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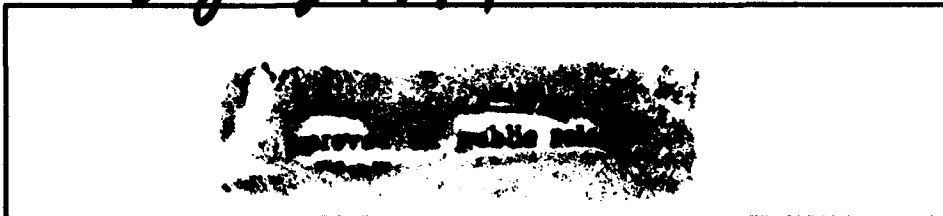
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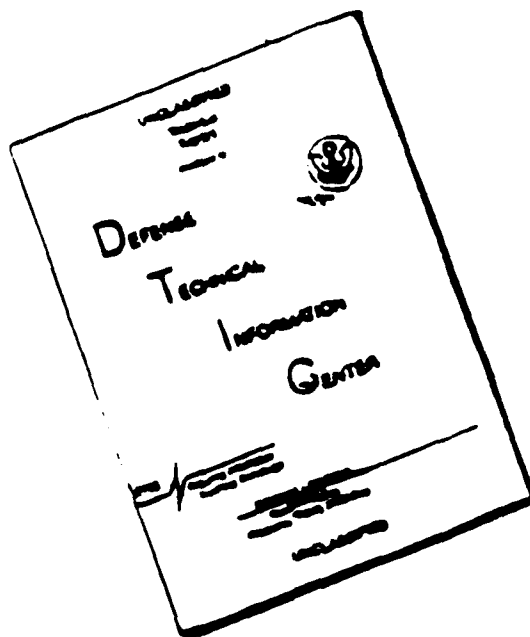


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Report 836

JAPANESE DRAFTING EQUIPMENT

Project GNS 468

8 July 1944

Submitted to

THE ENGINEER BOARD

Fort Belvoir, Virginia

and/or

The Chief of Engineers

U. S. Army

Washington, D. C.

FOR OFFICIAL ACTION

by

J. C. Cosby  
Warrant Officer, U. S. Army  
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## JAPANESE DRAFTING EQUIPMENT

### I. DESCRIPTION OF THE ITEM

1. General. This report covers a captured Japanese drafting or plotting set consisting of the following items: a set of drawing instruments with case, slide rule with case, plastic protractor, plastic straight edge or beam for beam compass, wood triangle, and a combination deflection fan and coordinate scale. (See Figure 1.) The set is provided with a canvas carrying case which was probably also used for carrying maps as it is considerably larger than is required for carrying the above-named items. The slide rule was made by Hemmi, Japan, but the other items have no trade marks or manufacturers' nameplates. The equipment was captured in the South Pacific area. The date of capture is not known.

### II. TECHNICAL FEATURES

2. Description. The drafting set consists of conventional commercial items which, with the exception of the combination deflection fan and coordinate scale, are equal to similar items manufactured for medium-price sale in the United States. The combination deflection fan and coordinate scale combines two instruments into one (paragraph 9). The set of drawing instruments has several more pieces than the field drawing sets issued to United States Army Units.

### III. USE OF ITEM OF EQUIPMENT

3. Length of Service. The equipment appears to have been used considerably. Its probable length of service is three to five years.

4. Use. The set of equipment was probably used by the fire-control section of a field artillery unit for plotting firing data.

### IV. COMPARISON WITH AMERICAN EQUIPMENT

5. General. No comparable sets of American equipment are issued to U. S. Army units; however, the component parts of the Japanese set have comparable items in general use in various U. S. Army sets.

6. Accuracy. The protractors, triangle, and combination deflection fan and coordinate scale are equal in accuracy to similar items of U. S. equipment. The plastic beam for the beam compass does not have sufficient rigidity to afford accuracy equal to that of the wood beam used by U. S. Army units for similar work.

