

# The De Lank Granite Quarry

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## Abstract

*De Lank Quarry, near St Breward on north-west Bodmin Moor, is the most famous of all the Cornish granite quarries, and is still active after about 150 years. It is noted for its silver-grey even grained granite and has furnished large blocks for civil engineering works such as bridges, docks and lighthouses, as well as for architectural and monumental work. The paper gives a brief history of developments at De Lank. The importance of photography is stressed as an on-going record of the industrial archaeology of a unique quarry landscape.*

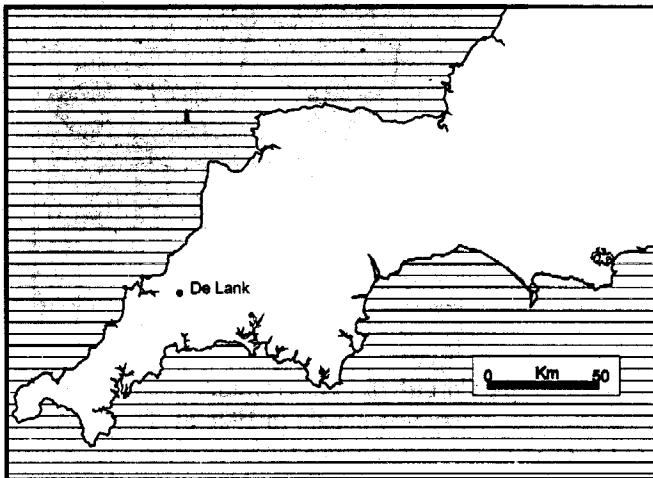


Fig. 1. De Lank. Location.

## HISTORICAL

The history and methods of Cornish granite quarrying have been summarised elsewhere (eg. Stanier 1985 & 1986), but De Lank is of special interest because of its longevity. The site is narrow, confined and hidden, where the De Lank River tumbles off the granite moor through a winding gorge. Development here was made possible after 1834 by the opening of the 19km Bodmin & Wadebridge Railway from Wenford Bridge to a shipping quay at Wadebridge on the Camel estuary. The railway company's traffic books record the carriage of granite for the De Lank Co. from at least 1856-9. Charles Goodyear, a London granite merchant, took up the lease in 1864, and is said to have supplied around 11,000 tons of granite for the piers of Blackfriars Bridge, with over 80 stones weighing 12-20 tons each and about 200 of 6-10 tons, 'all of the finest grain grey granite, remarkable for its evenness of colour.' (*The Engineer* 5 Nov. 1869, 300)

Despite an outlay of capital, the quarries and works were sold in 1877 to Hugh Shearer and Morris Charles Smith, granite merchants of Dalbeattie and Westminster. Quarried granite was carried by rail to a workyard on Wadebridge Quay, where stones for the Eddystone Lighthouse (1878-82) were dressed before shipment, an event commemorated in the name Eddystone Road. This yard closed soon afterwards when a larger works was established at De Lank itself, with modern plant installed on two levels laid out upon waste tips that now filled the valley floor. This coincided with the building of a 1.6km tramway and incline from the railway terminus at Wenford Bridge. There was a short incline at the quarries, where trucks were loaded by an overhead travelling crane. There were already several quarries here when Hugh

Shearer's Eddystone Co. had 'laid down the whole of the machinery for dealing with the work in an extensive and economical manner.' Although there was much activity as the Eddystone Granite Company H. Shearer & Co., debts were incurred and to help pay them off, Col. Peyton Phelps of Lewisham replaced Smith in the partnership in 1884. They must have been confident of the future, for stock in hand included work for the Eddystone and Bishop Rock Lighthouses, Putney Bridge and Hull Docks. Shearer also gained a reputation since Sir James Douglass drew attention to the work for his new Eddystone Lighthouse being completed within six months of the specified contract time.

