THE QUARRY COMPLEX ON LUNDY: SOME NOTES, OBSERVATIONS AND SPECULATIONS

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ABSTRACT

An investigation into the quarry workings on the island of Lundy between 1863-1868. The study provides an historical context for the commercial exploitation of granite by the Lundy Granite Company and brief notes on the impact that the enterprise had on the infrastructure of the island. Speculation regarding the methods of working and the systems employed in the extraction and exportation of the granite is supported by evidence provided by similar contemporary enterprises in Devon and Cornwall, the author's own field work and visual reconstructions of how the workings might have appeared when the quarries were in full production.

Keywords: *Lundy, quarries, inclines*

INTRODUCTION

My original intention when I began to compile this document was to provide a brief handout to accompany a guided walk I had been asked to lead for the Society's annual visit to Lundy in May of 1998. The writing of the pamphlet forced me to re-examine many of my original theories about how the quarries were worked, and has thrown up some new ones that need to be considered in greater detail. It is not my intention to make any definitive statements, but to make informed speculations that might stimulate debate and discussion among those better qualified than I to bring specialist knowledge to the subject. Much of what is already known has been well documented by others so I shall try to avoid going over old ground other than where it is useful to provide a broader context for the speculations.

HISTORICAL CONTEXT

Whenever man has required stone for building on Lundy, he has had a plentiful supply ready to hand, but apart from the utilisation of 'Moorstones' which would have lain exposed and abundant on the island, he would have had to dig for suitable material. This then would have been the beginning of quarrying, and when one considers the amount of building that has taken place on the island over the millennia, it is not surprising that we can find ample evidence of man's endeavours. Be it the wall-stone quarries of the southern end of the island or the millstone quarry north of Threequarter Wall, or the west side quarry just north of Quarter Wall (which possibly supplied the granite for the original lighthouse in 1819), or Rocket Pole Pond (from which the granite for the South Light was quarried), the evidence of man's enterprise and industry is clear to see.

With the boom in the number and scale of public works in the latter half of the 19th century (Stanier 1999, vii) came a huge increase in the demand for a reliable supply of good quality granite. Entrepreneurs and speculators saw an opportunity for investment and small companies sprang up to compete with the larger, well established firms. It was in this climate that the Lundy Granite Company Ltd. (LGC) was established and whose heritage can now be examined in greater detail.

THE VILLAGE

The Lundy Granite Co. Ltd. was floated in 1863. Samples of granite were taken from many sites on the island and used when tendering for contracts. On receiving the contract to supply granite for the Thames Embankment, the Company was able to raise further capital and the development of the quarries began in earnest. However, the Company did not supply granite of a consistent quality, and the contract was cancelled. Thus began the troubles that dogged the Company until its eventual liquidation in 1868 which was no doubt hastened by the loss of the Caroline as she was leaving the island bound for London with a forty-three and a half-ton cargo of granite on the Landing Beach in February of that year (Larn, 1974). It is possible that the weight of the cargo itself had been a contributing factor in rendering the vessel unseaworthy, forcing her skipper to drive her onto the beach in a north-easterly gale in order to save the crew. The fact that the cargo was destined for London suggests that at least one of the contracts to supply material for projects in the capital was being fulfilled. The numerous blocks of dressed granite that litter the seabed just off the Landing Beach are probably part of that cargo. The incident serves to indicate the hazards involved when shipping a heavy commodity such as granite off an exposed island and the impact those difficulties can have on the economic viability of such an enterprise.

There were two further attempts to quarry commercially on the island. The second incarnation of the LGC was to have begun in 1897, under the title of the Lundy Granite Quarries Ltd. but too few shares were sold, and it was wound up in 1900. The Lundy Island and Mainland Quarries Ltd., established in 1899, was followed by the Lundy Island Granite Quarries Ltd. which was the last, and also unsuccessful, attempt to make a profit from the island's most plentiful resource. Competition from Scandinavian quarries and the invention of Portland Cement ensured that the export of granite from the island would never be a viable proposition. It is ironic that the island has remained as unspoilt as it has largely due to the invention of cement, and it is interesting to imagine what the island would be like today had the Lundy Granite Company been a commercial success.

Many of the buildings that make up what we now know as the 'Village', were erected or adapted by the LGC. The Company added the south wing to the farmhouse, and built the store keeper's cottage and the building that housed the 'Marisco Tavern and Stores'. Imagine two or three hundred bored, restless quarrymen having the meagre delights of the tavern as their only distraction. This lack of amenity no doubt necessitated the erection and early commissioning of the brewhouse. The linhay with its fine arches, Barton Cottages and possibly the barn and smithy were also Company buildings, although the

smithy is uncharacteristic of quarry buildings and might have already been established on the island. The farm was included in the LGC's lease and if the map (Langham, 1994) that accompanied the lease is compared to the 1886 Ordnance Survey map it can be seen that many of the farm buildings appear to have been altered during this period. To the west of the High Street is the Fowl Run where the LGC built the timber barrack buildings that housed some of the work force (Heaven Archive, ref. M. Ternstrom). The Iron Hall, which was situated where the sheep pens to the east of the High Street are, and which was used as the refectory (Langham, 1994), was in fact built as the Mission Room, school and Reading Room that William Hudson Heaven stipulated in the lease that the LGC were to build (PRO).

QUARTER WALL COTTAGES

There were three accommodation blocks planned for the employees just to the north of Quarter Wall (Figure 1), although only two of the blocks, G and H, were ever fully completed. In the best traditions of the island, the material from the cottages that made up these accommodation blocks was recycled in 1885 to provided the raw material for Lloyds Cottages, also known as Signal Cottages (Heaven Archive, ref. M. Ternstrom), and, tradition has it, the church of St. Helena. The latter is hard to accept, as the stone used in the construction of the cottages was the coarse, undressed granite that is to be found in what remains of block G, Quarry Cottages and the hospital. Since the stone used in the building of the church is all dressed, it seems unlikely that the cottages provided any material other than a few dressed blocks and infill rubble.

It is interesting to compare the ground plan and measurements of the remains of Quarter Wall Cottages with those of Quarry Cottages and Barton Cottages. Although a detailed survey has not yet been completed, rough measurements suggest that they were very similar in layout and included outbuildings to the rear of each block. This theory provides the justification for the visual reconstruction of the buildings (Figure 2). It would of course make sense, if the stone masons had to produce a considerable number of door and window frames and lintels, that they did so to a pattern. There are two wells associated with these Quarter Wall Cottages, one situated behind accommodation block G and the other beside the main track to the west of accommodation block I.

The building whose remains stand to the north of Quarter Wall Cottages is known as 'The Hospital', and to the east of it are the foundations of another building connected to the hospital by an enclosure. To the north-west of Quarry Cottages it is possible to make out a small platform cut into the bank to the south of the track between Quarter Wall and Quarry Cottages. Langham (1996) identifies this as the 'Pump House', however it is difficult to understand why a pump house would be sited at this location. A good deal of clinker, cinder and coal waste has been found at this site which could of course be evidence of there having been a steam powered pump engine situated here. It is more likely however, that the site was a smithy, forge and repair shop for the equipment and machinery for the original quarry (designated A in Figure 3). Just to the east of this site can be seen a granite lined leat or drain that would have carried surface water away from the workings that are now known as Quarry Pond. On the high ground between this site

of the smithy and Quarry Cottages it is possible to see where the quarrymen have tested the hand-borers and 'swell jumpers' that were used to drill the granite prior to splitting. Worn out tools have also been found at this location by the author.

