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O T T A W A October 31, 1945.

R E P O R T
of the
ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1954.

(Subsequent to Investigation)
(Reports Nos. 1943 and 1950,
Sept. 28 and Oct. 26, 1945.)

Corrosion Protection of Interior
Rust-Preventive Compounds.

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Background:

A letter, dated March 19, 1945, from Dr. D. Wolochow, Secretary, Canadian Government Purchasing Standards Committee, National Research Council, Ottawa, Ontario, requested that the corrosion protection of a number of different rust-preventive compounds be investigated. The letter stated, in part:

"In connection with the work of our Wartime Subcommittee on Petroleum and Associated Products, it has been suggested that the several laboratories, who are equipped for testing rust-preventive compounds to the specifications which we are sending you, be asked to test a number of exchange samples to be supplied by the producing companies."

(Background, cont'd) -

The present report gives the results obtained in the investigation of the corrosion protection of three Interior Rust-Preventive Compounds, numbered 701-1, 701-2, 701-3. These were tested to Specification D.N.D. 701.

Investigation Procedure:

The above-mentioned Interior Rust-Preventive Compounds were tested for the following:

1. Salt Spray Test.

These tests were performed exactly according to Paragraph D-1f(3) of Specification D.N.D. 701, except that the panels were prepared by the following procedure:

After surfacing with the 150 grit wheel, the panels were wrapped in clean white paper. As soon as possible they were degreased in trichlorethylene vapour, scrubbed with a brush while immersed in trichlorethylene liquid, again suspended in trichlorethylene vapour, and, finally, wrapped in clean white paper until the coating could be applied.

This variation was necessary because the procedure outlined in the specification gave unsatisfactory results on very humid days.

2. Protection At High Humidity.

(a) One test on each of the three compounds was performed exactly according to Paragraph D-1f(4) except that the panels were prepared by the new procedure outlined in the preceding paragraph.

(b) One compound (701-1) was tested exactly according to Paragraph D-1f(4) except that -

(Continued on next page)

(Investigation Procedure, cont'd) -

(i) The panels were surfaced with a 180 grit belt instead of a 150-200 grit wheel.

(ii) Air was passed continually through the humidity cabinet.

In all other respects it was possible to prepare these panels for testing exactly according to the specifications because there was no trouble with high atmospheric humidity at that time of the year (early spring).

Results:

The results of the investigation were as follows:

Compound No.	RESULTS OF TESTS		
	SALT SPRAY TEST	PROTECTION AT HIGH HUMIDITY	
		Without Air Passing Through The Cabinet	With Air Passing Through The Cabinet
701-1	Failed (see Figure 1).	Failed (almost passed; see Figure 2).	Failed (almost passed; see Figure 3).
701-2	Failed (see Figure 4).	Passed.	
701-3	Failed (see Figure 5).	Passed.	