7. Compactness. Comparative sizes of U. S. and Japanese drawing instrument sets and slide rules of similar types are shown below:

<u>Instrument Set</u>	<u>U. S.</u>	<u>Japanese</u>
Overall size of case	$3/4 \times 4 \ 5/8 \times 10 \ 1/4$	$1 \times 6 \ 1/4 \times 9$ inches
Number of pieces	11 inches	20

<u>Slide Rule</u>	<u>U. S.</u>	<u>Japanese</u>
Overall size of case	$7/8 \times 1 \ 7/8 \times 11$ inches	$1 \ 5/16 \times 1 \ 3/4 \times 11 \ 1/4$ inches
Overall size of rule	$3/8 \times 1 \ 3/8 \times 10 \ 5/8$ inches	$13/32 \times 1 \ 5/16 \times 11$ inches

8. Weight. Comparative weights of U. S. and Japanese items are shown below:

<u>Instrument Set</u>	<u>U. S.</u>	<u>Japanese</u>
Total weight with case	13 oz	1 lb 2 oz

<u>Slide Rule</u>	<u>U. S.</u>	<u>Japanese</u>
Weight of case	2 oz	2 oz
Weight of rule	$2 \ 1/2$ oz	3 oz
Total weight	$4 \ 1/2$ oz	5 oz

9. Design. Since the Japanese set of equipment includes only conventional items, with the exception of the combination deflection fan and coordinate scale, the design of the equipment is necessarily the same as that of similar equipment produced in the United States. The deflection fan differs somewhat in design from similar equipment used by the U. S. Army. The Japanese fan is laid out on a rectangular piece of plastic. The two corners on opposite sides of the vertex of the deflection lines are utilized for coordinate scales. The deflection fan used by U. S. Army units is shaped generally like an elongated fan, with the corners on opposite sides of the vertex of the deflection lines cut away. The coordinate scale used by U.S. Army units is shaped like a small carpenter's square, with two scales at right angles to each other.

