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MEMO

C

From

AIB 7 5/13
Date 11/26/51

Answering
Your Memo

Subject HYPODERMIC NEEDLE

The examination of the samples submitted demonstrated that the brass cap from the collapsible tube contained a fragment of a steel hypodermic needle and that this fragment was identical in every respect to the section of hypodermic needle submitted separately.

Spectrographic comparison showed that the relative amounts of residual impurities such as Cr, Ni, Mn, Cu, Mo, etc. are the same in the two sections. They were also found to be identical in outer diameter and structure as determined metallographically.

cc:

SAMPLE

SPECIAL SAMPLES

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REPORT BY

DATE

NOVEMBER 5, 1951

SAMPLE NO.	Tube Wall	Tube Top	Tube Paint	Cap Base	Cap Tip	Tip			
Fe	trace	trace	minor	minor		minor			
Al	major	major	minor	trace		trace+			
Sn	nil	nil	trace	trace+		trace			
Cu	trace	trace	trace	major		major			
Ag	nil	nil	trace	trace		trace			
Zn	nil	trace	trace	major		major			
Ti	nil	trace	major	nil		nil			
Ni	nil	nil	trace	minor		minor			
Ca	trace	trace	minor	trace		minor			
Mn	trace	trace	trace	trace		trace			
Pb	nil	nil	trace	minor		minor			
Cr	nil	nil	nil	trace		trace			
Ba	nil	nil	minor	nil		nil			
Si	trace	trace	trace	trace		trace			
Mg	trace	trace	trace	trace		trace			
Sb	nil	nil	nil	nil		nil			

SAMPLE: HYPODERMIC NEEDLES

REPORT BY

10. The following table shows the number of hours worked by each employee in a company.

DATE NOVEMBER 27, 1951

R43.538.6

REPORT

November 21, 1951

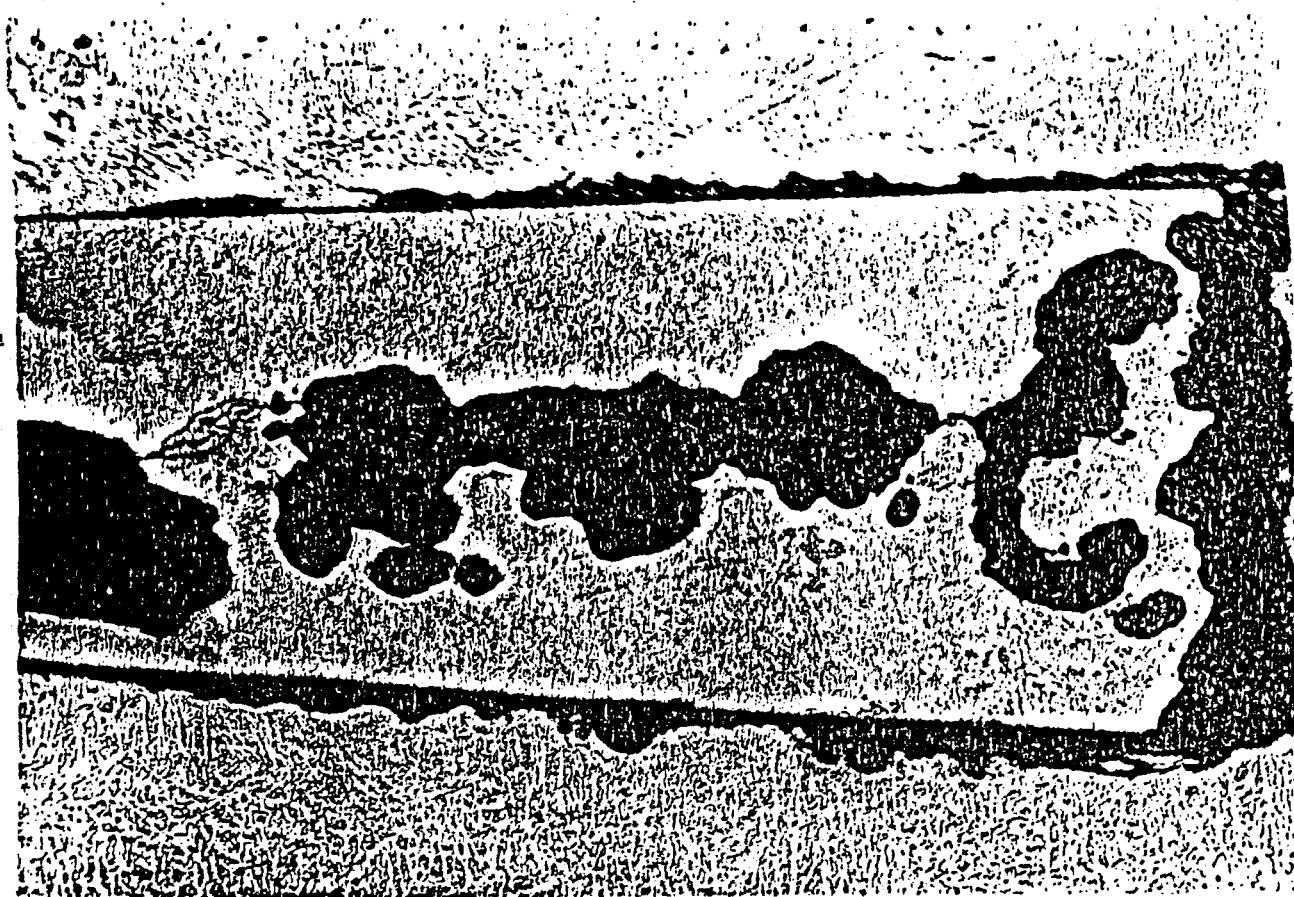
[REDACTED] C
Metallographic study of Hypodermic Needle