For a number of reasons, quarrying did not proceed as envisaged, and Shearer and Phelps sold out to the Marble Granite & Stone Co. Ltd. in 1885, although they remained major shareholders of the new Eddystone Granite Quarries Ltd. Ten years later the railway was connected to the main line system, which helped the transport of granite to inland destinations, as well as some dock works. In 1897 the business came into the hands of T.K. Freeman, who sold his interests to the Hard Stone Firms Ltd. of Bath, a new company of which he was a director. This company inherited much machinery and a description of 1898, when over 100 men were employed, is worth quoting for its rich detail:

The machinery, which is a great feature of this work, consists, on the upper level, of three dressing machines, made by J. Spencer & Co., Keighley (Brunton & Trier's patent), and a large lathe and drilling machine in the fitter's shop. On the lower level are two saw frames, in which Riddiough's Patent Steel saw Blades are used with diamond grit (Harrison Bros., Middlesbro') ... the machine cuts five inches in depth per day of 8 working hours, the frame working seven saws. There are also two large polishing wagons, four pendulum polishing machines for steps and other long stones, two vertical and two radial polishing machines, and a lathe with a 36ft. bed, capable of turning columns up to 18in. diameter. The whole of the polishing machines and saw frames were made by Henderson Bros., of Aberdeen. The motive power for driving all the machinery is obtained from a 200 NHP Vortex Turbine by Gilkes & Co., Kendal, which we understand has been running for over nine years, without any repairs. A higher testimonial of efficiency could not be desired. The water to work the turbine is conveyed in 24in. diameter steel riveted pipes, from a pipe-head, or small pond, which has been formed a quarter of a mile higher up the De Lank river. Very little

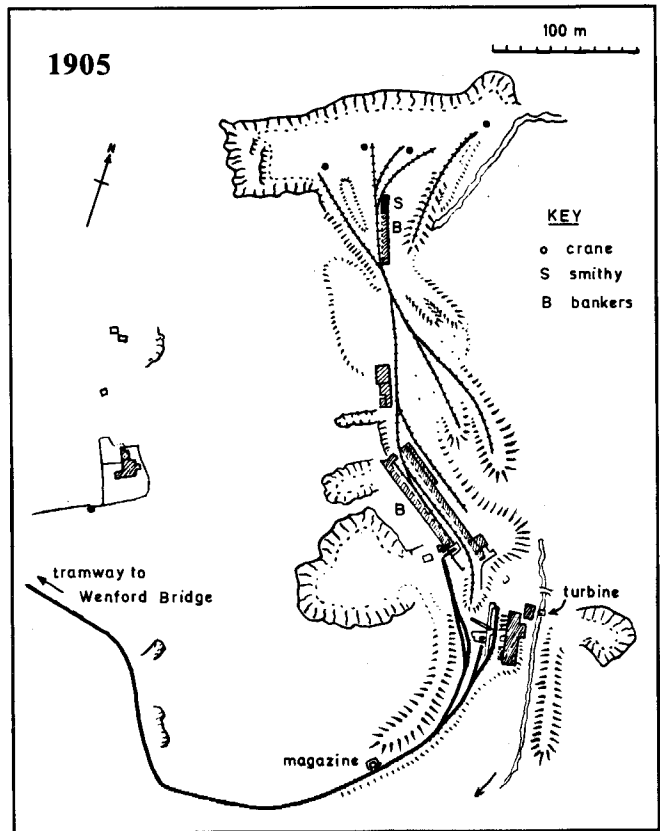
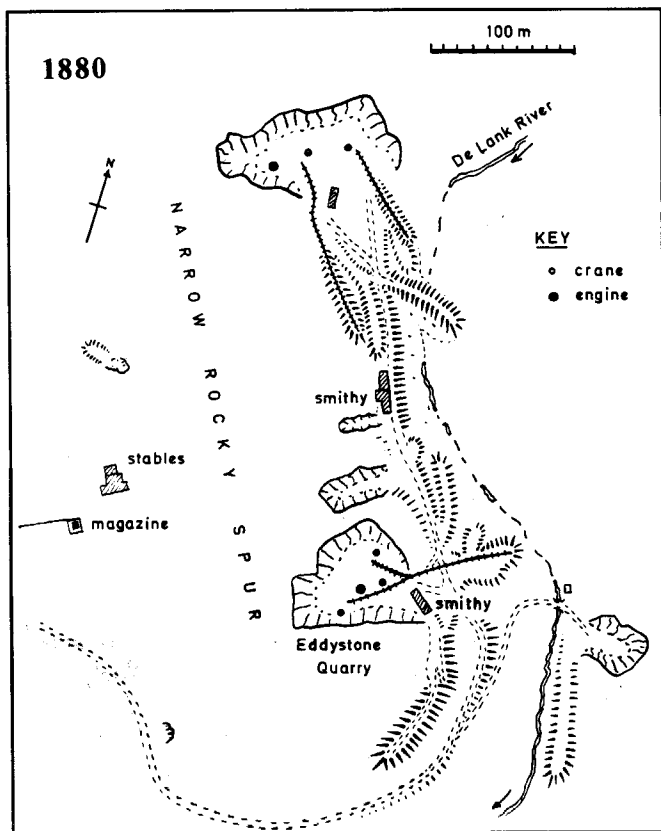


