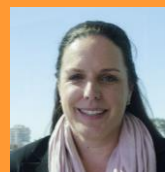


8th National Symposium Opening Speaker



Biography

Rachael commenced in this role in January 2016, and provides strategic leadership and management to the divisions within Minerals and Energy Resources. She is responsible for DNRM's delivery of a responsible resources and energy sector, that is valued and valuable contributor to Queensland.

Prior to this Rachael led the former Service Delivery division within DNRM, providing delivery of mining, water, land, vegetation and property services (including titles, valuations and spatial data).

Rachael has a broad range of experience in both the public and private sectors.

In her current role, and in her prior roles in government, Rachael has been actively driving regulatory and business process reform for the mining and petroleum sector. She has been instrumental in increasing the availability of online services within DNRM.

Rachael's roles in the private sector predominantly focused on business improvement.

Her experience ranges from operational management within a development unit in an underground coalmine in Central Queensland to magazine production and print management nationally and abroad (United Kingdom and Canada).

Rachael Cronin

Deputy Director -
General
Minerals and Energy
Resources Queensland

Ph. 07 3199 8277

Recent Initiatives that have Directly Impacted the Opal Industry in NSW



Biography

Charles joined the Department in December 2012 and is the Executive Director of Industry Investment & Export Support. (II&ES)

The II&ES Branch works to attract local and offshore investment into the energy and resources sector. The Branch is a primary contact point for industry, to actively engage and liaise with Government. II&ES also assists companies navigate and negotiate with Government Departments to achieve positive development outcomes.

Charles has over 25 years experience in the resources and energy sector. Prior to joining the Department he worked in investment banking in Asia, Europe and Australia and was Head of Commodities for Asia Pacific and the Global Head of Precious Metals for both The Royal Bank of Scotland and ABN AMRO Bank NV.

Charles has also worked as a commodity and resources banking specialist at NM Rothschild & Sons and Citibank.

Qualifications

Bachelor of Agricultural Economics:
The University of Sydney
Masters of Applied Finance: Macquarie University
Masters in Mining Engineering:
University of NSW

Fellow of the AusIMM,
Member of AICD

Abstract

NSW

Recent initiatives that have directly impacted the opal industry in NSW.

Why they have occurred and what are the Governments objectives.

What are the next steps and time frames.

The Opal industry going forward from NSW Governments perspective.

Charlie Dowsett

Executive Director
Industry Investment &
Export Support
NSW Department of
Industry
Resources & Energy

Ph 02 9338 6887

M 0421 144 437

Em charlie.dowsett@industry.nsw.gov.au

Negotiating an ILUA in Coober Pedy & Access to Woomera Test Range to Mine Opal



Biography

Peter is currently the Program Leader for Opal mining compliance and regulation for the SA Government and is based in Coober Pedy.

He has held that role for the past 4 years, prior to that he was a Senior compliance officer for 7 years.

Some of the projects Peter has managed since becoming the Program Leader have been:

- Lead the development of an Indigenous Land Use Agreement for opal mining on the Coober Pedy precious stones field.
- Commence development of a similar agreement for the Andamooka precious stones field.
- Provide advice and input to remake the Opal Mining Regulations in 2012.

- Commenced a review and rewrite of the opal mining information sheets
- Provided a review of service delivery and regional representation to the opal mining industry.

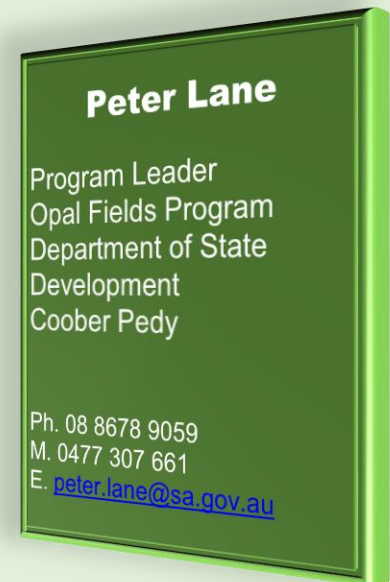
Prior to working for the SA Government Peter worked for a major bank in both Queensland and South Australia for 31 years.

He is married to Marilyn and they have 2 daughters. They have lived in Coober Pedy for the past 20 years.

Abstract

Land access is an important issue and it needs to balance the rights of land holders and those that want to develop resources.