QUARRY COTTAGES (BELLE VUE)
(The cottages are shown on the 1886 OS map as Quarter Wall Cottages and were referred to by the LGC as South End Villa, Middle Villa and North End Villa. The National Trust Archaeological Survey Unit refers to them as Old Quarry Cottages.)

There is clear structural evidence that Quarry Cottages underwent a series of alterations during their useful life, particularly to the rear outbuildings. Various modifications were made to improve conditions and amenities. Windbreaks were added to provide some relief from the westerly wind and there is also evidence of alterations to reduce the width of the rear access ways (Figure 1).

Originally sanitary arrangements are likely to have been no more sophisticated than earth closets or nothing but the crudest of drainage systems. However, there is evidence of what appear to be 20th century attempts to improve this facility. It is clear from the traces of mortar and cement left on the exterior north and south facing walls that various lean-to structures have been built against them. Large square terracotta tiles and the remains of a salt-glazed soil pipe are still visible close to the north wall indicating that this was probably the site of a relatively sophisticated WC (Figure 1). As South End Villa was being used as late as 1921 (Langham, 1995), it is safe to assume that these improvements took advantage of some of the advances in early twentieth century plumbing technology.

To the rear of the southernmost cottage, between it and its attendant outbuildings, are the remains of what could be a granite stand and a brick hearth for a 'copper', which would have been used to provide hot water for laundry purposes. It appears that water was supplied through a down pipe that would probably have fed rain water into a butt.

To the east frontage of Quarry Cottages a flowerbed appears to have run the length of the building immediately beneath the windows. The bed was separated by flights of granite steps that led from a path that connected the three cottages (Figure 1). From this path a further short flight of steps led down a sloping bank to the main garden, the boundary walls of which still extend for 45m toward the east sideland.

It is worth pointing out that the lintel, portico and supporting corbels that grace the east door of Government House, came from the main door of the quarry manager's cottage, (the centre one of the three). Twenty metres west of Quarry Cottages is the well that served them, and which the author believes is the site of the original Pump House shown on the 1886 Ordnance Survey map (Figure 4). Being associated with the residences of the senior officials, it is likely that the pump over the well would have been covered if not completely enclosed.

THE UPPER PLATFORM AND INCLINES

Today the path from Quarry Cottages to the Upper Platform, which Langham (1996) refers to as the 'time-check platform', passes Quarry Pond. This is the site of the earliest LGC quarry (A), identified as William Heard's Quarry (Heaven Archive, ref. M. Ternstrom), and the tramway leading from it to the sidelands passed through a cutting spanned by a wooden footbridge that linked the Upper Platform to the path from Quarry Cottages. The original timekeeper's hut (Langham 1996), now restored as a shelter and known universally as 'Gi's Hut', stands on the Upper Platform. Below the platform is a terrace from which a tramway leads southward to a series of spoil tips. On the terrace can be seen the remains of lean-to buildings. Here the granite would have been worked and dressed before being lowered to the Main Platform down a single-track incline, (Figure 5, incline 2). The first quarry (A) in the sequence that now makes up the main complex (Figure 3), might well have provided material for all the early construction work, including the building of the Upper Platform itself.

On the east sidelands evidence remains of the three inclines associated with the quarry workings (Figure 5). Incline 1 ran from the edge of the plateau just east of the hospital to the Main Platform and is shown on the 1886 OS (Figure 4) as a twin-track incline. Incline 2, a single-track incline, ran from the terrace below the Upper Platform to the Main Platform, whilst incline 3, which had twin tracks, ran from the southern end of the Main Platform down to the quay and the jetty (Figure 5).

It is still not clear how the upper inclines worked, but it is probable that the first shipments of granite were taken off the island before the three main quarries had been opened or the Main Platform built. Therefore some method of moving the granite down the steep sidelands must have been used prior to the building of the main incline (incline 3) from the Main Platform to the new quay. The line of the cutting for the earliest incline (incline 1) can still be seen, running from the plateau immediately east of the hospital to the southern end of the Main Platform adjacent to the brake drums.

Until February 2000 it was thought that incline 2 had been the first to be constructed, but investigations made by the author when the vegetation was at its lowest, revealed that masonry constructed as a support for the incline (incline 2) from the Upper Platform, had been laid over the track of incline 1. Langham (1996) also states that the incline (incline 1) from the Upper Platform to the Main Platform was controlled by a brake drum using a loaded tub or sled as the counter-weight. However, this seems unlikely as the incline is shown as a single-track incline on the 1886 0S (Figure 4).

It would be useful at this juncture to consider the factors confronting the LGC when it came to choosing the best site for the quay and jetty and the main incline. It should be remembered that from the earliest days of the enterprise the LGC must have had some facility for landing materials and supplies on the island. Within the terms of the lease, the LGC had access to the Landing Beach, but it had also undertaken to repair and maintain the roads and tracks it used and this would have been a considerable drain on its resources. This factor and the tremendous problems involved in transporting the granite

and other goods between the quarries and the Landing Beach, coupled with the immense difficulties of loading and unloading vessels from the beach without a proper jetty, would have compelled the Company to make the construction of its own purpose built quay and jetty as close to the quarries as possible, its first priority.

The lease gave the Company the option of siting the quay and jetty at Gannet's Bay, which would have provided a more sheltered landing, but in the event, and for ease of access, it chose a site directly below the workings now known as Quarry Beach. The fact that this jetty was only accessible in westerly winds and at high water, would have had a bearing on the eventual failure of the enterprise, as regular shipments would have been impossible to guarantee.

The conjecture about how the inclines worked begins at the head of incline 1 on the edge of the sideland east of the hospital. This incline is shown as a twin-track incline on the 1886 OS and was the first of the three inclines to be constructed. There is no evidence remaining of this incline other than the OS map and the depression left by the cutting. It is only the fact that a short length of retaining wall (personal observation, February 2000) that supported the track of incline 2 still exists laid on the bed of incline 1, that suggests the sequence in which the two inclines were constructed. It is not clear how the tubs were controlled on this incline but the most likely possibility is that a similar arrangement to that which was subsequently used on the main incline (incline 3), was employed.

With regards to incline 2, Langham suggests (1996) that the controlling mechanism was a vertical brake wheel or winding wheel rigged on a gantry mounted on the Upper Platform. There is no evidence of the massive structure that would have been needed to support this system, nor is the masonry of the platform itself sufficiently well bonded to have been able to withstand the stresses that such a system would have imposed upon it. It is more likely perhaps that a fairly crude system of cables anchored at the top of the sideland above the platform would have been employed for lowering and lifting the loaded tubs or sleds. It is also possible that the engine to drive or control this incline was not sited on the Upper Platform, but at the base of the incline on the Main Platform. If this was the case it would obviate the need for heavy equipment on the Upper Platform and would explain the single track configuration of incline 2, since the only mechanism required at the head of the incline would have been a well anchored pulley wheel or block around which the chain or cable that was attached to the tub would have run.

If the levels of engineering that were involved in later enterprises elsewhere in the country, (at the Vivian Quarry incline in Gwynedd, Figure 6, for instance), are considered, it can be seen that Lundy's inclines were fairly crude even allowing that they were constructed thirty years before the Vivian incline. However the basic principle employed in the working of the Vivian Quarry incline, is much the same as that which is being proposed in this paper.

THE MAIN QUARRIES AND MAIN PLATFORM

There is little evidence indicating the sequence in which the quarries were opened once the construction of the tramway from the Main (marshalling) Platform northward had begun. However, it is reasonable to assume that the site had been surveyed by the LGC and test quarries opened up to try and locate the best material. Langham (1996) suggests that the progression was northward from the Main Platform (Figure 3). There is no evidence to indicate whether the tramway was opened first (the view taken by the author) to provide an access route to the island top or gradually extended as the quarries were worked out.