Fig. 2. Developments at De Lank Quarries, 1880 and 1905.

storage is required at the pipe-head, owing to the large volume of water in the river during the driest periods. The difference in level between the pipe-head and the turbine gives a head of 130ft. The turbine drives a grooved rope pulley of 3ft. diameter, the ropes giving the necessary motion to the machinery by companion pulleys and shafting. A double Cornish tandem air compressor is also driven from the turbine; it has a 3ft. stroke and 16in. diameter cylinders (Holman Bros, Camborne). The compressed air is used for driving three 15 ton cranes in the quarries, and to supply the rock drills when they are employed, as well as driving the smiths' fires and the machinery in the carpenters' shop. The air is conveyed in 4, 3, and 1in. pipes of wrought iron with screwed joints. The dressing-sheds and mills are all built of wood in a substantial manner. There are two overhead travelling cranes in the masons' yard, a 20 ton steam and a 10 ton hand-crane, traversing the whole length of the yard, a distance of 330ft, which is a great advantage in dealing with large stones. There are also two 3 ton steam locomotive cranes, which can be used if there is a breakdown in the air machinery or for extra work. (*The Quarry* August 1898, 199-200)

This description may be compared with the layout shown on the 1905 revised Ordnance Survey 1:2500 map (see Fig. 2) and a photograph giving an overall view in 1907 (Plate 1).

The Hard Stone Firms Ltd. (United Stone Firms Ltd. after 1909) owned the De Lank Granite Co. in 1897-1914. The De Lank Granite Quarries Ltd. took over in October 1914, but the Great War intervened and six years later the company was reconstituted and renamed the Cornwall (De Lank) Granite Quarries Ltd. Despite an optimistic start, the company was wound up after only two years. Equipment remained similar in 1920, although the run of the masons' yard had been increased to 450 feet (137 metres).

After this came the Cornish (De Lank) Granite Quarries Ltd., in 1922-26. The quarry was bought in 1926 by Thomas W. Ward Ltd of Sheffield, but continued to work under the name of De Lank Granite Quarries Co. The turbine was replaced in 1927 by three smaller Gilkes turbines, each driving a Broome & Wade compressor and installed in a special turbine-house a short distance downstream (Plate 2). Alongside the 'dimension' granite, setts and kerbs were made until 1935, a practice since at least 1884, utilising the waste tips and discoloured granite unfit for other purposes. Crushing plant was installed to produce roadstone from the waste, and the Cornish Roadstone & Granite Co. Ltd had the right to work elvan or roadstone in several parts of the property in 1919.

Subsequent developments were complicated by the working for roadstone of a number of narrow elvan dykes which cross the valley, the main dyke being quarried for building airfields in the Second World War and now forming the dramatic canyon-like entrance to the site. Lorries replaced the horse-drawn tramway, which ceased altogether during the war. In later years granite quarrying and dressing were concentrated at the northern end of the site (Fig. 3).

