



*Spokane shaft headframe.*

## SHAFT SINKING RECORD AT SAN MAURICIO

During the month of December, 1939, the Spokane shaft of the San Mauricio Mining Company was sunk from a depth of 195 feet to a depth of 313 feet, or a total of 118 feet in very hard granite gneiss. It is a 3-compartment shaft and is 7 feet by 18 feet outside of the timber.

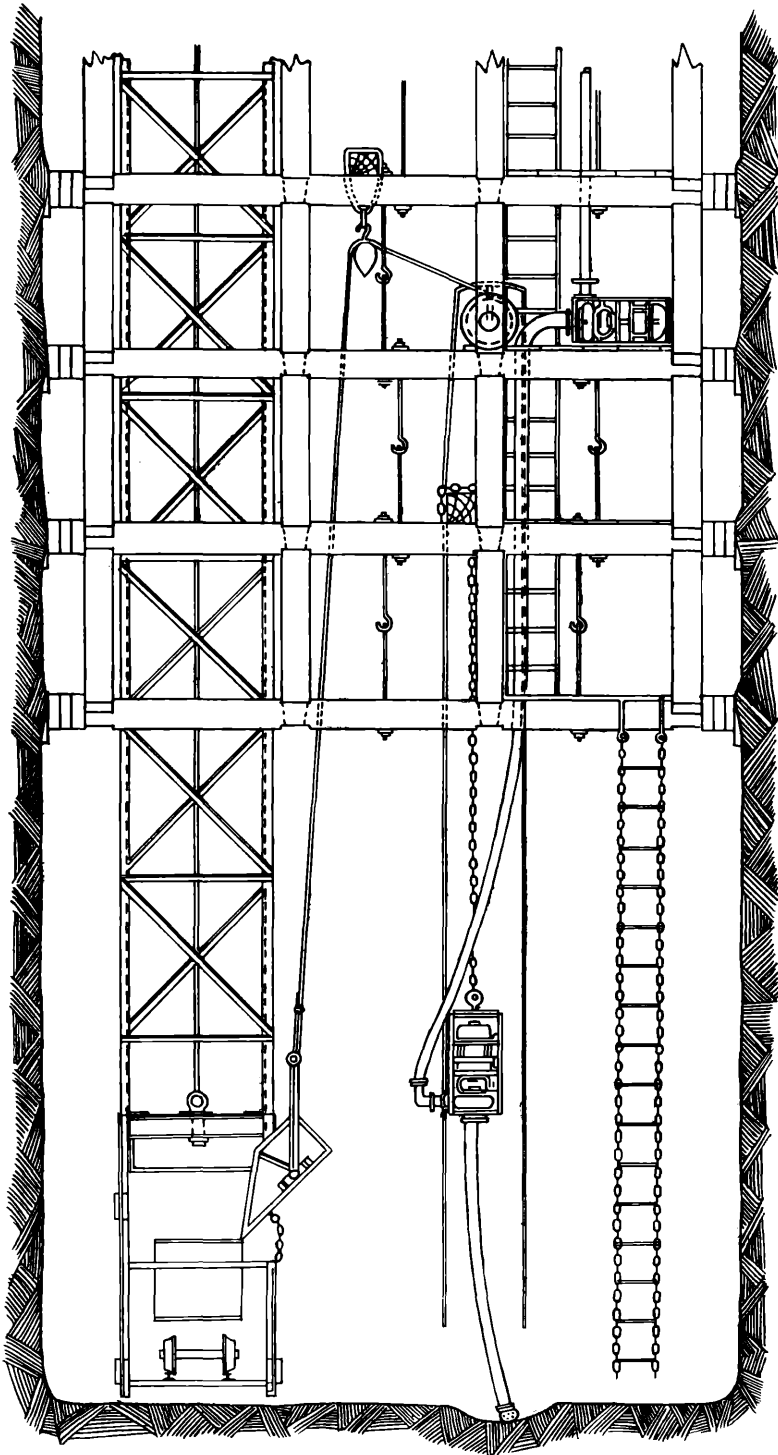
While this footage would not be considered particularly noteworthy by any of the large shaft sinking or development companies, it is excellent work for shaft sinking in routine mine operations. It is a record footage for this

district, and considering the hardness of the rock, it is probably a sinking record for the Philippine Islands.

The sinking operations at this shaft are on an 8-hour, 3-shift basis, under the supervision of Fritz N. Carpentier. Each shift has a personnel of 1 capataz, 10 shaftmen, 2 topmen, 1 compressor operator, and 1 pumpman. The entire Filipino crew are natives of the Bicol region and have received all of their mining experience at San Mauricio. All work including timbering is done by the regular shaft crews.