In papers relating to the winding up of the LGC which are held in the Public Record Office, the three quarries served by the main tramway are named as Smith's Point Quarry, Middle Quarry and Howard's Quarry. On existing evidence it cannot be confirmed which was which, but it is reasonable to assume that Smith's Point Quarry is the northernmost, Middle is VC and Howard's Quarry is the southernmost of the three (F, C and B respectively in Langham 1996).

There is very little evidence remaining to indicate how the quarries were worked, but photographs taken a few years later of other quarries in Devon and Cornwall, can give a very good idea of how they must have been organised (Stanier, 1999). What can still be recognised in all three main quarries are the remains of the crane bases on which the huge timber mast cranes would have been mounted. Ring bolts in the north and south faces of quarry F could have been part of the fixings for the system of stays and guys that were used to stabilise the masts themselves. The layout of the tramway that ran the length of the main workings to the Main Platform is traced by the marks made by the removal of the tramway sleepers. These marks also suggest that short tracks led from each quarry to the head of the waste tips associated with it. The granite sleepers, along with all other saleable items were disposed of when the Company went into liquidation. There are also the remains of what might have been a latrine situated to the west of the tramway between the southern and middle quarries.

Some way up the sideland, and running south from the south side of quarry F, are two crude terraces, one immediately below the other. They would have provided the track beds for short tramways that would most likely have been used to carry away the topsoil, rough waste and spoil from that level of the quarry workings. The upper of the two terraces, situated just below the granite outcrops at the top of the sideland is the wider and better constructed of the two with an average width of two metres and extending for about fifty metres from the edge of the quarry.

The spoil tips associated with the main quarries bear further testament to the enormous waste of material involved in this enterprise. Even on the mainland, quarrying granite suitable for engineering and architectural work often meant that 75 percent of the material extracted was discarded (Stanier 1999). Given the economics of the LGC operation, the proportion of waste from the Lundy quarries would have been even more excessive. An expert in the economics of quarrying or mineralogy might be able to explain why this

waste could not be used for sett stones, small building blocks or even hard core. One factor in the case of the Lundy quarries could have been the burden of the royalties due to W.H. Heaven under the terms of the lease, as the LGC had agreed to make payment for even the coarsest ballast (Hudson/McKenna lease, PRO). The spoil tips are the most visible scars left by the quarrying and thousands of tons of rough granite remain as evidence of the inefficiency of the industry. How many more thousands of tons of rock cascaded down the sidelands into the sea?

The spoil tips and the size and quality of stone they contain are a valuable record and they, along with all associated buildings and works, have been scheduled as Ancient Monuments (Summary of the Lundy SMR).

The drawing (Figure 7) illustrates how the Main Platform might have looked when the quarries were in full production. To the right are offices, store sheds and open fronted workshops or 'bankers', where masons would dress and finish the stone. It is also possible that a smithy was set up here, making and maintaining the quarrymen's tools and equipment, and if horses were employed to pull the trucks on the tramway, they might well have been stabled here. If any specialist equipment for the working of the granite were used on the island, it also would have been housed here. Recent finds by the author on Quarry Beach suggest that the LGC were producing granite columns on the island although it is unlikely that these would have been turned mechanically. Two short lengths of granite column approximately 25cm in diameter have been found, one of which has a triangular socket in one end. If they do not provide evidence that such columns were manufactured on the island, then they must themselves be part of a piece of equipment that had been imported.

THE MAIN INCLINE

At the southern end of the Main Platform are the remains of the braking gear that the author is suggesting controlled the descent of the sleds or trucks to the quay. It is not clear precisely how this system worked, so what is presented here is conjecture. The clues are:

- two openings for cables for each drum
- twin vertical rollers on spindles for each drum
- a single horizontal roller on the edge of the brake platform above the incline
- a pair of granite steps at the head of the incline to act as ratchet brakes while the tub or sled is being loaded
- evidence on the incline itself of two pairs of timber rails approximately 20cm square and 1m apart (as shown on the 1886 OS).

Figure 8 illustrates how the system might work if the above elements were brought together. If (as is almost certainly the case), the system were gravity driven (the tubs being connected by chain or cable), the weight of the loaded tub or sled as it descended on one track would pull the empty or partially loaded one up the other. Once at the top, a ratchet brake on the tub would lock against the granite steps automatically holding it in

position for loading until released for the downward journey. How the braking system within the brake drums themselves worked is not clear from the remaining evidence.

The tubs or sleds themselves were probably simple rectangular iron boxes on wooden runners with guides that sat between the timber rails. One of the details that are not yet clear, is the position of the tub as it was being loaded at the head of the incline. It would have been preferable from the point of view of those loading the granite, for the tubs to be on the same level as and horizontal with the platform. However, this would have necessitated either that the rear of the tub be raised or that the tub itself be constructed so as to provide a permanently horizontal bed. The latter was the solution employed at the Vivian Quarry incline (Figure 6). It is probable that a similar if cruder solution would have been applied on the Lundy inclines.

Langham (1996) provides a diagram of how he considers the tracks or rails were laid. The existence of the two pairs of longitudinal rails he describes can be confirmed but not the existence of the latitudinal timber sleepers. However, in February 2000, latitudinal iron tie rods, used to link and maintain the spacing between the rails, were identified and recorded by the author. No evidence of metal rails has been found on the inclines and there would have been little point in going to the expense of laying metal rails, designed to reduce friction and make for easy running, when the greatest problem was how to slow the descent of the vehicle. What little remains of the wooden rails has been recorded by the author, as they will not survive very much longer. Clearly a detailed survey of this section of the incline is vital before all the remaining evidence is lost.

The beauty of the gravity system is its simplicity and efficiency, as it requires the minimum of mechanics, but it does beg one or two questions about what happened at the base of the main incline. Anyone obsessed enough to walk the incline will realise that the steady gradient stops short of the level any quay or jetty would have been, by 30 or 40 m. At this point the sideland drops away much more steeply. The assumption used to be that the cliff had fallen away in the intervening one hundred years or so (anecdotal), and this provided a very convenient and plausible explanation. However in 1997 the author identified and photographed a series of inclined terraces that zigzagged down the steep sideland at the base of the incline. The terraces, each faced with rough masonry, could have provided access to the quay and jetty. They have since been recorded as part of the National Trust Archaeological Survey (Summary of the Lundy SMR).

The 1886 OS shows the main incline extending to the quay. If this was the case and the inclined terraces were contemporary with the incline itself it is possible that the incline was extended to the jetty across timber trestles (Figure 9) and that the zigzag terraces are in some way associated with the supports for the incline.

THE QUARRY QUAY AND JETTY

The rather generalised map included in Chanter's 'Lundy Island a Monograph' (1877) shows a jetty sited at the southern end of Quarry Beach. This map appears to have provided the model for many of the subsequent maps that show a jetty on Quarry Beach.

However it is unclear from Chanter's map whether the jetty extends from the base of the cliff itself or from a wider structure. The 1886 OS resolves this question, showing the jetty extending from a quay described by a curving line that runs roughly parallel to the line of the cliffs (Figure 4). This line also corresponds exactly to the line of dressed granite blocks (Figures 10 and 11) embedded in the beach sand. This line of blocks is occasionally exposed by the effect of heavy seas. Many of these blocks, each about 1m square, are fastened together with iron staples and are clearly the foundation stones for the quay shown on the 1886 OS map. On this map the quay is shown to be wide enough to accommodate all the necessary services associated with a small port and would probably have resembled those associated with any local harbour such as Clovelly and Ilfracombe or the granite quays of Cornwall. To handle the stacking and loading of the granite and the importation of equipment and supplies there would have been cranes, derricks, tracks, bogies, tubs and storage sheds, and docking facilities (Figure 12).

