File

O T T A W A May 29, 1945.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1878.

Corrosion Resistance of Aluminium and Tin-Coated Steel Mess Tins.

(Copy No. 10.)

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Background:

In a letter dated May 9, 1945, File No. DIRD(P)105-29, from W/C P. W. Webb, Director of Inter-Service Research and Development (Clothing and Equipment), Department of National Defence, 299 Bank Street, Ottawa, Ontario, it was requested that the corrosion resistance of an aluminium mess tin and a tin-coated steel mess tin be investigated. The tins were supplied by Wing Commander Webb.

Test:

The tin coating was removed by emery paper from one corner of the exterior of the tin-coated steel mess tin. The tin was then photographed (see Figure 1). The aluminium

(Tests, cont'd) -

mess tin resembled the tin-coated steel one.

Both tins then were placed in the Salt Spray Cabinet for 24 hours. A 20 per cent salt (sodium chloride) solution and a temperature of 95 ±5° F. were used.

At the end of the 24 hours the tins were rinsed off with water, dried, and photographed. Figure 2 shows the condition of (a) that part of the tin-coated steel tin which had been treated with emery, (b) a typical part of the unemeried surface, and (c) the steel handle. It will be noted that the handle and the part which had been treated with emery paper were badly rusted. There were numerous rust spots on the rest of the surface.

Figure 3(a) and 3(b) show the condition of the aluminium tin and its steel handle. The latter was badly rusted. Streaks were easily visible on the exterior of the tin, and the inside was pitted.

Conclusions:

1. Neither tin behaved perfectly in the test.

2. The aluminium tin was more resistant to the salt spray than the tin-coated steel one.

3. The steel handles of both tins were badly attacked.

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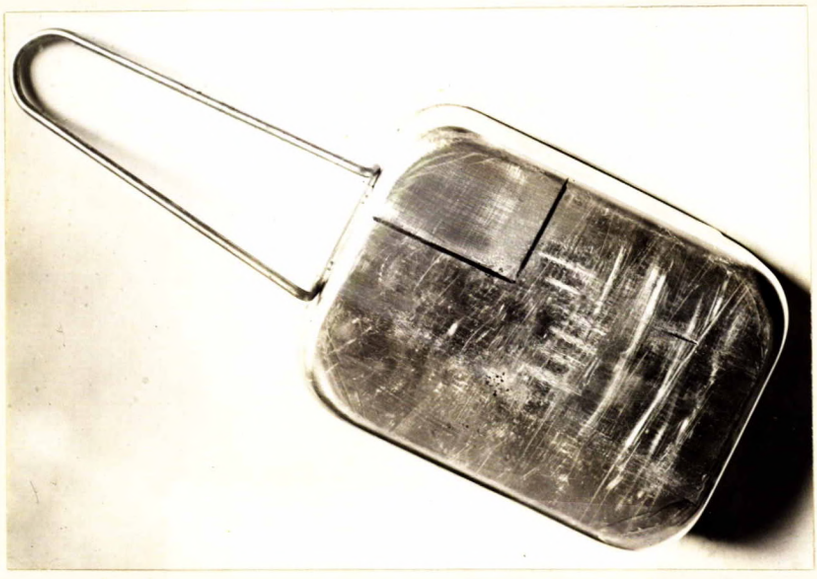
Figure 1.



TIN-COATED STEEL MESS TIN BEFORE BEING PLACED IN THE SALT SPRAY CABINET.

Note that the tin was removed with emery paper at the upper left-hand corner.