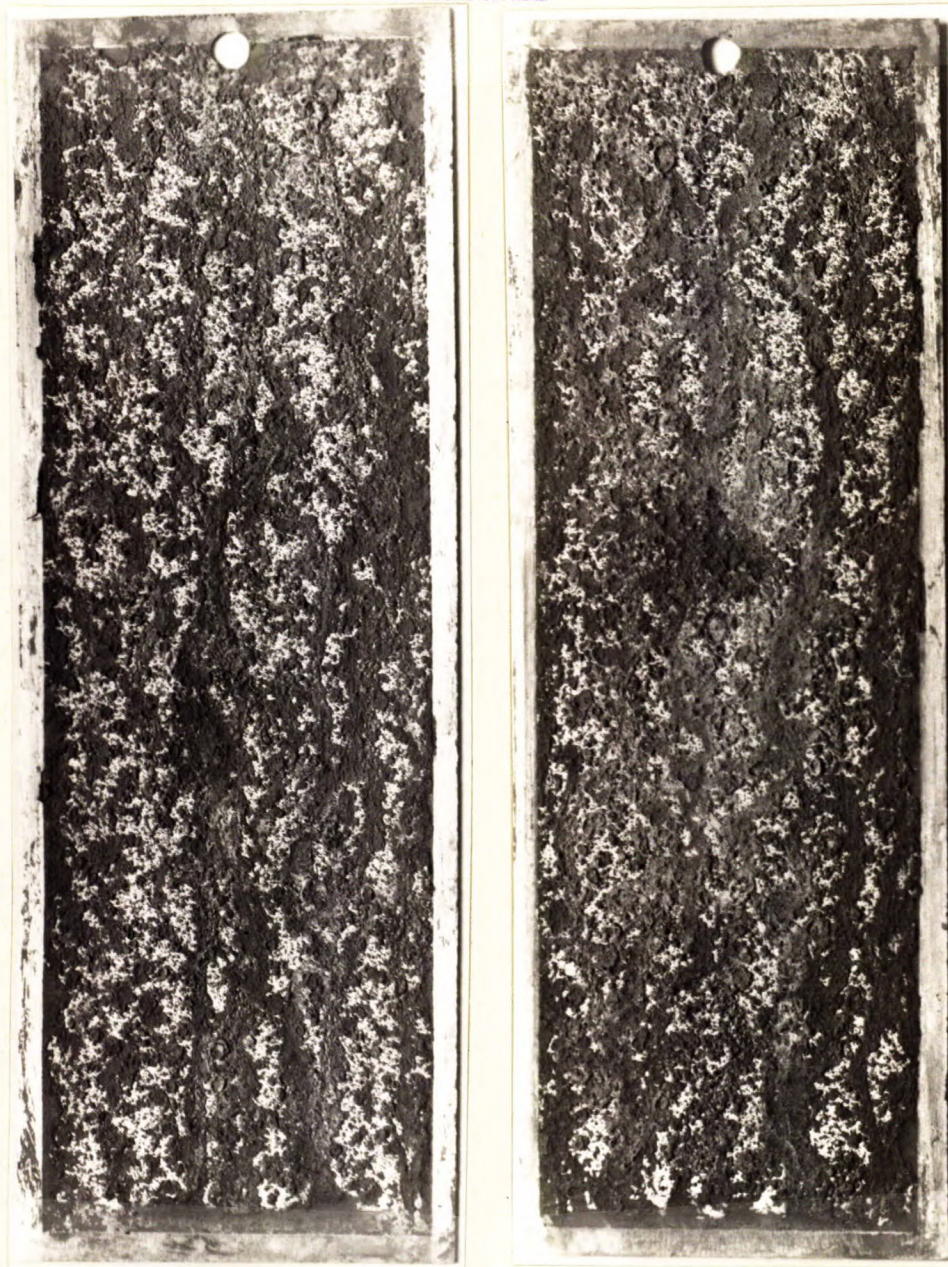
Remarks:

1. In the Humidity Test, Compound 701-1 failed with and without air passing through the cabinet. The failure was slight in both cases.
2. The humidity cabinet used throughout this investigation was the one described by Todd in INDUSTRIAL AND ENGINEERING CHEMISTRY, Analytical Edition 16, 394, (June) 1944.
3. Information regarding the results obtained by other investigators would be much appreciated.

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(Figures 1 to 5 follow,
on Pages 4 to 8.)

Figure 1.