The granite, in whatever state, rough, part dressed or finished, would have been stacked on the quay to await the arrival of the *Vanderbyl*, (the Company's steam vessel named after one of the principal directors) to transport it to Highbridge in Somerset or to Fremington Quay. This quay was run by Edward McKenna, brother of William McKenna to whom William Hudson Heaven had granted permission to quarry the granite.

It is probable that many of the granite blocks that now litter the Quarry Beach were once part of the quay itself. The fact that its outline can still be traced to this day is a testament to the remarkable skill of the masons and engineers who were responsible for its construction. How long it lasted after the quarries were abandoned is not recorded. It is clear however, that enough of it was still standing in 1884 for the surveyors for the Ordnance Survey to record details that included the steps that provided access to the beach and a landing for small craft. The total destruction of Hartland Quay, built in 1878, gives an indication of the power of the forces that Quarry Quay had to withstand. 137 years were to pass before a second jetty was constructed on the island.

The LGC jetty was of timber construction and, being even more exposed than the quay, only lasted ten years. The fact that it came to a sudden end is confirmed in a letter from Cecilia Heaven to Hudson Heaven (Heaven Archive, ref. M. Ternstrom) in January 1873, in which she describes the fearful storms they had experienced on the island she says "*.....as for the jetty, it lies almost entirely on the beach ...*". No boats had been able to land at Lundy for a month, and this was not an unusual occurrence. These circumstances give an indication of the vicissitudes that the islanders and the 300 LGC employees (Stanier 1999) must have had to endure.

Figures 9 and 12 attempt to show how the quay and jetty might have looked in 1866. Further evidence (which the author recorded in 1997) for the reconstruction of the jetty can be found in the two parallel rows of granite blocks that extend eastward from the extreme southern end of the quay shown on the 1886 OS. The rows are approximately 3m apart; each pair of blocks being also 3m apart. Each of these rows is made up of four

base blocks and each block has four iron pins set into it in a square configuration at 0.5 m centres. These are clearly the foundation blocks to which iron sockets were bolted, and into which the timber piles for the jetty were set (Figure 9). One of these sockets or similar base plates with locating holes at the same centres as the pins set into the foundation stones, still exists firmly in place on a rock in the south west corner of the beach, some 2m above high water line. Judging by the remnants of the securing bolts arranged in the same pattern on the rock close to this existing plate, there seems to have been another plate in position slightly higher and further south of the existing one by approximately 1m. Photographs of the jetty at Wooda Bay near Lynmouth (Bridle 1991) give a useful indication of the type of construction that might have been used in the building of Quarry Jetty.

Looking at the Quarry Beach now, it seems impossible that a vessel could survive grounding on the boulders that cover it. It must be remembered however, that the scene would have been totally different 130 years ago, and it is likely that the beach would have been fine granite sand. The boulders that cover the beach today are the remains of the quay, spoil from the quarries and rock falls. In the far northern corner of Quarry Beach is a small patch of fine white sand, which gives some indication of what the whole beach might once have looked like. An account of a visit (anon. 1886), published in the North Devon Journal of August of that year, describes the fine silver sand of pulverised granite on the Landing Beach glinting in the sun. If the Landing Beach looked like that in 1868, what must Quarry Beach have looked like? All the waste from the spoil tips just a few hundred metres north being pounded by incessant wave action would have provided hundreds of tons of sand for these beaches.

On the cliff face immediately to the south of where the jetty would have stood are a number of drill holes and notched and levelled areas of granite. It is likely that these were the fixing points for some heavy pieces of equipment. The drill holes are all approximately 60mm in diameter and vary from 100mm to 300mm in depth. Evidence of iron bolts remains in several of them. It is possible that these mountings were part of a bracing system designed to reinforce the jetty against the force of a vessel pounding against its northern side. Alternatively they could be part of the rigging for a mast crane or derrick.

Of the large number of dressed granite blocks on Quarry Beach, many, as it has already been suggested, will once have formed the structure of the quay; others will as certainly be parts of shipments that never made it off the island. Broken kerbstones, windowsills and lintels can be found on the beach as well as the remains of the granite columns.

A few years ago a length of rail that used to get washed around on the beach was photographed but unfortunately not measured (personal observation). Since that time it has not reappeared. Fortunately in 1999 another short section of track was identified (personal observation) which is likely to have been an offcut cast aside when the track was being laid on the jetty. It was found, firmly 'welded' into a large accreted lump, hard under a granite block alongside one of the jetty foundation blocks. It is about 30cm long,

75mm wide at the base, 95mm high and the rail itself is 50mm wide. It is now resides with the N.T. Archaeological Survey Unit.

It is the small, seemingly insignificant items like this length of track that have provided some of the answers to the many questions concerning the workings of the LGC and enabled the facts presented here to emerge little by little from the speculation. This paper has attempted to bring together as much as possible of the jigsaw that makes up the current body of knowledge of the quarry workings on Lundy. It is hoped that a fuller and clearer picture has been presented that will provide a sound basis for further research and stimulate a lively debate about the organisation and workings of the quarries of Lundy.

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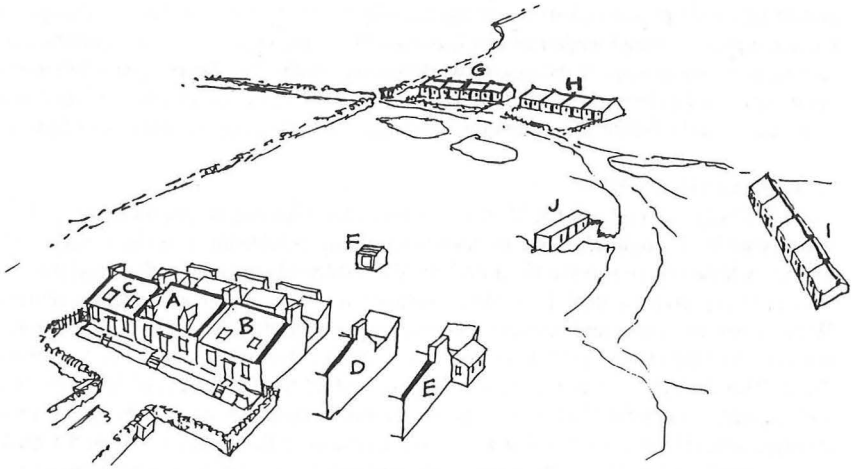

LEGEND:-

- A ---------- Middle Villa - Company Engineer, Mr. Ryle
- B ---------- North End Villa - Foreman of Works, Mr. Gray
- C ---------- South End Villa - Company Surgeon, Dr. Linacre followed by Dr. Snow
- D ---------- First Modifications to outbuildings
- E ---------- Later Modifications to outbuildings
- F ---------- Pump House
- G-H-I ----- Accommodation blocks for quarry workers
- J ---------- Smithy & Workshop

Figure 1: Schematic of Quarter Wall Cottages and Quarry Cottages.