*One of the three record - breaking shaftcrews.*



*Figure 2—Showing details  
of "Mucking Pan" device.*



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A 30-hole and cut round, a diagram of which is shown in Figure 1, is used to great advantage. This type of round minimizes timber breakage and piles the muck in one end of the shaft which is a great help in "mucking pan" operations. Drilling equipment consists of 3—3-inch drifters equipped with handle bars and chucks for 1 1/4" round lugged steel, 6—55-lb. machines of the jackhammer type with chucks for 7/8" hex. steel, and 3—55-lb. moilers. The drilling is done with 3 drifters and 4 jackhammers. A round is usually drilled out and blasted in 8 hours.

60% gelatin dynamite is used with electric detonators from 0 delay to No. 9.

It was in the mucking portion of the

cycle that the greatest amount of time was saved. This was accomplished by the use of the "Mucking Pan" which, while it has been used in other places, was further developed by Mr. Carpentier to fit conditions here. The main feature of this operation is the ability to get the cage to the bottom of the shaft at all times. This is accomplished by means of an extension head on the cage to which are attached extension shoes. This is illustrated in Figure 2. The mucking pan is constructed something like the body of an open end car. The sides are about a foot high and obviate the high lift usually encountered in mucking. The men turn the open side toward the muck pile and roll the material in. Its

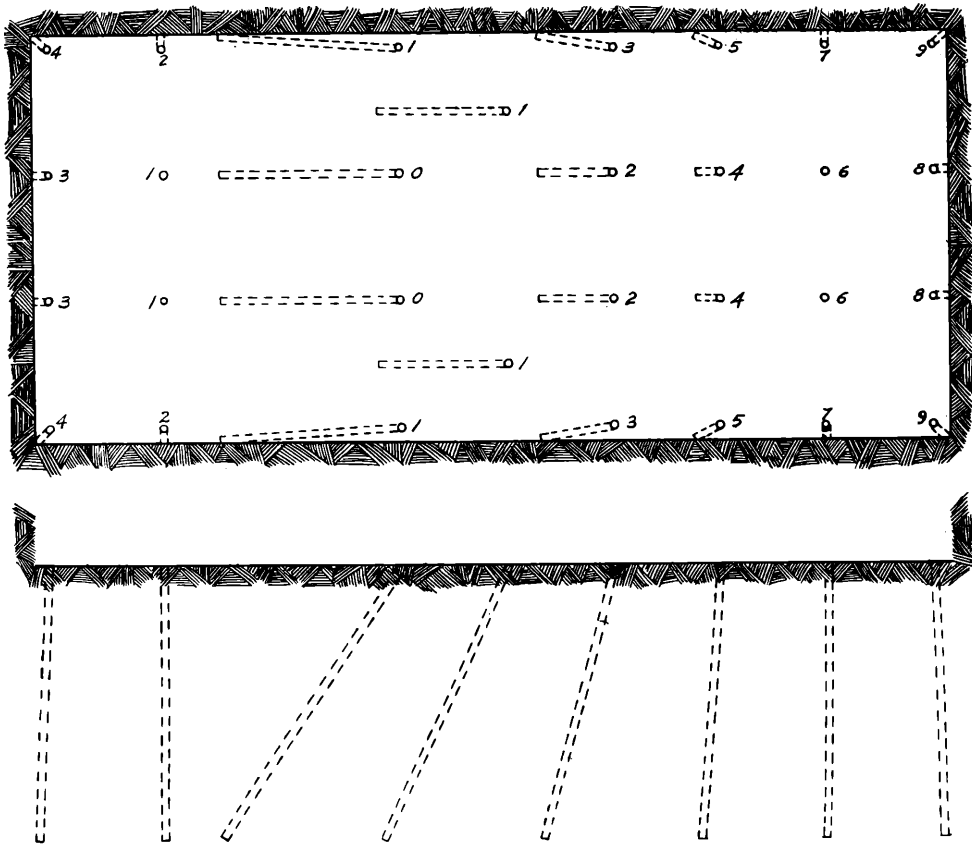


Figure 1

*San Mauricio Mining Company  
30-Hole Shaft Round*

capacity is about 20 cubic feet and when loaded is hoisted and dumped into the car on the cage. The pan is handled with a tugger hoist that is located a short distance above the mucking operations. The maximum lift required to dump is about 8 feet. Muck is removed as fast as cars can be hoisted and lowered. 75 cars have been mucked in one 8-hour shift. Timber must be kept within 45 feet of the bottom to allow the cage to operate.

