP TO MYANMAR

I went on my first real field expedition in June 2001 to Myanmar, as a field assistant to Ted Themelis, author of several books on Mogok and heat treatment, and gem merchant Hemi English. We first visited the Namya ruby and spinel producing area and then

the Hpakant jadeite mines. Hemi was very much interested in the bright 'hot pink' spinels from Namya; that interest was contagious and the expedition was not only the starting point of my career as a field gemmologist but also the beginning of my passion for these gems I would later go on to call 'Jedi Spinel'.

AN UNFORGETTABLE EXPEDITION IN MOGOK

I was very happy when two months later Ted asked me to join him on another

trip. On this occasion he took me to Mogok, the place I dreamt of visiting for many years. Mogok is a unique place with beautiful small wooden towns surrounded by mountains rich in gems mines. It produces an incredible variety of gems such as rubies, sapphires, spinels, moonstones and many others including rare gems like painite or poudretteite.

TRAVELLING WITH GEM HEROES

Probably my best memories involve travelling and working with my gem



Vincent with gem dealer Hemi English on a trip to the Namya gem deposits in Myanmar. Image credit: Hemi English.



Exploring the gem mines of Madagascar with Richard Hughes (left). Image provided by Vincent Pardieu.

heroes. I got into gemmology basically because I fell in love with *Ruby & Sapphire* by Richard Hughes (available to purchase at shop.gem-a.com). Being asked in 2005 by Richard to take him to visit ruby and sapphire deposits in Madagascar was a dream come true.

EXTRAORDINARY ENVIRONMENTS

On the human side, some of the most incredible experiences I had were to be able to live for a few days in gem rushes like in Winza (Tanzania) and Didy or Bemainty (Madagascar). It was incredible to witness thousands of highly motivated people rushing in the jungle.

I will also never forget the landscapes of northern Mozambique, Tajikistan, Vietnam, Sri Lanka or those of Greenland

where I've recently had the privilege of training geologists working in a very remote ruby mine during the day, and in the evening enjoying the sight of the Northern Lights over the arctic landscape.

ASSISTING ASPIRING GEMMOLOGISTS

Travelling with young people and helping them start their career is something I really love. I think that over the past 20 years, I've taken more than 100 young people to the field as guests. Starting in gemmology had been very tough for me and the only reason I succeeded is because I was helped by people like Ted, Richard and a few others. My way to thank them is to keep helping the next generation.

FIELD GEMMOLOGY

ABOUT THE GEMMOLOGIST

Vincent Pardieu AG GG
Field Gemologist & Director at VP Consulting SPC in Bahrain

Education: BSc in Analytical Chemistry, University of Bordeaux I (1994); Associate Gemologist, GGA (2001); Graduate Gemologist Diploma, GIA (2001)

Career Highlights: Vincent Pardieu has led a varied career in the gem industry; early in his career he worked as a gem buyer, gemmology teacher, professional laboratory gemmologist and lab director before moving to GIA in 2008 where he headed up the Field Gemology department until 2017. In total he has completed 148 field expeditions to ruby, sapphire, emerald, spinel and garnet deposits in 19 different countries across Asia, Africa, Australia and America.



Working at a ruby mine in Greenland, 2018. Image credit: Didier Barriere Doleac.



Wim Vertriest

VISITING GEM MINES IN ETHIOPIA

Ethiopia has produced opals for about 15 years but in late 2016 it suddenly appeared as a producer of dark blue sapphire and fine emerald. The emeralds reached the market quickly and immediately made an impact throughout the entire supply chain. GIA's field gemmology team was among the first foreigners to visit these remote localities in the barren deserts surrounding Aksum and the hilly jungles around Shakiso. The amount of work and

preparation leading up to the expedition was immense, but it was worth it when we were able to set foot in the mines and witness them with our own eyes.

CÔNG TRƯỜNG SPINEL MINE

My first gemmological field expedition was to the ruby and spinel mining area of Luc Yen in northern Vietnam. Only a few mines are working the hard marbles to extract spinel and ruby. One of those mines is located on the top of a jungle-covered hill overlooking the valley. Reaching the mine site requires a tough climb through the forest over crevasses and sharp limestone edges, but you →



Sapphire deposits in Northern Ethiopia were only discovered in 2017. GIA's field gemmology team were among the first foreigners to visit the mines. Photo by W. Vertriest.

are rewarded with sublime views and a legendary mine site. The name of the mine couldn't be more appropriate since Cổng Trời is Vietnamese for 'Heaven's gate'.

ATTENDING GEMFIELDS' RUBY AUCTIONS

GIA field gemmologists don't spend all their time in the field and the lab. We have been fortunate to attend the auctions where Gemfields sells their Mozambican ruby rough to selected buyers. These are people that live and breathe ruby, and thus have a deep understanding of these stones. Witnessing these ruby experts at work and seeing how they analyse stones is an incredibly valuable experience for anyone working with rough gemstones.

WITNESSING HEAT TREATMENT OF SAPPHIRES AND RUBIES

During field expeditions and research projects, we often see stones being treated. Heat treating rubies and sapphires is always an exciting affair. The rough used is of high value and the results are unpredictable, making every treatment operation a bit of a gamble. Opening the oven after several hours and seeing how the stones have reacted to treatment is still exciting even though I've done and seen it over a dozen times now.

SEEING 'THE GEMSTONE'

I did not grow up in an environment where gems and jewellery were around. Initially, I wondered about the value that people place on gemstones. Why would anyone pay such outrageous amounts of

FIELD GEMMOLOGY

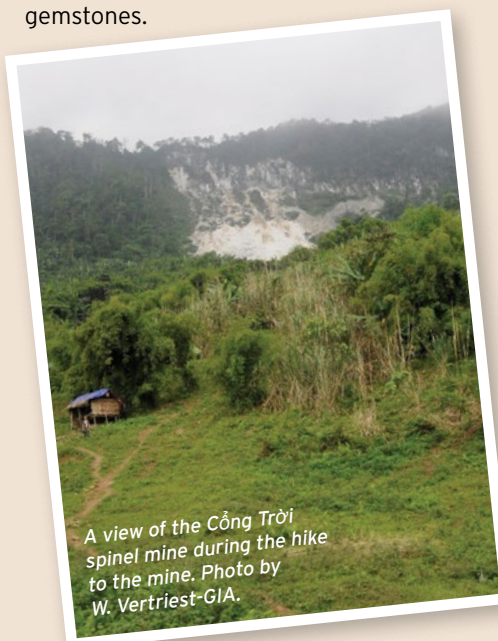
ABOUT THE GEMMOLOGIST

Wim Vertriest FGA GG
Supervisor of Field Gemology for Gemological Institute of America, based in Bangkok, Thailand

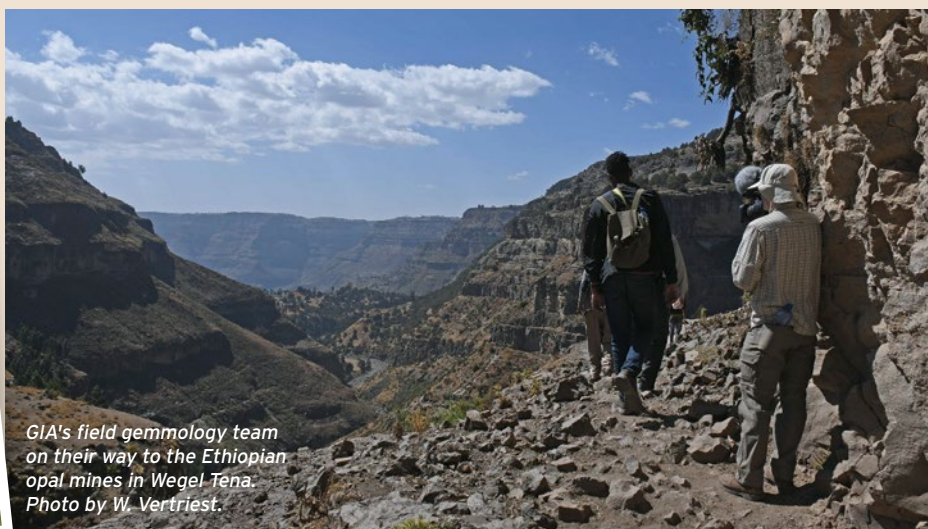
Education: Master's degree in Geology, specialising in Geodynamics and Geofluids, KU Leuven (2014); Graduate Gemologist Diploma, GIA (2016); Gemmology Diploma, Gem-A (2017)

Career Highlights: Since joining GIA in 2015, Wim has participated in GIA field expeditions to gemstone mining areas in Thailand, Cambodia, Vietnam, Myanmar, Sri Lanka, Greenland, Tanzania, Mozambique, Ethiopia and Russia. During these expeditions, he was responsible for sample collection and documenting the local gemstone dynamics. Wim oversees the Field Gemology department and curates GIA's coloured stone research collection in Bangkok.

money for them? Why did medieval kings go to war over them? I simply couldn't grasp how a 'pretty stone' could stir up such emotions to move people to such actions; that was before I saw my first gem that made me feel like that. At that point, a gemstone turns into a *gemstone*. I still remember my first ruby and to this day I get goosebumps when I think of that stone. That stone showed me what gems are all about. ■



A view of the Cổng Trời spinel mine during the hike to the mine. Photo by W. Vertriest-GIA.



GIA's field gemmology team on their way to the Ethiopian opal mines in Wegel Tena. Photo by W. Vertriest.



