

**ROCK
EXCAVATING
AND BLASTING**

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Rock excavating and blasting by J. J. Cosgrove

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By
J. J. COSGROVE



Author of

"PRINCIPLES AND PRACTICE OF PLUMBING"
"SEWAGE PURIFICATION AND DISPOSAL"
"HISTORY OF SANITATION"
"WROUGHT PIPE DRAINAGE SYSTEMS"
"PLUMBING ESTIMATES AND CONTRACTS"
"DESIGN OF THE TURKISH BATH"
"SANITARY REFRIGERATION AND ICE-MAKING"
"SANITATION AND HYGIENE"



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PREFACE



HIS work was called forth by a real and urgent demand for a book that would help the young engineer, the superintendent, the rockman and miner to understand the mysteries of explosives; how to handle them; and how to get the best results in the various kinds of rock excavating.

It is a well-known fact that schools of engineering teach the design of engineering works, but not their construction. A few strokes of the pen show how a tunnel is to be driven through a mountain, but there is nothing shown on the drawings or taught in school, that will point out how the work is to be accomplished. This part is left for the contracting engineer to work out for himself, and the young engineer in charge of the work, if he has had no previous experience, must pick it up as he goes along from the rockmen in charge of the blasting.

As most of the graduates of engineering colleges follow the construction branch of their calling, and in the course of their work are soon put in charge of rock excavating, either open-cut work, tunnel driving or shaft-sinking, this work will be found invaluable to them as well as in the class room, and in the hands of anyone interested in quarrying or blasting rocks or other hard materials.

It is believed that by following the text a person

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wholly unfamiliar with blasting and explosives could intelligently superintend rock excavating or do it himself. Text and illustrations show how to drill bore holes to get different results; how to charge the bore holes; how to drive a tunnel; how to sink a shaft; blasting in quarry-work and open-cut excavating; care, handling and storage of explosives; and the tools and machines required in rock excavating.

A copy of this book should be found on the shelves of every library. It will also be found invaluable at mines and quarries, in the class room of engineering colleges, and in the offices of engineers, architects and contractors.

J. J. COSGROVE.

Philadelphia, Pa., September, 1913.

PUBLISHERS' NOTE



THIS is an age of vocational training. The old system of apprenticeship having passed away left a lack of skilled workers without which no nation can be truly prosperous. Schools and colleges have been established to supply this lack of technical training, but schools and colleges can help only those who come to their doors, thirsting for knowledge.

The great host of workers, however, the very backbone of the industrial Commonwealth, are left to shift for themselves, and carve out of the hard rocks of experience their own futures and fortunes. Such a system injures not only the worker, but the employer and State as well; and within recent years large industrial concerns have turned their attention toward providing vocational training for all those interested in their calling.

Railroads not only have traveling instructors and courses of study for the trainmen, but some of them have schools for apprentices in their shops; and most of the railroads do not stop at that, but reach out to help the farmers, manufacturers and tradesmen along their lines to produce bigger crops, increase their output, and in every way improve their methods and make greater profit.

Manufacturers of type-setting machines maintain free schools to teach the care and operation of their machines. Manufacturers of plumbing and heating goods have textbooks and free publications of an educational nature prepared, to help and instruct those connected with their calling; and all along the line is found the same awakening to the importance, the duty, and the benefit of a like course.

In keeping with the spirit of the times, we, as the pioneer manufacturers of fire-proofing materials for buildings, and the largest manufacturers in the world of NATCO hollow tile building blocks, have accepted the responsibility thus imposed upon us, to do our share towards furnishing reliable and readily-available information regarding all phases of building construction. In carrying out this undertaking our monthly magazine, BUILDING PROGRESS, was started, and the work, "Rock Excavating and Blasting," first appeared in its pages as a serial article. The value of the information contained in the series prompted us to put it out in more enduring form, suitable for ready reference; and this we do just as it left the author's hands, without one word of advertising anywhere in the book.

NATIONAL FIRE-PROOFING COMPANY,

Pittsburgh, Pa.

TABLE OF CONTENTS



	PAGE
FORCE AND DIRECTION OF A BLAST	1
SINKING SHAFTS THROUGH ROCK	17
TUNNEL DRIVING	23
ROCK-DRILLING TOOLS AND MACHINERY	35
OPERATING DRILLING MACHINES	45
ROCK-DRILL BITS OF STEEL	51
HAMMER DRILLS	69
STONE CHANNELERS	75
POWDER	91
CHARGING DRILL HOLES WITH POWDER	107
DYNAMITE	117
METHOD OF THAWING DYNAMITE	127
LETONATORS FOR EXPLODING CHARGES	147
FIRING BLASTS BY ELECTRICITY	157
HANDLING AND STORING EXPLOSIVES	173

LIST OF TABLES



TABLE.	PAGE
I. Size of Drill Holes	12
II. Weights and Specifications of Rock Drills....	38
III. Weights and Specifications of Rock Drills	56
IV. Air Required to Run Rock Drills	64
V. Factors for Various Altitudes and Pressures..	66
VI. Capacities of Hammer Drills	70
VII. Specifications of Stone Channelers	85
VIII. Specifications of Channeling-Machine Steels...	87
IX. Size of Drill Holes for Different Weights of Explosives	105
X. Size, Number and Weights of Tamping Bags..	116
XI. Sizes and Weights of Dynamite Cartridges....	123
XII. Sizes of Blasting Caps	148
XIII. Name and Use of Fuses	152

LIST OF ILLUSTRATIONS



FIG.		PAGE
1.	Hole Made by "Grip" Shot	2
2.	Inclination of Drill Hole for "Grip" Shot	3
3.	Effect of Blast in Rock Having Two Free Faces	5
4.	Effect when Charge is Equal Distance from Two Free Faces	6
5.	Showing Terms Used in Blasting	8
6.	Bench Work in a Quarry	9
7.	A "Chambered" Drill Hole	11
8.	Effect of Multiple Blasts	13
9.	Rock Removed by Multiple Blast	15
10.	Arrangement of Drill Holes in Shaft Sinking..	18
11.	Deep Drill Holes for Shaft Sinking	20
12.	Rock Drilling in Small Tunnel—Soft Rock	24
13.	Diagram of Drill Holes in Tunnel—Soft Rock...	25
14.	Drill Holes for Small Tunnel in Hard Rock.....	26
15.	Drill Holes Near Fissures or Faults	29
16.	Method of Working Large Tunnel	31
17.	Rock Drill on Tripod	36
18.	Rock Drill on Quarry Bar	40
19.	Mining Column or Shaft Bar	42
20.	Sand Pump	47
21.	Perspective View of Rock-Drill Steel	52
22.	Drill Steel for Hard Rock	52
23.	Drill Steel for Soft Rock	53
24.	Length of Rib on Drill for Soft Rock	53
25.	Cutting Edge on Drill Steel for Soft Rock	54
26.	"X" Bit Drill Steel	55
27.	A Swage	62
28.	A "Sow"	62
29.	Cross-Shaped Dolly	62
30.	X-shaped Dolly	62
31.	A Flatter	62
32.	Spreader	62