Master of Icebergs
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Published for the Communication Industry by
Western Electric Company
Makers of the Nation's Telephones

Number 56 of a series
PREPARE FOR YOUR JOB

The Explosives Engineer

Is Devoted to the Technology of Drilling, Blasting, Loading and Transportation of Coal, Ore and Stone

The Explosives Engineer, now in its fourth year, is taking a higher place every month in the industrial press of the country and of the world. Its circulation is spreading wherever there is mining, quarrying, or construction. Each issue contains practical, usable information for the man who expects to take his place in the explosives consuming industry.

In February, for instance, there is an authoritative article on blasting in the construction of the Philadelphia subway. Another article describes a new seismograph which, with explosives, is used in determining geological structures. From his twenty-four years of explosives' experience around mines, the author of "Advice to Coal Blasters" has compiled some practical blasting information. "Road Building Above the Clouds" tells why and how Continental Divide highways are drilled without the aid of modern equipment. There is a portrait and a biography of S. A. Taylor, the next president of the American Institute of Mining and Metallurgical Engineers. And, of course, a Blaster Bill cartoon and the usual bibliography of all articles on drilling and blasting and a list of new patents, digested from the technical press of the world. You can see it in the college library, but you will want a complete file of your own. Send in your subscription on the coupon.

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Get the habit—Visit our fountain often

Cotner Pharmacy
1716-18 N. High St. Next to State Theatre
A HUNDRED years before Napoleon was born, before his wars scourged Europe, before the French Revolution raged, this Cast Iron Pipe was laid, in the reign of Louis XIV, to supply water to the fountains of Versailles.

To the patient researches of M. Blanc, Chief Inspector of the Water Service of Versailles and Marly, into dust-covered volumes in the garrets of the Palace of Versailles, we owe the proof of its antiquity.

A report from the Director of the Water Service, M. Blanc’s chief, says: “From their actual state of preservation, which is excellent, excepting the assembly iron bolts, these conduits seem to be able to furnish service for a very considerable time longer.”

The high resistance of this Cast Iron Pipe to corrosion may be judged from the clearness of the fine “parting line” produced by the old horizontal method of casting.

THE CAST IRON PIPE PUBLICITY BUREAU
Peoples Gas Building, Chicago
INDUSTRIAL BUILDINGS SHOULD BE WELL LIGHTED.

From the employer’s viewpoint, the big difference between men who work out of doors and those who perform tasks inside the building, is the factor of light. Daylight furnishes sufficient illumination outside during the daytime working hours for men to pursue their tasks efficiently and safely. But the proposition of getting enough daylight into the interior of industrial buildings, requires some thought.

It is not a difficult problem by any means, and any employer can take advantage of daylight and utilize it for lighting his building during the daytime, if he desires. It is an excellent light, especially suitable for the eyes, reducing eye strain and eye weariness to a minimum, and has the great economic advantage of costing nothing.

To utilize daylight to the utmost, we must first provide means for allowing daylight rays to enter the interior of buildings in sufficient quantity—namely, proper and adequate windows and skylights. Many excellent instances of buildings designed with a due regard to the importance of daylight lighting can now be seen in many of our industrial cities. Such buildings present the appearance of being practically all windows—“window walled,” as they are termed—and this type of daylight construction is coming rapidly into favor, because it constitutes a more healthy building for large numbers of employees, both from the lighting and ventilation standpoints.


The Larkin Co., Philadelphia, has erected a building almost entirely glass, 85% being windows, and the Loomis Breaker, operated by the D. L. & W. R. R. Co., Nanticoke, Pa., is literally a glass house, being 93.5% of glass. The new buildings of the Winchester Repeating Arms Co. have an average glass area of 58%.

An investigation covering 18 buildings constructed by the Aberthaw Const. Co., Boston, shows that the average window area is 57.5%.

These figures indicate how important the subject of lighting is now considered by employers of industrial labor, and how well the idea has been carried out by the architects and engineers, in order that all parts of a building may receive sufficient daylight. But, in addition to providing ample window space, there is another factor which is equally important, and that is, equipping the windows with the proper glass.

The bright direct rays of the sun should not be permitted to strike the eye, and we must provide a means for reducing the glare to rays which will not be too bright. This is accomplished by glass especially manufactured for industrial windows, known as Factrolite. This glass possesses the property of breaking up the intense rays of the sun and diffusing the light into the interior of the building in proper portions, solving the problem of sun glare.

If you are interested in the distribution of light through Factrolite, we will send you a copy of Laboratory Report—“Factrolited.”

MISSISSIPPI WIRE GLASS CO.,
220 Fifth Avenue,

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**You can shave more easily when you tilt the razor**

When you shave you tilt the razor so that the blade will shear off the hairs. It cuts a great deal more smoothly that way than if you drew it straight down on your beard.

The Brown & Sharpe engineers built this easier cutting, shearing principle into a milling cutter by “tilting” the cutting edges of the teeth, with the result that they shear easily into the metal.

To further improve the efficiency of the cutter they alternated this “tilt” or spiral angle and “staggered” the teeth. Also, the teeth were well undercut and furnished with a rugged backing. The result is a cutter with plenty of chip clearance that will take easily and rapidly deeper cuts, especially in steel.

This cutter is called the Brown & Sharpe Staggered Tooth Side Milling Cutter. It will remove a large amount of metal without destructive vibration and chatter, the enemies of high production milling.