Land holders include diverse groups such as traditional owners, Pastoralists, Government and users such as miners.



Queensland Opal



Biography

Peter Donaghy is the Regional Director of Mines, based in Rockhampton and the Director of Coal Assessment within the recently established Coal Resource Management Centre within the Department of Natural Resources and Mines.

Originally from Northern New South Wales, Peter comes from a dairy and agricultural background.

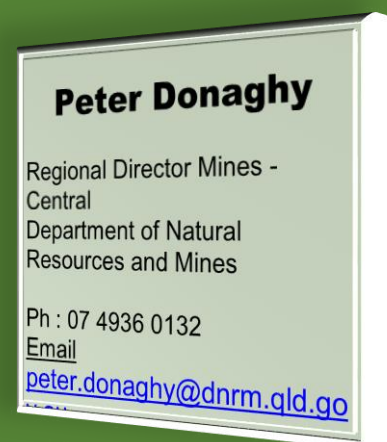
He holds a Bachelor of Resource Economics from the University of Queensland and a Masters of Business (Research) with Central Queensland University.

Over the past 15 years Peter has held various positions with the then Department of Primary Industries, initially based in Emerald and then in Rockhampton.

He led the agricultural economics team in Rockhampton and managed several significant state-wide projects prior to his move to mines.

Peter has been involved in various land use projects that have examined the economics behind competing land uses, the landscape processes that underpin land use and the economic impact of land management decision making.

He has been involved in the economic analysis of the horticulture, cotton, broad acre cropping, sugar, beef and feedlot industries and now with his experience in mines has a well rounded perspective on competing land use and coexistence.



Abstract

"Queensland Opal"

- the Queensland opal fields
- industry growth
- tourism initiatives
- MMOL assisting industry

Advances in Geographical Information Systems, Digital Terrain Modeling, Mapping, Satellite Imagery, GPS, their use and Applications for Prospecting and Exploration in the Opal Industry



Biography

In the 1980's Colin was working as a Telecom technician in Network Construction.

His Opal Adventure started on the weekends in the late 1980's, exploring old opal mining areas, when he was in Western Queensland installing Solar Powered Radio telephones for 2 years. In 1990 he left Telecom to go full time Opal mining on Mayneside Station, eventually settling in Opalton.

In recent years Colin has been based in Winton and working between Opalton and west of Winton in the Woodstock/Middleton area.

An Opal Data CD in 2000 sparked an interest in computer mapping and its application to Opal Prospecting and Exploration.

Abstract

Colin will be demonstrating current advances in geographical information systems, digital terrain modeling, mapping, satellite imagery, GPS, their use and applications for prospecting and exploration in the Opal Industry, using freely available software and data.

Colin Duff

Opal Miner, Computer Enthusiast

Ph : 07 4657 0408

Email

col.opalton@bigpond.com

Packing Array Structure in Opal



Biography

Paul is a Senior Lecturer in materials chemistry. His work is focused on the silicate chemistry and he has been working on the materials chemistry of opal since 1998. Much of the work carried out on opal has been on the characterisation of the material properties through thermal and spectroscopic means which has resulted in 16 publications in international refereed journals, two book chapters and a number of conference papers at international conferences. The aim of the work has been to understand opal as a material with a view to linking the properties of mined opal to formation models as well as understanding the material properties which are associated with susceptibility to crazing.

In recent work, which was initiated at the Winton Symposium in 2009, he has been investigating, along with his colleagues Anthony Smallwood and Laurie Aldridge and colleagues at ANSTO and the Australian Synchrotron, the array structure of opal using long length scale techniques which allow the probing of the sphere array structure that provides the play of colour in precious opal.

This work is the subject of the presentation at the 2016 Symposium in Winton.

