

The American Crystal Co., organized to mine minerals, crystals and rocks near Caddo Gap, has been formed with W. D. Filkins, Caddo Gap; Dr. C. Lee Graber, Lakewood, O.; Walter C. Astrop, and William H. Hill, Cleveland, and R. L. Jones, Norman, as directors. It will issue 1,000 shares of stock without par value, and has \$300 paid in capital, according to articles.

May Develop Quartz Mines

Permit Asked to Take Out Deposits in Montgomery County.

Hot Springs, May 1.—(Special.)—An attempt is being made by Dr. C. Lee Graber of Cleveland, Ohio, to acquire 180 acres of land in the Crystal Mountain range, near Norman, in the Ouachita National Forest, where extensive quartz deposits are located, according to officials at forest headquarters here. The negotiations were started through the land office at Washington.

A survey has been made by Dr. Graber, who has spent approximately \$8,000 in that work. He has opened nine mining claims.

Officials at Washington have referred the matter to officials of the Ouachita National Forest and, according to R. H. Charlton, supervisor, an inspection of the area will be made. A report will then be made to Washington officials as to whether the land is more valuable for mining or forestry purposes.

Crystal quartz is now being used industrially, it was said. The quartz may be reduced by grinding, and formed into quartz glass which, unlike ordinary glass, will admit ultraviolet rays.

Crystal Mines To Be Opened

Mining Operation Near Norman to Develop New Industry.

Norman, June 26.—(Special.)—Under the direction of Raymond L. Hunt of Cleveland, O., engineer and electrochemist plans that have been made for the mining of rock crystal at Crystal Mountain, and the development of what will amount to a new industry for this section, are expected to go forward rapidly. Mr. Hunt is now here and machinery, it is understood, will arrive soon, to be transported to the mines.

These rock crystals, which of late have become of great value and importance in scientific research and development, are no new discovery. It is the new uses to which rock crystal is being put that makes the deposits in Montgomery county of outstanding importance.

Radio, multiplex telephony, surgery, the construction of telescopes for astronomical work, the making of fine microscopes, all involve the use of rock

crystal, according to Mr. Hunt. Also glass made from rock crystal is said to permit the passage of the curative rays of the sun, instead of screening them off as does ordinary glass, and a field for the use of the crystal in the making of this glass is being opened.

It is related that crystals were taken from what is known as the Rock House mine in ancient times, and even before the coming of the Indians. Also some years ago crystals were taken from Alley Bluff, but the industry lapsed.

Mr. Hunt feels there is a big future in the industry for himself and the town of Norman. It is planned to drive a tunnel through Crystal Mountain and open the pockets. The machinery will be transported by truck, and, over the last part of the journey, by burros. A considerable number of men will be employed when the mining gets under way.

Mr. Hunt is accompanied by his youngest son who has entered wholeheartedly into the spirit of the enterprise.

New York Firm to Manufacture Paper Weights From Arkansas Quartz and Ore-Bearing Rocks

Paper weights made from Arkansas quartz and ore-bearing rocks will ornament desks in the United States, Canada and England within a short time.

With an order from a New York and Toronto firm for 10,000 stone and quartz paper weights, Arthur A. English of Mobile, Ala., was in conference yesterday with Dr. George C. Branner, state geologist, on location of various stone and quartz suitable for such use.

Dr. English was impressed with quartz crystals, bauxite ore and other formations and plans to spend some time in Arkansas in collecting a supply of these materials. From Arkansas he will go to Colorado, Oklahoma, Nevada, Oregon, Washington and California to secure additional material.

In Arkansas, Dr. English plans to secure quantities of quartz crystals, novaculite, volcanic rocks from the

Magnet Cove region, peridotite, Bauxite and Mexican onyx. These will be ground at his plant at Mobile into sizes suitable for paper weights.

Dr. English displayed at the geology department a collection of semi-precious stones he has gathered in the United States, South America, Australia and Africa. The collection included topaz, star sapphire, malachite, opal, kunzite, tourmaline and other stones.

The collection also included an ornamental article of jewelry upon which Dr. English was secured a patent. It consists of a small glass globe, mounted in gold to provide for a neck chain. The globe is filled with a light transparent oil in which floats many small chips of opals.

The patent was secured, Dr. English said, upon the process used in filling the small glass globe with oil without leaving an air bubble.

Hot Springs "Diamonds" Are Only Quartz but Rivals of Real Gems in Rare Beauty

Hot Springs.—Arkansas not only produces the only diamonds found in North America, but the best imitation diamonds also.

With the summer tourist season in full swing here at present, more interest than usual has attached to the clear, sparkling stones known as "Hot Springs diamonds." The genuine "Hot Springs diamonds" have become known around the world, but a great deal of mystery has always surrounded their origin and especially their process of manufacture.