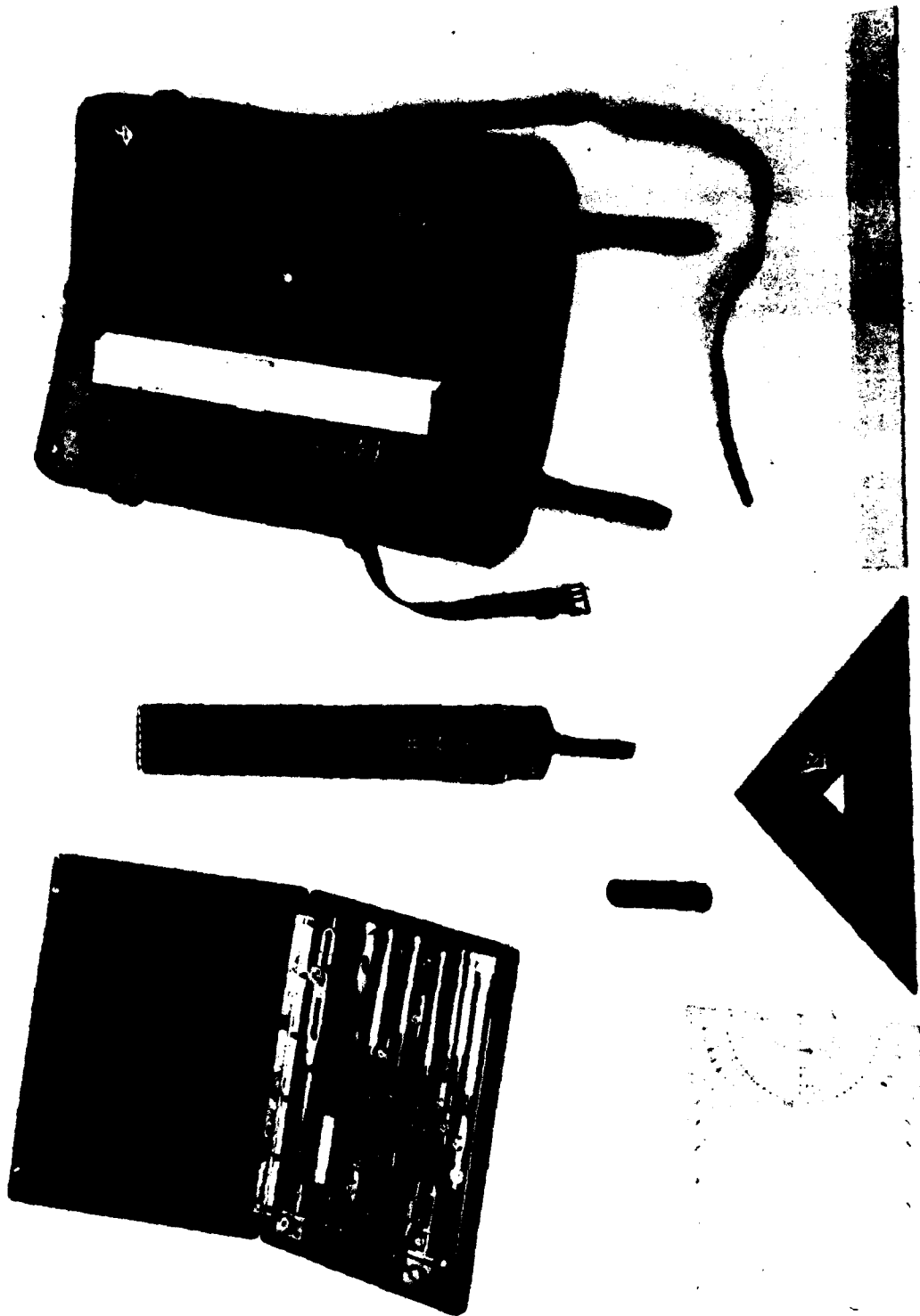


FIG. 1. JAPANESE DRAFTING OR PLOTTING SET. View shows component parts of set. Manufacturer's nameplate (Hemmi) appears on slide rule.

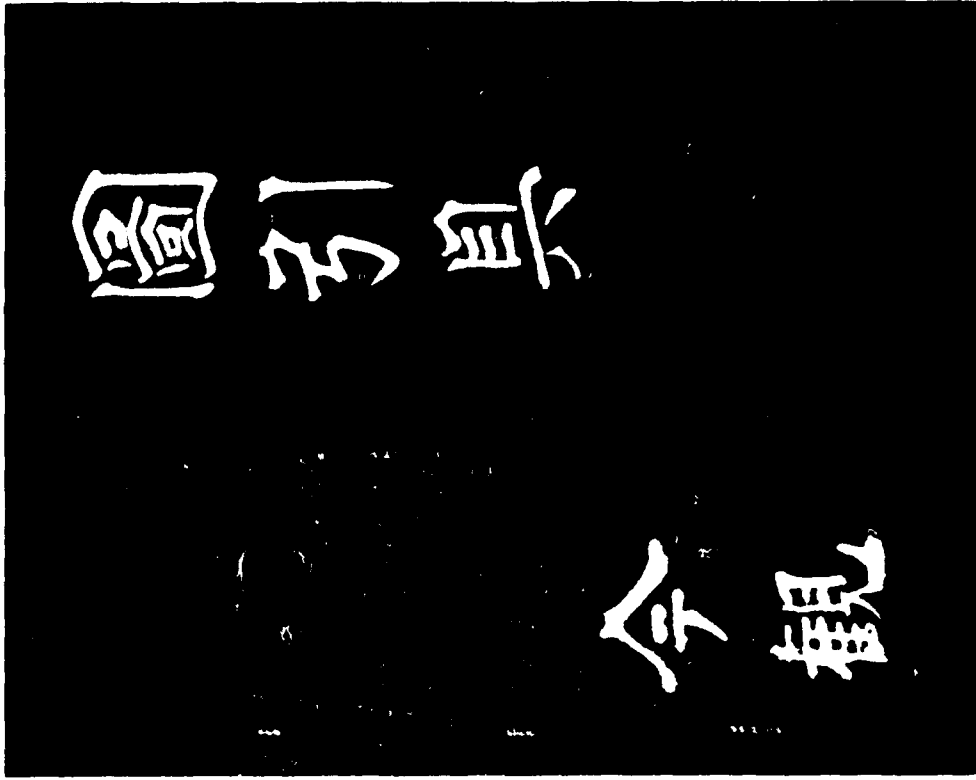


FIG. 3. JAPANESE INSCRIPTION ON THE DRAWING INSTRUMENT CASE.

