

THE BIG JOB

BASIC MAGNESIUM NEWS LETTER

NUMBER 11

- OFFICE OF PUBLICATION -
DEPARTMENT OF INDUSTRIAL RELATIONS

SEPTEMBER 3, 1942

MAGNESIUM HAS GROWN UP

Now that initial production of magnesium is under way at Basic, history of the metal and not-too-technical facts about its production take on unusual significance. Today there is an especial meaning in the words "Magnesium finally has grown up."

The metal was a swaddling infant way back when the war of 1812 was being fought. It was still in the creeping stage during World War I, when it was a youngster 106 years of age. But when September 1, 1939 arrived, magnesium was a lusty, mighty force in a world at war.

For magnesium had come of age.

In World War I airplanes were made of cloth and wood. They were clumsy and ineffective things when compared with the sleek metal thunderbolts of today. For at that time men did not know that a plane would fly if it were made of metal.

LEARN ABOUT ALUMINUM

In the days of troubled peace which extended between World War I and World War II men learned that aluminum, the big and older brother of magnesium, could be fabricated into airplane fuselages, wings, tails, and cowlings.

And then, just before World War II men learned that plane parts could be made from magnesium, aluminum's younger brother - and that such planes could fly nigger, faster, and with more deadly effect than ever before. Men began a race to find and recover from its ores this little known metal. It had first been discovered by a man named Davy back in 1808. It was first separated into the pure metal in 1836, 88 years later. In the 1920's work with the metal had scarcely gotten beyond the laboratory stage. And now it was to take the center of the stage as one of the most vital metals in all the world.

AN IMPORTANT OUTLOOK

It was the metal from which planes were to be made, from which incendiary bombs were to come, from which tracer bullets would be manufactured - in short, it was the metal which could and would win the war. But men knew so little about it the metal was considered a mysterious thing.

The mystery of producing magnesium is no mystery at all. Simply and directly speaking, it is merely the transformation of an oxide to a chloride, and the passage of an electric current through the chloride. Magnesium and chlorine are the result.

Here is the way it happens.

Up in a desert valley of Nevada, is a great body of magnesium ore - one of the most significant magnesium deposits in the world - and one of the richest. This ore is mined and concentrated at the mine into magnesium oxide - symbolically expressed as MgO. After concentration it is shipped to Basic Magnesium, Incorporated at Las Vegas.

At Basic Magnesium, the MgO is ground up, mixed with coal and other substances, and formed either into little pellets ranging as large as a walnut or into small bricks. These pellets are then placed in kilns and subjected to considerable heat to dehydrate them, or to remove the water.

INTO CHLORINATOR

The briquets or pellets are then placed in what is known as a chlorinator, a large cylindrical furnace heated at 800-900 degrees. This furnace has a bed of carbon bricks upon which the pellets or briquets of MgO are melted. As they melt a stream of pure chlorine gas passes through the furnace. To the practical man the result is a molten mass of magnesium chloride which is tapped off and placed in an electrolytic cell. The electrolytic cells into which the molten magnesium chloride is placed with other chemicals resemble nothing so much as they resemble a large tiled bathtub in one of our better class homes.

A strong electrical current is passed through the molten magnesium chloride - a current of approximately 20,000 amperes. This current causes the molten magnesium to separate from the chlorine and come to the surface of the molten material much the same as cream comes to the surfaces of milk. Recovery of the metal is done by simply ladling it out of the cell by hand. Meanwhile the chlorine which has been separated from the metal passes out of the cell through a pipe and is directed back into the chlorinators.

IT COMES OUT NEARLY PURE

Purity of the metal thus recovered is approximately 99.90 percent.

It has been found that magnesium alone

THE BIG JOB—BASIC MAGNESIUM NEWS-LETTER

is not sufficiently strong to meet the needs of the construction of aircraft or other uses. For that reason the material is further refined and simultaneously in the same operation the alloying metals added to enable the finished magnesium alloy to be fabricated into enduring commercial articles. This further refining is done in a refinery where the addition of fluxes completes the purification. The fluxes remove the impurities and the metal now is ready.