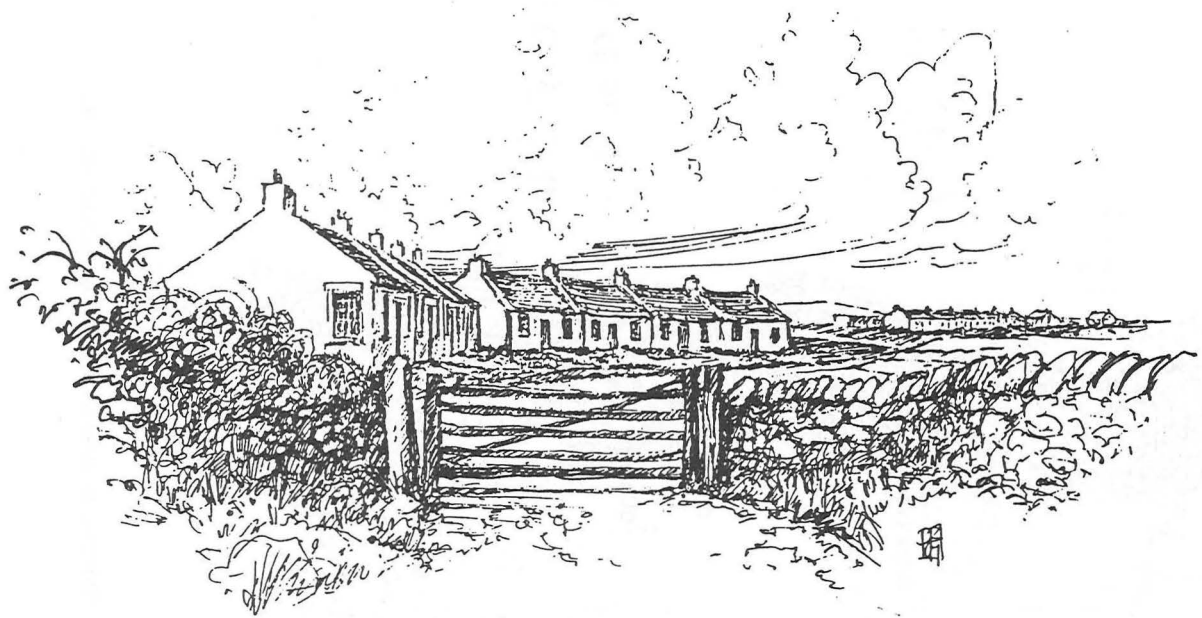

Figure 2: Quarter Wall Cottages (visual reconstruction).

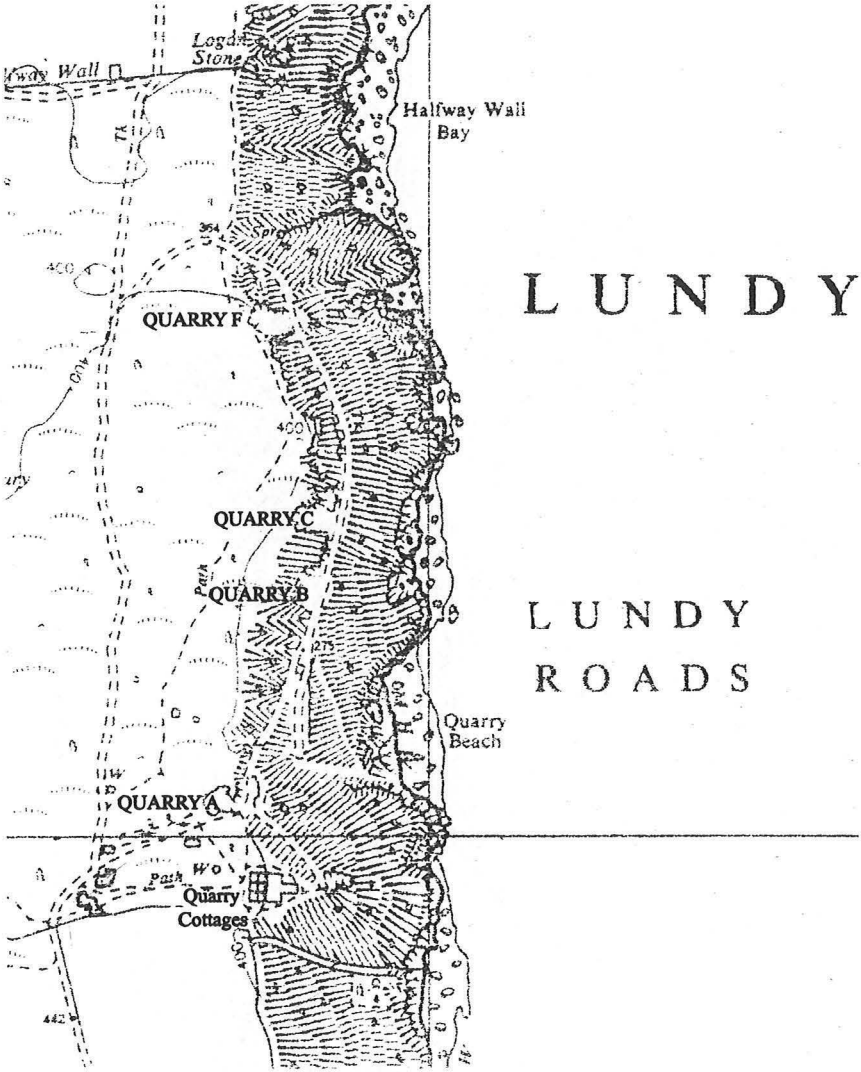

Figure 3: Sequence, position and designation of main quarries.

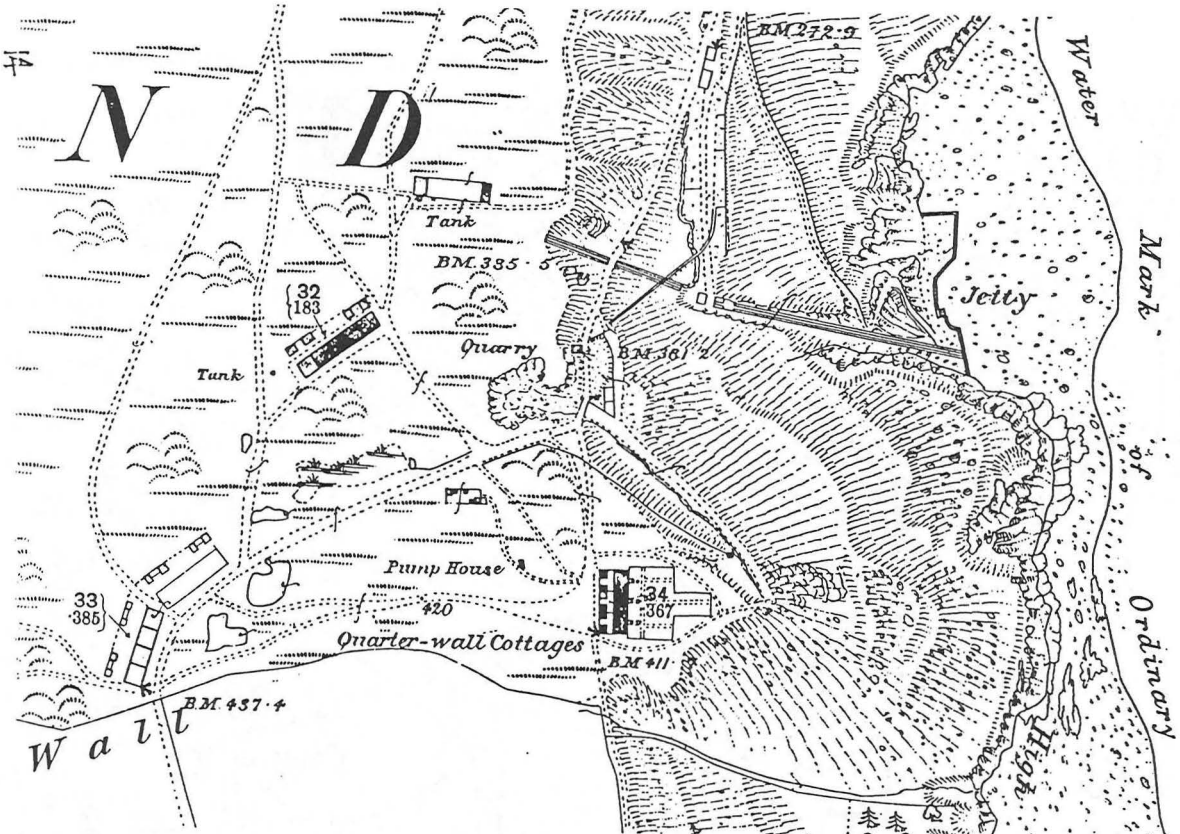

Figure 4: 1886 Ordnance Survey map showing the main features of the quarry complex.