In the early 1960s the dressing yard was moved closer to the active quarry, which was worked to a depth of over 30 metres within its original borders. In 1966 quarrying was aided by a thermal lance or jet-channelling blowpipe (introduced four years earlier in neighbouring Hantergantick Quarry), which causes less wastage than the old 19th-century methods of blasting in deep holes with black powder. The quarry had three cranes: a 10 ton electric derrick, and 10 ton and 7 ton compressed air derricks, both formerly steam. Once raised, large quarried blocks were transported about the yard on a tipper lorry while smaller pieces and sawn slabs were carried by a 'run-about' mobile crane. The main sawing and polishing machines were now housed in large, purpose-built sheds, while traditional masons' 'bankers' were located nearby in the shelter of the quarry face.

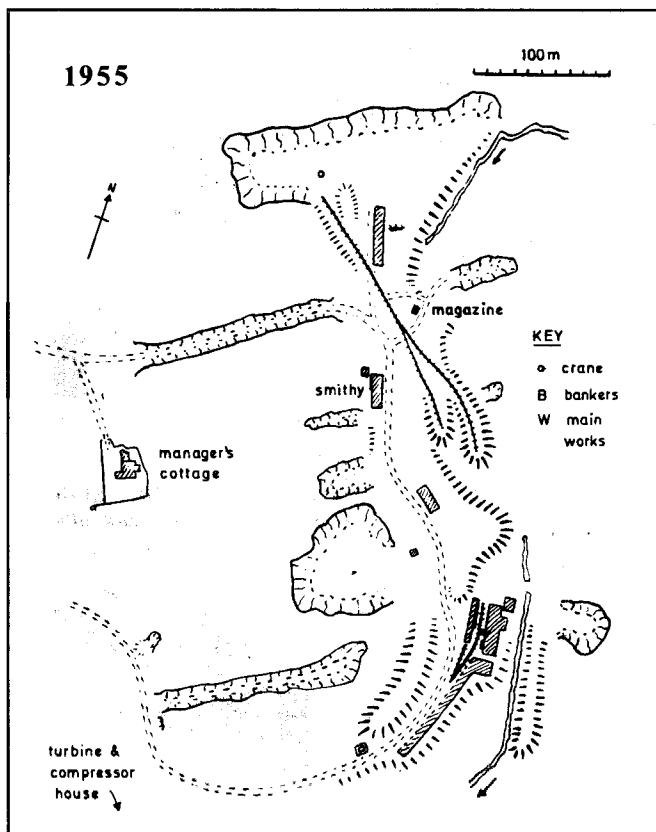


Fig. 3. Developments at De Lank Quarries 1955, and 1980.

During this period, the nature of dressing machinery changed rapidly. For primary sawing in 1966, the old frame saws had been replaced by a Smith-Whitcombe & Cook wire-loop saw with two 219 metre continuous wires, but this was scrapped in favour of two Norwegian Bergsli saws with short wire loops of 23 metres and 40 metres each. Circular saws with diamond-impregnated blades were used for secondary sawing. Radial polishers, such as had been in use since the late 19th century were used for smaller work (Plate 3), but a semi-automatic polisher was now installed. The three turbines suffered from summer water shortages, so that by 1966 a new three-cylinder Broome & Wade compressor powered by mains electricity was doing most of the work (Mumby 1966, 25-7). A crushing and screening plant was operated in 1965-80 in a last attempt at producing roadstone from the waste.

The Ward Group was taken over by Rio Tinto Zinc in 1983 and Ready Mixed Concrete Ltd. in 1988. Under RMC, the quarry traded as Dimensional Stone Ltd., until that firm was bought by Albrighton plc in 1993. Since 1994, De Lank has operated under Albrighton's subsidiary Natural Stone Products Ltd. The complex history of ownership at De Lank listed above reflects the changing fortunes of even large firms in the granite quarrying industry.