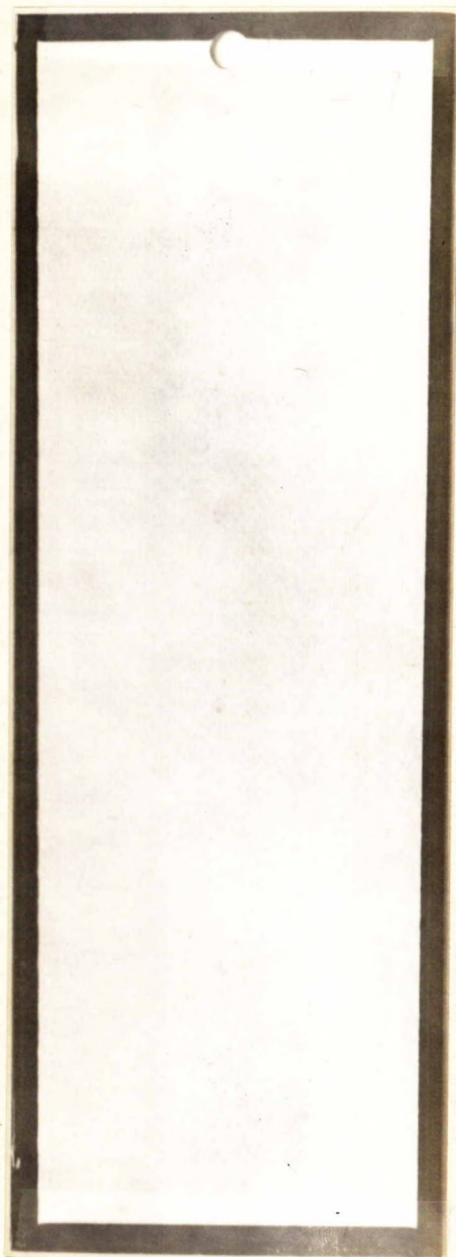
(a)

(b)

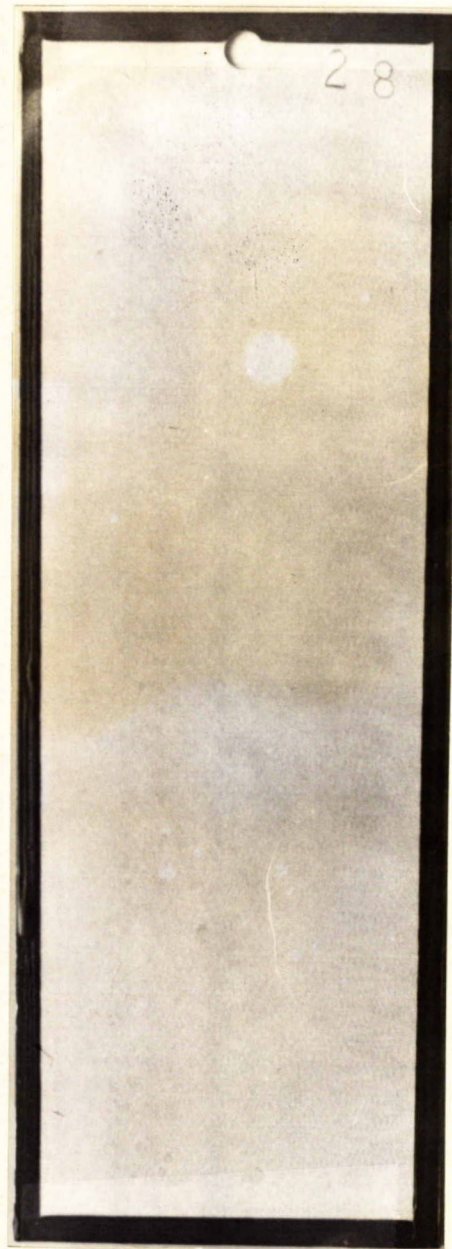
PANELS COATED WITH COMPOUND 701-1, AFTER
200 HOURS IN THE SALT SPRAY CABINET.

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Figure 2.