Ready for bombs which will cascade down over the tinder cities of Japan, bombs which will strew a path of fire from Tokio to the Wilhelmstrasse. Ready to be fabricated into airplanes which will fly thousands of feet above their enemies and stalk them with deadly speed and accuracy.

And that's the story of magnesium.

BUILDING THOSE BIG SILOS

For tons of raw materials to be stored on the Basic project the Macdonald Engineering Company has built 21 big concrete tanks. Around the project they call them silos. They look like fodder cylinders, too. When they were going up the method of their construction was the talk of the field.

Altogether their construction was not a job to be sneezed at even in these parts where world's records are kicked around almost every day. Altogether the silo construction took 11,000 cubic yards of concrete, and 2,000,000 pounds of reinforcing steel.

SMASH A WORLD'S RECORD

The largest of the silos--for storage of magnesium oxide--are 35½ feet high, 40 feet in diameter and with 8 to 9 foot walls. Each of these required 1300 cubic yards of concrete.

UP BY THEIR BOOTSTRAPS

The construction method at BMI was by an improved patented jack form process. A cylindrical form four feet high was made, topped by a roof deck and surrounded by a rail for safety. As concrete was poured the form was lifted by patented mechanical jacks climbing one-inch rods. As the mix rose, the crew moved around the form working the jacks. Each turn at the jacks lifted the form one inch--and the climb was continuous. The silo rose about a foot an hour. A perforated pipe around the form sprayed water on the concrete continuously to cure it. Climate here helped on the job by setting the concrete rapidly so that an uninterrupted pouring was possible. It was like lifting yourself by your bootstraps.

A COSMIC COOLING SYSTEM

"Dad, the Carpenter"--That's the way he signed the letter--has seen so many amazing things built around here that he goes into a trance

and comes up with a new idea. Dad calculates as now the engineers could build some tall tubes of light metal, telescope 'em, naut 'em up high by blimps to the sub-zero altitudes, snoot cold air down to the surface and cool things off considerable. Dad says this would be a cinch for our project engineers and he lists some nifty advantages. "We can bring down a tube," writes Dad, "to the shore of Lake Meade, freeze the water, float ice down a canal to Los Angeles, raise Polar bears on the shores of the lake, and have seals diving from the bridge that goes nowhere."

O. K. Dad--what're we waiting for?

OPENING OF SCHOOL

Twelve grades of school will open for the children of Basic Townsite, Pittman, and the Basic Trailer Camp a day or two after October 1st, Roy G. Petrie, Superintendent of the Railroad Pass School District announced yesterday when the local school board received word from the McNeil Construction Company that the school will be completed by September 30. Construction of the school was delayed by scarcity and slow delivery of various materials. The exact date of the opening will be announced later.

MEDICAL CARE -- HOSPITALIZATION

Dr. F. E. Clough, Chief Surgeon, announced yesterday that offices will be open at the hospital very shortly.

IN CASES OF ACCIDENT

When the hospital opens--around the middle of September--special provisions of Nevada law governing industrial accidents will prevail. One of these provides that in industries where a hospital is in operation, persons who are injured on the job must be treated by company doctors and at the hospital if they are to receive benefits under workmen's compensation; and that if they receive treatment elsewhere they must pay the bills themselves.

"OUR DAILY BATTLEFIELD"

Thanks to W. G. Manns, General Ledger, for submitting to The Big Job a quotation from Robert Louis Stevenson. It applies to all of us on this project. The quotation:

"The world has no room for cowards. We must all be ready to toil, to suffer, to die. And yours is not the less noble because no drum beats before you when you go out to your daily battlefield, and no crowds shout about your coming when you return from your daily victory or defeat."