Under the Loupe: The Valuer



Ever wondered what it's like to be a jewellery valuer? Craig O'Donnell FGA of SafeGuard Valuations tells *Gems&Jewellery* about his career and shares some sound advice.

Tell us about your role at SafeGuard Valuations.

I have worked as a full time valuer at SafeGuard at the Birmingham Assay Office for the last 20 years. In addition to being the Principal Valuer I am also the resident Antique Jewellery and Silver Specialist and Curator of the Assay Office's silver collection. My average day begins at 9am: I fire up the computer, check my e-mails and get my basket of work from the walk-in safe. Our valuations are dictated into the computer — I start with a comprehensive description of the item, with all gemstones and diamonds correctly identified and accurately measured; the hallmark details are then described (if the item is not hallmarked the metal is acid tested or XRF tested to get an approximation of the metal content); finally, I calculate the precious stone weights and diamond weights and assess the quality of the diamonds. From these stages the replacement value can be worked out. After an appropriate value is ascribed our typists will then prepare the valuation to send back to our customer.

Can you tell us about your education background?

My first job in the jewellery trade was in Turkey at the age of 19; I went for a week's holiday and got offered a job with a jeweller in Bodrum. I later found myself living in Surrey, where I found out about Gem-A and attended the Gemmology Foundation course at Farnham Adult Education Centre. I then got a job working front-of-house in Dewi Griffiths' in Cardiff, which is where I started to learn about valuations. I left Dewi Griffiths' to begin the Fine Arts Valuation degree at Southampton Institute and graduated in 1999, before starting work as a full-time Valuer at SafeGuard in 2000.

Name:

Craig O'Donnell FGA

Current role:

Valuer/Curator
Antique Jewellery
and Silver
Specialist,
SafeGuard
Valuations

Education Background:

- Gemmology Diploma, Gem-A
- Certificate in Appraisal Theory (CAT), National Association of Jewellers
- Fine Arts Valuation BA (Hons), Southampton Institute

Professional Experience:

Craig O'Donnell's career in the jewellery trade began when he was just 19, working in a jeweller in Bodrum, Turkey. Since then Craig has spent time working as an antique jewellery and silver dealer; front-of-house at a bespoke jeweller and as a Valuer at SafeGuard Valuations for 20 years.

What do you love most about working in valuations?

The diversity of the job; through SafeGuard I have given talks and presentations on many related subjects including hallmarking, silver, arts and crafts jewellery, valuations, silver spoons, foreign hallmarks and have several upcoming talks this year. At SafeGuard, our contract valuers can share information with each other and interact

with AnchorCert, our gemstone and diamond grading lab, for their additional expert opinion.

Are there any significant jewels you have come across in your work that occupy a special place in your memory?

A personal favourite was a René Lalique pearl and ivory bas relief brooch from circa 1903; a fine example of work from one of the greatest jewellers who ever lived. I sought various opinions from top dealers in the country whose estimates ranged from £3,000 to £10,000! In the end I based the value on achieved auction prices for similar pieces, arriving at £45,000.

What should a valuer do to keep at the top of their game?

Being a valuer means learning as much as you can about your chosen subjects. You should also check out courses and talks both nationally and internationally. Join both professional bodies such as Gem-A and the National Association of Jewellers as they will keep you posted of talks and seminars nationally, and also join relevant societies such as the Society of Jewellery Historians, The Silver Society and The Decorative Arts Society.

What would you say to someone who would like to pursue a career in valuations?

A sound practical gemmological knowledge is essential (as provided by Gem-A) as is a basis of theoretical valuing knowledge (as provided by the NAJ's Certificate in Appraisal Theory). Handle as much jewellery as possible — auction viewings are great for this. Talk to as many members of the trade as possible, identify any gaps in your knowledge and strive to fill these gaps with reading, courses and practical help. Most importantly, be enthusiastic and passionate about the subject! ■



What does it take to be a jewellery expert in a busy auction house?

Gems&Jewellery speaks to Sarah Duncan GD, Head of the Jewellery Department at Chiswick Auctions, to uncover the investigations, insights and ideas needed to put world-class jewels up for sale.

BEHIND THE CURTAIN

Sarah Duncan is good at reading clues. In fact, she's spent much of her academic and professional career investigating objects and analysing their meaning. She credits her analytical eye for detail to her parents and grandparents, whose interest in bespoke woodworking, antiques and art fostered her keen sense of quality and craftsmanship. She later went on to study at the University of St. Andrews in Scotland, but only touched on themes of Roman jewellery... there was nothing at this point to signal a fascinating future career in jewellery and gemstones.

Upon graduating, Duncan secured an administrator position at Bonhams auction house and put her research skills to use. She enhanced her newfound

academic interest in jewellery, past and present, with distance learning with the Gemological Institute of America (GIA). Now, in 2020, Duncan is Head of the Jewellery Department at Chiswick Auctions in London, overseeing a team of gemmologists, diamond graders, specialists, historians and valuers.

"One day I can be supervising photography and the next I could be working with graphic designers, supporting valuations, meeting with clients, cataloguing, researching, digging through books and going to the archives," Duncan says. She is the first to admit that her background in history, art history and meticulous, patient research is one of the biggest advantages in her role. "I have been lucky enough to

use that part of my brain successfully, especially when identifying rare pieces, such as a René Boivin necklace. The vendor had no idea who [the necklace] was by; he had inherited it. The mark was a little unusual for Boivin, but the quality of the workmanship immediately stood out to me. I was able to find some archival material that contained a photograph of the necklace decades earlier [...] this all helped to sell the piece well for our client."

When identifying pieces from across the Georgian, Victorian, Edwardian and more contemporary eras, Duncan relies on what can only be described as an auction house 'sixth sense'. She explains: "A lot of times, it's simply about picking something up and holding it in your hand..."

René Boivin Necklace
Auction date: 15 May 2018
Hammer sale price: £7,200

A nephrite and pearl 'Japanese' necklace, by René Boivin, 1911, of stylised bib form, the fluted nephrite demi lune decorated with realistically modelled cherry blossoms, suspending a fringe of 4.5-4.7mm pearls and nephrite beads and drops

René Boivin (1864-1917) established one of the most original and respected jewellery houses of the 20th century. Boivin was considered 'the jeweller of the intelligentsia'. He was particularly drawn to naturalistic themes, including flowers and animals. Following Boivin's premature death in 1917, his wife took the unusual move to continue the company. Her strong design ethic was complemented by her assistants, including Suzanne Belperron, and brought the house global acclaim.



your brain fills with a sort of back catalogue of reference points, which is something really only time and experience can give you. I know this can be frustrating for more junior members of staff because they say, 'But how do you know?' I just know! It just feels right — you know by the thickness of the band, you know by the weight, the heft of something."

This jewellery 'muscle memory' is equally important with contemporary pieces, Duncan admits. "Pick up a Cartier Love bangle, for example, it doesn't feel right; it's too light, too

heavy, too thick, too thin. When it comes to antique pieces, look at the workmanship: is it cast? Does it look handmade? Are there enough imperfections to be accurate? Is it too good? Has it just been overcleaned?"

On the latter point, Duncan says that the overcleaning of antique pieces can give a deceptive impression. In her opinion, the right amount of "wear and tear" is "one element to the assessment", as well as the tell-tale signs of resizing. After all, if a piece is hundreds of years old and has passed

down generations, chances are it will have been resized once, if not multiple times.

As an example, she cites a recent case with a Renaissance-style ring that "didn't feel right to me at all". The ring was left with Chiswick Auctions for further research, leading to mixed opinions within the team. "I ended up getting one of the top antique jewellery specialists in the world to have a look and he immediately said, 'No, it's not right — it's probably 60-80 years later than it needs to be'. I felt vindicated!"

Of course, a vital ingredient in the →



Carlo Giuliano Necklace
Auction date: 9 May 2017
Hammer sale price: £22,000

A pearl, ruby and enamel fringe necklace by Carlo Giuliano, circa 1875-1895. In the Indian style, the foxtail link chain, suspending a fringe of batons, each decorated with a cluster of granulation, a collet-set circular-cut ruby and blue enamel flowerhead, terminating in a 3.1-3.8mm pearl and blue enamel trifoil accent, maker's mark C.G.

The British Empire's colonisation of India led to a sharing of artistic themes and the vast trade between the two countries saw Indian goods brought directly to the British public. Already seen at the 1851 Great Exhibition, interest in Indian jewellery rose to new levels when Queen Victoria became Empress of India in 1876.



Cartier Vanity Case
Auction date: 18 September 2018
Hammer sale price: £8,500

An Art Deco jade, enamel and diamond vanity case, by Cartier, circa 1925. The rectangular case with black pékin mille raies enamel decoration, centrally-set with a carved jadeite

jade, onyx and rose-cut diamond floral motif, to a rose-cut diamond thumb piece and hinged connectors, opening to reveal a mirror, a lipstick holder and a powder compartment, suspended from a twin black enamel link chain with jadeite jade bead accents, to an onyx circlet surmount with rose-cut diamond connector, signed Cartier.

auction house recipe is signed pieces by coveted designers and brands. Duncan describes her team as being “switched on” to British designers of the 1960s and 1970s, such as Andrew Grima, Alan Gard and John Donald. While these iconic British names continue to perform well on home soil, Duncan points to other names that always catch her eye, including French designer of the 1940s and 1950s, Pierre Sterlé, and Italian-born, London-based jeweller, Carlo Giuliano, who was known for his Renaissance-style pieces from around the 1860s onwards.

