

Chapter 6. Life, Times and Technology. El Arteal from 1945 to 1991.

- 6.1. Introduction.**
- 6.2. The miners' quarters.**
- 6.3. The hospital.**
- 6.4. Amor más allá de tiempo.**
- 6.5. The bath houses.**
- 6.6. Ore processing at El Arteal. Froth flotation, las aguas salas, ball mills and spiral classifiers.**
- 6.7. Another of life's mysteries.**
- 6.8. An urban myth.**

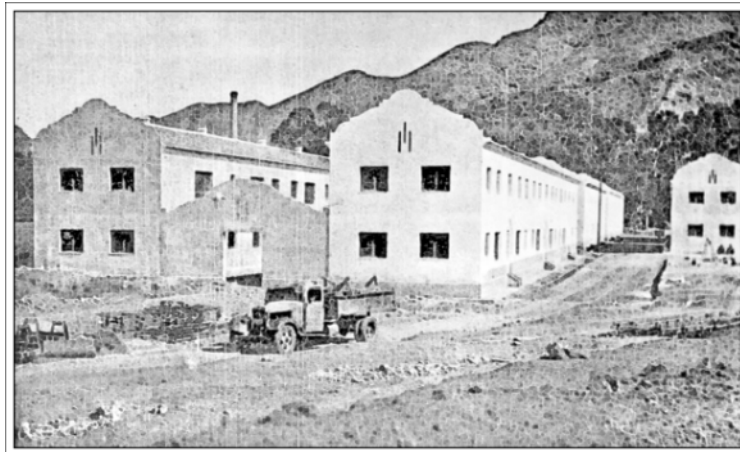


6.1. Introduction.

Information about MASA's time at El Arteal has been difficult to find. There is more information about the period leading up to the Spanish Civil War than there is after it. Rodrigo's photographs and contemporary accounts that have been digitized give a vivid picture of the late 1800s. Moran's series of postcards, produced for Luis Siret's company, and visitors' accounts do the same for the early 1900s. In contrast, 1936 to 1975 is a bit of a black-hole and few photographs or accounts have found their way to publishers or websites. Hopefully, the recent upsurge in interest by younger Spaniards in their recent history, and their refusal to continue subscribing to the collective amnesia about the period, will result in more information becoming available. In the case of the mines of the Almagrera it is becoming critical as their history, literally, crumbles to dust and their echos are blown away on the wind.

6.2. The miners' quarters.

One of the photographs that did catch my eye was this one of the married workers' accommodation block under construction.



Minas de Almagrera S.A. 1944-58. A S Picón & I G Jiminéz.

The married miners' housing complex was called La Corea as in the country Korea. Whether this was for ideological reasons or not I don't know. The bunk houses for the single men were situated in the area above and behind the married quarters.



The remains of the Miners' Quarters.

The last unit of the first block by the electrical transformer was used as a board school for the employees' children. There were no structural changes made to these units. There used to be the wrought iron legend "Escuelas" above the door. Nowadays you would never know that a school had been there. The ironwork was stolen during the recent economic crisis.



Left, the board school complete with legend and right, the more recent view.



A gentleman by the name of Higinio Robles Campos lived at El Arteal from 1954 to 1962 and attended the school. In the photograph below, taken in 1954, the gentleman on the motorbike in Guardia Civil uniform is his father.



*El Padre de Higinio Robles Campos.
Collection: The Robles Campos Family.*

What was the relationship between the Guardia and MASA? Was Franco worried about communist sympathies amongst the various nationalities of the miners? Whatever, Señor Campos seems very happy with his lot.

6.3. The hospital.

Two of the housing units in the accommodation block were modified to form a trauma clinic. These are situated at the western end of Calle C. The fireplace has been removed from the right hand unit and the walls tiled. It served as an operating theatre. From here, a doorway leads to two recovery wards. The left hand unit has also been modified, in this case the sink has been enclosed for some reason. The next room, painted black, was the X-ray room.



Operating theatre.



Recovery wards.



Left, the x-ray room. Above, what was possibly a waiting room or dispensary. The sink in the left hand unit was enclosed in a cupboard.

The doctor's house was by the two white towers in this picture.