A brass ferrule enclosing a rusted end of a hypodermic needle, and 1/4 inch piece cut from a separate one-inch length of a rusted hypodermic needle were mounted in bakelite, ground down to present a longitudinal section in the outer wall of the needle, and polished for metallographic examination.

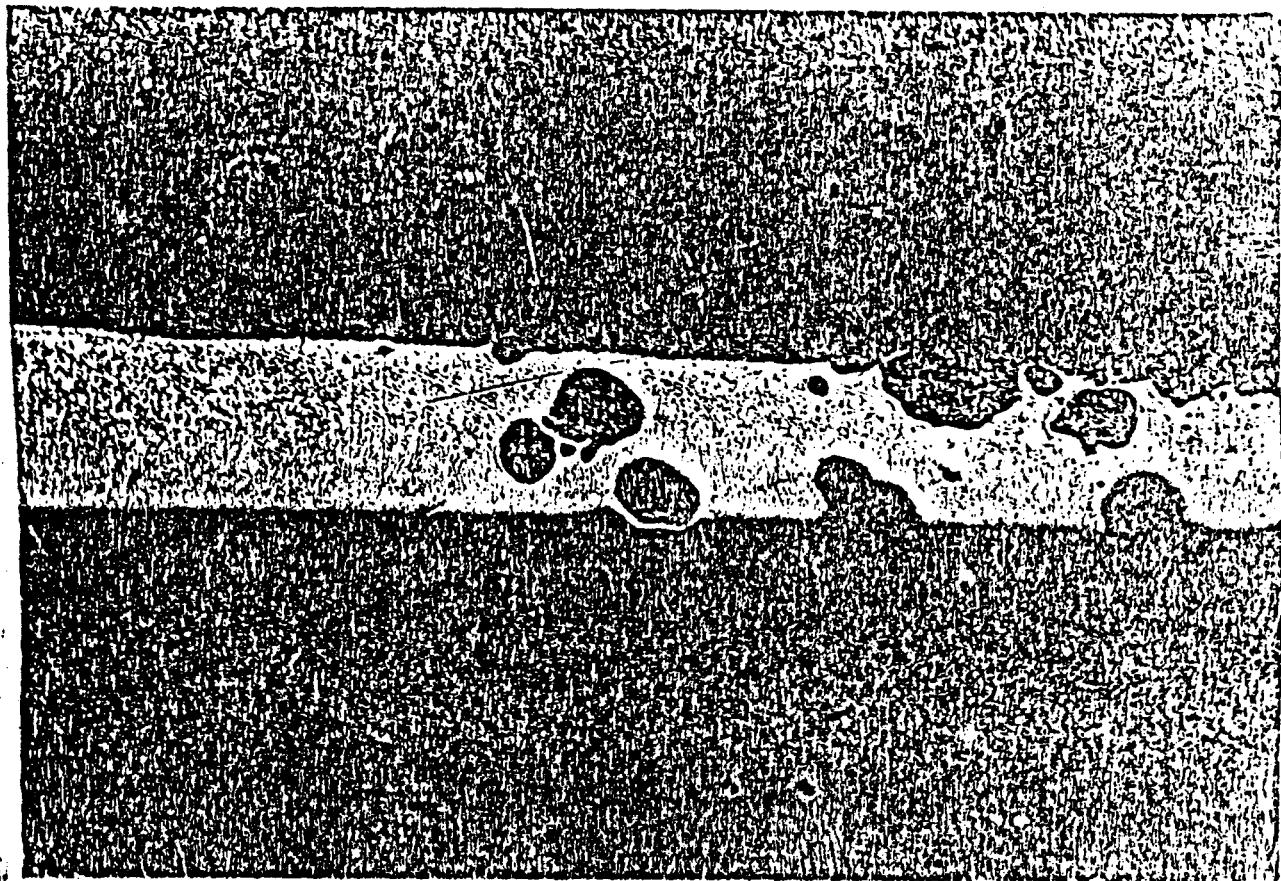
Both pieces of steel needle were observed to be of about the same diameter, but it was not possible to make measurements due to the rusted condition of the needle end encased in brass.