Abstract

"Packing Array Structure in Opal"

Precious opal is an amorphous hydrous silica ($\text{SiO}_2 \cdot n\text{H}_2\text{O}$) that exhibits play-of-colour (POC) which results from the diffraction of visible light off the ordered packing of single sized (monodispersed) silica spheres. There is still much discussion as to as to the chemical processes which are responsible for the formation of the silica spheres, but, once they have formed, the silica spheres must order or 'crystallise' into ordered arrays. Laboratory experiments on the crystallisation of 'hard sphere' suspensions of monodispersed plastic spheres have demonstrated that crystallisation readily occurs for large spheres of the order of the sphere sizes observed in micrographs of opal (200 to 400 nm in diameter). This crystallisation happens within the fluid 'bulk' and not at the surfaces (e.g. through sedimentation). Similar structures are observed in opal where multiple crystals or 'grains' are seen, especially in the harlequin type opals, indicating that opal may also form from the bulk or 'homogeneous' crystallisation of silica spheres. Using ultra

Dr Paul Thomas

School of Mathematical and Chemical Sciences

University of Technology Sydney

Ph : 02 9514 1721

E: Paul.Thomas@uts.edu.au

small angle neutron scattering (USANS) and small angle x-ray scattering (SAXS) the structures of these ordered arrays can be investigated and work carried out at ANSTO and the Australian Synchrotron using these techniques to characterise the array packing structures in precious opal will be presented and discussed and related to the processes involved in the formation of precious opal.

The Australian Opal Centre – Update



Biography

Jenni Brammall is Manager of the Australian Opal Centre at Lightning Ridge, NSW, where she has lived since 1998.

Jenni is also a vertebrate palaeontologist, gemmologist, photographer, designer, writer, opal valuer, and valuer of fossils and opal-related geological items for the Australian Government's Cultural Gifts Program.

Her professional background includes scientific research and publication, journalism, event management, exhibition development and curation, collection management, photography, writing, graphic design, jewellery and web site design, opal sales and marketing in Australia and the United States.

Abstract

The Australian Opal Centre (AOC) is a not-for-profit facility dedicated to opal-related scientific research, education and training, heritage and arts, travel, cultural and economic development.

Over the past decade the AOC has achieved strong growth in its support base, its public collection of opal-related objects, archival materials and rare Australian opalised fossils (now the world's largest), its services, research linkages and educational, cultural and other public programs.

It has opened a second location to facilitate growth of its activities and assets, while progressing towards construction of a major new building that will provide Australia and the world with a locus for opal-related knowledge, training and activity.

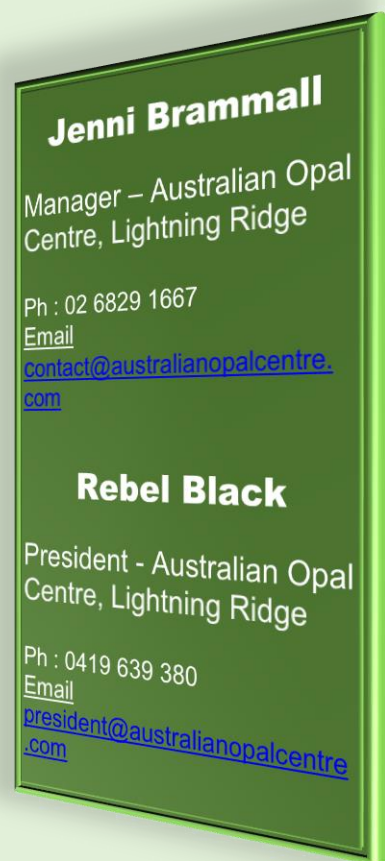
The Centre has ties within the scientific, cultural and tourism sectors, collaborating actively with organisations such as the Australian Geographic Society, the Gemmological Association of Australia, the University of New England in Armidale and many other local and regional organisations.

This presentation will report on current and recent Australian Opal Centre activities, and on progress towards construction of the new Australian Opal Centre.

Each of Australia's opal-producing regions has distinctive opal and opalised fossils, mining methods, landscapes, natural and cultural heritage and tourism potential.

The new AOC will be a place of dazzling treasures, knowledge, learning, discovery, creativity, community, enterprise, economic and cultural development.

Contact the Australian Opal Centre if you haven't already, to discuss membership, partnership, collaboration or major benefaction in this history-making project.



AUSTRALIAN
OPAL
CENTRE
LIGHTNING RIDGE • NSW



AUSTRALIAN
OPAL
CENTRE
LIGHTNING RIDGE • NSW

What makes Black Opal “Black”?



Biography

Dr Alexander Fink is Scientific Consultant at the Centre of Materials and Surface Science, La Trobe University, Melbourne.

His research focuses in the composition, structure and origin of opal and specifically on Lightning Ridge Black Opal.

