

METALLURGY

Steel Strip Mill Controlled By Powerful Electric Motors

Gone are the Back-Breaking Roasting Tasks of the Industry's Past; Man Now Has His Place at Controls

MAN and machine reach new heights of coordination in a steel strip mill, such as was exhibited in Lackawanna, N. Y., near Buffalo, to a group of newspapermen by the Bethlehem Steel Company. Human brains and skill, both in design and operation, combine with precise and delicate control of large electrical power to roll in a few minutes a thick slab into a lengthy strip of steel sheet metal.

To see a red-hot chunk of steel pass successively through eleven huge sets of rollers, that squeeze it thinner, wider and much longer, is one of the best spectacles of modern industry. Clouds of steam arise from the cooling water sprays on the rolls, electric switches click, and the long radiant carpet of metal rushes down a path of smooth-running rollers to be coiled automatically like so much adding machine tape. Two and a half tons of steel ribbon, not touched by human hand or brawn, the creation of human brains and skill.

Behind this rapid metamorphosis of crude steel into sheets for automobiles, refrigerators, furniture, and a hundred other products, is precise electrical control. The modern rolling mill would be impossible without the flexibility and responsiveness of motors, thousands of them, mounted upon the machines. In a lofty central room, "pulpit" to steel men, where he may survey the whirling mill below, is the god of the machine, the operator, playing with skillful mind and fingers on the bank of switches that are masters of the wheels below. In a vast electrical room, giant motor-generator sets whirl, giving the direct current that drives the machines.

35,000 Horsepower

As much power is used by a strip mill as by a large ocean liner, some 35,000 horsepower for the new Bethlehem mill. Without the development of electrical power devices, particularly the direct current motor precisely controlled by resistance changes, such modern strip and sheet mills would not be possible.

Do not imagine that the human element is entirely lacking. Automatic

as the machine appears in its smooth operation, constant manual adjustment is necessary in order that the strip may flow out smoothly. Essential is the proper relative motion of the squeezing rolls, speeding up as the rolling proceeds, and this fine adjustment is made by the human operator, second by second. And man had to make the machine.

Months and years of engineering experience were necessary to produce the American-developed continuous strip-sheet mill, of which there are now about twenty, besides the new one that arose in less than a year on waste land in Lackawanna.

Man-Power Needed

The brawn of strong young arms is still necessary in the game of steel, but gone are the backbreaking, roasting

tasks that Charles M. Schwab, veteran steel man, reminisced about when he saw the Lackawanna mill for the first time. Labor per ton of steel produced has been vastly reduced, yet leaders like E. G. Grace, president of the Bethlehem Steel Company, remind that more men than ever are employed in making steel. More steel per man employed, they argue, when it goes out into industry, creates more jobs. It will, to be sure, if purchasing power allows the public to gratify yens for more things of steel.

This recurring adjustment of man to new machines is one of the most troublesome situations confronting modern life. The machines are marvelously built and controlled. Better engineering of the human labor element is another and less solved problem.

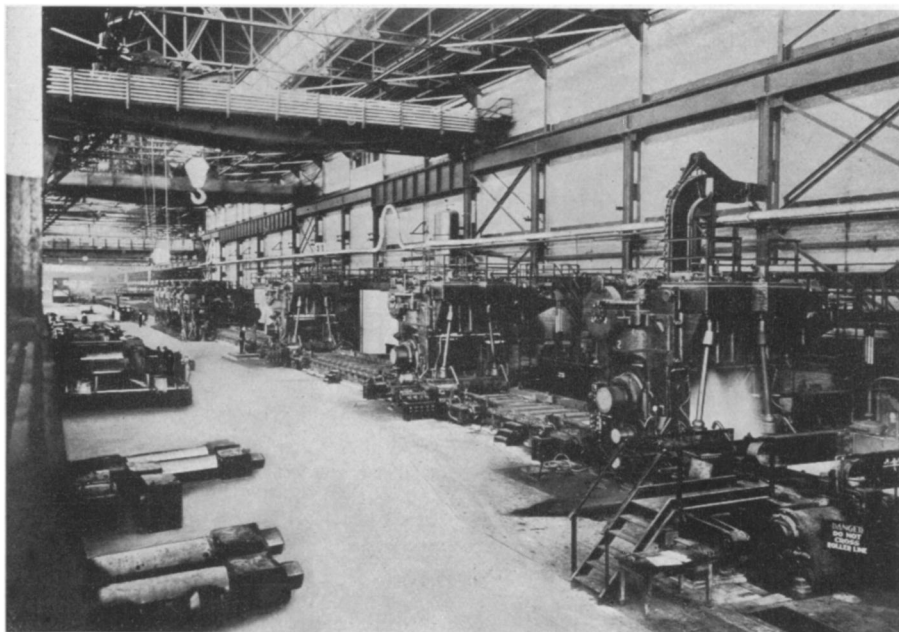
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EVOLUTION

Chinese Deserve Credit For Aid to Evolution Idea

CHINA deserves credit for helping to launch the theory of evolution, concludes Prof. A. H. Rowbotham of the University of California. It was the influence of China on European thought in seventeenth and eighteenth centuries, he says, that paved the way for ultimate development of Darwin's famous theory.

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SQUEEZE OUT RED CARPET OF STEEL

In foreground large sets of rollers are the "roughing trains" that make the first reductions of thickness. Thin sheets are produced by the six "mills" farther along. Notice how small comparatively is the man standing on a platform at the right of the room toward the rear.