6.4. Amor más allá de tiempo, en El Arteal. (Love ever after, in El Arteal.)

This web post is a charming account of life in these quarters by a lady by the name of Maribel who lived there and worked in the hospital as a young girl. By young, we are talking, from the age of 12. As she herself says, “at that time there was no age to work”. The “love ever after” tag line refers to a touching tale of love letters exchanged along the washing line between two blocks, of parental disapproval, of the intervention of the local curate, of a begrudgingly allowed midnight wedding in Las Herrerías, and most of all, of a lifetime of happiness with her beloved Paco. As well as being a love story, Maribel’s account gives some insight into life at El Arteal. Señor Campos wasn’t the only person happy with his lot. She describes it as a good life and a good place to live. Full time employment, a bar, a football pitch, two cinemas, 250 kilos of coal a month for the range, electricity, running water on tap and an indoor flush toilet. More than could be said for housing in Las Herrerías or La Muleria. Maribel was content with her lot. Not a life full of luxuries, but not wanting for much either. In the days when you could still walk in the courtyards between the blocks, I always sensed that they had been happy places, where women had hung out the washing, gossiped and shelled peas. A place where children had played and where love had blossomed. Now I know that I was not mistaken. Such a shame that they are going to rack and ruin! Maribel recounts that there were three main groups at El Arteal, the British, the Germans and the Spanish. She asserts that the British and the Germans left everything in good order and that it was the Spanish who, for some reason, trashed the apartments. Looking at the systematic destruction of the bathrooms and sculleries, I don’t think that it was done by the ordinary Spanish: I believe that it was a measure, possibly ordered at company level, to prevent squatters from occupying the blocks.

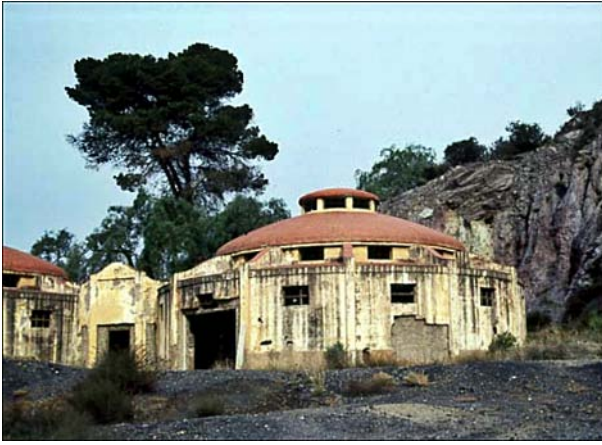
Maribel’s Paco worked in the offices which were near to the workshops. Paco always said that the youngsters who were trained there left with good skills. Where the offices and workshops were I don’t know. I suspect that MASA used the old workshops that were already on site since they would have been already equipped with lathes and forges etc.. The offices could well have been in front of Encarnación by the abandoned new build.

6.5. The bath houses.

A measure of how much of a show piece El Arteal was are the bath houses. The normal pit bath-house of the era were the basic showers and locker-rooms like those at the Mina Andorrana in Teruel, Aragon. In stark contrast, the bath houses at El Arteal are something else! The twin, circular edifices could win a design award today. The present landowner has recently refurbished them and converted them into two luxury apartments, restoring them to their original glory.



The spartan showers and changing room of the bathhouses of the mine Andorrana. A. Pizarro.



The El Arteal bathhouses, left in 1999 (Gonzalo Garcia) and right, after renovation (Panoramio).

We also have the same landowner to thank for the conversion of the substation and the old MASA buildings next to the sheds, into housing for field workers.



6.6. Ore processing at El Arteal. Froth flotation, las aguas salas, ball mills and spiral classifiers.

MASA's lavadero was a proper ore mill, with all of the most modern technology and equipment. A far cry from the days of the criba cartagenera and the donkey-powered cone mills. The wagons bringing ore out of the tunnel tipped into hoppers in the area between the bath-houses and what is now a retaining wall. (The area has been filled in and levelled.)



Left, screenshot of the bath houses and sheds in 2002 showing the mouths of the hoppers at the top of the wall.



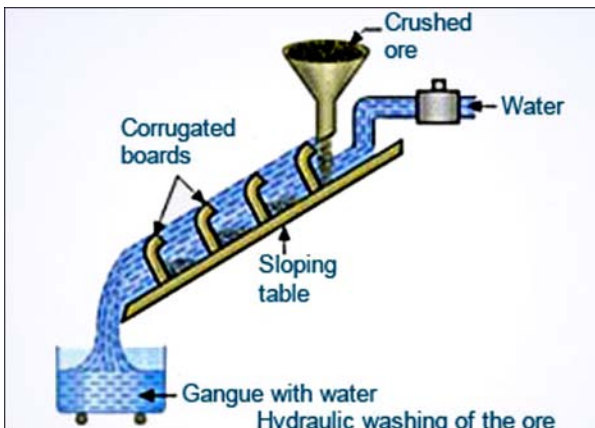
Right, the lavadero retaining wall.

