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While one worker drives wooden wedges into narrow trenches in the rock with a mallet, another worker soaks them with water. In some instances – for example, when working with harder rock such as granite, or when larger blocks are required – it may be necessary to cut wider channels in the rock to give more room for levers to detach the stones from the bedrock.

□ Granite was used for wall linings and roofing blocks in the burial chambers, plugging internal passages, columns, false doors, offering tables, sarcophagi and pyramids. It could only be worked using hand-held pounders made of dolerite, a hard stone.

STONES

The pyramids are built from blocks of limestone. With no iron tools available, the blocks must be cut from the bedrock using wooden wedges and levers. First, a

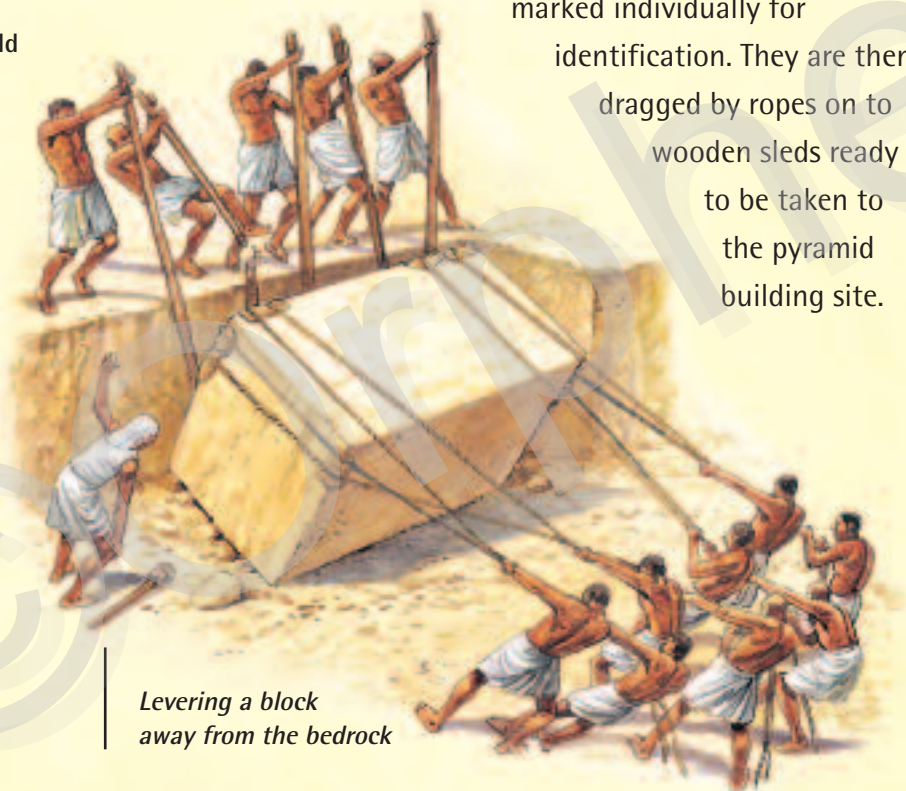
workman cuts a narrow trench in the stone using an axe. Wedges are then driven in along the trench with a heavy mallet. The wedges are soaked with water. As the wood swells, the stone cracks. The quarry workers then use ropes and heavy timber levers to free the block. Each block weighs around three tonnes, so a number of men are needed to complete this task. Using a copper chisel, the blocks are

marked individually for identification. They are then dragged by ropes on to wooden sleds ready to be taken to the pyramid building site.



Soaking the wedges

Wooden wedges being hammered into a trench



Levering a block away from the bedrock

Most stones are quarried out of the rock near the site. But a fine white limestone, used for the polished casing, comes from Turah, a quarry on the opposite bank of the Nile. Granite slabs, also used in building the pyramids, are quarried at Aswan, some 900 kilometres farther upriver. The best limestone at Turah is obtained from tunnels dug into the face of the cliffs. The