The finished products are well known as favorite jewelry for milady's evening wear. The clear, crystal facets catch and reflect gleams of light, rivaling in beauty and appearance even genuine diamonds. They harmonize with all colors, being pure, sparkling and transparent. There are some colored "imitations" for wear with colored gowns.

The stones, ground and polished much as are diamonds, are set in rings, strung as necklaces, made into bracelets and brooches. Brooch sets which imitate natural crystal formations are clever and beautiful.

Research just completed by Henry W. Lix, Hot Springs National Park ranger, has thrown new light on the origin and process of manufacture of these semi-precious gems.

According to Lix, the "diamonds in the rough," are rock crystals, an attractive type of silica. These pure crystals of water-clear quartz are unusually abundant in the Ouachita mountains. Lix found, and it is because of their wide commercialization here that they have become known as "Hot Springs diamonds."

They are found in most of the formations of the Ouachita region, but the veins with the best crystals are restricted to the Crystal Mountain sandstone in the Crystal mountains, located in Garland and Montgomery counties.

Crystal Mountain, situated between Hot Springs and Mt. Ida, was formerly the principal source of crystal quartz, but now there are other mines scattered over a fairly large area.

Probably the largest collection of rock crystals in this region is that at the establishment on Whittington avenue here known as "Crystal Cave," an artificial cave, built of crystal formation by J. A. Bauer through years of painstaking effort.

In this artificial cave, the hallways and rooms are entirely covered with scintillating crystals. Several unusual specimens have been collected. A prize exhibit is a pure, transparent crystal that has an enclosed cavity partly filled with water which may be seen to flow as the crystal is turned. Another has impurities so arranged as to produce the effect of a miniature forest; and still another specimen presents the likeness of a woman's face. Some of these odd specimens are very valuable.

This form of quartz is used for making optical apparatus, tuning forks and fused-quartz glass, but the industry here has grown up around the manufacture of jewelry. Superior hardness and brilliance make quartz crystal more valuable for ornamental stones than glassware, but the lower cost of producing good glass imitations has made great inroads into the quartz jewelry industry.

Lix declared that it is very hard for the average person to determine whether stones are of genuine crystal or of glass. The best way is to examine the stones through a magnifying glass. If round bubbles are seen, the work is of glass; if there are any imperfections at all in crystal, they are oblong, not spherical.

Most of the genuine "Hot Springs diamonds" sold here are ground and polished with carborundum and diamond dust, in Germany. Some of the work is done in Chicago and New York, but the price is almost prohibitive.

Quartz crystals are always hexagonal, or six-sided. Lix explained this by stating that this uniformity

of external appearance is but an outward indication of an orderly arrangement of the extremely minute "building blocks" of which the crystal is made. The pattern produced depends merely upon the kind of elements involved and the physical forces to which they were subjected.

Research by Lix showed that quartz found in this region is of the sedimentary kind. During the geologic era known as "late Pennsylvanian time" the Ouachita mountain region was "folding" and rock formations, including Crystal Mountain sandstone, were crushed together and thoroughly fractured. Later on, water containing colloidal silica in solution percolated down through these cracks. Due to some physical or chemical factor such as a decrease in temperature or pressure, or increase in silica concentration, some of the silica was deposited as quartz veins. In distinct cavities, where ions could collect slowly and unhampered, the quartz crystals grew to the most magnificent proportions.

Arkansas has a deposit of genuine diamond bearing ores, from which more than 2,000 fine diamonds have been taken, cut and placed on the market. There are two or three deposits that are known in southern Arkansas, and two of them have been developed. It so happens that in Arkansas are found the only diamonds discovered in North America, and those produced are equal in quality to the best that have been found anywhere in the world. One of the diamond mine developments is near Murfreesboro.

Hot Springs Quartz Crystal



"DIAMONDS" IN THE ROUGH.

NOTES OF THE DAY.

A pair of pure quartz crystals, four by six inches, used by the General Electric Company to measure light in its lamp development laboratory, is the largest in the world. There are larger single quartz crystals, but no larger pairs. In detecting light from any source they can see spaces no wider than a hundred millionth of an inch. The device in which they are used is called a double monochromator. It looks like three cannons pointing in different directions and hinged together, with the crystals as hinges. The light to be examined is focused down the barrel of one of the tubes and spread out by one of the crystals into a rainbow. One narrow band of this color is then focused on the other crystal. Between the two, light wave lengths only a 250,000,000th of an inch can be examined. The crystals show that only about 15 per cent of the electricity going into a 500-watt lamp comes out as visible light. From one to two per cent of the current becomes ultraviolet and the rest of the waves are infrared, or heat.

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