Description and micrographs are attached.

Respectfully submitted,



6518



6519

Plate 6518 As polished 100x

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Longitudinal section ground part way through the wall of a hollow steel needle encased in brass.

The black areas are voids due to holes rusted through the steel from inside toward the outside.

The brass appears above and below the needle.

Plate 6519 As polished 100x

Longitudinal section ground a very little way into the wall of a hollow steel needle.

The black areas are rust pits which attacked the outside of the needle.

This section is narrower than the one above only because grinding did not progress as far into the wall.

The inclusion pattern of this piece of steel needle, represented by the small black dots, is about the same as that in the brass-enclosed needle above.

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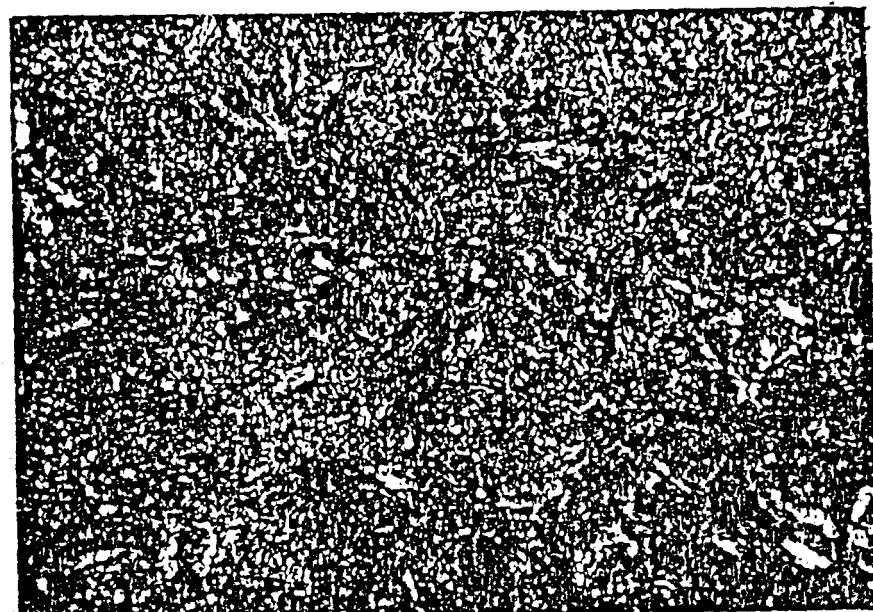