The main processing was carried out in the two sheds which is now used for storage.



*Inside the shorter of
the two sheds.
Minas de Almagrera S. A.
Sánchez Picón*

As far as I can work out this shed, the shorter of the two and with the split-level roof, held a pair of gravity washers which separated the heavier, ore-bearing material from any organic debris and lighter matter. The heavier material gathered in the corrugations while the waste was carried down to the bottom. Vibrating tables are a possibility, but the angle of the ramps are really too acute for this method of separation.



Gravity washer diagram.

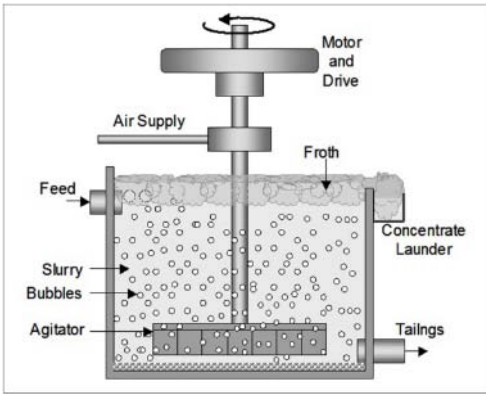
It is probable that the second shed housed ball-mills and the froth floatation tanks.

Froth floatation.

The development of froth floatation enabled the economic recovery of valuable metals from much lower grades of ore, and previously considered waste material. It enabled MASA's main operation, that of, scavenging the spoil heaps left from previous activities to be carried out.

The process selectively separates hydrophobic (non-wettable) from hydrophilic (wettable) materials. The difference in hydrobicity between the waste gangue and the valuable mineral is increased by the use of surfactants. (Compounds that lower the inter-facial tensions between a liquid and a solid, e.g. detergent).

Here, at El Arteal, the galena was made more hydrophobic by the addition of sodium ethyl xanthate as a surfactant. The pulp, consisting of wettable and non-wettable particles, was then introduced into floatation cells or tanks and aerated to produce bubbles. The non-wettable particles attached themselves to the bubbles which rose to the surface forming the froth that gives this process its name. The minerals that did not float were scavenged, subjected to further floatation, in order to glean any remaining valuable particles. The froth, containing the valuable ore was removed, washed and dried.



Cross-section of a flotation cell



Ore-laden froth

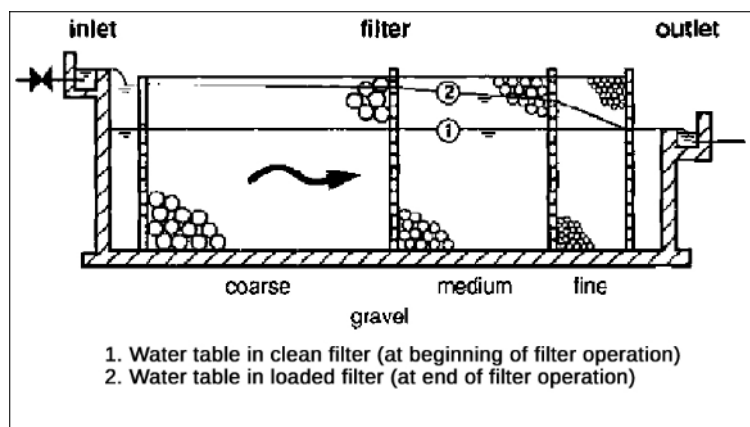
Las Aguas Salas. The locals use this term for the gravity separation tanks which are beside the track leading up El Arteal. These tanks are a bit of a mystery. I know that the water storage tanks and the coal bunkers for the old boiler house were sited here. I have a feeling that these were simply modified to act as gravity tanks when electric power was installed and they became redundant. I don't doubt that MASA used them, but I think that they simply "made use" of them.

They are quite a distance from the main recuperation and washing plant. There was possibly a gravity fed pipe line from the sheds to the tanks. It looks as if the water was supplied from either, the pumped outfall of the desagüe, or the old water deposit by the Central de Transformación. They could have been used to scavenge particles of ore in order to reprocess them.



Settlement tanks at El Arteal.