Turnover at De Lank is still high in 1996, although mechanisation has reduced the workforce to around 25. In the quarry, the jet-channelling blowpipe is still in use after 30 years. Powered by oxygen and paraffin, and cooled by water, it works at 3,000°C with much noise and steam to disintegrate the rock and form a channel to cut out the back and sides of a block (Plate 4). Some blasting in horizontal capping holes might be needed to heave the block from its 'bed'. Lines of deep holes are drilled for secondary wedge-splitting. Once extracted, large blocks are reduced to a manageable size by the traditional plugs and feathers placed in lines of drilled holes (Plate 5). Power for drills and other machinery still comes from the three-cylinder Broom & Wade 100HP compressor,

driven by an electric motor (mains supply).

A 25 ton electric derrick (Anderson Grice) raises granite blocks from quarry (Plate 6). In the dressing sheds, primary sawing is now by two diamond-tipped circular saws of 3 metres and 2.5 metres diameter (Gregori and Spielvogel), and secondary work by 600mm and 1200mm diameter saws (Terzaggo and Gregori Impala). The greatest change is a fully-automatic polisher on a 14 metre bed (Thibaut 525). There are smaller polishers and a drilling machine. The process goes on and in turn these will become obsolete, just as the equipment listed almost a century earlier.

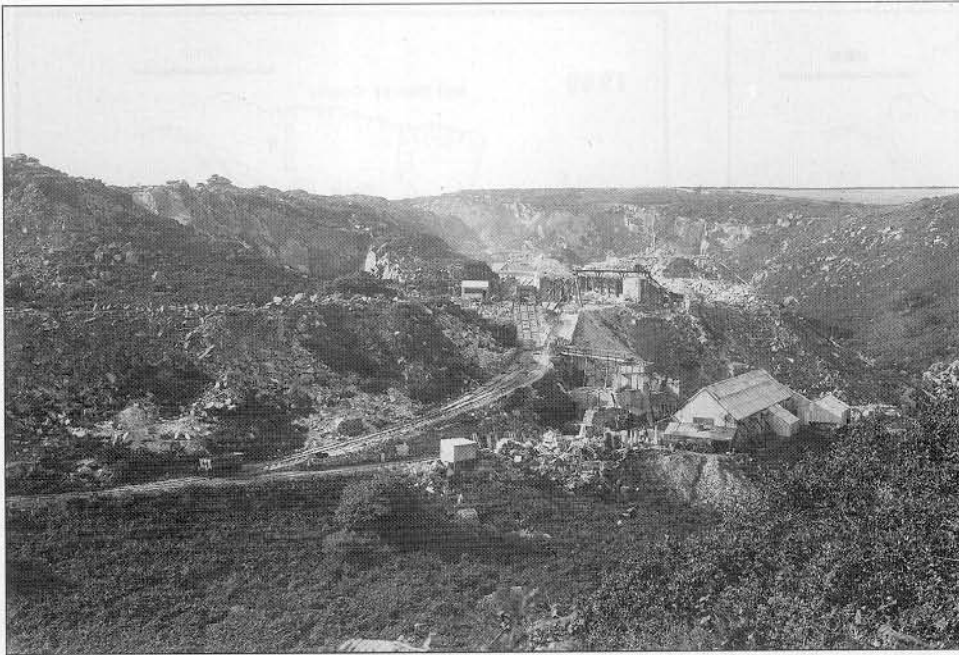
The market for stone has changed in the second half of the 20th century - whereas in the past the greatest demand was for engineering or architectural 'dimension' stone, the main requirement now is for sawn and polished cladding, with the result that a quarried block can go much further. Stone dressing machinery has developed and changed at an increasing rate in recent years, and with heavy investment in machinery, such as at De Lank, a modern workyard must now diversify and win contracts to dress outside or foreign granites to meet the demands of architects and the building industry.