Speaking of Carlo Giuliano, Duncan tells a wonderful story of a builder who upon tearing down a house, felt a pouch fall and land on his head. Inside were two necklaces, one Edwardian with Russian emeralds and the second a fringe necklace identified as a Carlo Giuliano

piece. While these stories of discovery are few and far between, auction houses continue to be one of the best sources of anecdotes like these.

Looking into the past is an important tenet of any auction house, but, increasingly, there's a need to be bang up to date. In the past, jewellery was carefully reworked to suit the latest trends, but in the last century there has been a shift to one-time-only pieces, supported by a more accessible supply of gold and gemstones. For auction houses, this means selling pieces that are just a few seasons old, or designs that are part of ever-evolving collections. The flip side of this is that customers are looking for more sustainable ways to grow their jewellery collections, making previously owned pieces at auction an exciting proposition. “People are looking at the

auction market for sustainable jewellery options, which I am really enthusiastic about,” Duncan says. “The cachet of antique jewellery is very strong, but modern and contemporary signed jewellery [...] is still very commercial and desirable.”

She continues: “There are a lot of really dynamic young journalists out there who are helping spread the message about buying second hand and buying sustainable – there are a lot of designers using recycled materials and with that I think people are starting to catch onto the idea that [pre-owned or recycled] jewellery doesn't have to be unwanted things from your grandmother's jewellery box; they can be unique, cool designs and things you won't see anywhere else.”

The allure of the auction scene for emerging generations of jewellery collectors is supported by a strong online auction market and innovative methods of securing online-only sales. At Chiswick Auctions, its ‘Chiswick Live’ function allows buyers to bid no matter where they are in the world. Should customers ask for more information, Chiswick Auctions can swiftly send multiple images, in different lighting conditions, and videos via email to interested buyers. Technology is not hindering the auction market but opening it to a broader audience. At the same time, the accessibility of information on the internet is inspiring

“The important thing about being a specialist for jewellery in an auction house is that it's not just one skillset – you have to have a lot of feathers in your cap...”

GEMSTONE HIGHLIGHTS

Take a look at some of the fabulous gemstones that have been sold by Chiswick Auctions in recent years, including some exceptional signed pieces (not including buyer's premium):



6.51 carat Burmese ruby ring:
Auction date: 12 September 2017
Hammer sale price: £120,000



9.35 carat emerald ring
Auction date: 17 September 2019
Hammer sale price: £12,000



10.51 carat Burmese ruby ring
Auction date: 17 September 2019
Hammer sale price: £370,000

potential buyers to ask more questions. Duncan explains that while Chiswick Auctions conducts its own in-house grading, it has many customers asking for independent laboratory reports for an extra layer of reassurance prior to the bidding process.

With such empowered buyers, it is important not to underestimate the multi-faceted requirements of a career in the auction market. "The important thing about being a specialist for jewellery in an auction house is that it's not just one skillset — you have to have a lot of feathers in your cap," Duncan notes. "Of course, you need to be a great gemmologist; you need to know whether it's a synthetic sapphire or a natural sapphire, and what country it may possibly have come from. But you also need to do other things, like authentication and research. Being someone with an interest in the history of jewellery and how styles have evolved is important. You must have an eye for contemporary designers and what's popular at the moment."

And perhaps the most forgotten skill of all? Communication. Duncan is swift

to point out that a career within an auction environment is just as much about the people you meet as the pieces themselves. She concludes: "You've got to be good with people as well. We are not salesmen, but we meet with clients day-in, day-out. I consider it to be a fun part of the job! You have to be able to

put across your knowledge and your passion for what you do, so having good interpersonal skills is really important for this role." ■

Find out more about Chiswick Auctions via chiswickauctions.co.uk. All images courtesy of Chiswick Auctions.

ANTIQUES & AUCTIONEERING

ABOUT THE INTERVIEWEE

Sarah Duncan GD
Head of Jewellery Department, Chiswick Auctions

Education: Bachelor of Arts (BA) in Classics and History, Florida State University (2004); Master's Degree (M.Litt) in Classical and Ancient Studies, University of St. Andrews (2007); distance learning with the Gemological Institute of America (GIA).

Career Highlights: Having lived in the UK, the United States and Asia, Sarah Duncan has experienced the full breadth of work in a busy auction house, including valuation, authentication, acquisition, researching, cataloguing and the sales process. Duncan worked as a jewellery specialist at international auction house, Bonhams, for six years before moving to become Head of the Jewellery Department at Chiswick Auctions in London. Her role covers historic and contemporary jewellery pieces ranging from three to six figures in value.





THE BEST OF BRITISH



*Victorian jet knot brooch
circa 1831-1850. Image
courtesy of Sarah Steele.*

Great Britain is home to two unique and intriguing gems: Whitby Jet and Blue John. Inspired by these thoroughly British gems, Gem-A Graduate Liz Bailey FGA DGA shares an abridged version of her Gemmology Diploma project, which investigates their intricate geological and social history.

When considering geographical locations with regards to gemmology, the United Kingdom is probably not the gem bearing location that springs to mind first. Although certainly not as gemmologically prolific as many other countries such as Russia, the USA and Sri Lanka, the United Kingdom forms a handful of attractive gemstones from its unique geology.

The United Kingdom is positioned in the middle of a tectonic plate, with the nearest plate boundary currently located at the mid-Atlantic ridge. So, whilst there is no local plate movement, no subduction zones, or volcanic activity typically associated with the formation and surfacing of gemstones such as ruby, sapphire and diamond elsewhere in the world, the UK is home to a wide range of rock and gem material, with

great geological diversity incorporating hydrothermal, metamorphic and sedimentary rocks caused from a long history of geological action and weathering.

The igneous rocks in Britain are a result of historic volcanic activity, from when the UK was close to a plate boundary. The Giants Causeway in Northern Ireland is an example of a massive volcanic eruption around 50-60



Winnats Pass, Castleton, Derbyshire, close to the Treak Cliff mines where Blue John is found. Image: royalty free via Pixabay.

million years ago. The lava erupted to the surface, cooled and solidified to form the iconic basalt rock columns that are now renowned the world over. Other examples of igneous rocks in the UK are located in the Highlands of Scotland and include rocks formed from basalt lavas found on the Isle of Skye and Isle of Mull.

There are sedimentary rocks in Britain, including limestones and sandstones across the UK, notably in the Peak District, the North of England and the Midland Valley. These rocks are formed from weathering and erosion of existing rocks and sand which are then compacted and cemented as particles that make up the sedimentary rocks. Arguably the most common sedimentary rocks in the UK include limestone and sandstone. Limestone, a chemical sedimentary, is formed from the calcium carbonate in living organisms in marine waters, whilst sandstone is a clastic rock formed from the cementing together of calcium carbonate, iron oxide and silica.

With this relative abundance of rock types in a limited land mass, it is this great geological diversity that makes the UK responsible for a range of rock and gem material, prized for their decorative uses. Gemmologically speaking, the UK forms gemstones such as garnet, hematite, sapphire, agate and quartz. However, there are two gem materials that are widely perceived to be unique to their specific geographical locality in the

UK, which contribute to Britain's great geological significance, and these are Derbyshire Blue John and Whitby Jet.

DERBYSHIRE BLUE JOHN

Derbyshire Blue John is a rare polycrystalline variety of fluorite with the chemical formula CaF_2 . This captivating gem material – also known as Derbyshire spar – exhibits a unique blue and white, or 'bleu et jaune' (French for blue and yellow) banded pattern, which is allegedly where the name for the material derived.

For hundreds of years, this sought-after gem material has been prized in carvings, ornamental materials and

jewellery. Blue John ornamental vases, candlesticks, furnishings and wall panels were highly popular in the 18th century and adorned the homes of the upper classes throughout the UK.

The only geological occurrence of Blue John is found in the Treak Cliff mines located near Castleton in the Peak District, Derbyshire. The distinctive appearance of Blue John is the result of the geology of the surrounding area and its subsequent hydrothermal formation in this concentrated area.

In terms of the geological origin of Blue John, the village of Castleton is located on a border between Dinantian limestones and Namurian Millstone Grit. ➔



Derbyshire Blue John rough specimen. Image credit: Gem-A.



The border between these two types of sedimentary rocks is distinguished in local streams throughout the area. The mineralisation in this unique geological area is due to groundwater circulation from Permian to Jurassic times, up to 298 million years ago.

During this timeframe, hot groundwater circulation between the fractures of limestones and sandstones rose and cooled once they hit cooler sulphur bearing waters, encouraging crystallisation in these fracture zones. Therefore, the geological origin of Blue John occurred through fracture hosted vein mineralisation. Due to this method of mineralisation, each of the Blue John 'seams' possess a different banded pattern, named after the cavern from which it is mined and formed in accordance with the shape and mineral concentrations within these fractures.

Blue John is a polycrystalline fluorite that is only found in Derbyshire; however crystalline fluorite is sourced from locations across the world including China and the USA, occurring in nearly all colours, with mainly cuboid and octahedron crystal habits.



A chalice carved from Blue John. Image courtesy of Barbara Kolator.



Whitby Jet rough specimens. Image courtesy of Albion Fire & Ice.

WHITBY JET

Another of the United Kingdom's indigenous gemstones is jet, found in the seaside town of Whitby in north Yorkshire. An organic gemstone, jet is famed for its high lustre when polished and its rich 'jet black' colour. Whitby Jet has been used in jewellery for thousands of years, but shot to popularity in the 1870s.