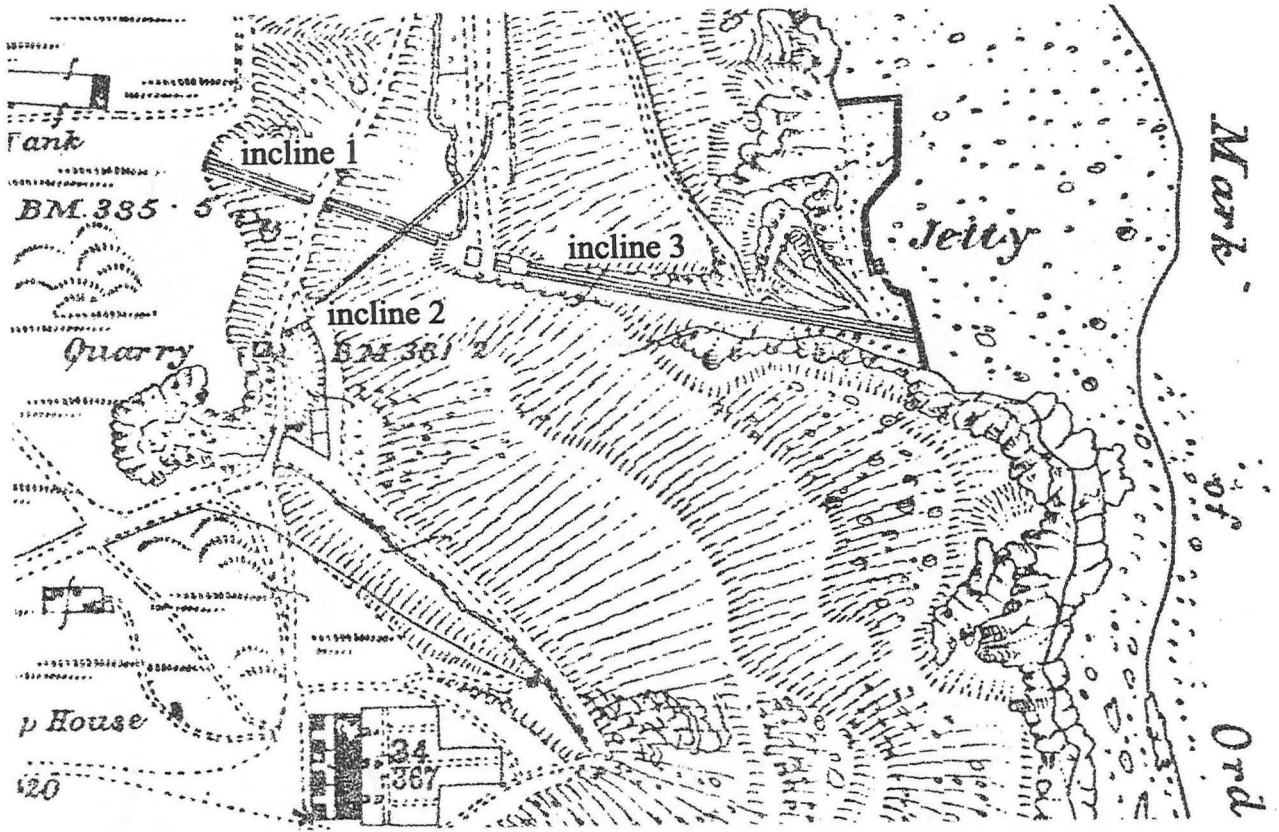

Figure 5: Suggested sequence of incline building.

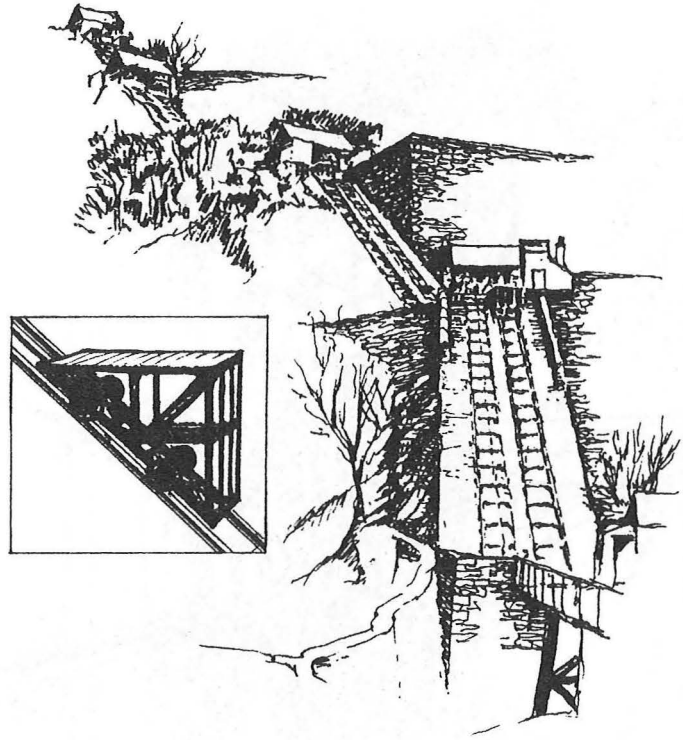

Figure 6: The Vivian Quarry incline - Gwynedd - 1896. (Inset shows the design and configuration of the trucks.)