Abstract

At Lightning Ridge, precious black opal occurs in Albian shallow marine, intensely weathered, volcanoclastic sediments as irregular nodules (“nobbies”) and, less commonly, as thin veins (seams). Major and trace element analysis of 32 opal samples, varying from honey coloured to almost black, showed that Si and Al are negatively correlated due to the presence of host rock kaolinite.

The unique black body colour of Lightning Ridge opal is not due to organic carbon, as there is no significant correlation of carbon content with greyscale colour, but due to very fine-grained pyrite, as greyscale colour is correlated with S and Fe, as well as with Co, Zn, As, Ni, Cu and Pb; these latter elements either form sulphide minerals or can readily substitute for Fe in pyrite.

Dr Alexander Fink

Scientific Consultant
LaTrobe University
Melbourne

Ph : 03 9479 1033

Email a.fink@latrobe.edu.au

Elevated levels of TiO₂ and V in darker coloured opal may reflect the presence of very fine-grained ilmenite.

Formation of Precious Opal in Central Australia



Biography

Associate Professor Patrice Rey is a geologist from the University of Sydney.

Patrice has been involved in researching the origin of the formation of opal since 2003.

In 2013, he published his research in a comprehensive paper published in the Australian Journal of Earth Science.

For his work on the formation of our National Gemstone he was awarded in 2013 the A.B. Edwards medal by the Geological Society of Australia.

Patrice is the co-director of the Basin Genesis Hub, an ARC-funded research centre dedicated to understanding the formation of sedimentary basins and their resources.

Abstract

Between 93 Ma and 60 Ma, slow uplift and erosion of the Great Artesian Basin drove the oxidation of Lower Cretaceous reduced volcanoclastic sediments. This oxidation led to the production of a large volume of sulfuric acid via oxidation of biogenic pyrite, and via ferrololysis of reduced iron.

The acidic oxidative weathering of volcanoclastic rocks led to the formation of large volumes of amorphous silica, through the weathering of feldspars and volcanic ash into clay, and clay into amorphous silica and goethite. Locally, occasional hydraulic fracturing was able to concentrate the amorphous silica gel into veins.

Once formed, and following the sealing of pore space by secondary minerals, the amorphous silica gel evolved in closed environments in which pH

Patrice Rey

Associate Professor
School of Geosciences
Earthbyte Research Group
ARC - ITRH Basin Genesis
Hub

Ph : 02 9351 2067

E : patrice.rey@sydney.edu.au
www.geosci.usyd.edu.au/users/prey/

evolved to alkaline conditions favourable for the production of homogeneous silica spheres necessary for the formation of precious opal.

Gemmological differences between Australian Opal and Ethiopian opal, and discuss the different treatment of these opals.

Certification and Valuing Principles for Opal



Biography

Anthony (Tony) Smallwood has been employed in the jewellery industry since 1980 beginning with what is now Gem Studies Laboratory and involved with diamond grading, gemmology and gemstone photography.

After this a progression was, made into the grading and wholesale selling of gemstones for a sapphire mining company mining in Inverell and based in Sydney, until a take over saw a move into the retail jewellery industry at Angus and Coote. The relationship with Angus and Coote has continued until the present day.

The Angus and Coote experience progressed from a retail sales position in the Sydney CBD through some years of retail store management on a at call relief management position in to the management of the companies jewellery valuation service for many years. The culmination of which was the establishment and implementation of the Angus Coote Quality Assurance department, in the late 1990's via the contracted company Advanced Gemmological Services Pty Ltd.

During this time further education has been an important part of life. After obtaining Fellowship of the Gemmological Association of Australia in 1980 and commencement of teaching gemmology for the NSW branch, further gemmological education was undertaken with the result of the Graduate Gemmologist diploma gained from the Gemmological Institute of America in 1983.

Then began an association with opal gemstones. The result has been the development, production and implementation of the only educational course available world wide in the instruction of Opal gemmology, terminology and information. Notwithstanding the assistance given for the accreditation and implementation process of the opal cutting courses available through Tafe SA at the Coober Pedy Campus.

The interest in opal has seen the completion of a Masters Science degree in materials Science at the University of Technology in Sydney in 2000, and subsequently further research toward attaining a PhD degree sometime in 2008. This process, achieving the publication of several scientific papers in internationally refereed journals, as well as presentation of papers at four national opal symposia, and several material science conferences.