This eye-catching gemstone was used extensively in mourning jewellery, following the example of Queen Victoria upon the passing of Prince Albert in 1861. This easily carved, lustrous and relatively light gem material, with a specific gravity of just 1.30 to 1.34, was perfect for wearing in suites of necklaces, bangles, earrings, brooches and bracelets, especially in mourning.

Similarly to the village of Castleton in the case of Blue John, Whitby's unique geology makes it a key location for the formation of this gem material. Whitby Jet was formed during the Jurassic era, in which there was severe flash flooding across the UK that swept many trees and fauna into the sea. According to organic gem expert Maggie Campbell Pederson, jet is naturally formed from "at least six different species of tree", including *Auracaria*, which is closely related to the Monkey Puzzle tree.

Jet is formed from the fossilised remains of driftwood; indeed, most specimens of rough jet will display the original wood and

grained structure, visible to the unaided eye. Jet is carbonaceous in composition, and includes traces of mineral elements such as aluminium, silicon and sulphur.

So why does jet occur in Whitby and no other location in the UK? The ancient Lias Sea that is now the North York Moors National Park created ideal conditions for jet to form. Once dislodged by extreme weather conditions, the trees sunk into sedimentary mud at the bottom of the Lias sea, and were consequently sealed by this thick mud in anaerobic conditions. It was these anoxic conditions that enabled the preservation of certain tree species, and the subsequent formation of jet up to 180 million years ago. The sedimentary mud also assisted in the fossilisation process through the wood's absorption of hydrocarbon oils.

In terms of geological occurrence, Robert Webster



Rough Whitby Jet found on a beach in Whitby. Image courtesy of Sarah Steele.

wrote that jet is found in “the shales along the Yorkshire coast near Whitby”. This coastline stretches approximately 7.5 miles, with the town of Whitby centrally placed. The cliffs of Whitby are predominantly sedimentary, and Whitby Jet is located in thin seams in limestone or shale. In the present day, jet is not mined, but found through natural coastal erosion when material is removed from the coast by tidal currents, displacing rock from the cliffs landwards and found as tumbled rocks on the shoreline as an eluvial deposit. However, when it was at the height of its popularity in the Victorian era, jet was extensively mined inland and along the coast to satisfy an increased demand for the material. When these sources were depleting, Spanish jet was imported to quench the public appetite for mourning jewellery.

Unlike Derbyshire Blue John, jet is formed and mined in different locations

The ancient Lias Sea that is now the North York Moors National Park created ideal conditions for jet to form.

the jet that is mined from the Fushan Province of China.

Asturian jet is formed in much the same way as Whitby Jet, and found along the coastline of the Iberian Peninsula, but can possess differing concentrations of minerals in keeping with the change in locality.

Asturian jet is widely perceived to be of a differing quality to Whitby Jet, with a lesser lustre, and known to be a more brittle gemstone. This is because of marcasite and pyrite iron sulphides within the material. The addition of these sulphides lends itself to a material that is easily fractured, as the sulphides are liable to oxidise to become sulphates, opening up cracks within the material and leaving it more likely to fracture.

China is another country where jet is naturally formed. Jet deposits have been mined in the Fushan province near the shore of the Bohai Gulf. Again, the quality of this jet is variable in accordance with the location. While the Spanish jet is easily cracked, Campbell Pedersen outlines that the predominant issue with Chinese jet is that “it lacks a deep vitreous lustre”.



Top: Jet from the Georgian Republic usually called 'gagate'. Left: Asturian Azabache. Right: a flat rectangular plank of Whitby Jet. Image courtesy of Sarah Steele.

across the world, including Spain, France, Germany, Ukraine, Siberia and China. However, it is worth noting that the quality of the material in these locations varies somewhat. Indeed, Campbell Pedersen has asserted that “English jet... is superior to many others, having an exceptionally homogenous, deep velvety-black appearance, and taking a very high polish”. For the purposes of comparison, we shall examine Asturias jet located on the Iberian Peninsula in Spain and



Shell cameo brooch in a jet mount 1860-1880. Image courtesy of Sarah Steele.

CONCLUSION

Each of these gemstones is a product of the unique geology and ancient history of its area, resulting in fine gem material, widely used for jewellery and carving in the case of Whitby Jet, and jewellery and ornamental materials for Derbyshire Blue John. Furthermore, these gem materials possess great historical significance to their respective areas, with Blue John supporting the towns of Derbyshire from the 18th century onwards, and Whitby Jet providing hundreds of residents with livelihoods from the late Victorian period and beyond.

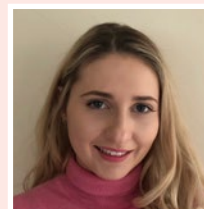
Gordon M. Walkden stated in a 2017 paper that “much work needs to be done to recognise British decorative stones [...] and to restore them to their proper place in our national heritage”. Certainly, in the case of these two gemstones alone, the UK should be recognised as an area of significant geological interest that would benefit from even further research. ■

A full bibliography and references are available upon request.

ANTIQUES & AUCTIONEERING

ABOUT THE AUTHOR

Liz Bailey
MA FGA DGA
Jewellery
Specialist and
Auctioneer,
Peter Wilson
Fine Art
Auctioneers



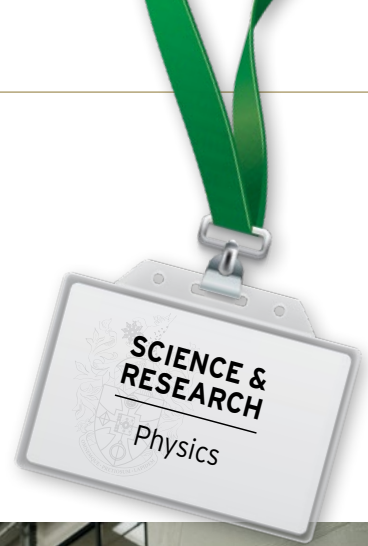
Education: Bachelor's degree in English Literature, The University of Leeds; Master's degree in Antiques, The University of Central Lancashire, Diamond Diploma, Gem-A; Gemmology Diploma, Gem-A.

Career Highlights: After accumulating years of experience working at auction houses in Birmingham and Cheshire, Liz was offered her current role as Head of Jewellery at Peter Wilson Fine Art Auctioneers. Liz also regularly uses her gem knowledge to carry out freelance content writing for leading jewellery retailer websites in the UK.



Beyond the Fire

Dr Stephanie Liggins, Principal Scientist at Element Six, explains how this part of De Beers Group is leading innovation in synthetic diamond applications for industry.



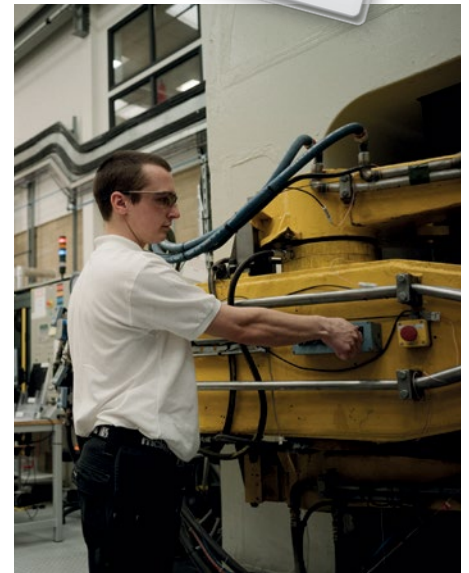
Diamond's properties stretch far beyond its aesthetic appeal as a gemstone for jewellery. Its extreme and diverse characteristics make it the material of choice in a range of industrial applications including the machining of the latest smartphones, high power lasers, high-end audio systems and in quantum enabled sensing devices.

From as early as the 16th century, small grains of diamond have been used to cut and polish other diamonds; something so hard needs something equally hard to polish it. Today, diamond's many extreme properties make it a valuable commodity for many industrial applications, but the variability and scarcity of natural diamonds makes many of these technological advances unsustainable.

SYNTHESISING NATURE

Element Six employs two methods to synthesise diamond material on a timescale of days. The first of these is high pressure, high temperature (HPHT) synthesis, which mimics the conditions under which diamond naturally forms. HPHT production is ideal to meet the demand for a wide range of abrasive applications, where materials can be adapted to suit challenges in areas including manufacturing in the automotive and consumer electronics industries, cutting and drilling in the oil and gas industries and in components for mining, road and wear applications.

The second is chemical vapour deposition (CVD), a low-pressure technique using a plasma chamber. CVD technology has been developed to enable



An employee operating one of Element Six's HPHT presses.



▲ *The diamond tweeter dome, designed and manufactured by Element Six in collaboration with Bowers & Wilkins. The third component from the left is the synthetic diamond tweeter dome (above).*

◀ *Element Six Diamox™ cell with boron doped diamond wafer for wastewater treatment (left and below).*



diamond's broad engineering potential, making available a material that has not only consistent characteristics but one that can be tailored and specific to an end application.

CVD grown material uses gas chemistry with a small fraction of carbon in a surplus of hydrogen, heated to temperatures in excess of 2,000°C. This forms the fundamental building blocks of our diamond and, through the addition of gas dopants such as boron or nitrogen and the careful control of temperature and pressure, we can manipulate our processes to deliver polycrystalline or single crystal diamond, that may be electrically insulating or conductive, optically opaque or transparent, or even a range of different colours.