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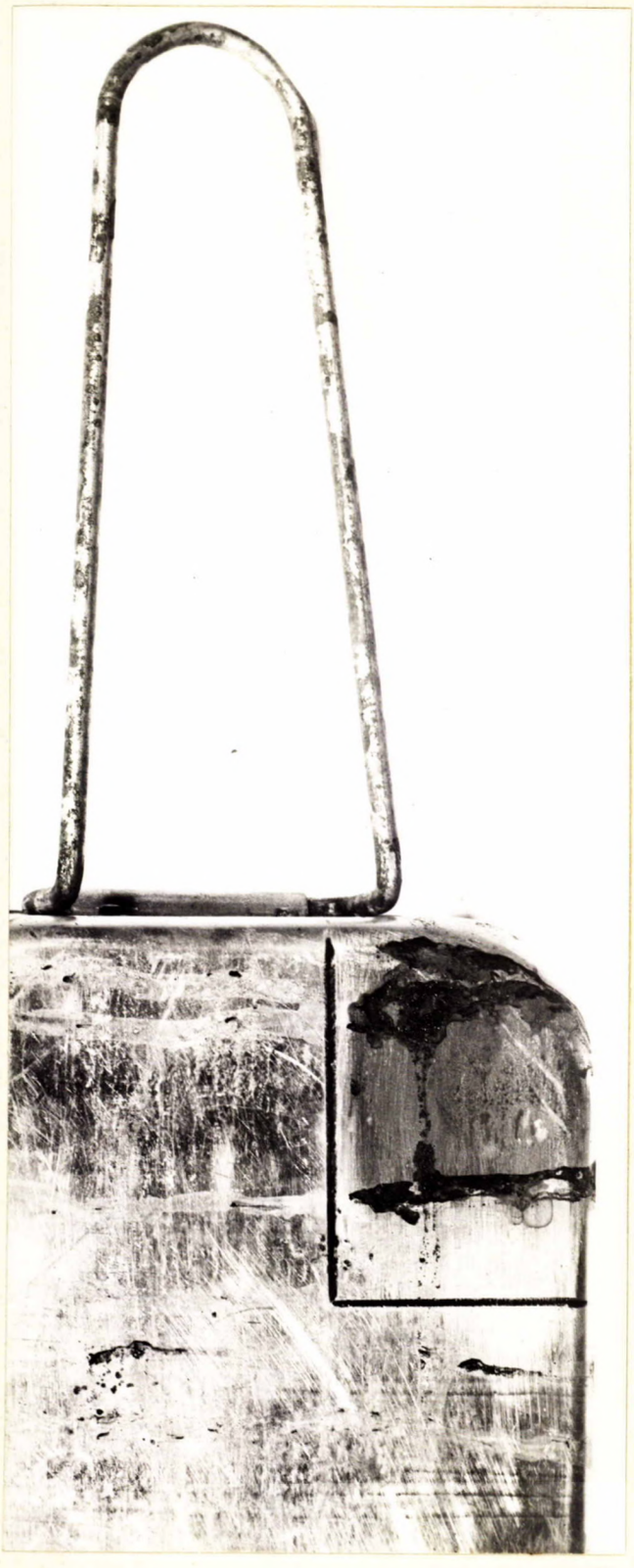
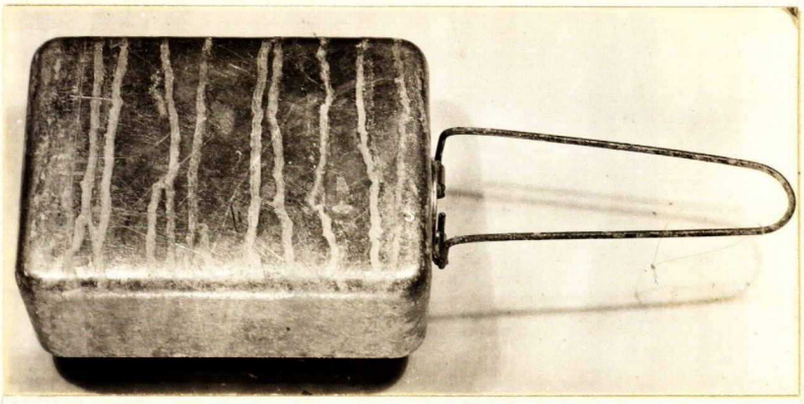
Figure 2.



PART OF THE TIN-COATED STEEL MESS TIN AFTER 24 HOURS IN THE SALT SPRAY CABINET.

Note the considerable amount of rust on the area from which the tin coating had been removed.

Figure 3.



(a)

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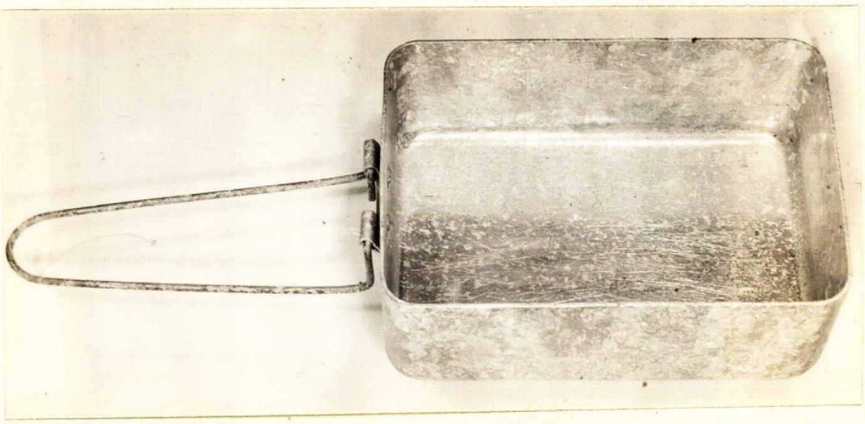
Figure 4.



(b)

ALUMINIUM MESS TIN AFTER 24 HOURS IN THE SALT SPRAY CABINET.

(a) Exterior view.

(b) Interior view.

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