

Finding gems in NSW

Gemstones are rock-forming minerals. Their value is determined by their qualities of beauty, durability (or resistance to abrasion) and rarity.

The beauty of a stone may be in its colour, as in emerald and ruby; its fire, as in diamond; or a special optical effect such as the play of colours possessed by precious opal. Often the beauty of the stone is more important than its durability - opal, despite its relative softness, is a valuable gem.

Because they are natural rock-forming minerals, gemstones can be obtained from rocks on which they crystallized. Usually they are present in small amounts only, sometimes in pockets or cavities in the rock. Breaking up massive rocks is hard work and may damage gemstones present. It is preferable to search for gems that have been eroded from the rock and deposited in stream gravel in known gem-bearing areas.

Gem minerals, being durable by nature, survive processes of rock weathering and stream transport and, like alluvial gold, collect in crevices in stream beds and in gravel bars on the insides of stream bends. They may be recovered by panning, but it is more common for the gem-seeker to use sieves made specially for this purpose.



Quartz "jelly babies" from New England. "Jelly babies" are weathered quartz pebbles and are found in stream beds

Sometimes, "fossil" gem-bearing gravels can be found and worked. These gravels occur along the former courses of ancient streams. They may have been buried beneath soils or lava flows. Gravels preserved beneath lava flows are known as "deep leads".

Beryl and its varieties emerald and aquamarine, although hard are too brittle to survive stream transport. Opal is too soft to withstand the abrasion of stream transport and it too is mined directly from rocks in which it originally formed.

Occurrences in NSW

Gemstones, particularly alluvial deposits, are found almost exclusively in the eastern highlands of the State. West of the ranges, opal has been worked at Lightning Ridge and White Cliffs. Garnet, beryl and amethyst are found in the Broken Hill region. Gemstones considered in the following localities list are as follows: diamond, sapphire, ruby, beryl (emerald and aquamarine), zircon, precious opal, topaz, spinel, garnet and the varieties of quartz:- rock crystal (colourless and clear), amethyst (purple), rose quartz, cairngorm (dark brown), morion (black) and citrine (yellow).

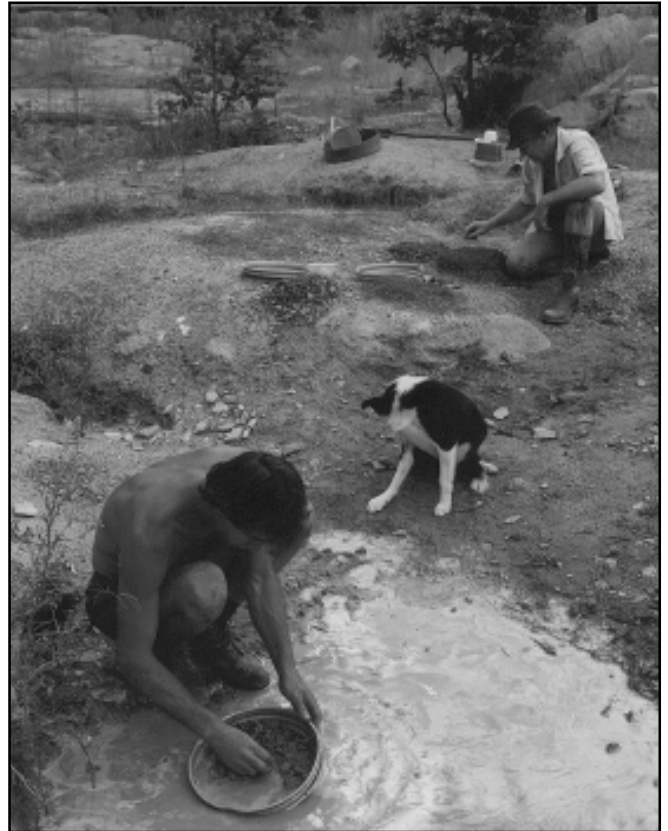
The appearance of a gemstone name means only that it has been recorded from the locality; it is not necessarily found there in abundance.