REVOLUTIONISING WASTEWATER

At a time where water supply is a global concern, driven by population growth and global industrialisation, the demand for clean water is growing at an extreme rate. Industries in developed nations consume more than half of the available water, and the wastewater produced is

often low in biodegradability and has a high chemical oxygen demand. This means it consumes high levels of oxygen during the decomposition of the organic matter and the oxidation of inorganic compounds, which can starve aquatic life.

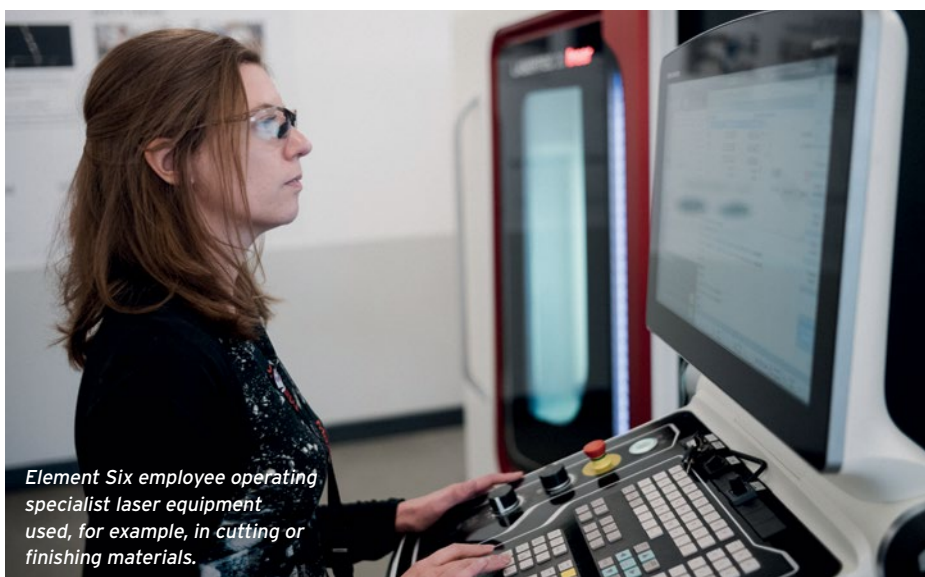
Using boron doped conducting CVD diamond grown in our labs, Element Six helped to pioneer electrochemical oxidation for treating otherwise hard to treat water waste. Electrically conductive diamond retains all its physical properties including chemical inertness, perfect for the manufacture of free-standing electrodes for harsh environments. These electrodes can operate at higher current densities than conventional electro-chemical components and the diamond electrode has a much lower catalytic effect on water.

Rather than electrolysing the water to generate O_2 , a weaker oxidant, it instead oxidises the hydroxyl ions naturally occurring in water to form the critical radicals. These short-lived species have little effect on the electrode itself but have the oxidation potential to fully oxidise or mineralise the undesirable species (organic pollutants) in the waste. This inertness to the process and extreme effluent environment allows the electrode to have a lifetime measurable in years compared to market alternatives able to survive just hours.

CLARITY IN SOUND

Whilst industrial applications are Element Six's primary focus, our research also looks at consumer applications. Utilising diamond's stiffness and low mass resulting from its unique crystal structure, polycrystalline CVD diamond is an ideal material for the manufacture of tweeter domes for use in speaker systems. The tweeter dome is designed to replicate high audio frequencies, typically from 2 kHz upwards without distortion.

The figure of merit used to describe the quality of a tweeter is the break-up frequency, the driving frequency at which the dome no longer acts as a perfect rigid piston and instead begins to vibrate in sections. Tonal abnormalities result, where the generated waves from these different sections start to interfere with each other, giving the sound a different texture to that desired. For tweeters, focused at generating the high frequency sounds, this break-up frequency needs to be as high as is possible.



Element Six employee operating specialist laser equipment used, for example, in cutting or finishing materials.

The break-up mode is a function of geometry and material and therefore the material speed of sound. This formed the challenge for our scientists, how to design the perfect geometry, radius of curvature, thickness and diameter that would give the perfect performance and push unwanted resonances beyond the listener's audible range. In 2004, the diamond tweeter dome was launched in collaboration with Bowers and Wilkins and can now be found in studios including Abbey Road in London.

SOLUTIONS TO SHAPE THE FUTURE

At Element Six we are continuously looking to develop synthetic diamond solutions that will enable next generation technologies, such as quantum magnetic field sensors that have the potential to be used, for example, in medical diagnostics.

With the field of synthetic diamond science moving so incredibly quickly and the technical challenge of developing material for new applications, we are continuously developing our CVD techniques to produce incredibly pure synthetic single crystal diamond with nano-engineered precision and control.

In 2015, engineered diamonds were part of a landmark experiment testing quantum mechanics, reported in *Nature*. Such ground-breaking research is extraordinary and promises to revolutionise information technologies.

In 2018, our synthetic gemstones were launched under the Lightbox brand, focusing on white, pink and blue stones for use in jewellery.

Today, our research continues, not only to exploit the natural beauty of diamond, but to maximise the advantages it has in industry, beyond its fire and sparkle. ■

PHYSICS

ABOUT THE PHYSICIST

Dr Stephanie Liggins
Principal Scientist, Element Six

Education: PhD in Physics, University of Warwick (2010)

Career Highlights: Stephanie joined Element Six – a global leader in the design, development and production of synthetic diamond and tungsten carbide super-materials – as a research scientist and has been the technical lead on projects including the development of the diamond tweeter dome. She now leads the Lightbox research and development programme. Stephanie enjoys the collaborative customer focus in her projects, identifying customers' key technical challenges, developing novel solution concepts and seeing them through to commercialisation at one of Element Six's production facilities.





A Dazzling Collection

Guest columnist Jamie Richardson, a member of the United Kingdom Facet Cutters' Guild (UKFCG), gives an insight into a recent display of UKFCG members' finest works at the Oxford University Museum of Natural History.

One of the key aims listed in the Articles of the UKFCG is 'To promote to the public the science, art and craft of facet cutting and the study of the materials used to create gemstones. We do this so the public might benefit from improved general awareness of gemstones in their daily lives, and understand the political intrigue and mystery surrounding famous gems throughout history. With this in mind, we linked up with the Oxford University Museum of Natural History and offered some of our members' beautifully cut gemstones for display at their exhibition, Captivating Crystals (9th March - 10th May).

A great pleasure of being a faceter is selecting the right stone and matching it to the right cut. Then the real challenge of producing the finished article begins. You find yourself asking many questions: Do I want and can I get brilliance, dispersion, scintillation? Is there some zoning or pleochroism I need to take into account? Is the Refractive Index suitable for the critical angles? This particular

stone might just have the last laugh unless I'm really careful.

So after many hours' work, head scratching and possible swearing, the final result reveals itself. Totally unique and beautiful, everlasting and eye-catching. There it is delicately balanced between finger and thumb ready to be... well, quite often placed in a box rarely to see the light of day again. This situation isn't always the case but it was recently decided that, to enable more people to see the art and skills of a Guild faceter, some of these stones would be de-boxed and shown in their full glory.

The Guild Collection comprises 35 very different stones and wonderfully displays a wide variety of cuts, colours and sizes. It includes natural stones such as morganite, spinel, Oregon sunstone, scapolite, citrine, feldspar and fluorite. There are also examples of synthetics and simulants including lithium niobate, glass, synthetic quartz and of course some cubic zirconia.

Neither many of these stones nor many of the cuts would be seen on the

high street; while some would make exquisite pieces of jewellery, others simply wouldn't as their properties are not up to the rigours of being worn or the stones are just too unfamiliar.

Another challenge is to make replicas of world famous diamonds, and in this exhibition we have the Cullinan III, crafted in lithium niobate, and the Dresden Green in cubic zirconia. The most remarkable thing is also that which would be impossible in reality; there is on display, sitting next to one another, the Hope Diamond and the French Blue. Why is this impossible? Because one stone was cut from the other.

At the museum, the display has a set of Fact Sheets where more information about the stones can be found, ranging from the material, chemical composition, design name and, of course, the cutter. We've also included some interesting facts about each stone including the historical background of the real diamonds, curses and all! We hope that people enjoy the display and we are delighted to share our passion in this way. ■



Replica diamonds including the Hope Diamond, the French Blue, the Dresden Green and the Cullinan III.

Image credit: Oxford University Museum of Natural History. Please note, current lockdown conditions in the UK mean Captivating Crystals is temporarily closed.



Under the Loupe: The Diamond Grader

Gem-A Graduate Lauren Bedward FGA DGA explains how she forged a career in diamond grading and what her day-to-day role encompasses.



Tell us about your role at Clark Diamonds.

I have been working in the Stone Room at Clark Diamonds Ltd for two and a half years. I complete orders and jobs for customers within the local area and further afield, matching sets of diamonds in various shapes and sizes, in addition to sourcing and supplying certificated diamonds from around the world to meet customers' requirements; customers regularly send in items of jewellery needing matching diamonds.

Can you tell us about your education background?

How did it lead you to your current profession?

I have always had an interest in rocks, minerals and gemstones so I decided to study Geology A Level. I then worked in a local jeweller for a few years as I was unsure about university at the time and which direction I wanted to go in. Working with jewellery further fuelled my interest in gemstones and consequently led me to the Gemmology and Jewellery Studies degree at Birmingham City University.

What are the most challenging aspects of your job?