#### RECORDS IN DOCUMENTS

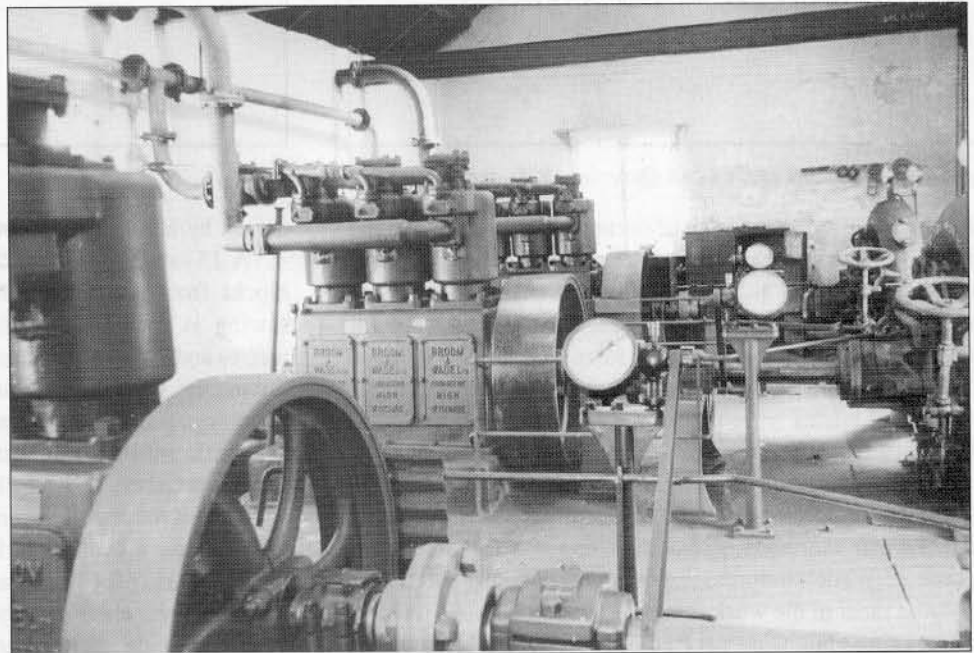
Historical records of the industry are notoriously sparse, but developments at De Lank have been documented from the late 19th century onwards, in trade journals such as *The Quarry*; *Quarry Manager's Journal*; *Stone Trades Journal* and *Stone Industries*. Copies of leases and company prospectuses are held in the Cornwall Record Office, Truro, and Public Record Office, Kew.

#### RECORDS IN MONUMENTS

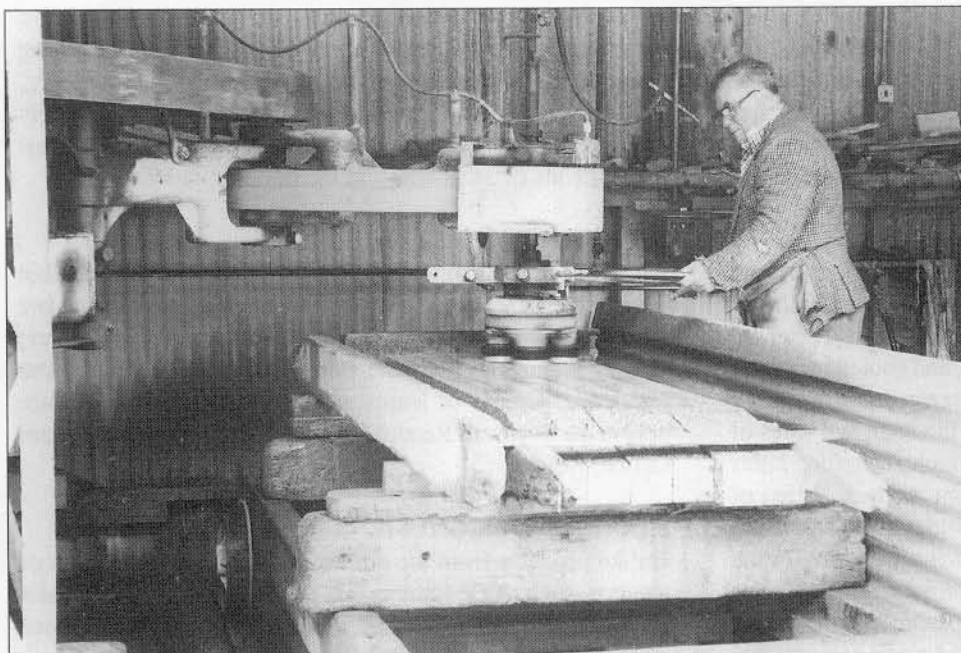
Unlike products from the mining industry, another aspect of a quarry such as De Lank is that its fine products live on as a lasting memorial to the skills of its quarrymen and stone masons. Outside the many local uses in Cornwall, there are



