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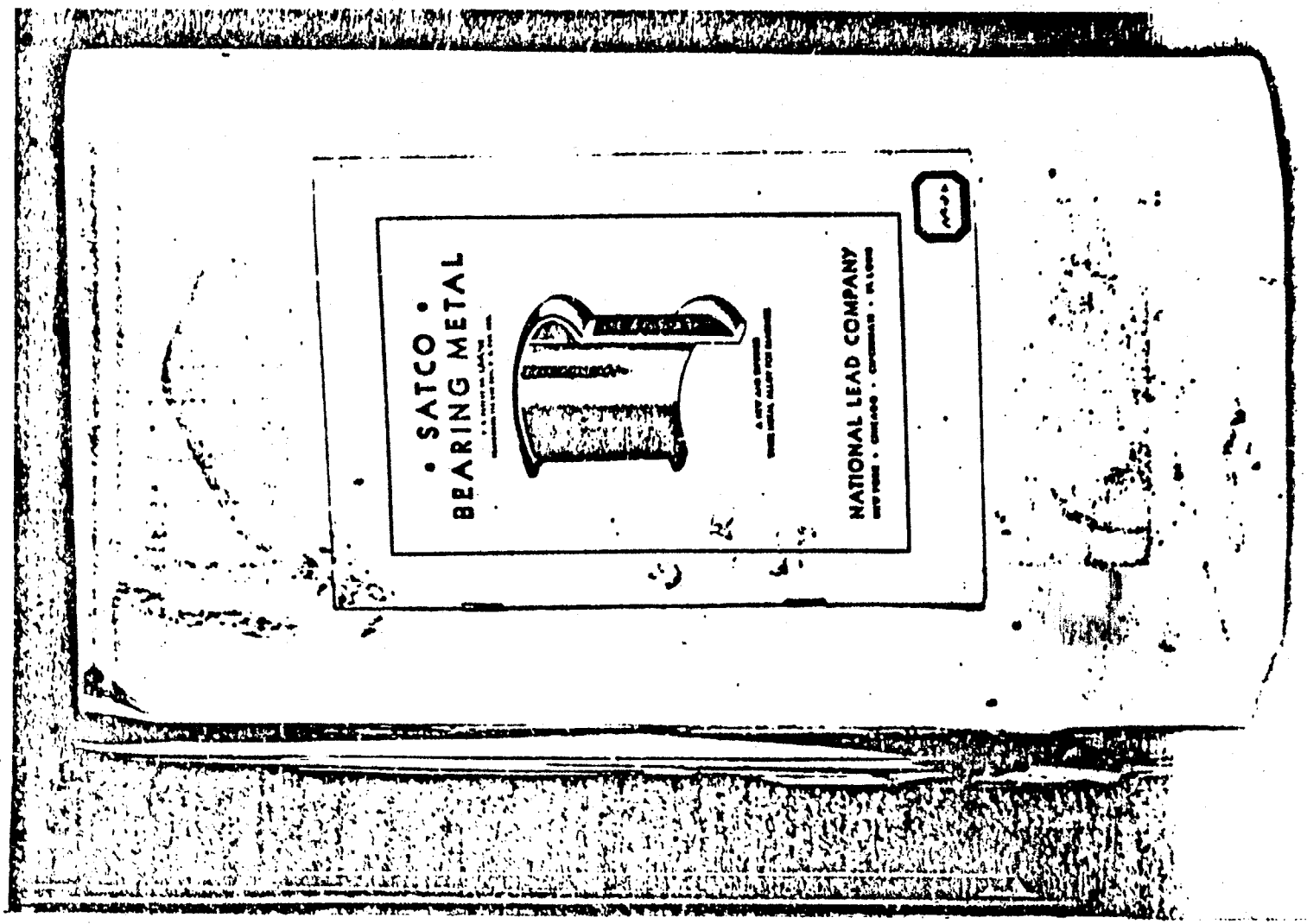

SATCO BEARING METAL

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National Lead Company, through the research department of one of its important subsidiaries, has developed a white metal alloy which is an improved type of bearing metal for automotive, railway, agricultural implement and crushing equipment use, as well as for machinery generally. This metal was perfected to meet the insistent demand of engineers for an alloy more durable than the present standard-composition bearing metals.

Satco Metal, the new and better alloy, is based on careful scientific study by trained engineers and chemists who are specialists in bearing metal problems. It has been thoroughly proved in practice by subjection, over a period of eight years, to difficult and unusual tests.

Due to modern conditions, where bearings are subjected to high speeds and heavy shaft and axle loads, the demands on white metal linings have become more and more severe. In fact, the original development of Satco Metal was largely brought about by service conditions which were so difficult that the known formulas for bearing metal alloys failed. Satco Metal means added insurance against bearing failures.

Practically all the white bearing metal alloys heretofore used have relatively low melting points and insufficient hardness at running temperatures to withstand exceptionally difficult conditions. In cases where lubrication fails temporarily, bearing temperatures will frequently run from 350 to 400 degrees Fahrenheit and higher. At these temperatures, the ordinary lining fails, either by melting or

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deformation. Furthermore, the commonly used babbitt metals are brittle by nature with the result that cracks often develop in service due to the lowered resistance of the lining to transverse stresses. Seneca Metal was designed to overcome these deficiencies in babbitts.

The important requisites of a bearing metal are adequate resistance to crushing stresses; a low frictional coefficient; a relatively high melting and softening point; toughness [illegible] extraordinary deformation. With these [illegible] there must also be the ability to receive quickly to a smooth surface if the alloy should be roughened by foreign substances which may get into the bearing. Perhaps most important of all, the alloy should be able to adapt and shape itself to the ordinary play of the shaft. Each of these features has received careful consideration in the development of the new and improved alloy—Seneca Metal.

A further important advantage of Seneca Metal is that it is so readily handled in running as any of the regular babbitt metals.



Seneca Metal being shoveled into place in order to fill [illegible] of shell

... Soldering Flux and a special Seneca No. 70 Bonding Alloy should in all cases be used when fixing bronze-back bearing shells and steel shells. With the proper use of this improved flux and this improved bonding alloy, Seneca Metal adheres tenaciously to bronze and steel back bearings.

Physical Properties

For purposes of comparison, the physical properties of Seneca Metal are here set against those of National Lead Company's Heavy Pressure Metal and National Lead Company's Phoenix Metal.

Heavy Pressure Metal and Phoenix Metal are two of the most costly of our alloys. Through long and satisfactory use, both have become recognized as unusually high-grade and serviceable bearing metals.

Brinell Hardness

Testing Temperature	Seneca	Laboratory Chill Casting Heavy Pressure	Phoenix
20 degrees C.	27.6	32.0	23.0
100 degrees C.	15.7	16.0	12.1
150 degrees C.	10.1	11.3	8.1

Transverse Test

Specimens used in transverse test were machined from chilled castings and were 6 inches long, 1 inch wide, and $\frac{3}{4}$ inch thick. The bars were suspended at two ends with a span of 4 inches, the load being applied in the middle of the specimen. The load and deflection were noted in point of failure. Results follow:

Alloy	Transverse Strength Lbs. per Sq. In.	Degree of Bend for Failure
Seneca Metal	14265	11.0
B.B. Genuine Babbitt	13770	7.0

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