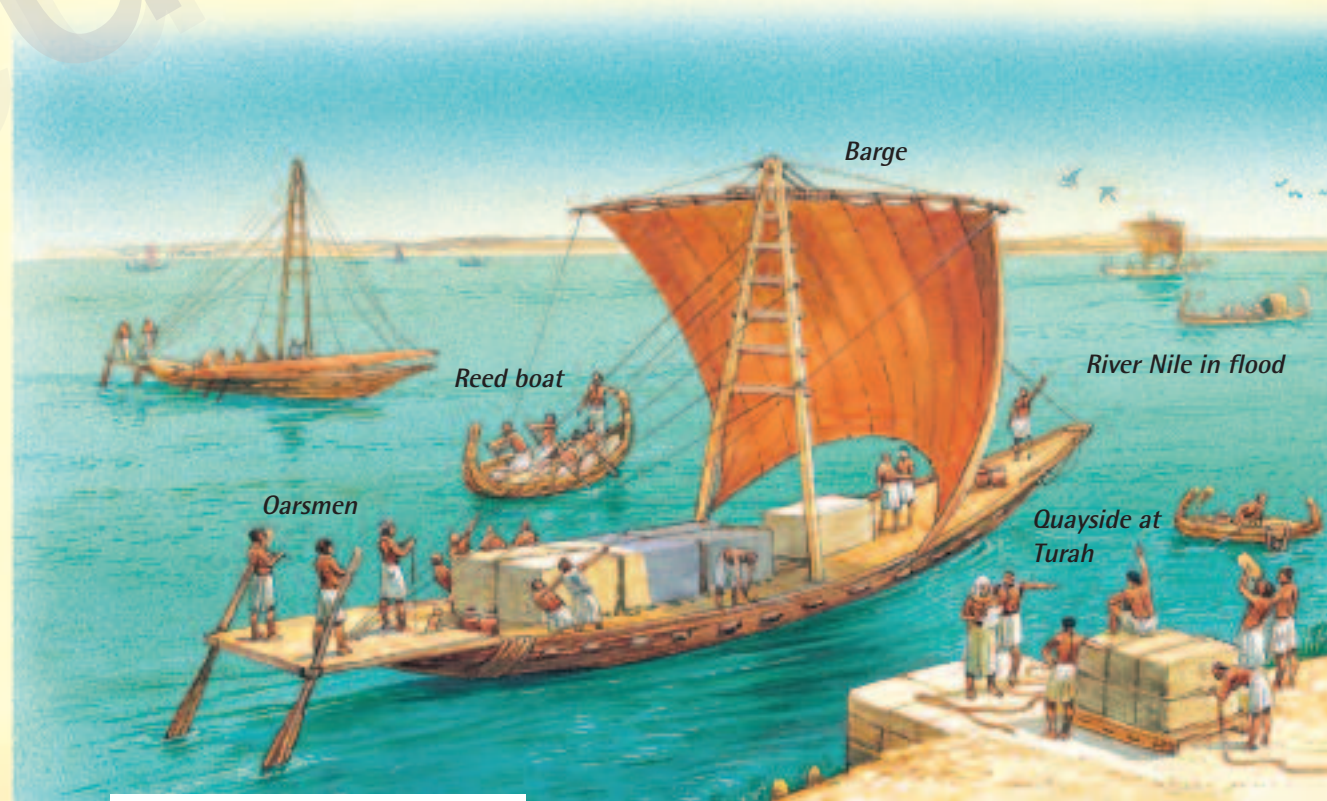
Marking stone for identification



blocks are dragged to the river's edge. To prevent them from sinking into the sand, tracks made from parallel wooden boards embedded in the ground are laid and the blocks dragged along them. Each stone is marked with the name of the work gang that hauled them; that name will be checked off at the site. Finally, the blocks are loaded aboard barges to take them across the Nile to the pyramid building site.

□ Just to cover the outer surface of the Great Pyramid of Khufu, 67,390 cubic metres of Turah limestone were needed.

The casing blocks are stored at Turah until the time of the annual Nile flood. At this time, most of the distance between quarry and site can be travelled by river, making transportation of the heavy stones much easier. The Nile in flood is, however, fast-flowing and dangerous and great skill is needed to steer the heavily-laden barges across its waters.



Barge

Reed boat

River Nile in flood

Oarsmen

Quayside at Turah



This is a cross-section through the pyramid as it will look when complete. The entrance is at ground level. The positioning of the blocks that make up the roof of the burial chamber form a peaked shape. This is designed to support the enormous weight of pyramid blocks above it.



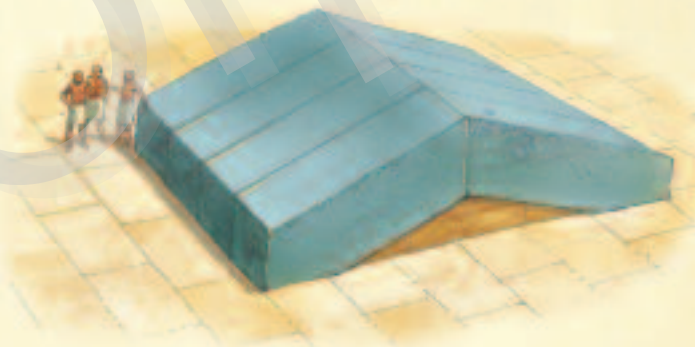
The sarcophagus is the outer stone coffin into which the wooden coffin is to be laid. This one is carved from pink granite.

BUILDING THE TOMB

While the ground is being levelled, workers can make a start on the burial chamber and the underground passage that will lead to it. Using their dolerite pounders, they smash their way through the bedrock to open up a gradually descending shaft. Men with chisels follow behind them, evening out the walls before finally smoothing their surfaces. Meanwhile, a large hole is dug



in the bedrock from above. This will form the burial chamber. A few metres below ground level, the passageway levels out and runs horizontally until it meets the chamber. The sarcophagus is too big to be hauled along the passageway, so it must be carefully lowered into the chamber before the roof is put into position. Two rows of granite slabs are now fitted together to form a peaked shape (*below*). As the next levels of stone slabs are added to the pyramid base, the roof of the burial chamber will be gradually covered over.



Stonemasons toil in the shade, chipping away at the individual stones. Each block is carefully chiselled into shape and marked with a number to indicate its position in the pyramid structure.

FITTING THE BLOCKS

The area lying within the outer rim of casing stones is filled with blocks of lesser-quality stone quarried locally. But these, too, must be carefully chiselled so that their upper and lower surfaces are exactly horizontal. Now the blocks that will form the next layer are hauled to the site. The teams of workers drag the sleds, each with a block firmly attached, along a "railway" made of wooden boards embedded in the ground and coated with mud. Keeping the track constantly wet helps the sled to be dragged along much more easily. A ramp, built from close-packed rubble, allows the teams to haul blocks up to the higher level.

Once the casing stone has been brought up to its allotted place, the side that will eventually form part of the sloping outer face of the pyramid is carefully marked with lines. These show the exact slope of the face. The stone is then levered snugly into position next to its neighbour.