Plate 6521

Etched with Nital

1000X

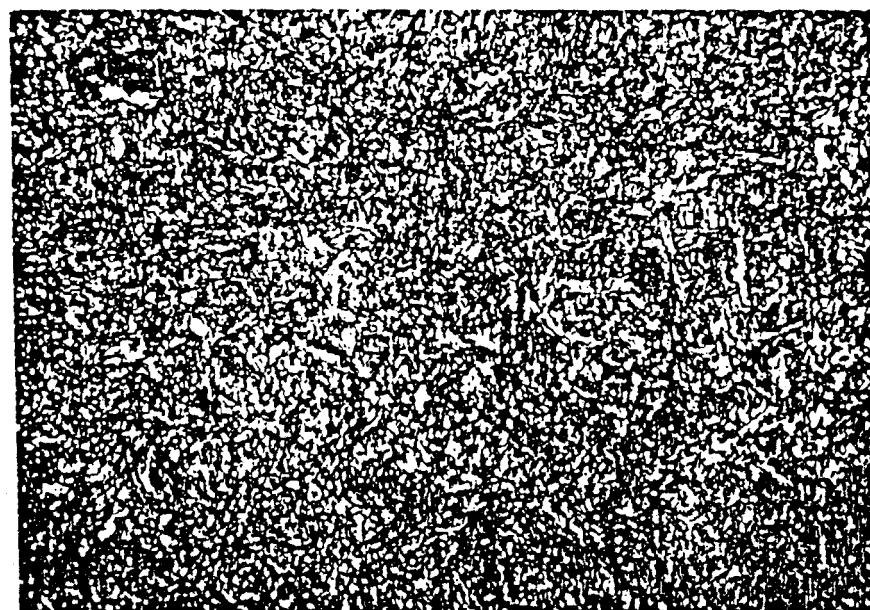


Plate 6520

Etched with Nital

1000 X

Plate 6521 Etched with Nital 1000x

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Micrograph of etched microstructure of the needle enclosed in brass.

This structure consists of scattered spheroids of cementite in a matrix of tempered martensite. It is typical of a high carbon tool steel such as is usually used for hypodermic needles.

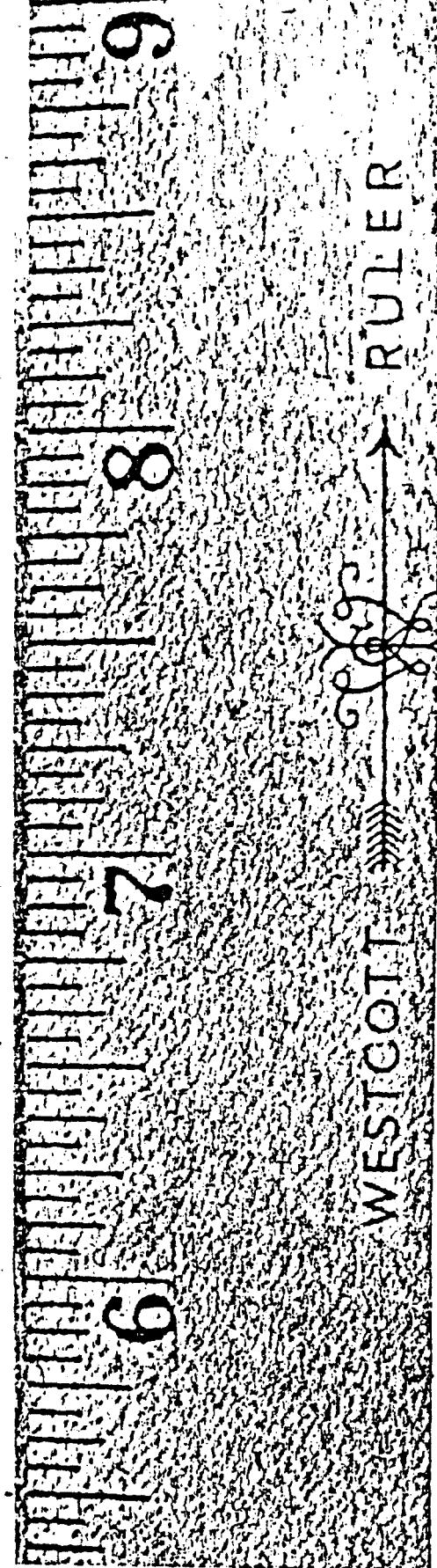
Plate 6520 Etched with Nital 1000x

Micrograph of etched microstructure of the separate piece of needle.

This also consists of scattered spheroids of cementite in a matrix of tempered martensite.

RULER

WESTCOTT



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