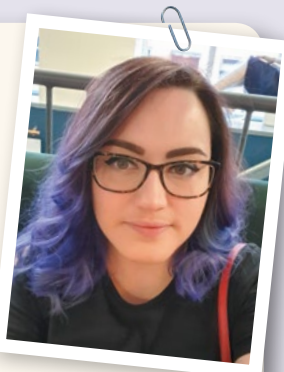
One challenge is to understand that, while handling diamonds is a day-to-day task for us, our retail customers are working on behalf of people who are making a big purchasing decision and it is probably quite intimidating in some respects. The internet is a fantastic tool but sometimes it does cloud people's opinions on what they want by giving them conflicting information. Also, keeping track of fast-moving market movements and trade developments can be challenging, particularly with regard to synthetics.

Name:

Lauren Bedward
BSc FGA DGA

Current role:

Diamond
Grader and
Sales at Clark
Diamonds Ltd



Education Background:

- Gemmology and Jewellery Studies BSc, School of Jewellery, Birmingham City University (2012-2015)
- Gemmology Diploma, Gem-A (2012-2014)
- Diamond Diploma, Gem-A (2012-2013)
- Jewellery Education Training (JET) Certificate, The National Association of Jewellers (2010)

Professional Experience:

10 years' experience in jewellery retail in both Wiltshire and Birmingham's Jewellery Quarter. Two and a half years' experience supplying diamonds to the trade at Clark Diamonds Ltd.

Does your role require constant training to keep up with developments in the trade?

Definitely. The industry is constantly changing and it helps that we have some of the newest high precision equipment to be able to test any diamonds. We have recently all been given training in synthetic diamond detection through De Beers to help us keep up-to-date with the characteristics of lab-grown and treated diamonds.

What would you say to someone who would like to pursue a career in diamond grading and wholesale?

The Gem-A Diamond Diploma was a great starting point, although you are learning all the time throughout your career. Completing this course alongside the Gemmology and Jewellery Studies degree was fantastic because we were able to put into practice what we had learned as we had access to some advanced equipment.

Technology is always improving and changing so it's great to be able to keep up with the developments. Key skills such as diamond grading are something you constantly have to develop. ■

What are the biggest misconceptions about your job? Do people have common opinions about what you do and what it involves that you have to correct?

One of the biggest misconceptions is that it is glamorous and all diamonds are huge and perfectly flawless. We stock diamonds in all qualities and sizes, some as small as 0.8mm (which comes as a surprise to some people) and measuring them can get tedious to say the least!





Gems with Influence

Since graduating with a Gem-A Gemmology Diploma in 2014, Katerina Perez has forged a fascinating career as a jewellery writer, consultant and influencer. Here, she shares insights into a typical year in the life of a jewellery trendsetter.



Perez wears shoulder-skimming diamond earrings by Jaipur Gems. Image from @katerina_perez on Instagram.

Katerina Perez says she discovered her passion for jewellery aged just three and was encouraged to follow her artistic pursuits by her mother and father, who restored paintings and worked with antique furniture respectively. She founded her own digital platform, katerinaperez.com, in 2013 and was invited just one year later to host a seminar at the UK trade event, International Jewellery London. From this point onwards, Perez was recognised as a member of the jewellery community using social media to not only build her own business, but demonstrate the very best of gemstones, complex diamond settings and bejewelled creativity.

With jewellery retail and management experiences at Tiffany & Co., Chaumet, Asprey and Boghossian, Perez decided the next natural step was to study gemmology. She says: "I wanted to have a deeper knowledge of gems. In fact, I was truly fascinated by them and I used

the excuse of working in the jewellery industry to spend two years of evening courses studying with Gem-A." In 2017, Perez added a number of career-firsts to her CV, including speaking at JCK Las Vegas, serving as a judge for the Couture Design Awards, and presenting her insights at the International Coloured Gemstone Association (ICA) Congress in Jaipur, India. Within the space of two years, she travelled the world, won awards and featured in both the New York Times and the Financial Times as an influencer to watch.

Here, Perez recounts a typical year in her very busy life and offers some inside information on what it really means to run a digital jewellery business...

JANUARY & FEBRUARY

Where? Vicenzaoro, Italy and Doha Jewellery & Watches Exhibition, Qatar

"It is quite scary to think of how much I travel as I do it without thinking. I just check the weather in the country I am

heading to, pack my bag and go! I generally travel 2-3 times per month as I attend the most important fairs, go to brands' events, conduct seminars or private consultations with brands. In the beginning, I simply followed my feelings towards jewels without realising that what really excited me is unique design, especially if beautiful coloured gemstones are present too. It is fascinating to witness how jewellers express themselves and their personal style through precious materials, making intangible ideas into wearable art. It is important for me that a jeweller pays attention to not only the most visible part of the design, but every millimetre, and knows when it's time to stop before their creation becomes overloaded with unnecessary design elements."

MARCH & APRIL

Where? TEFAF Maastricht, Netherlands and Baselworld, Switzerland

"For an outsider it may seem that my type of work is a walk in the park but, in reality, it is extremely demanding and requires multitasking on a daily basis. I always have a plethora of tasks to complete, so I start the day by putting my tasks in priority order and evaluating the time I need for each of them.

My role includes research; interviewing designers; writing articles; analysing statistics of existing articles and social media posts; photographing and modelling jewellery for my media channels; retouching images; planning my social media calendar, preparing posts and answering comments on Instagram; pitching and discussing business ideas with brands; assisting my co-editors and social media manager with their requests... the list goes on!"



Perez presenting at the Couture Design Awards 2019 in Las Vegas.

MAY, JUNE & JULY

Where? GemGenève, Switzerland; The Couture Show, Las Vegas, United States; Masterpiece London Art Fair, United Kingdom; and Paris Haute Couture Week, France

"I do different types of photoshoots — some are for my website and social media, while others are for brands and stay very much behind the scenes. When it comes to creative editorials, I conduct around 7-8 per year, sometimes more. I see them as an artistic exploration and a blend of different types of art. I do them for pleasure and it is not always easy to find the time. I work with other creative individuals to come up with interesting themes for photoshoots and original set design. As with any editorial, it is not enough to have fantastic jewellery — what's important is a visual story that you tell through photos."

SEPTEMBER, OCTOBER & NOVEMBER

Where? Vicenzaoro, Italy; Hong Kong Jewellery & Gem Fair, Hong Kong; JeweLuxe, Singapore; Jewellery Arabia, Bahrain

"When it comes to consultancy, there is no set schedule as it all depends on brands' individual needs. I assist with branding, market positioning and social media strategy, but can only take a few clients per year. For this reason, I do not normally advertise this service and only take clients by recommendation or where I know I can really add value. The greatest misconception is that all bloggers or influencers want is money, freebies and/or fame. That's definitely not my case and I am proud to be paid for quality work.

All I want is to share my inexhaustible love for jewellery with women across the globe, educate about jewellery and ignite desire in women to own precious jewellery pieces. Anybody who wants to be a 'jewellery authority' like me needs to be prepared to work extra hard, constantly multitask, challenge their creativity, innovate and always keep that passion within. It will be the only thing that keeps you going when times are hard." ■

Perez at a speaking engagement in London.

All images courtesy of Katerina Perez.

MARKETING & COMMUNICATIONS

ABOUT THE INTERVIEWEE

Katerina Perez

Editor-in-Chief and Founder, katerinaperez.com

Education: Business, English and French, St.Petersburg State University of Culture and Arts (2005); Gemmology Foundation, Gem-A (2011); Gemmology Diploma, Gem-A (2014).

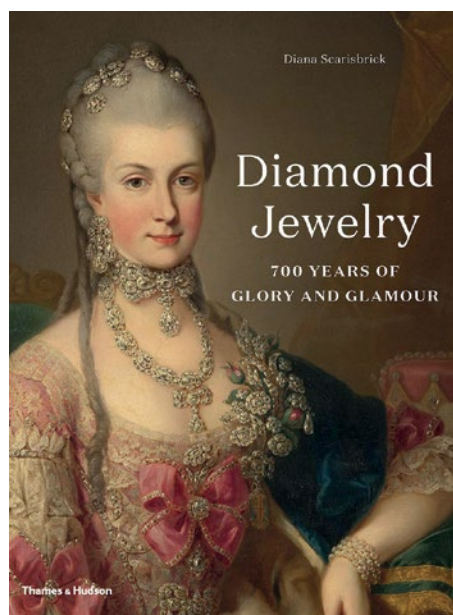
Career Highlights: Russian-born and Paris-based jewellery insider, Katerina Perez, has worked as a freelance journalist and content creator since 2011. She has written articles in both English and Russian for international print and digital magazines, as well as for her own successful platform, katerinaperez.com, founded in 2013. Since then, Katerina has championed the work of jewellers across the globe and has built an international reputation as a social media influencer, jewellery consultant and trends expert. She is regularly called upon for public speaking engagements, including talks at International Jewellery London and the ICA Congress, and has served as a judge for the Couture Design Awards in Las Vegas.





Describing Diamonds

Esteemed art historian and author, Diana Scarisbrick, brings the age-old allure of diamonds to life in her new book, *Diamond Jewelry*. Here, we present an extract and find out more about Scarisbrick's fascinating career.