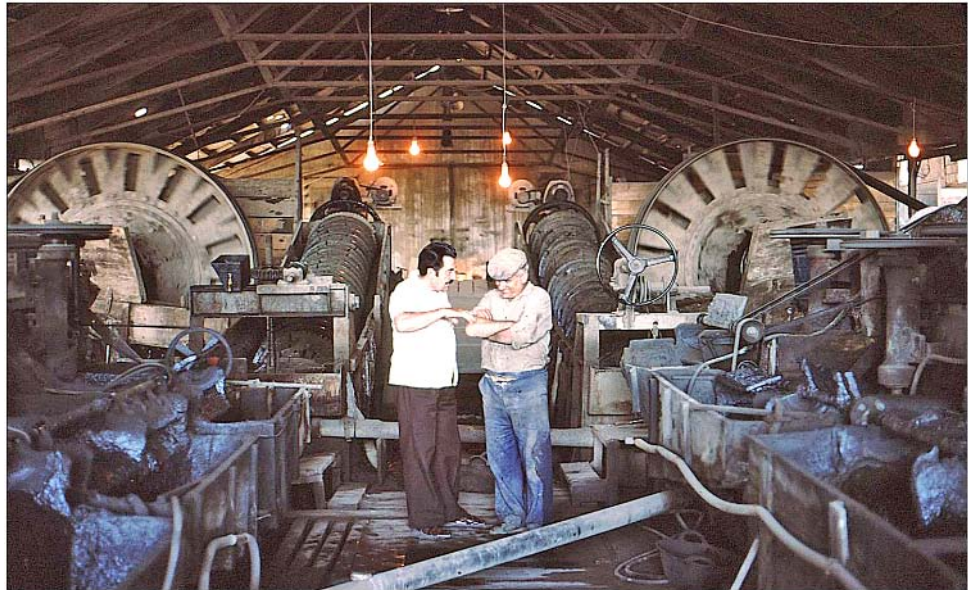
Settlement tank diagram.



After MASA pulled out of El Arteal in 1958 a private company refurbished the ore mill and continued to recuperate material from the spoil tips, particularly those in the Jaroso valley, until as late as 1991.

This superb photograph from 'el blog de helios' of the interior of the other shed is from that period.

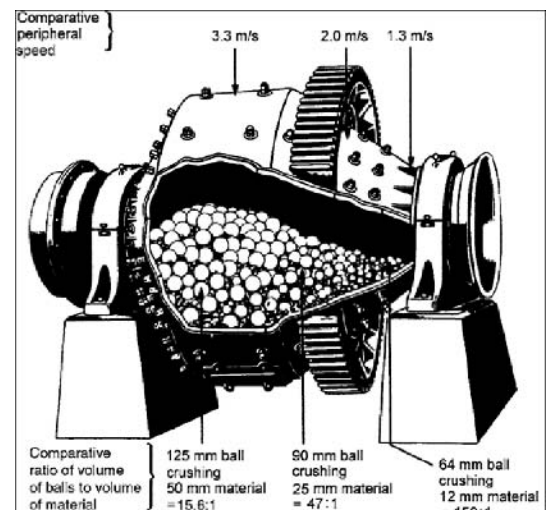
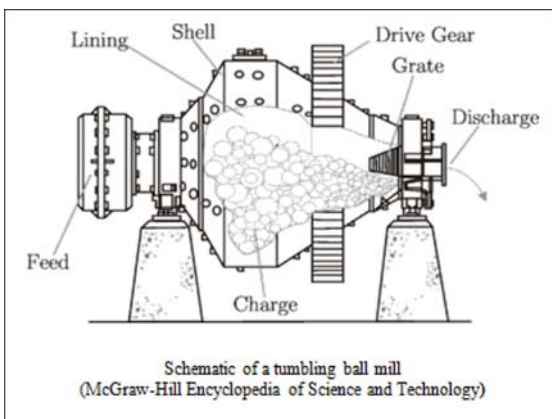
Ore processing at El Arteal.
Helios.



The large wheels on either side of the photograph are the ends of two massive ball mills and what looks like a pair of Archimedes screws are spiral classifiers. The containers full of evil looking bubbles are froth floatation tanks.

Ball mills.

