The Black Opals of Lightning Ridge

by
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From the air, it looks rather like the surface of the moon — or an air-force practice-bombing range. Acre upon acre of white pockmarks (little white craters) weave their way through the stunted scrub of Australia's great outback.

It seems even more desolate from the ground. A dusty track winds its way through a maze of holes and hillocks of white sandstone from which the sun bounces with a glare that narrows eyelids to a cautious squint. The track leads to a strip of asphalt, which is the main street. There is a store, a two-room hotel called the Digger's Rest, and a scattered collection of rather battered-looking cottages. In spite of a recent remarkable growth of civic pride, it is not an impressive-looking settlement. But this is Lightning Ridge, home of one of the world's rarest gems — the fabulous black opal, with the world's production in the hands of three dozen or so miners.

It is situated in the north of the State of New South Wales, 45 miles from Queensland, in sheep-station country where they measure holdings by square miles instead of acres.

The black opal that lay hidden under the thin crust of sandstone remained undiscovered until the turn of the century. It was formed thousands of years ago when Australia had a vast inland sea. For the first three years after it was discovered, it was considered near worthless and sold for a pound or two *an ounce*. Today, it sells for up to £120 ($250) *a carat*.

Australia is now exporting nearly $6,750,000 worth of opals a year, and the cream of these are the black opals of Lightning Ridge.

In 65 years, the world has come to love, appreciate and want this strange

black stone with the inner fire that flashes with every color of the spectrum.

How the Opal Chose its Home

In Cretaceous times a shallow sea stretched like a broad silver sash across Australia from the extreme tip of Cape York to the Great Australian Bight. Over millions of years this inland sea was gradually filled and the waters receded. Over much of the area a sand deposit remained that became consolidated into a sandstone.

Opal is composed of silica and water, and silica is of volcanic origin — yet there is nothing volcanic in the Cretaceous crust where opal is found. There is, however, rock of volcanic nature below the old sea bed, and the silica came from there. In the course of time, silica and water in hot solutions rose from deep-seated magmas. It percolated through cracks and crevices until it met the desert sandstone, beneath which it cooled off and formed opal. In its upward course, it replaced anything it came in contact with — shells, bones, corals or wood — the replacement by opal sometimes being complete.

This is how a geologist explains the formation of opal. But the colors of the opal, and especially the inner fire of a black opal, remain a mystery, explained only by the belief that they are prismatic due to very minute fractures that occurred in the opal's formative process. (Editor's note: See the article entitled, *The Origin of Color in Opal, Based on Electron Microscopy,* by P. J. Darragh, B.Sc., and J. V. Sanders, Ph.D., in the Summer, 1965, issue of *Gems & Gemology.*)

It remains one of the few gems that defies successful imitation by man.

For thousands of years the black opals remained undiscovered, imprisoned in the gritty clay layer under the overburden of sandstone. Late in the last century, a drover was pushing a huge flock of sheep through the dry country of northern New South Wales when he decided to camp for the night, since a storm was brewing. The storm struck with sudden fury. There was a tremendous flash of lightning. Legend has it that 700 of the drover's sheep were killed by the one lightning bolt. Violent electrical storms seemed to follow the low-lying ridges of the area; thus the drover's misfortune coined the name Lightning Ridge for the area.

In 1900, men were mining pale milky opals at a place called White Cliffs, west of Lightning Ridge. There were many who had no luck and either packed their belongings together and went in search of other fields, or else drifted into other jobs. Charles Nettleton, one of the men who left White Cliffs, was a lean, tough bushman, who demonstrated his stamina by walking the 400 miles from White Cliffs to the town of Walgett (45 miles from Lightning Ridge) in the searing hot summer of 1901-2. At the little pastoral town of Walgett he was told that gold had been discovered near the Queensland border, about 90 miles away, so he walked north only to find that the supposed gold was mica.

The black opal mines of Lightning Ridge. This photo was taken in the Three-Mile area, from which some of the richest gems in the world have been mined.
Courtesy Australian News and Information Bureau

Still undecided about what to do next, Nettleton met some drovers who, over the campfire, told him about some strange black stones that some of the boys had picked up while following their flocks of sheep. The stones were strange because they flashed in any kind of light and gave out beautiful colors.

Intrigued, Nettleton managed to get some samples, which he immediately recognized as being opal. But they were quite different from the opals of White Cliffs and, somehow, seemed alive with color under their black velvetlike mantle.

Nettleton had no money. He contacted a hotel keeper, called Joe Beckett, convinced him that he could find the source of the strange new stone and managed to get a grubstake for the venture. He sank his first shaft at Lightning Ridge on October 15, 1902. He found traces of opal, but nothing of value.

Early in 1903, the wife of a boundary rider on a nearby sheep station showed him some pretty black stones her family had found while picnicing six miles to the east of the main ridge of Lightning Ridge. This proved to be a real strike. Four local sheep-station owners each put up $60 and formed a small prospecting company. The company provided Nettleton with a salary of $2.56 per week and keep, and he began work with a friend called Charlie Troy. They soon had some parcels of beautiful black opal, but little realized that their troubles had only begun.

Nettleton, still fascinated by the inner fire of the stones, packed a parcel and sent it off to a dealer in Sydney, capital of the State of New South Wales. The dealer wrote that the black *nobbies* (the name given to black opal before cutting) were a near-worthless matrix (the rock in which gems are often enclosed) and he offered Nettleton $2.24 for the lot. Nettleton refused the offer and requested the return of the opal. He then sent it to other dealers who also rejected the stones as worthless.

The first opal company at Lightning Ridge folded.

Then trouble began with the nearby sheep-station owners.

In spite of Nettleton's failure with his black stones, other men had drifted to Lightning Ridge in the hope of finding white saleable opal of the White Cliffs variety.

The sheep-station owners objected to the presence of the miners on their properties. They could not stop them from sinking their shafts because they held Miners' Rights that conferred powerful rights to the prospector. So they impounded the miners' horses, claiming that they were grazing illegally. They charged .25 for the release of every animal, which was a considerable sum in those days to a struggling miner. But this action did not break the spirit of the men who had come to Lightning Ridge, so the sheep-station owners decided on a more drastic action. One station manager controlled the only water supply available to the miners of the Ridge. He fenced it in, stating that although the law allowed the miners to sink shafts, it did not force him to supply them with water. The resourceful miners dug a number of small drains that sloped down and beyond the fenced dams, allowing water to flow under the fences. The incensed station manager told the miners that he had poisoned the water to kill rabbits. Although the miners did not believe him, they did not drink the water. Instead, they organized a string of pack horses that traveled long distances to bring them in a meager supply of water, only enough to allow them to hold out at the Ridge.

The tense situation was relieved at the end of 1903, when Lightning Ridge had its first opal rush. At Simms Hill, deposits of opal had been found that were on the white side and, therefore, saleable.

The squatters were prohibited from impounding the miners' horses and were also forced to give the miners access to the dams until the Government could arrange a water supply. The Government also declared 1200 acres to be a mining field.

Nettleton, meanwhile, disheartened by the rejection of his black opals, traveled over the border to the while-opal fields of southwestern Queensland. He worked there for a while, but the lure of the black opal was too strong for him. He returned to Lightning Ridge, packed his belongings once again, and set off on foot for White Cliffs 400 miles to the west, determined to sell his black opals. He walked the first 120 miles to Brewarrina, and then worked his way from sheep station to sheep station until he reached Bourke. From Bourke he caught a paddle steamer carrying wool down the Darling River to Wilcannia. From Wilcannia he walked the 50 miles to White Cliffs.

To be continued in the Spring, 1966, edition