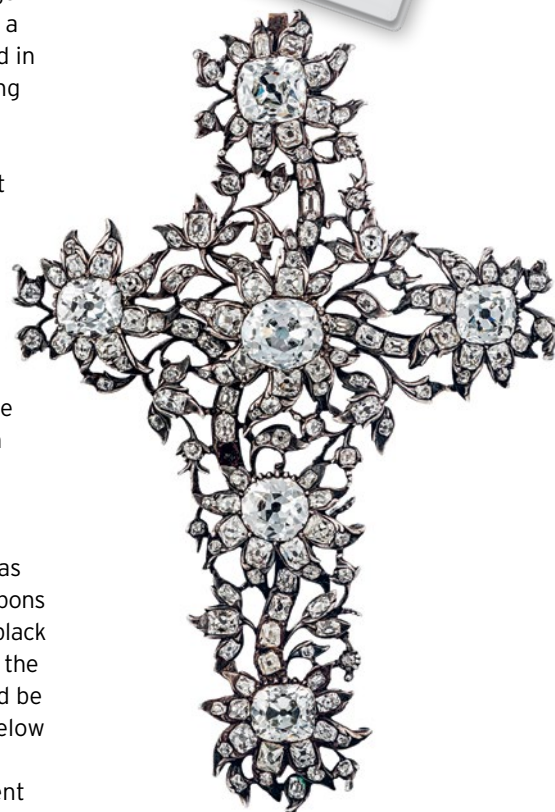
The finery of the eighteenth-century woman culminated in a display of aigrettes and pins, sparkling amidst snow-white powdered hair or from the front and sides of bonnets and caps. Most designs were inspired by nature, notably flowers, either single or in a bouquet. Gold trembler springs made the flowers seem to blow in the wind, and for extra realism jewelled insects hovered over them. A fine example belonging to the Marquise de Gontaut – née Antoinette Eustachie Crozat of a millionaire banking family – was composed of a bouquet with gnats perched on the smaller flowers, set with 145 brilliant-cut diamonds graduated in size.

The Princesse de Condé who owned many such examples, bequeathed her finest bouquet, composed of flowers tied with ribbons and set with yellow as well as with white brilliant-cut diamonds, to her sister, Mlle de Soubise. Feathers were a popular alternative to flowers and insects, and, in 1752, at Lady Betty Germain's party, among the 'ladies with a vast quantity of jewels in their hair, Mrs

Watson had a diamond bird with wings stretched out and in its beak [it] held a diamond drop'. Other motifs executed in diamonds included fireworks exploding upwards, miniature hats, stars and crescents, ribbons and bowknots.

In spite of the ordeal of piercing that had to be endured, earrings were essential to the appearance of the well-dressed woman, as whether her hair was dressed high or low the ears were left showing. The fashion for girandoles continued and a 1753 valuation of the diamonds of Comtesse de Forcalquier included a pair set with ten large and medium-sized brilliants surrounded by smaller stones.

This was the age of the exquisite necklace and in the Rococo style it was usually composed of jewelled floral ribbons tied into a bow mounted on a band of black or coloured silk or velvet, which set off the glittering pattern of flowers and could be adjusted high or low on the throat. Below hung pendants of smaller bows often terminating in a cross, or a magnificent stone emulating the Sancy as worn by Queen Marie Leczinska. Exemplifying the de luxe type, which the rich Marquise de Gontaut brought to her marriage in 1744,



Asymmetrical floral diamond cross, uniting the powerful symbol of faith with the contemporary love of flowers inspired by the publications of Carl Linneaus. Courtesy S. J. Phillips Ltd.



Private Collection. Albion Art Jewellery Institute. Necklace consisting of a band of 25 cushion-cut stones between borders of smaller stones associated with a diamond bow. From the Russian Crown Jewels, second half of the eighteenth century.



Albion Art Collection. Pair of asymmetrical diamond and pearl floral sprays for sewing onto court dress, imitating the pattern of brocade. From the Russian Crown Jewels.

and buttons of court dress, was another triumph of the Parisian jeweller, who, inspired by the patterns of Lyons silks, also created sprays of narcissi, hawthorn, sunflowers and roses set with large diamonds on a ground of smaller ones. Another favourite was the bowknot, either displayed as one 'Grand noeud pour les Robes de cour' ('large knot for court dress') or in a set – usually of three graduated in size – similar to that of the Marquise de Gontaut, which was encrusted with huge diamonds, the largest tied from four loops of ribbon.

Since they were set with a large number of diamonds, most breast jewels had short existences before being broken up, but exceptionally, a pearl and diamond example, of triangular shape graduated

from neck to waist and commissioned by Charles Theodore, Elector of Bavaria (reigned 1777–99), for his first wife, Elizabeth Augusta, Princess Palatine (1721–94), still survives.

Providing the finishing touch to the elegant toilette, the chief decorative feature of the bracelet was the clasp set with a miniature of a beloved friend, spouse or child. This category is exemplified by those listed in the 1756 inventory of the Duchesse de Brissac, representing her children, the Comte de Brissac and the Marquis de Cossé, within double rows of brilliant-cut diamonds. While this pair were attached to nine rows of pearls, other bracelets, with or without miniatures, were composed of chains of diamonds and some were fastened by buckles. ➔

Sparkling on a woman's finger, a diamond ring gave a man the pretext for admiring the beauty of her hand.

is a necklace set throughout with hundreds of diamonds composed of ribbons with a great bow in the front hung with a drop-shaped 'pendeloque'. A less valuable but nonetheless charming variant, composed of twin cornucopias, ribbons and a pendeloque, was owned by the Comtesse de Forcalquier in 1753.

Attached to the necklace or to the bowknot at the neck, every woman of fashion wore a cross, which might be floriated but was usually a simple display of precious stones, as listed in the marriage contract of the Marquise de Locmaria in 1725: 'A diamond cross set with four stones and hung with a pendeloque.' For splendour none equalled the cross of Madame de Pompadour, centred on a magnificent great yellow diamond within a diamond sunburst.

The huge breast jewel or stomacher covering the bodice like a cuirass, worn en suite with the shoulder knots, loops



Diamond and pearl jewel for head or bodice composed of diamond feathers and flowers. From the Russian Crown jewels (c. 1760). Courtesy S. J. Phillips Ltd.



ART & JEWELLERY HISTORY



Profile photo credit: Carla van de Putelaar, www.womenintheartworld.com

ABOUT THE AUTHOR

Born in 1928, Scarisbrick studied history at St. Hugh's College, Oxford, and later went on to work in Paris as a journalist and then as a translator for the French navy, based in Fontainebleau, as part of SHAPE (Supreme Headquarters Allied Forces in Europe). Here, she shares some highlights and insights into her sparkling career...

It all began in 1975 when I was invited to catalogue rings bequeathed to the Ashmolean Museum, an institution to which I remain very attached. Then S.J. Phillips, whose Bond Street shop I had been haunting for some years, asked me to catalogue the post-classical rings and engraved gems in the Ralph Harari collection, which led to my friendship with Professor Sir John Boardman, with whom I have had a very happy collaboration ever since. Another milestone was the invitation to write the history of the Parisian jeweller Chaumet from 1780 to the present, published in 1995 followed by an exhibition at the Musée Carnavalet.

My personal best was last year with three books published as I entered my nineties.

As for my career as an author my luckiest encounter was through my interest in cameos and intaglios

which led me to study the collection at Chatsworth. While there I met John Cornforth, then architectural editor of *Country Life* magazine and through him I published a series of articles beginning with the famous Devonshire Parure, created for the Countess Granville to wear at the coronation of Alexander II in Moscow, 1856.

My association with Thames & Hudson began with the publication of the Harari collection in 1977

and has continued until recently: *Diamond Jewelry: 700 Years of Glory and Glamour* (2019) is my sixth T&H book. This year Paul Holberton is publishing my study of posy rings from a private collection, and Shang Hai Fine Art Publishers has commissioned a catalogue of a collection of antique jewellery which will, we hope, introduce mainland China readers to this Western tradition, so different from theirs.

Of the special areas of jewellery of particular interest, I would say that the beauty of gems comes first, and my visit to the State collection housed at the Bank Mellé in Teheran was a great inspiration. My tastes are eclectic — I get excited over a pair of Boucheron earrings c. 1870, by a miniature of Alexander I covered by a 34-carat portrait diamond, by a necklace of celestial blue sapphires, and of course by the exquisite Dudley pearl.

As for advice to a would-be beginner

I would say this is something you can take up at any age — it is never too late to start. Once the decision has been made, be prepared for setbacks — the many disappointments I have had could fill a whole volume. However, for those who persist I can promise that they will never have a dull moment.

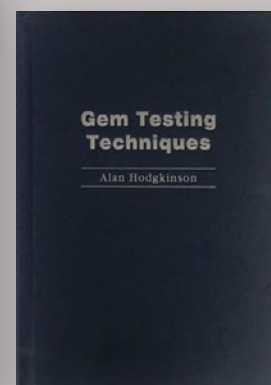
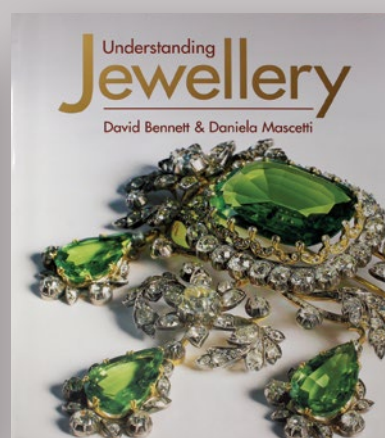
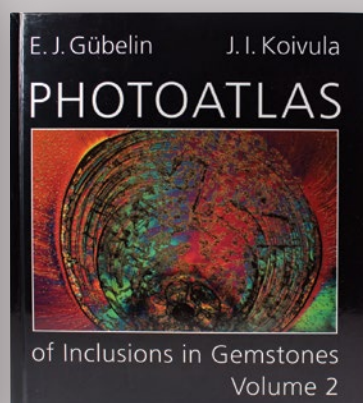
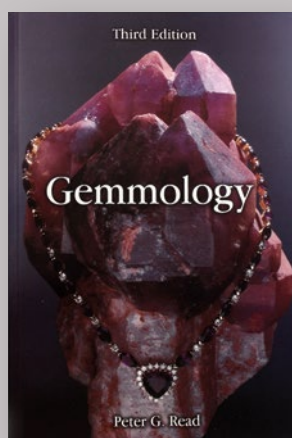


Brilliant-cut diamond fleur-de-lis jewel tied with a bowknot made by Jeffreys, Jones and Gilbert of Cockspur Street, London, for the marriage of Martha White to the 5th Earl of Elgin in 1757. Courtesy S. J. Phillips Ltd.