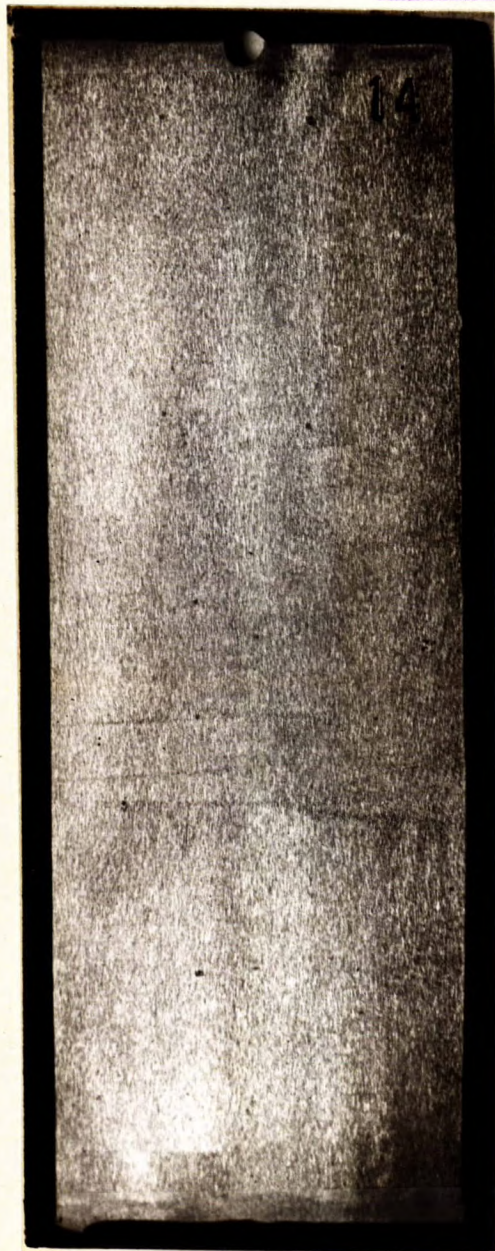
(a)



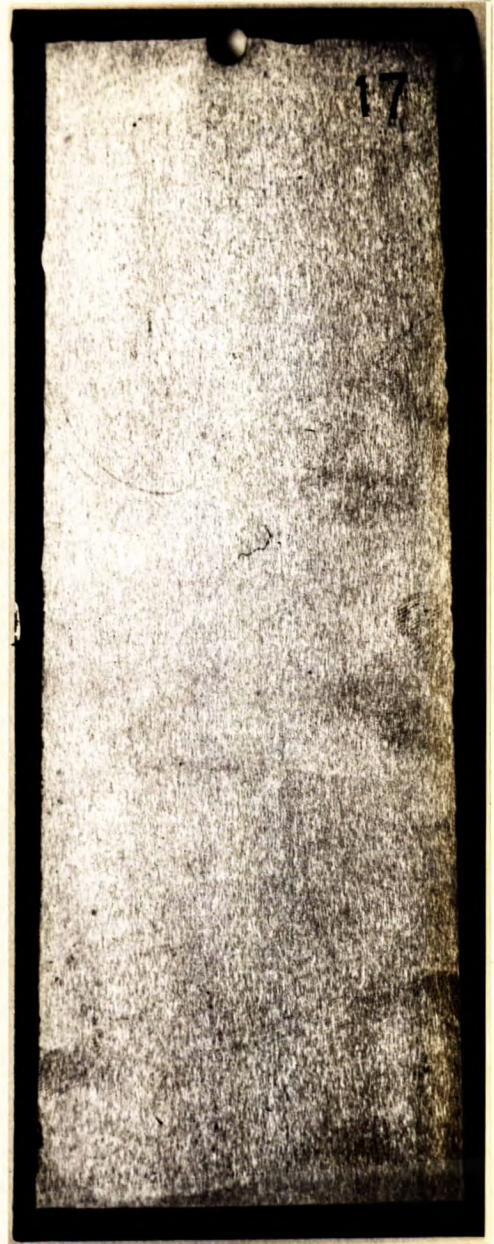
(b)

PANELS COATED WITH COMPOUND 701-1, AFTER
7 DAYS IN THE HUMIDITY CABINET
WITHOUT AIR PASSING THROUGH.

Figure 3.



(a)



(b)

PANELS COATED WITH COMPOUND 701-1, AFTER
7 DAYS IN THE HUMIDITY CABINET
WITH AIR PASSING THROUGH.

Figure 4.



(a)



(b)

PANELS COATED WITH COMPOUND 701-2, AFTER
200 HOURS IN THE SALT SPRAY.

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Figure 5.



TYPICAL PANEL COATED WITH COMPOUND 701-3,
AFTER 200 HOURS IN THE SALT SPRAY.

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