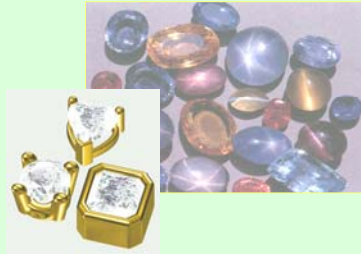


CARE TO BE TAKEN IN SRI LANKAN GEM INDUSTRY FROM MINE TO MARKET



Tilak Dharmaratne
Director
Gem and Jewellery Research and
Training Institute



OVERVIEW

1. Mining
2. Heat-treatment
3. Fashioning
4. Setting in Jewellery
5. Storing
6. Cleaning
7. Gem testing
8. Conclusion

Mining

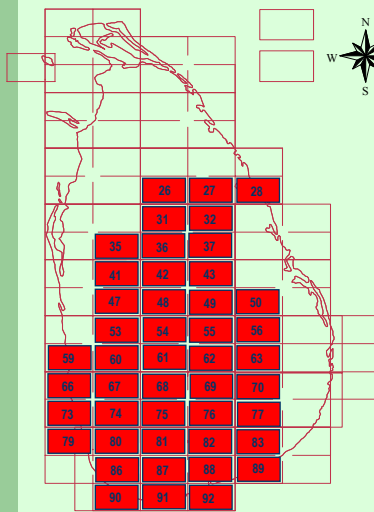
- Wrong techniques
- Inadequacy of illumination
- Digging holes (unplanned)
- Mining workers conditions
(workers appear to get tired soon due to excessive sweating)
- Washing processes

Mining

- Wrong techniques
- Inadequacy of illumination
- Digging holes (unplanned)
- Mining workers conditions
(workers appear to get tired soon due to excessive sweating)
- Washing processes



The proposed scientific gem exploration in Sri Lanka.



- | | | |
|--------------------|--------------------|--------------------|
| 26 – Medawachchiya | 54 – Kandy | 75 – Balangoda |
| 27 – Horowpatana | 55 – Mahiyangane | 76 – Haputale |
| 28 – Trincomalee | 56 – Padiyatalawa | 77 – Buttala |
| 31 – Anuradhapura | 59 – Negambo | 79 – Alutgama |
| 32 – Kaudulla | 60 – Attanagalla | 80 – Matugama |
| 35 – Galgomuwa | 61 – Gampola | 81 – Rakwana |
| 36 – Kekirawa | 62 – Hanguranketha | 82 – Timbolketiya |
| 37 – Polonnaruwa | 63 – Bibile | 83 – Kataragama |
| 41 – Nikaweratiya | 66 – Colombo | 86 – Ambalangoda |
| 42 – Dambulla | 67 – Avissawella | 87 – Morawaka |
| 43 – Elahera | 68 – Nuwara Eliya | 88 – Hambantota |
| 47 – Kurunegala | 69 – Badulla | 89 – Tissamaharama |
| 48 – Matale | 70 – Moneragala | 90 – Galle |
| 49 – Pallegama | 73 – Kalutara | 91 – Matara |
| 50 – Mahaoya | 74 – Ratnapura | 92 – Tangalla |
| 53 – Kegalle | | |

Mining

- Wrong techniques
- Inadequacy of illumination
- Digging holes (unplanned)
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Mining

- Wrong techniques
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Washing Process



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Heat-treatment

- Selecting stone

Mistakes seem to be made

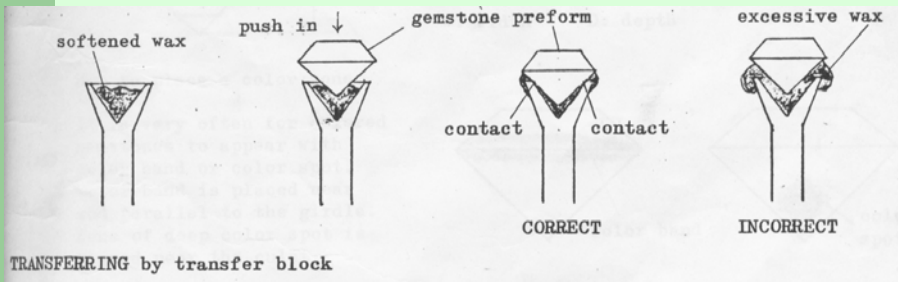
- Chrysoberyl and milky quartz taken as corundum !!!