Sparkling on a woman's finger, a diamond ring gave a man the pretext for admiring the beauty of her hand. 'Alliances' or twin-stone wedding rings might be very grand, such as that bought by the Prince de Monaco in 1765, which was composed of tinted rose and green diamonds tied together by a lover's knot. Sentiment was also expressed by the ring set with a heart-shaped brilliant worn by Dame Elizabeth Justine de Roissy, married to a high-ranking administrator of the French royal household, and also by the many examples enclosing a lock of hair.

Nature was represented by the Duchesse de Brissac's 'Flower pot ring set with coloured diamonds, on a diamond and ruby hoop'. As only royalty and the richest, such as the Marquise de Gontaut, Mlle de Bourbon Condé and Madame du Barry — mistress of Louis XV — could afford solitaires, the bourgeoisie Madame Menesdrieux made do with smaller diamonds mounted in clusters. ■

Extract from the chapter 'Jewels for Women of Fashion' in Diamond Jewelry: 700 Years of Glory and Glamour by Diana Scarisbrick. Published by Thames & Hudson, September 2019. Images supplied courtesy of Thames & Hudson.



DESERT ISLAND BOOKS

If you only had one gemmology or jewellery book to take with you on a desert island – which would you choose? Gem-A's Facebook followers answered in droves...

On March 26, we called upon our Facebook followers for some reading recommendations. Just a few hours later, 53 of you had commented and added your opinions to our #gembookclub must-read list! The question was simple — what is the one gemmology book you would want on a desert island? Below, we've rounded-up some of the books that are clearly firm-favourites among our Facebook fans, as well as some surprising tomes that you brought to our attention. Happy reading!

Kay Frances Murphy spoke fondly about how ***Gemstones of the World*** by **Walter Schumann** is great for Gem-A Gemmology Foundation students, while Jayne Sambrook Smith pointed out ***Nature Guide Gems*** by **Ronald L. Bonewitz** for fellow "rookie" gemmologists like herself.

A highly popular nomination was **Alan Hodgkinson's *Gem Testing Techniques***, a colossal 552-page book that provides an in-depth guide to a range of practical tests used for gemstone and gem treatment identification. Unfortunately, Hodgkinson's much-adored book was only printed in a limited edition of 1000 and completely sold out in 2015. Those of you lucky enough to own one — guard it with your life!

The Six Voyages of Jean-Baptiste Tavernier by legendary gem dealer **Jean-Baptiste Tavernier** was another hit nominated by Yoram Finkelstein and Brenda K. Reichel. This book, which recounts Tavernier's travels across Asia in the 19th Century, is available to read online on the World Digital Library, here: wdl.org/en/item/17788/.

Novels that combine travel, adventure and gems were popular choices for desert island living... just ask Pauline Jamieson who suggested ***Tic Polonga the Personal Adventures of a Gem Hunter in the Far East and South America*** (1954) by **Russ Anderton**.

Sarah Caldwell Steele sent us a snap of her copy of ***Handbook of Gem Identification*** by **Richard T. Liddicoat, Jr.**, while Menahem Sevdemish and James Evans proudly pointed out books they themselves have written, ***The Dealers Book of Gems and Diamonds*** and ***The History of Synthetic Ruby***, respectively.

Some books popped up time and again, like the ***Photoatlas of Inclusions in Gemstones Volume 2*** by **E.J. Gübelin and J.I. Koivula**, which was recommended by Rachel McIntyre and Barbara Kolator.

Sophie Evans gave a shout-out to Gem-A Gemmology Diploma students

and Graduates with her choice of ***Gemmology*** by Peter G. Read. She was quickly backed-up by Tanya Thomas.

We also had some great recommendations for jewellery books, like ***Understanding Jewellery*** by **David Bennett and Daniela Mascetti**, which was pointed out by our Facebook follower, Rocio Del Mar. In fact, this book contains over a thousand detailed, high-resolution images of precious jewels from the 19th and 20th centuries... certainly lots to peruse on your deserted island. Elsewhere, Paul Haywood commented with ***The Jeweller's Directory of Gemstones*** by **Judith Crowe**, praising its insights into how gems can be used in jewellery.

Finally, we would like to thank **Elizabeth Rapalee** for sharing pictures of her epic collection of gemmology books, proudly displayed on a veritable library of shelves. Perhaps Elizabeth will one day rival our Sir James Walton Library at Gem-A HQ! ■

Visit the Gem-A Facebook page to join the #gembookclub conversation. Don't forget to check out Gem-A Instruments, to discover the books that are in stock and ready to add to your collection.

Gems, Friends and Sunsets

One of Tucson's legendary sunsets. Image: Charles Evans.

The sun has set on the Tucson gem shows for another year. If you missed out, *Gems&Jewellery* has the lowdown of Gem-A's highlights at this year's scintillating showcase.

In early February 2020 the Gem-A team journeyed to Arizona to join in one of the most significant highlights of every gem lover's year: the Tucson gem shows. This year, Gem-A exhibited at AGTA GemFair Tucson, where attendees got the chance to meet the team, take part in a gemstone identification competition and find out about studying with Gem-A.

In addition to exhibiting for six days, Gem-A presented two very popular gemmology seminars during their Tucson trip. Gem-A Instruments Manager and Gemmology Tutor

Sam Lloyd FGA DGA EG presented 'Fun with Filters!' at the Gem-A sponsored AGA Conference, which guided participants through some of Gem-A's favourite filters and how to use them, while Charlie Bexfield FGA DGA EG hosted 'Seeing Colour: Succeed with the Spectroscope', where participants learnt how to get to grips with different types of portable spectrometers. The team also enjoyed having dinner and networking at the AGA Gala, where the annual Antonio C. Bonanno Award for Excellence in Gemology was presented to Robert Weldon, Director of the RTL Gemological Library & Information Center at GIA.

The Tucson gem shows are renowned for showcasing the most spectacular gemmological marvels that the world has to offer, and this year was certainly no exception. Some special sights on display this year included specimens from the Smithsonian Institution's collection, gems from Shelly Sergeant's Somewhere in the Rainbow collection, heaps of fine sapphires and even polished dinosaur bone!

Undoubtedly another key event was Gem-A's Big Gem Bash at the Scottish Rite Cathedral, Tucson on 6 February. Over 300 people attended this evening to enjoy live music, networking and socialising with fellow gemmology enthusiasts over drinks and hors d'oeuvres. A highlight of the Big Gem Bash included the announcement of the first major donation to Gem-A USA from Robert Sadian of European Art & Antiques; the stellar gift comprises of a collection of more than 7000 gemstones. Attendees also saw the unveiling of Gem-A's new graduation film, in which recent



From dino bones to dino stones! Dinosaur skeletons (above) and polished dinosaur bones (right) which made stunning gems! Above image: Elaine Ruddle; Right image: Charles Evans.



Nysa Pradhan, Charles Evans and Sam Lloyd flying the flag for Gem-A at the AGTA gem show.



Heated and unheated sapphire specimens from Potentate Mining at Tucson. Image: Charles Evans.

Gem-A Graduates spoke about their experiences of studying with Gem-A and how it had helped to advance their gemmological skills and knowledge.

There are few occasions quite like the Tucson gem extravaganza; it always offers a fantastic opportunity to learn, network, see and purchase extraordinary gems. It is sad to say goodbye for another year, but the Gem-A team is already looking forward to Tucson 2021! ■

GEM-A INTERNATIONAL SCHEDULE 2020

Want to say hello? We will have a presence at this show in 2020:

Hong Kong Jewellery & Gem Fair
13-19 September



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NEW UNIVERSAL SMARTPHONE MICROSCOPE ADAPTER

One of the latest products to arrive at Gem-A Instruments is the Universal Smartphone Microscope Adapter, which promises to make photomicrography accessible, quick and easy in the era of smartphone technology.

With no need for a camera or any additional tools for installation, this adapter makes photomicrography easier than ever before; simply fit your smartphone to the adapter and attach to the microscope's eye-piece (size 21-44 mm) to begin taking professional photos of gemstones and micro features such as inclusions and laser inscriptions.

The Universal Smartphone Microscope Adapter is conveniently multi-sized to fit most smartphones and adjustable to work with devices ranging from 56-88 mm wide. In addition, the soft covered surfaces will protect microscope equipment and your smartphone, while providing a steady support to prevent blurry photos under magnification.

Retail Price £12



If you require any further information or advice please email instruments@gem-a.com. Please note that the Gem-A Shop is unable to process orders in-store or online at the time of publishing, but hopes to reopen soon. ■



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