Methods of gemstone recovery

For working with massive rocks which may contain pockets of gem material the following items are required:

- Geologist's hammer (one end a hammer, the other a pick or chisel)
- Small sledgehammer
- Rock gads and cold chisels (15-20 cm)
- Pick
- Shovel
- Crowbar
- Sledgehammer

Large boulders may be levered from the ground using pick and crowbar and broken up using the sledgehammer. Smaller rocks are broken open with the smaller sledgehammer or the hammer end of a geologist's hammer. Cavities containing gem minerals are opened with hammer and chisel, care being taken not to damage any stone present, particularly if they are well-formed crystals.



Fossicking for sapphire in New England

Equipment used for washing gems from stream gravels is as follows:

- 2-4 sieves
- Gold pan (optional)
- Short-handled shovel
- Small containers for specimens (screw-top glass jars are ideal)
- Tweezers
- Hand Lens (x6 or x8)

Sieves should be 1/4", 1/2" and 1/8" mesh (1/2" may not be needed if gravel size is small); a fourth sieve with 1/16th" mesh should be added if the gravels are likely to contain diamonds. Special light-weight gem sieves, about 14" in diameter and fitting snugly into each other, can be purchased at lapidary supply shops and some disposal stores.

Locality	Gemstone	Geological occurrence
New England		
Emmaville	Beryl, aquamarine, emerald, topaz, quartz	In weathered granite and pegmatite veins
Torrington	Beryl, aquamarine, quartz, (morion, cairngorm, amethyst)	In quartz or pegmatite veins
Glen Innes, Sapphire, Inverell	Sapphire, zircon, topaz, spinel, quartz	Recent gravels
Copeton	Diamond, sapphire, topaz, garnet, zircon, spinel	Recent gravels and "deep leads"
Tingha	Sapphire, emerald, quartz, (citrine, morion, amethyst)	In quartz veins, weathered granite and recent gravels
Kingsgate	Quartz (citrine, rock crystal)	Vein deposits
Oban	Topaz, sapphire, zircon, garnet, quartz (rock crystal, citrine, amethyst)	Recent gravels
Uralla	Topaz, diamond, garnet, zircon, quartz (citrine)	Recent gravels
Bendemeer	Quartz (rock crystal)	Veins in granite
Moonbi Range (Halls Creek)	Rose quartz	With a manganese vein deposit
Nundle	Sapphire, zircon, garnet, quartz (rock crystals)	In gravels; rock crystal also occurs in quartz veins
Bingara	Diamond, garnet, topaz, sapphire	Recent gravels and "deep leads"; garnet occurs in a volcanic "plug" at Ruby Hill
North-West Slopes		
Lightning Ridge, Grawin, Angledool	Opal	As "nobbies" and occasional veins in claystone overlain by sandstone
Narrabri	Diamond	In a "deep lead"
Western Plains		
White Cliffs	Opal	In a "deep lead"
Broken Hill	Garnet, beryl, quartz (amethyst)	Garnet - in mica schist, Beryl - in pegmatite veins, Amethyst - in quartz veins
South Eastern		
Tumbarumba	Sapphire, garnet, beryl, emerald spinel	Recent stream gravels
Albury	Garnet	Within parent rock - mica schist
Gundagai	Topaz, garnet	Recent gravels
Wee Jasper	Sapphire, garnet, zircon	Recent gravels
Crookwell	Sapphire, diamond, beryl, garnet, topaz, zircon	Ancient gravels and "deep leads" also recent gravels
Mittagong	Sapphire, diamond, topaz, zircon	Ancient and recent gravels
Central Eastern		
Oberon (Native Dog Creek)	Sapphire, garnet, zircon quartz (amethyst)	Recent stream gravels
Abercrombie River (Tuena)	Quartz (rock crystal)	Recent gravels
Carcoar (Rocky Bridge Creek)	Opal	In cavities in basalt
Wellington	Diamond, zircon, sapphire	Recent gravels
Mudgee (Cudgegong River)	Diamond, sapphire, ruby, topaz, garnet, zircon, spinel	In patches of ancient gravels near course of the present river also in recent gravels
North Coast		
Tintenbar	Opal	In cavities in basalt, sometimes weathered out
Drake	Quartz (several varieties mainly rock crystal)	Recent gravel