*Plate 1. De Lank granite quarries, workyards and railway viewed from the south, 24th September 1907.*

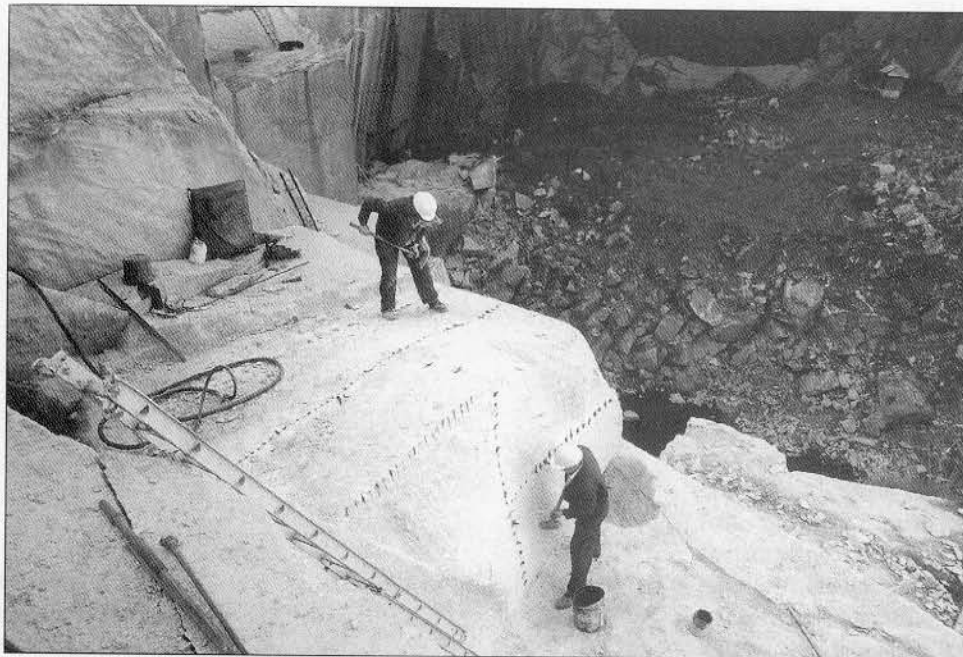
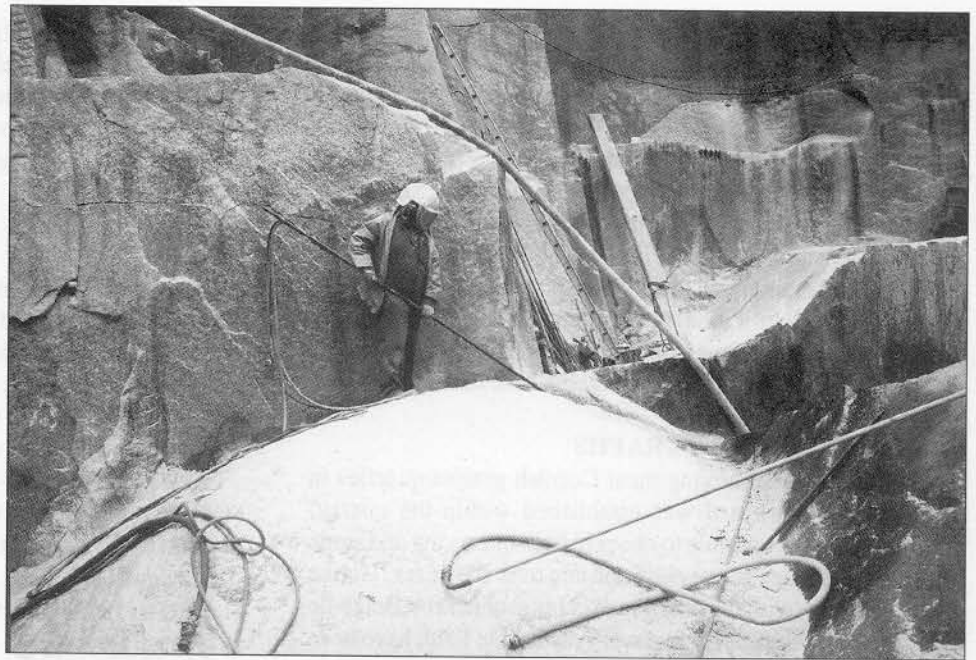