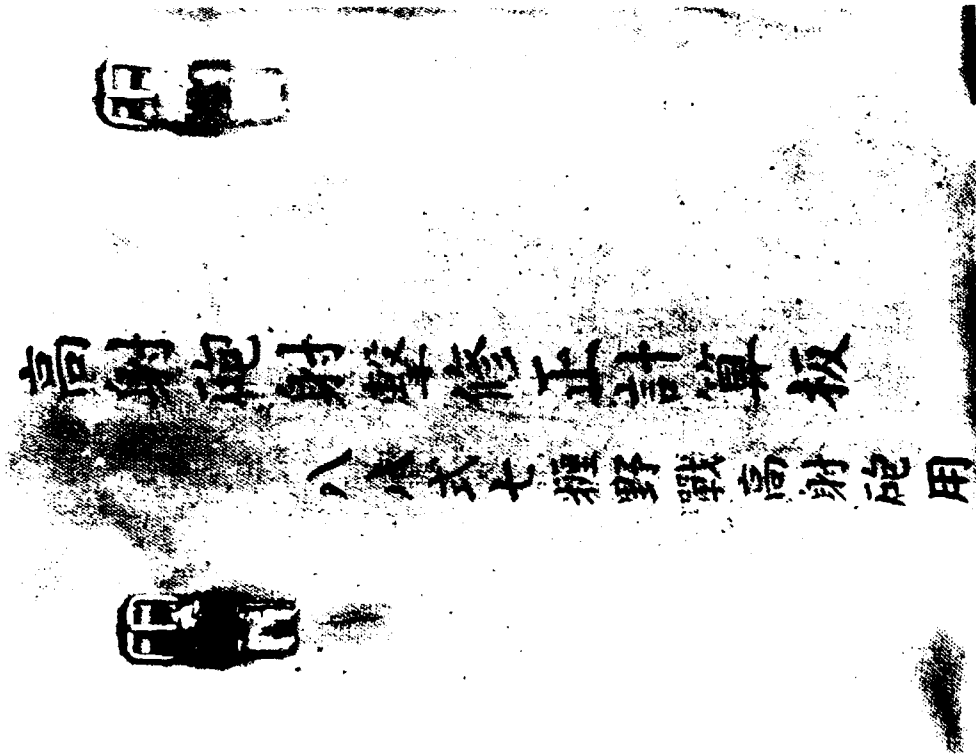


FIG. 2. JAPANESE INSCRIPTION ON THE CANVAS CARRYING CASE.

10. Operation. Since the design of the various items of Japanese equipment is essentially the same as similar items of American equipment, the operation is generally the same.

11. Material. The material used in manufacturing the Japanese equipment is the same as that used in comparable United States equipment, with the following exceptions:

a. The Japanese plastic beam for beam compass is not considered equal to wood beams used by U. S. Army units.


b. The Japanese wood triangle is not considered as durable as American plastic triangles; the accuracy is the same.

c. The Japanese slide rule is made of bamboo wood while equivalent United States rules are made of hardwood, usually mahogany. Both seem equally satisfactory.


#### V. RECOMMENDATIONS


12. Recommendation. The Japanese combination deflection fan and coordinate scale is the only piece of drafting equipment differing from items in common use in the United States. This item of Japanese equipment has combined two U. S. items into one, but since no particular advantage is gained by this combination, no action is recommended.

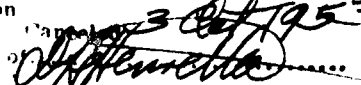
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by authority of  3 Oct 1953

APPENDIX A

DEDUCTIONS AS TO JAPANESE ECONOMIC STATUS

AND

NAMEPLATES AND MARKINGS

## DEDUCTIONS AS TO JAPANESE ECONOMIC STATUS

No deductions as to Japanese economic status are possible from the examination of this equipment.

## NAMEPLATES AND MARKINGS

The manufacturer's nameplate (Hemmi) appears on the slide rule. The other items comprising the set are without nameplates.

Japanese characters appear on the carrying case (Figure 2).

Japanese characters appear on the drawing instrument case (Figure 3).