The academic interest in providing information, training and lecturing to the jewellery industry has seen continuous employment for lectures with the Gemmological Association and the National Council of Jewellery valuers mostly in NSW however also participating with lectures in every state of Australia.

Abstract

Discussion – Opal Certificates and valuation

As Australian precious opal is now being marketed in a new way into China, and with the advent of competition between Australian precious opal and Ethiopian precious opal it is evident that there is a case to be made for the certification of Australian precious opal.

Further to this discussion are some cultural differences in China with regard to certification almost becoming a prerequisite for marketing precious gemstones.

As certification of precious opal has almost become a necessity an opal certification system will be presented and compared with similar procedures used by international laboratories for diamond certification and grading. At the heart of opal certification is a suitable nomenclature for the description of opal along with a suitable set of acceptable rules for grading.

It is considered that the grading and certification of both precious opal and diamonds requires the separation of the grading laboratory from any person or establishment that will use a grading certificate in order to produce a value based document on any particular gemstone. The nature of arm's length valuation provides integrity for both user and laboratory.

The role of both the laboratory producing a certificate, and the valuer providing a document in a particular market place and the conflicts between these documents will be discussed.

Anthony (Tony) Smallwood

FGAA, GG, MSc (UTS)
Advance Gemmological Services

Ph : 0418 480 395
Email antrand@bigpond.com

Abstract

UPDATE on Ethiopian Opal

Australia has for a long time been the major supplier of precious opal for the jewellery industry and is quoted in many references that we supply 95% of the world supply. This is now no longer the case and increasingly Ethiopian precious hydrophane opal is providing competition to Australian mined precious opal.

In some ways the newer Ethiopian material is "taking over" the markets into which Australian opal has traditionally been sold.

There are specific differences that are measurable and easily determined between the two types of opal and to the gemmologist who has available a modest amount of equipment the process of distinguishing between the two types of opal should not be difficult.

A review of the differences in formation and gemmology of the Ethiopian varieties of precious opal will be presented in comparison to Australian and precious opal, and further comparison with opal from other sources will be elucidated. Details of separation, treatment and identification will be presented.

AS much of the Ethiopian material is the type of opal that is known as "hydrophane" these characteristics will be explored, and highlighted especially with the relationship to treatments available. The world gemmological community is discussing the details of special care requirements required to be stipulated in the market place for this new variety of opal.

The Relationship between the Opal Miners / the GAA / Retailers / Consumers



Biography

Matthew was originally trained and worked as a chef for 8 years in Canada.

He then studied Gemmology in 2007 in Canada obtaining his qualifications from the Canadian Gemmological Association and then from the Gemmological Association of Great Britain soon after.

In 2011 Matthew moved to Australia and became involved with the Gemmological Association of Australia as a teacher, he also joined the NSW management committee.

In 2013 Matthew became the president of the NSW division of the GAA.

Currently Matthew is working for Altmann & Cherny Opal Specialists in Sydney in stock control, jewellery design and Sales.

At the end 2012 Matthew began his own business doing opal and other coloured gemstones with custom designs.

Abstract

Matthew will be speaking about the relationship between the Opal Miners / the GAA / Retailers / Consumers.

What we are currently doing, how each seems to be perceived and how we could potentially strengthen the bonds between the different associations into the future.

Matthew Morin

Gemmologist FGA, FCGmA
Director
M.E.M GEMS
7/19-23B Riverside Cres.
Marrickville NSW

Ph : 0405 199 931

E : matthew@memgems.com
www.memgems.com

Timeline of the National Gemstone – Wild West Opal-show



Biography

As a child, until his late teens, Peter and his cousins met on weekends and holidayed in Coober Pedy. There he witnessed the heydays and the recounting of his grandparents' good fortune.

In his early twenties he graduated Economics (majoring in Geology) and in Gemmology. Armed with a gemlab briefcase, Peter then travelled to Brazil – Gemstone paradise. There he scouted the gem fields of Bahia and Minas Gerais, also revisiting the Opal mines in Piaui where he had spent considerable time during his formative teenage years.

Peter has carried on his family's tradition, honing his skills at exploring, value-adding and merchandising gemstones.

Abstract

The rush to find Opal in Australia; Looked at from a Queensland perspective, where the 'Opal game', began over 140 years ago.

Viewed in the context of the colonization and nationhood of Australia with comparisons to the US experience.

