

New Australian Opal Fields

Further discoveries of opal in Australia have recently been announced: an additional site in the Coober Pedy district, and an entirely new field, Amberooka, 300 miles north of Coober Pedy.

The Amberooka locality is of especial interest because opal from that area is very different in appearance from most of the Australian opal. Amberooka opal is semi-transparent with a blue body color and strong play of color in green. Typical Amberooka opal is shown in the accompanying color plate.

The new opal field at Amberooka was made known to the Gemological Institute of America by Mr. Athol L. Spring of Sydney, Australia. During his visit in Los Angeles, Mr. Spring exhibited a fine collection of over 7,000 carats of Australian opal from all of the well-known localities, including many beautiful specimens from Amberooka, Coober Pedy, White Cliffs and Lightning Ridge.

Regarding present conditions in the Australian opal fields, Mr. Spring stated that there are now about 150 active miners and that buyers (including many Americans) now outnumber the miners. He further reported that good rough opal is becoming increasingly scarce.

The specimens illustrated in the accompanying color plate were made available to the Gemological Institute through the courtesy of Mr. Spring. In choosing opals for the photograph, Mr. Spring selected stones typical in appearance of the four principal localities: Lightning Ridge, White Cliffs, Coober Pedy and Amberooka. The approximate location of each of the fields is shown on the map.

The other new opal site in the Coober Pedy district has been described recently in a report received from the Australian Consulate General at San Francisco.



Outline map of Australia, showing approximate locations of main opal fields.

(Courtesy of Australian News & Information Bureau, San Francisco.)

The new find was made in February, 1945, at a point about nine miles northwest of Coober Pedy. First news of the locality was brought back by Oswald Grayson, a young Melbourne tailor, who had undertaken a desert mapping tour as a vacation.

The discovery is attributed to an aboriginal cattle hand named Mompey, who with his friends have shared in the wealth along with the white diggers who rushed to the new field. Opals from the new site are said to be of rare size and beauty—one shown to Mr. Grayson was six inches long and four inches wide, and as much as £1000 has been paid for a single stone.



(Opal from collection of Mr. Athol L. Spring)

Opals from Australia

Lightning Ridge
Lightning Ridge
Lightning Ridge

Coober Pedy
White Cliffs
Amberooka

Coober Pedy
White Cliffs
Amberooka

Composition and Genesis of Opal

The composition of opal is $\text{SiO}_2 \cdot n\text{H}_2\text{O}$, that is, hydrated silica. The content of water varies from 1 to 21 per cent, but in precious opal is generally 6 to 10 per cent. Impurities such as compounds of calcium, iron, magnesium, sodium and aluminum are frequently present.

Opal is formed from gelatinous silica, deposited in cracks and fissures in various types of rocks by water solutions. In hardening, the silica gel loses some of its water, thus forming opal. During this process of dehydration and hardening, cracks often form. These cracks are sometimes later filled with additional thin films of opal, having a different refractive index from the main ground mass. Interference of light waves in passing through these thin films of opal results in the familiar play of color, or "fire," which makes opal a valuable gem.

Opal is a very common mineral, found in almost innumerable localities all over the world. Only rarely, however, has Nature filled the cracks formed during the dehydration with that thin opal film necessary for sufficient beauty to be classed as a gem. In its common varieties opal may be colorless, white, gray, brown and various other tints.

Varieties of Opal

Opal is commonly classified as either *precious opal* or *common opal*. The following are the important varieties of precious opal:

White Opals are those having a light or white body color with fine play of color.

Black Opals have a black, dark blue, dark green, or dark gray body color with fine play of color.

Harlequin Opals are those which show play of color in regular, close-set angular patches. Harlequin opals having very small patches of color are known as *pin fire opals*.

Flash Fire Opals are those displaying play of color in more or less irregular streaks. According to Schlossmacher, a *flame opal* is a variety of flash fire opal in which red is the predominant color.

Girasol Opals show no play of color but instead have a moving billowy blue light.

Fire Opals are those which are transparent to translucent with an orange red to red body color. They may or may not show a play of color. *Cherry Opal* is a name given to the cherry-colored variety.

Gold Opal is a variety which exhibits an over-all color of golden yellow.

Onyx Opal is defined by most authorities to be opal made up of alternate layers of precious and common opal, or of alternate layers of opal and chalcedony.

Occurrence of Opal

By far the greatest proportion of precious opal is found in Australia. Australian opal is classified as follows, according to the type of matrix in which it is found:

Boulder Opal is an occurrence of Australian opal in which the opal is found as thin veins in brown iron-stone boulders of concretionary origin.

Sandstone Opal is a type of occurrence where the opal is found in pipe-like masses up to one inch or more in diameter running through sandstone.

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Seam Opal is a term describing opal which is found in thin, flat cakes or seams in sandstone. These seams may vary in thickness up to one inch or more and are without adhering matrix.

The main opal fields in Australia, aside from the new ones mentioned in the earlier part of this article, are described below and indicated on the accompanying map.

New South Wales. There are three general localities in New South Wales where opal has been mined extensively. These are Lightning Ridge, the Tintenbar district, and White Cliffs district.

South Australia. The Coober

Pedy field, about 70 miles west of Anna Creek Station, is the most important producer in this region. The new field of Amberooka, approximately 300 miles north of Coober Pedy, is also in South Australia.

Queensland. Production from this district is far less than in New South Wales and South Australia. A large district in Western Queensland is known to contain opal, but the working has been restricted to a few localities.

Precious opal is found in lesser quantity in numerous places besides Australia, other localities of note being Czechoslovakia, Mexico, United States and Honduras.

Government Control in Colombia

The Republic of Colombia, the world's largest producer of emerald, is placing the mining and export of all its precious stones under control of the national bank. (*Jewelry*, 11-18-46.)

Brazilian Amethyst

"A new discovery of amethyst at Campo Formosa in the State of Baia, north of Brejinho, the former chief amethyst-producing center, has depressed the price [of that gemstone]." (*From Report of Bureau of Mines, U. S. Dept. Interior, Nov. 20, 1946.*)

Gübelin Article Held Over

Owing to lack of space in this issue, "Identification of Synthetic Gems," Part II, by Edward Gübelin, C.G., will appear in the Spring Number of *Gems & Gemology*.

The article, "The Diamond Industry in 1945," by Sidney H. Ball, Ph.D. (condensed in the Fall, 1946 issue of *Gems & Gemology*), appeared through the courtesy of *Jewelers' Circular-Keystone*.