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Fashioning mistakes

- Dopping
- Non-continuous of facet edges
- Direction of the best colour



Fashioning mistakes

- Dopping
- Non-continuous of facet edges
- Direction of the best colour

Common Cutting Defects in the Standard Brilliant Cut - CROWN



Overlapping Facets



Irregular Girdle Facets



Truncated Mains



Extra Facet

Common Defects in the Standard Brilliant Cut - PAVILION AND GIRDLE



Unequal Girdle



Misalignment of Crown and Pavilion Facets

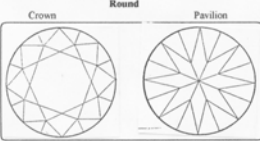


Unequal Lower Girdle Facets



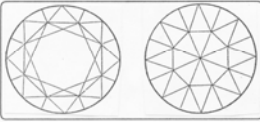
Additional Facet

Popular Faceting Styles



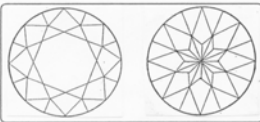
Modern Brilliant Cut
Crown Facet Angles

Pavilion Facet Angles



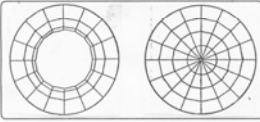
Brilliant Cut with Horizontal Split Mains
Crown Facet Angles

Pavilion Facet Angles



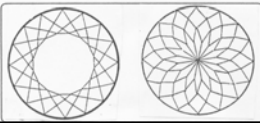
Zircon Cut
Crown Facet Angles

Pavilion Facet Angles



Round Step Cut
Crown Facet Angles

Pavilion Facet Angles



Portuguese Cut
Crown Facet Angles

Pavilion Facet Angles

Fashioning mistakes

- Dopping
- Non-continuous of facet edges
- Direction of the best colour

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Setting in Jewellery

In selecting stone for Jewellery the following factors should be considered

1. Shapes should be right for stones to fit in to the jewellery findings.
2. Girdles should be polished
3. Girdles should be uniform and not damaged
4. For crown to pavilion propagation should be right

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Storing

- Several varieties in the same packet
- Trouser pockets



Storing

- Several varieties in the same packet
- Trousers pockets

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Cleaning

- Improper cleaning
- Ultrasonic cleaning
- Steaming or boiling
- Cleaning with worm-soap water

Improper Cleaning

- Ultrasonic cleaning can damaged or cause complete destruction of certain varieties of gems...eg: Emerald, Turquoise, Opel, Topaz, Zircon, Silliminite, Pearl, Moonstone etc...

- Improper cleaning
- **Ultrasonic cleaning**
- Steaming or boiling
- Cleaning with worm-soap water

Ultrasonic Cleaning

- The varieties not adversely affected in an ultrasonic cleaning device are Diamond, Corundum, Chrysoberyl, Aquamarine, Spinel, Garnet and Quartz...

Cleaning

- Improper cleaning
- Ultrasonic cleaning
- Steaming or boiling
- Cleaning with worm-soap water

Steaming or Boiling

- Steaming or boiling can badly affect the following gems...Sinhalite, Topaz, Tourmaline, Zircon, Peridot, Kornerupine...etc

Cleaning

- Improper cleaning
- Ultrasonic cleaning
- Steaming or boiling
- Cleaning with worm-soap water

Cleaning with Warm Soap

- Cleaning with warm soap water seems to be safe for almost all gemstones except Oiled Emeralds, Dyed Agate and Amber.

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Gem Testing

Colourless Spinel and colourless Garnet

- Both are singly refractive
- RI range 1.712 to 1.720
- SG 3.57 to 3.62

* When they clean, the only way to distinguish them appears to be the potentially destructive hardness test.



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Conclusion

- Sri Lanka seems to lag behind many other coloured gem producing countries like Thailand and Brazil in Value addition
- The standards of our products are well below those accepted in the consumer countries.
- However, in Sri Lanka few traders, most of them are exporters, maintain high standards!!!
- The problems and suggested solutions should be conveyed to the industry, can set a chain reaction resulting in raising the standards of our products and services.