The extinction of the European Opal mines, which the Australian mines helped eclipse, and the newly discovered Opal reserves in Ethiopia all form part of the global Opal brand continuum.

For students of History, in a rapidly changing world, even the most recent events conjure instructive arguments.

'Glory days' are generally always short-lived yet hardly ever forgotten.

Peter Christianos



Ph : 0408 087 019

Email gpc@opaline.com.au

Opal Marketing and Promotion - Trends and Directions in a Changing World



Biography

Ian grew up in a country town, learning life skills of country life as well as customer service at the family retail hardware/furniture store of which he was manager when he was 22 years old and still owns the family business.

Ian's career has primarily been in positions of senior management, leadership in human service organisations, business consulting and that of a Yacht Captain.

Ian's education, skills and competencies in leadership, strategy, marketing, training, instruction and teaching give him the capability to help people achieve their personal and professional goals.

When Ian was in his mid 30's he was appointed to a senior leadership and teaching role at CQ University, while there he undertook an MBA study program.

After leaving CQU Ian established his consulting business, helping businesses, NFP organisations and sporting clubs achieve their business and development goals.

Since 2000 Ian has been a Gemstone Market Development Consultant, Gem Collector, Gem Cutter, Market and Promotion Development of Central Queensland Gemstones. Ian has been working with Central Queensland Gemstone producers to market, promote and sell their products. His goal is to help Central Queensland gemstone producers to reach their potential using new technologies and marketing initiatives.

Ian is a member of a number of gem and lapidary clubs both in Australia and in Florida.

Career opportunities and experiences has allowed Ian to share his knowledge and experiences with others.

He enjoys collecting and cutting gemstones and promoting Queensland gemstones to the world.

Ian continues to evolve his career with new challenges focussing on the Queensland gemstone Industry.

Abstract

Australian Opal has been attributed as supplying anywhere between 90 and 95% of the world's precious opal. According to Rapaport, Opal is the sixth most popular gemstone after Diamond, Ruby, Sapphire, Emerald and Tanzanite.

However, Australian opal production continues to decline and faces an uncertain future. Indeed many opal producers are struggling to remain viable.

One must wonder why this is the case when Australia has a virtual monopoly on such a highly valued and popular gem resource? It seems that this circumstance is a result of many complex and difficult internal and external factors. These factors have evolved over a number of years and include, but are not limited to, costs of production, land tenure/use issues, aging producer population as well as global competition from other gemstones and synthetic opals and the emergence of other opal producing locations.

Ever since Tullie Wollaston made his epic journey's to the Australian Opal fields in the mid 1890's, bought opal from the miners of the day and went on to London to establish a market for Australian Opal, the model for the marketing and distribution of Australian Opal has remained relatively the same. Yet the world has moved on.....

In less than a generation we have witnessed profound economic, political and social and technological change. Economies have grown and contracted, nations have formed and reformed, social norms have altered, information has become ubiquitous, communications and the rise of social media and networking has closed the geographical gap. More than ever, people are connected and informed. These features coupled with relatively cheap and easy international travel have had a huge impact on the way we interact with the world and with each other.

New technologies have disrupted entire industries and new models of business have relatively quickly arisen.

Ian Bone

Yacht Captain/Business
Owner/Consultant/Gem
Marketing Consultant

Ph : 0473839792

Email : boneyian@gmail.com

Think Uber, Airbnb, Facebook, Instagram, etc....

The idea that an opal producer is just a miner and can remain divorced from the global trends in jewellery, fashion, design and culture is long gone. To be a successful and profitable opal producer is to recognise that one is a part of the global gemstone and jewellery product network.

Research and analysis reveals that the future for the jewellery industry is largely positive and emerging trends in the industry will present challenges. (McKinsey and Co – "A Multifaceted Future – The Jewellery Industry in 2020"). However, are opal producers ready to capitalise to take best advantage of these emergent trends? I wonder?

In my presentation I hope to give some insights into possible ways and means that Opal producers both individually and collectively can take advantage of the new technologies. I will outline future industry trends, and touch on a range of marketing and promotion ideas and strategies that might assist producers better understand their markets and their customers.

Australia's opal fields are bigger than those found in the rest of the world combined. Opal production was worth \$47 million, coming from three states, to Australia in 2007-2008 and supports many communities in South Australia, New South Wales and Queensland.
<http://www.itsanhonour.gov.au/symbols/gemstone.cfm>