There is considerable information about cutters and their design in the New No. 30 Small Tool Catalog. A copy will be sent free at your request.

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Two Cents a Copy

Published five times a week
The Incas would not know the Peru of today

Construction activities of The Foundation Company in Peru are changing the old order. The layout for the modernization of Lima, Cuzco and thirty other cities is comprehensive and has been carefully planned with this progressive republic.

The Office Building of the Ministry of Public Works would do credit to any community. It represents the public interest in facilities for efficiency in government. Thirty new public schools will be the equal of those of any country.

Highways and Streets are being paved to meet the needs of motor traffic in the cities and between them. Asphalt or concrete are used depending on location and necessity. This familiar looking paver is only a part of the modern equipment seen in Peru.

The New Water Supply System—including underground collecting galleries high in the hills, concrete reservoirs, and conduits of concrete or iron—will soon supplant the well constructed, but entirely inadequate, vitrified clay pipes of the ancients. Sewers and Disposal Plants will guarantee the health of the people.

The modernizing of Peru is a typical construction project of this organization.

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Office Buildings  •  Industrial Plants  •  Warehouses  •  Railroads and Terminals  •  Foundations
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BUILDERS OF SUPERSTRUCTURES AS WELL AS SUBSTRUCTURES
Timken Steel for Timken Bearings

The world's largest producer of electric furnace steel is the Timken Roller Bearing Company. A complete steel mill is part of the marvelously self-contained Timken Bearing plant.

Timken Tapered Roller Bearings are produced on a scale so large, because of their large importance throughout manufacture, construction, mining, agriculture, transportation, and every field in which machinery is used.

Timken Bearings are being designed into every sort of machinery to eliminate excess friction, to save labor, power and lubricant, to increase quantity and quality of output, and to lengthen machine life.

These economies are so important to all the industries that 132,000 Timken Bearings are being added daily to the 150,000,000 Timkens already successfully applied.

Each day—each year—Timken Bearings become of still greater interest to all concerned with machinery. As a potential engineer you have a direct interest in obtaining the valuable little book on Timken Bearings. It will be sent free on request.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN Tapered Roller BEARINGS
The question is sometimes asked: Where do young men get when they enter a large industrial organization? Have they opportunity to exercise creative talents, or are they forced into narrow grooves?

This series of advertisements throws light on these questions. Each advertisement takes up the record of a college man who came with the Westinghouse Company after graduation and within the past ten years.

Engineer!

Arrest that Bolt

The Sales Department was talking in emphatic and easily understood language. It was saying, “We want action.”

At Westinghouse, action in many cases is another word for research. And research works toward selected goals. In this case the goal was for new apparatus to make unchained lightning more respectful of power plants, lines and equipment.

Today, as a consequence, the electrical industry is the beneficiary of the “Autovalve Lightning Arrester”, perfected to a degree of efficiency, long service and universal utility never dreamed of before. Behind that picture you find Joseph Slepian. With two degrees from Harvard, he started training in our East Pittsburgh Shops in 1916. A year later he entered the Research Department.

This was the lightning arrester situation which Slepian took into the research camp: There were two different types of apparatus. One, called the multi-gap, was used chiefly on poles of distribution circuits. When lightning struck, it frequently caused transformer troubles and damaged equipment. For high-voltage application there was the cumbersome electrolytic arrester. Its performance was good enough. But it required constant attention; was costly of upkeep; and could not be used on poles.

When Slepian perfected the Autovalve Arrester, the demand was so great that orders could not be filled. It was entirely new. One type of apparatus solved the whole problem—no more costly care. It stands up indefinitely, whether used on poles or on the ground—sufficient reasons for yearly sales exceeding $2,000,000.

Such results may depend as much on a phase of an engineer’s past training as on his immediate research. Take the radio horn which gives the natural tone to Radiola sets. It was Slepian’s mastery of mathematics, in which he specialized at Harvard, which contributed toward that big advance in the early days of loud-speaker popularity.

The man with “hidden reserves” is constantly finding them called upon to “climb peaks and cross mountains” in institutions like Westinghouse.
The World's Loudest Voice

On the rolling plains of South Schenectady, in several scattered buildings, is a vast laboratory for studying radio broadcasting problems. Gathered here are many kinds and sizes of transmitters, from the short-wave and low-power sets to the giant super-power unit with a 50- to 250-kilowatt voice.

Super-power and simultaneous broadcasting on several wave lengths from the same station are among the startling later-day developments in radio. And even with hundreds of broadcasting stations daily on the air throughout the land, these latest developments stand for still better service to millions of listeners.

Only five years old, yet radio broadcasting has developed from a laboratory experiment into a mighty industry. And alert, keen young men have reaped the rewards.

But history repeats itself. Other electrical developments will continue to appear. And it will be the college man, with broad vision and trained mind, who will be ready to serve and succeed.

GENERAL ELECTRIC

From the studio of WGY in Schenectady, six miles from the developmental station, there may be controlled a great number of transmitters, one of which is the first super-power transmitter in the world. WGY, together with its associates, KOA of Denver and KGO of Oakland, is the General Electric Company's assurance to the American public that radio broadcasting shall be maintained upon the highest standards.

A new series of G-E advertisements showing what electricity is doing in many fields will be sent on request. Ask for booklet GEK-1.