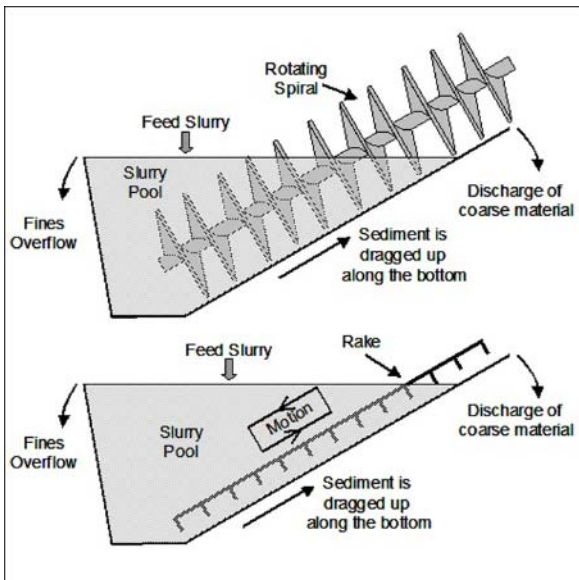
The ball mills crushed the ore bearing material, preparing it for further processing. They are rather simple, but effective devices, which have changed little in the intervening years. The two profile diagrams show how ingenious they are. The shape of the internal drum means that differences exist in the rotational speed along its length. This effects the distribution of the various sizes of balls with the result of drawing the finer ground material towards the discharge port. From here they are transferred to the adjacent spiral classifier. Ball mills were extremely expensive to operate and used vast amounts of electricity.



Above & right, Ball Mill profiles.

Spiral classifier.

Spiral classifiers work on the principle that solid particles with different sizes and proportions have different falling speeds in liquids. Particles small and uniform enough to go onto the next stage are passed on to the floatation tanks. Coarser particles are carried up by the action of the Archimedes screw and returned to the ball mill for reprocessing.



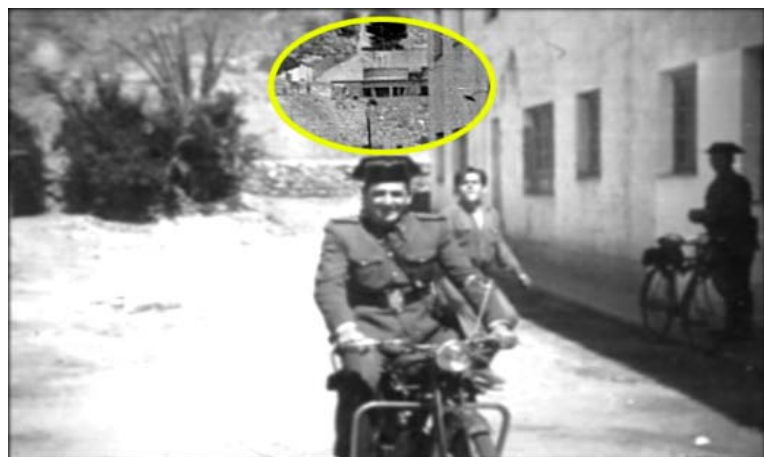
Spiral classifiers diagram.

6.7. Another of life's mysteries.



The mystery structure.

This structure, situated below the processing sheds, intrigued me. I think that it was originally circular, and that the bit behind this wall has been either in-filled or destroyed. When I was looking again at the picture of Señor Robles on his motor bike I noticed what was in the background.



Detail from Señor Robles photo.

My mystery structure is the remains of a circular, raised tank. The level of the land has been raised when the area was put to agricultural use, so the supports for the tank are probably rotting away underground. So what was it? The most likely explanation is that it is a settlement tank, but not necessarily for galena. It looks like the tanks used for the settlement of iron ore, like the modern version below.



MASA had taken over the iron ore calcination ovens in Las Rozas, so were probably processing spoil from there. However, a chance meeting and conversation with an elderly gentleman in the mountains confirmed my theory about the circular tank. This gentleman told me that his uncle used to drive a truck taking iron-rich waste from the spoil tips of the mine La Guzman. His uncle had described the spoil being fed into a large circular tank where it was stirred. Obviously, at the time, the track to La Guzman and Independiente was suitable for small trucks and are still accessible today in an all-terrain vehicle. There is clear evidence of the removal of spoil from the Guzman tips.

6.8. An urban myth.

And finally, an urban myth. There was a belief that the Santa Barbara tunnel had been used by the Americans for the interment of soil contaminated with plutonium following the “nuclear incident” in Palomares. The basis for this erroneous story was a report in the Daily Telegraph newspaper about the disposal of the contaminated material. It reported that loaded trucks were to be seen entering a tunnel in the mountains and returning empty. Great secrecy and high security surrounded the Americans’ movements in Palomares and the reporter was at considerable distance from the activities. What he actually saw was trucks entering a deep cutting leading to the burial site and the mountain was simply one of the hills to the west of Palomares. It was a bit of lazy reporting to say the least, but for the locals, it was about the only piece of uncensored news that they read. They put two and two together and made five. Tunnel + Mountain = El Arteal. The fact that a truck couldn’t enter Santa Barbara due to restricted height didn’t seem to matter! It is a story that is still told, along with the one about dumping the waste down disused mine shafts. Both are without credibility.