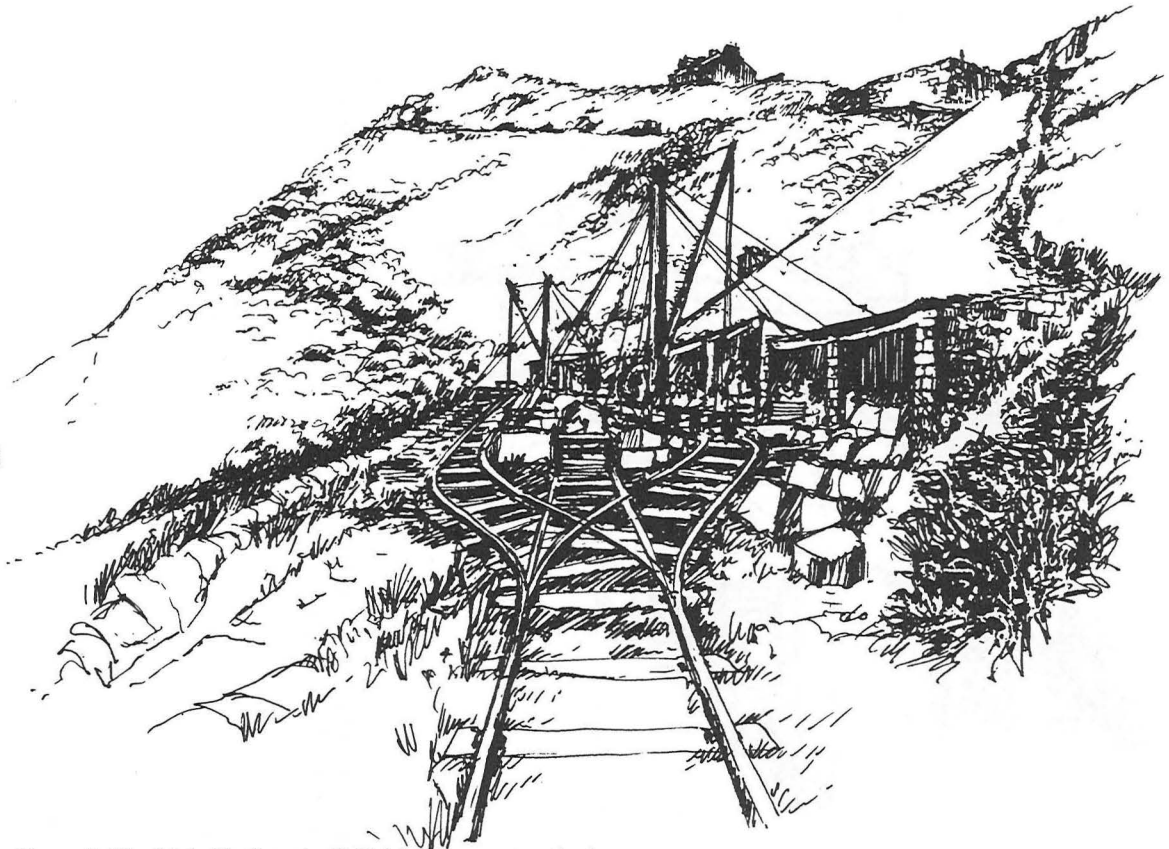

Figure 7: The Main Platform in 1966 (visual reconstruction).

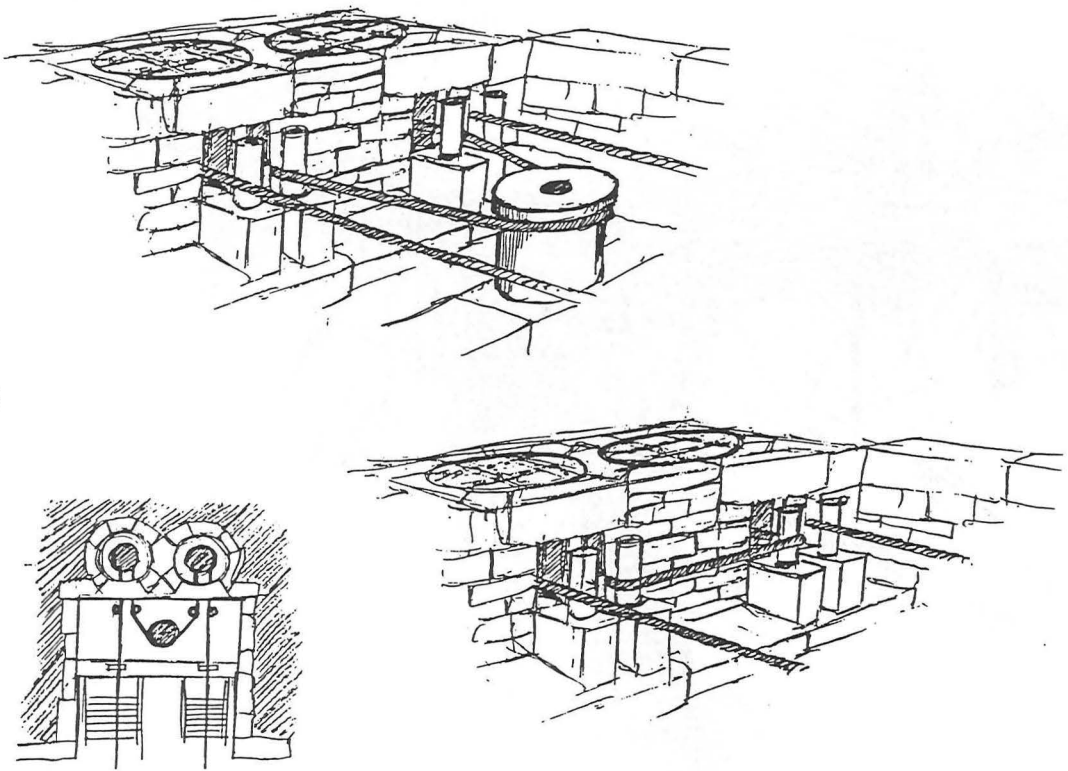

Figure 8: Possible arrangements for the cable and brake drums for the main incline.

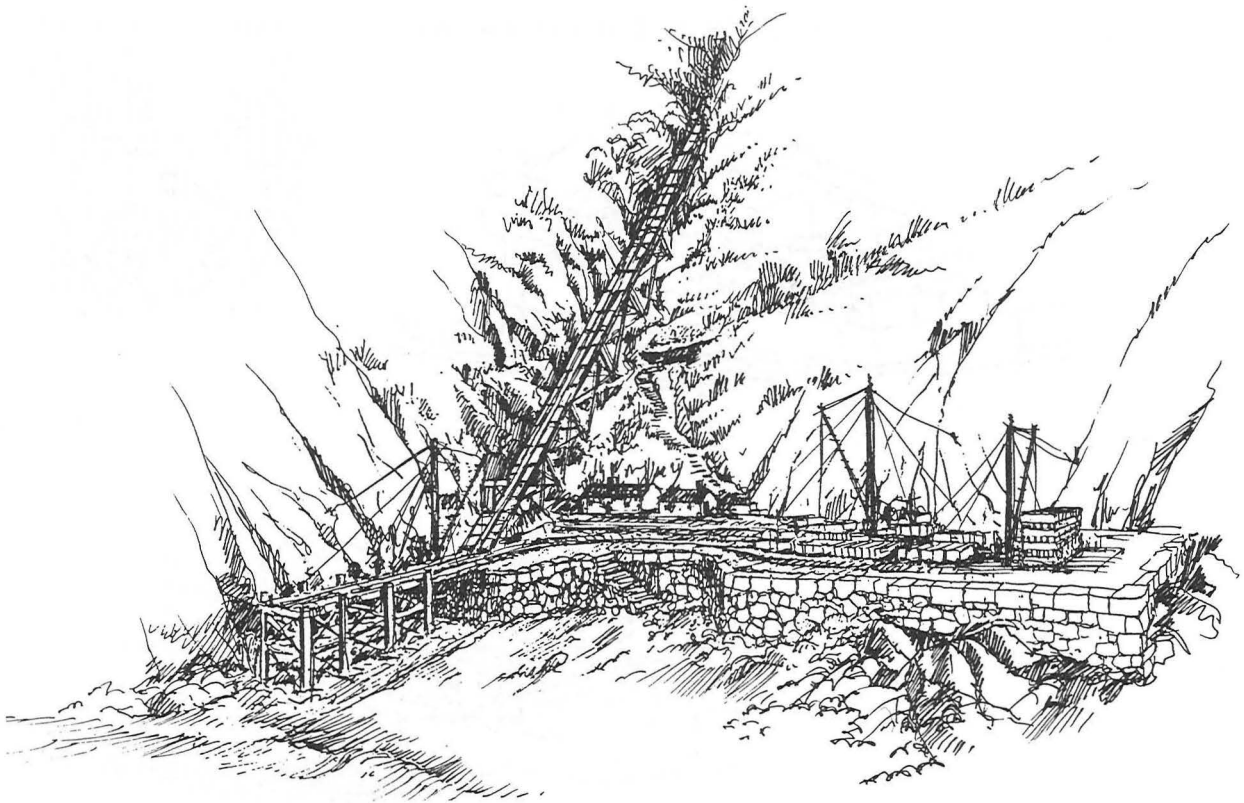

Figure 9: Quarry Quay, Jetty and lower incline, 1866 (visual reconstruction).