All timbering is done by the regular shaft crew. 10 x 10 Oregon pine is used with 1" hanging rods. Sets are spaced at 6' centers with 5" x 6" Api-tong guides. Timbering is kept to within 45 feet of the bottom.

In order to do away with the necessity of handling the large heavy pumps that are necessary for high lifts, we install a 5 H.P. centrifugal pump at each 100 feet of depth. These are all connected to one starting box and pump in series. If a greater amount of water is encountered than can be handled over 100 feet of static head by a 5 H.P. pump, we will install the pumps of the necessary size. Pump

installations are shown in Figure 2.

**DATA FOR DECEMBER, 1939.**

*Miscellaneous*

No. of 8-hour shifts worked . . . .	93
Man shifts . . . . .	1360
Total advance . . . . .	118 feet
Number of rounds blasted . . . . .	21
Sets of timber placed . . . . .	18
Total lost time . . . . .	96 hours
Average blasting cycle . . . . .	35 hours
Advance per round blasted . . . . .	5.6 feet
Drill steel used per round . . . . .	246 bits

*Cost Per Foot*

	<i>Per Foot</i>
Labor (Including Bonus) . . . . .	P36.59
Explosives . . . . .	6.57
Timber . . . . .	9.91
Other Supplies . . . . .	4.32
Supervision (Capataces) . . . . .	1.48
Mine Distributive (Staff Supervision, Machine Drills, etc.) . . . . .	7.71
Power . . . . .	1.83
Engineering . . . . .	0.41
Assaying . . . . .	. . . .
<b>Total Cost Per Foot . . . . .</b>	<b>P68.82</b>

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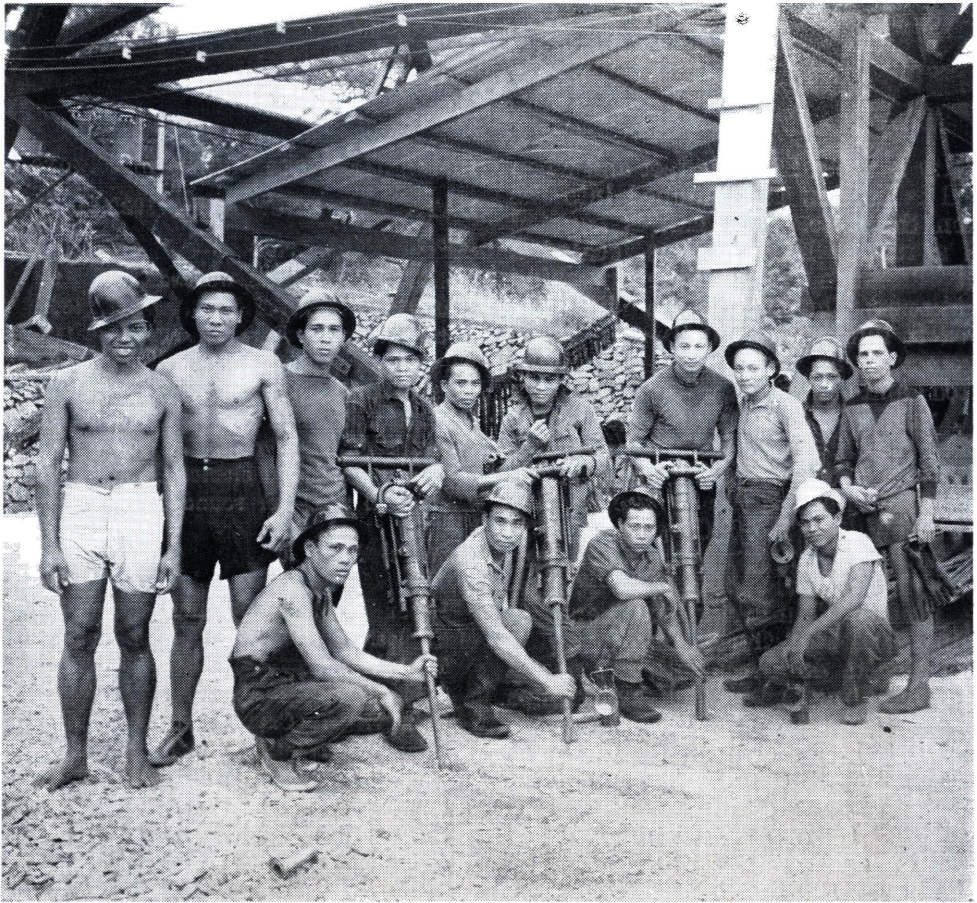
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*These are two of the shaft sinking crews who made record time at San Mauricio.*

