

# State Department of Geology and Mineral Industries

702 Woodlark Building  
Portland 5, Oregon

CLOUGH & DUNCAN ARRASTA<sup>R</sup><sub>A</sub>

Eagle Creek District  
Baker County

**Location:** On Goose Creek, near the Sanger Mine, and in T. 7 S., R. 43 E.,  
about section 9 - 10.

**Owner:** Mr. Charles Marks. Residence on Medical Springs - Lily White  
road, near Goose Creek.

**Note:** The following pages contain the text of a talk given to the Baker  
County Historical Society. As the subject matter covers an  
assemblage of hitherto unrecorded data of a sort worth recording,  
the text is herewith submitted as a report, but since the text  
does not follow the routine report form in manner of presentation,  
this title page has been especially prepared and appended in  
accordance with filing requirements. The notation "See also  
Clough & Duncan" should be added to all mine index reports for the  
Sanger Mine and Sanger district, as this report covers certain  
phases of the early Sanger Mine and Sanger District history.

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N. S. Wagner, geologist  
Talk given, December 4, 1950  
Informants, Mr. Marks, Bert Sturgill, Irving Rand (letter Oct. 2, 1947)

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& MINERAL INDS.

## THE CLOUGH AND DUNCAN ARRASTA

Many of you know what an arrasta is. Some of you may have even seen one in operation. For the benefit of those who aren't familiar with them I will begin by first making a few remarks designed to acquaint you with one.

An arrasta is an exceedingly primitive type of gold-ore mill. Its function is the same as that of any other mill, namely to grind the ore so as to free the particles of gold from other rock particles. The operating principle is crude and inefficient to say the least, and arrastas are therefore used successfully only on ore of exceptionally high grade.

To state it in its simplest form, grinding in an arrasta is accomplished by dragging heavy rocks over fragments of the ore. This is done by attaching the rocks by chains to a pole or arm which revolves around a vertical axis. The drag stones are therefore drug around a circular course. The track over which the stones are dragged is solid and hard. It was often made of large flat stones embedded in a soil or concrete foundation, and it logically follows that the track area would be enclosed by a confining wall a couple feet high.

In other words, the foundation was a paved floor bounded by a circular wall, with the centerpost of the revolving mechanism located in the center of the circle.

The motivating force can vary. Horses have been used sometimes, and horses and oxen were doubtless the rule during the earlier centuries of mechanized civilization when mills employing this same operating principle were used for grinding grains. The Spaniards are known to have used captive Indian slaves to man their arrastas when they operated the rich mines of central and south America. When water power was harnessed it naturally was employed where conditions permitted.

With the advent of water power and more advanced methods of building machinery in general, the arrasta benefited by improvements in design. The simple crossarm that I mentioned in my initial description, was replaced by a wheel from the spokes of which more sets of dragstones could be attached, and the use of water power entailed the use of additional wheels for power transmission purposes. Since as you know, the old fashioned water wheels were large and picturesque looking items, it follows that the water powered arrastas were impressive-looking contraptions.

Regardless of improvements in design, the operating principle remained the same as that in the most primitive horse powered forebear. The heavy dragstones went round and round and relentlessly ground to powder the softer, smaller ore fragments fed into the mill.

After the ore was reduced to powder, the procedure for recovering the gold consisted of shoveling up the powdered residue and washing it by means of panning or sluicing to effect the separation of the gold from the pulverized rock fragments.

So much for the background phase of the subject. The main point of this talk tonight is to bring to your attention an arrasta which was built during the earliest decades of eastern Oregon mining. It is a water powered arrasta made of hand sawed timber, and it is known as the Clough and Duncan arrasta.

It is located on Goose Creek, and it is now owned by Mr. Charles Marks. Furthermore, it is the only remaining arrasta in eastern Oregon that I know of that is sufficiently intact to be recognizable for what it is, yet strangely enough it is one of the earliest ever set up in the area.

From such information as has come to my attention, the story is that this arrasta was originally situated at another place on Goose Creek. It was built by Col. Clough and Mr. Charles Duncan, and it figured actively in the early production from the Sanger district.

The original arrasta was a double unit deal -- meaning two separate and independent grinding units each working from a common power wheel. It was intact as late as 15 or so years ago, and I have been told by those who have seen it that the water wheel was 30 feet or more in diameter. However, that may be, Mr. Marks moved one of the grinding units to its present location and built a new power wheel utilizing for the purpose timbers salvaged from the original wheel which was then in somewhat of a dilapidated condition. Marks' rebuilt wheel is only 14 or 15 feet in diameter. A road has since been built directly across the site of the original Clough and Duncan set-up, and the other grinding unit was burned by way of disposing of it.

The way it stands there are lots of details in this story that remain to be filled in, such as, the exact date of the Clough and Duncan operation. According to Marks this was in the early 1880's. The history as recalled by Marks and Mr. Bert Sturgill is that Col. Clough first built a single arrasta on the Sanger above the present Wendt cabin site, but he later bought a stamp mill which he erected about where the Wendt cabin now stands. This stamp mill was known as the Clough mill, but was also sometimes referred to as the Hogem mill which latter name was the name the camp went by at that time. The stamp mill was a 5 stamp battery which Clough had obtained in San Francisco, and as a stamp mill it was one of the first ever erected in eastern Oregon. However, Clough didn't like it and, with Duncan built the double unit which is the subject of this discussion. This second arrasta was considered to have an 8 ton per 24 hour capacity and it reportedly took three seasons to construct. It was operated by Clough and Duncan for a period of several years (reportedly seven) and was then sold to the Sanger Mining Company. The company then erected the better known 10 stamp Sanger Mill and the arrasta was no longer used. Considering this history, the early 1880's date appears logical as the original Summit claim of the Sanger mine was discovered in 1870.

Regardless of what the details of the history are, and they can doubtless be established more fully by hunting up and checking over old records, the existing arrasta is the last intact specimen of an arrasta left in the country insofar as I have been able to ascertain. In addition to being the last remaining specimen, it is also to be identified with the initial period of operation of one of eastern Oregon's earliest and notable mining camps. Furthermore, it is a superb example of rugged pioneering craftsmanship. Its preservation is certainly something that would be of local historic import. Should your group elect to take steps to preserve this arrasta, you can count on it that the State Department of Geology and Mineral Industries will cooperate with you in every way possible, especially so in attempting to confirm its history as authoritatively as possible.