*Plate 2. Power for the quarries. Interior of 1927 turbine house with three redundant Broom & Wade compressors driven by turbines, September 1983.*



*Plate 3. Granite dressing. Hand-operated radial polisher ('Jenny Lind') in April 1977.*

*Plate 4. Quarrying with the jet-channeller, March 1993.*



*Plate 5. Lines of plugs and feathers to split granite in the quarry, March 1993.*

*Plate 6. Lifting a block with 'dog' hooks. Note face behind, showing characteristic marks of jet-channelling, March 1993.*



rock-tower lighthouses - the very symbol of strength - including the Eddystone of James Douglass (not John Smeaton as often written), Bishop Rock, Beachy Head, Needles and Smalls; docks at Cardiff, Cork, Hull, Newport, Swansea, Tilbury, West Hartlepool and Bombay; dockyards at Chatham, Devonport, Portsmouth, Gibraltar and Singapore. In London, there is De Lank granite in the Thames Embankment and the Blackfriars, Putney and Tower Bridges. Architectural granite is in many civic and commercial buildings here and in other cities throughout Britain. Monumental granite is seen in famous London memorials to Nurse Cavell, Karl Marx, Winston Churchill, and the base of the Cenotaph.

#### RECORDS IN PHOTOGRAPHS

De Lank is unusual among most Cornish granite quarries in that a major workyard was established within the quarry, where it has been possible to observe both quarrying and stone dressing processes at one confined site over the years. Unlike many quarries (with the possible exception of nearby Delabole Slate Quarry), the quarry and workyard at De Lank have been recorded in photographs for about a century. The earliest published photographs, from the 1890s, are ten of the quarries, tramway, dressing sheds, and a very rare view of quarrymen actually using (and not posing with) 'jumpers' to bore lines of holes for plugs and feathers (*The Quarry* August 1898, 193-9). Later published photographs appear in Greenwell & Elsdon (1913, Figs. 330-2), *Stone Trades Journal* (1927, 544-5), and *Stone Industries* (1966, 27). Photographs of the finest quality are a set of six taken on 24 September 1907 by T. Clifford Hall for the Geological Survey (see Stanier 1995, 45-6). Inspired by these and exactly 70 years later, the author of this paper began a series of photographs which has continued at regular intervals until the time of writing. The result is now a comprehensive record of black and white prints and colour transparencies, showing many aspects of De Lank, including quarrying methods, sawing, polishing, turbines, compressors, powder magazine, smithy, waste disposal and transport. It is only after such a time period - 19 years - that the true value of this type of recording begins to be appreciated. By its nature a quarry destroys itself as it evolves. Although older sections of De Lank survive, with much of interest for the industrial archaeologist, they are always at risk, which lends increased value to an on-going photographic record.

#### ACKNOWLEDGEMENTS

I am particularly grateful to David Methven, Manager at De Lank, for his continued interest and support. Plate 1 is reproduced with permission of the Director, British Geological Survey: NERC copyright reserved. All other plates are by the author.

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