

A Lunar Settlement -- Tùr Gealaich "Moon tower".

Presented for your consideration. Lunar towers created in-situ. I've never had an idea that wasn't thought of and dismissed 50 or so years ago, so let's give this a try.

Lunar rovers are sent with solar arrays. Set them going harvesting resources from the lunar dust. The goal is to separate out iron, iron oxide, and aluminum bearing dust. Eventually the rovers will break down, to be banished to the bone yard, who's function is to be spares and a solar cell farm. We are going to need a large farm and much power.

The goal is to produce mounds of iron oxide, aluminum dust (for thermite), and other minerals for melting and making bricks. A terrestrial task is to experiment with processes for separating out iron, iron oxide, and aluminum. The aluminum will be very difficult to produce and power intensive. It is hoped that mounds of raw materials can be produced as more solar is delivered for the smelting. Since creating the aluminum is power intensive, the thermite is partially a way of storing this power.

Terrestrially, processes to extract aluminum would have to be developed. Also, experiments for reacting thermite in a vacuum and the correct mixtures to produce structurally sound castings. When thermite reacts, it produces melted iron, slag, and a lot of heat. Also needed is a way of using this waste heat to melt glass or basalt, in a mixture with this thermite or in laminates or what have you. Create processes for create glass/basalt bricks for construction and for paving. Perhaps thermite could be used a mortar for these bricks.

A Broch House is a sloping stone structure consisting of (often) two concentric stone shells. Between is built a stairway, however, in this case it would be filled with regolith. The bricks would be cast and placed and sealed with an iron/aluminum bead. It would be as large and as tall as the materials will allow. This cannot be determined a head of time – as feasibility is far from determined. (Casing the bricks in the regolith area between the shells may be a possibility. Moving the materials to the edge is will be difficult regardless.) Initially, I expect that inflatable structures would be used inside.

Ideally, it would be placed at the south pole, if not too crowded there. Perhaps near the north pole, if a good solar location can be found. Resupply from earth will be frequently required; it would have to be paid for. Perhaps the intermediate products could be sold – or traded for. How would you keep people from just taking your resources? That's another reason for the north pole rather than the south. Another reason is to produce a trans-lunar economy.

Here is a picture from Wikipedia of a broch house:



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