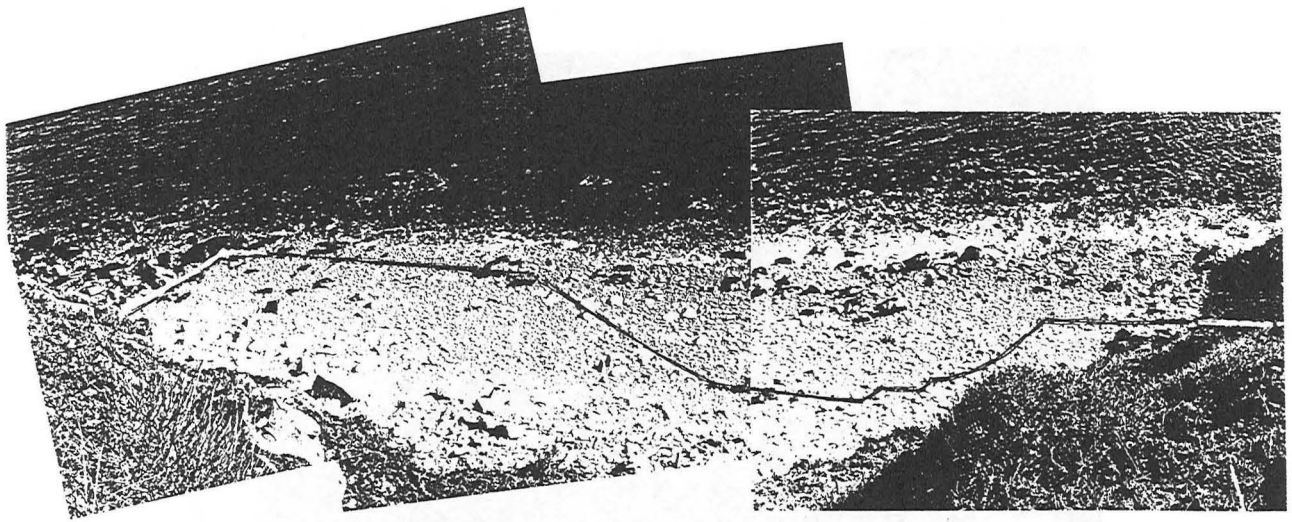

Figure 10: Existing line of foundation blocks for Quarry Quay on Quarry Beach.

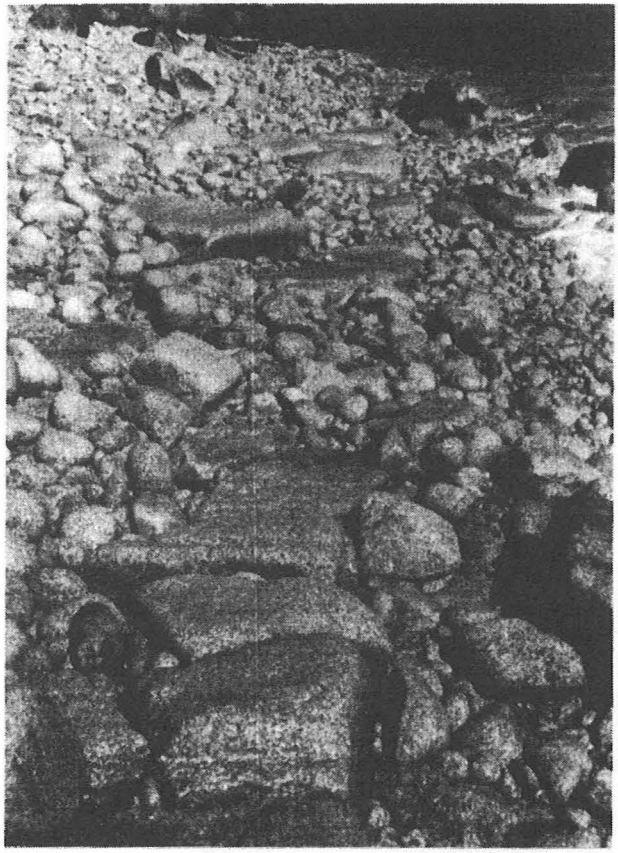

Figure 11: Foundation blocks for northern end of Quarry Quay.

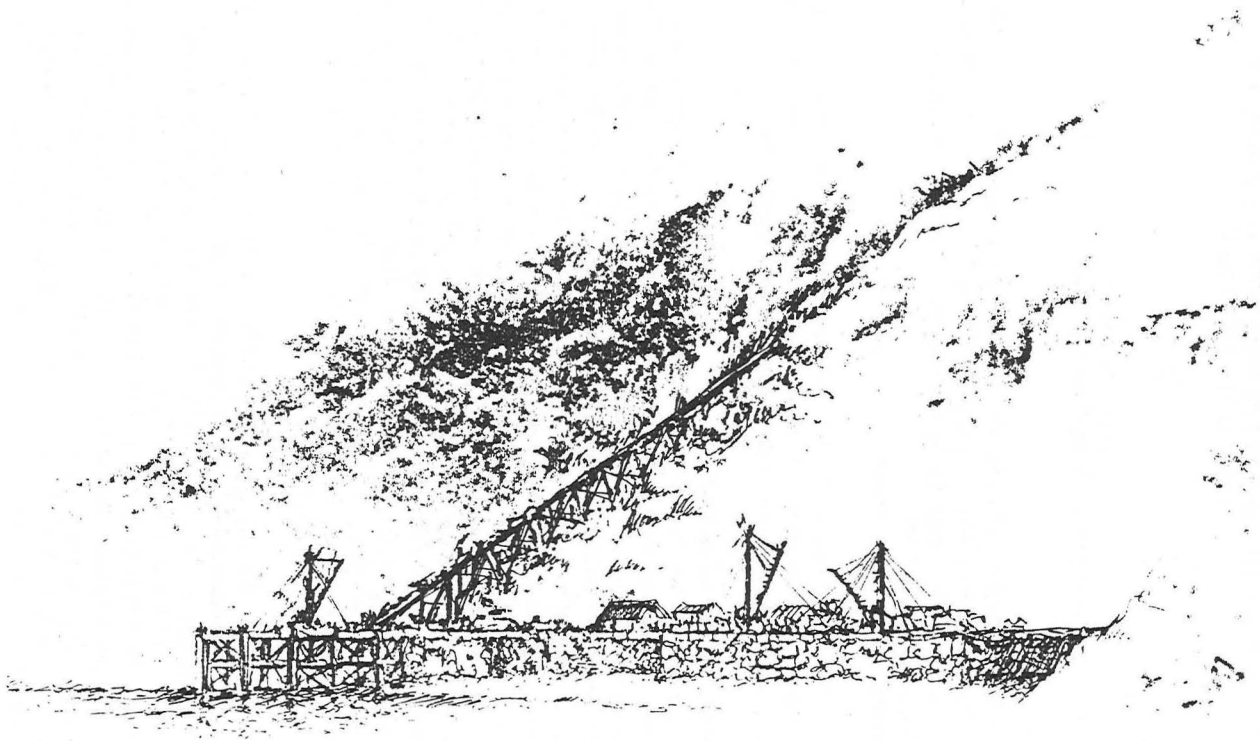

Figure 12: Quarry Quay and Jetty, 1866 (visual reconstruction).