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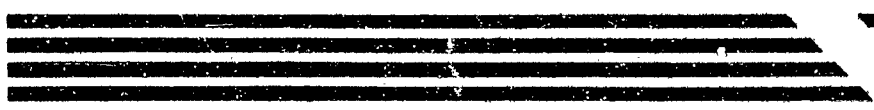
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ARMY MEDICAL RESEARCH LABORATORY

FORT KNOX, KENTUCKY

PROJECT NO. 9 - SIZE INCREASE OF MEN WEARING VARIOUS CLOTHING COMBINATIONS (ANTHROPOMETRIC MEASUREMENTS.)

*Project NO. 9



RESEARCH AND DEVELOPMENT DIVISION
OFFICE OF THE SURGEON GENERAL
DEPARTMENT OF THE ARMY

ARMORED MEDICAL RESEARCH LABORATORY
Fort Knox, Kentucky

Project No. 9
SPMEA 741-3

20 October 1945

SIZE INCREASE OF MEN WEARING VARIOUS CLOTHING COMBINATIONS

1. PROJECT NO. 9 - Anthropometric Measurements. Partial Report.

a. Authority: Letter Chief, Combat Vehicle Branch, Development Division, OCO-D dated 14 August 1945.

b. Purpose: To furnish data on increase over nude measurements with various clothing combinations.

2. DISCUSSION:

The Armored Medical Research Laboratory was requested by Ordnance to furnish data on increase in size resulting from various clothing combinations, the data to be used by tank and vehicle designers in arriving at spacial requirements for vehicle crewmen.

Many of the measurements are subject to wide variability depending on snugness or looseness of fit, hand of cloth, etc. Table I gives minimum increase tabulation for certain clothing combinations. Figures 1 thru 9 give general idea of increase resulting from factors other than cloth thickness alone. Table II is reproduction of Army Air Force data on amounts added to nude dimensions by typical clothing outfits--Memo Report, Engineering-49-695-32, dated 18 August 1943.

3. CONCLUSIONS: None

4. RECOMMENDATIONS: None

Submitted by:

Lester B. Roberts, Major, SnC

APPROVED *William B. Bean*
WILLIAM B. BEAN
Major, Medical Corps
Commanding

2 Incls.

#1 - Tables I & II

#2 - Figures 1 thru 9

TABLE II

AMOUNTS ADDED TO NUDE DIMENSIONS BY TYPICAL CLOTHING OUTFITS

	Heavy Winter Flying Clothing ¹	Quilted "Feathertex" (Thomas Quilt) ²	Electrically Heated Suit (Type F-1) ³	Electric Suit G.E. 2-piece) ⁴
Weight	20 lbs.	14 lbs.	16 lbs.	15.5 lbs.
Stature	1.9 in.	1.9 in.	1.8 in.	1.2 in.
Head Length	0.4	0.4	0.4	0.4
Breadth	0.4	0.4	0.4	0.4
Height	0.2	0.2	0.2	0.2
Circumference	1.7	1.7	1.7	1.7
Arm				
Total Span	0.4	0.0	0.2	0.0
Span-Akimbo	0.8	0.0	0.4	0.0
Anterior Arm Reach	0.4	0.0	0.2	0.0
Shoulder-Elbow Length	0.3	0.3	0.5	0.5
Shoulder Breadth (to bone)	1.3	0.8	0.4	0.2
Shoulder Breadth (across muscle)	0.7	0.8	0.5	0.2
Elbow Breadth (across body)	4.4	4.7	2.4	2.9
Hand Length	0.3	0.4	0.4	0.2
Hand Breadth	0.4	0.3	0.2	0.2
Trunk				
Sitting Height	0.6	0.6	0.6	0.6
Eye Level from Seat	0.4	0.4	0.4	0.4
Shoulder to Seat	0.6	0.7	0.5	0.5
Chest Breadth	0.6	0.6	0.4	0.5
Chest Depth	1.4	1.7	0.7	0.7
Chest Circumference- resting	9.1	6.8	4.4	3.4
Abdominal Depth	1.4	2.2	0.4	0.8
Hip Breadth	1.3	2.1	0.4	0.8
Buttock Breadth	1.7	2.5	0.5	0.6
Leg				
Buttock-Knee (sitting)	0.5	1.1	0.4	0.3
Knee Height from Floor	1.8	2.2	1.6	1.9
Knees, Breadth across Both	2.5	2.1	2.5	1.0
Calf Circumference	6.0	3.9	1.6	1.8
Foot Length**	2.7	2.7	2.7	2.7
Foot Breadth**	1.2	0.9	0.7	0.9

¹B-3 jacket, A-3 trousers, B-5 helmet, A-9 gloves, A-6 boots.

²3J-4* jacket, ST-9* trousers, B-6 helmet, A-9 gloves, A-6 boots.

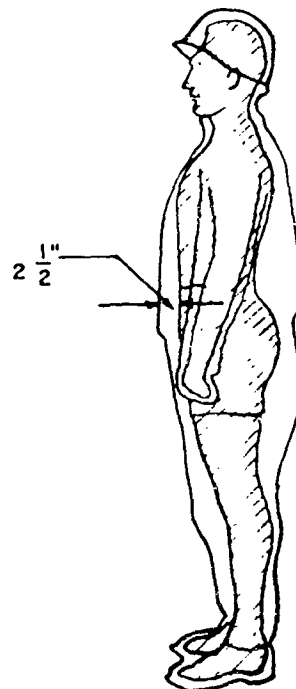
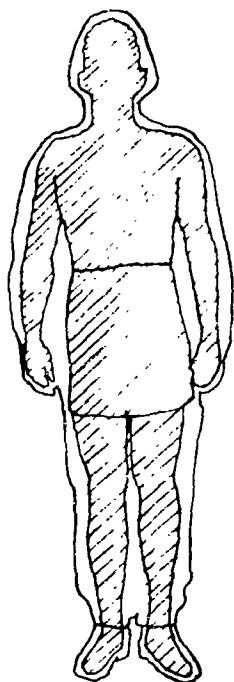
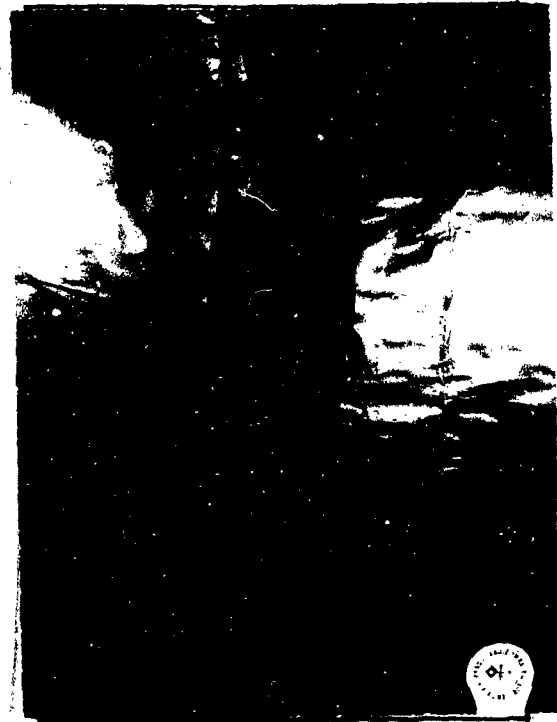
³F-1 suit, B-5 helmet, A-6 gloves, A-9 boots, D-1 boot pilots

⁴PA-17-II* jacket, PA-17-MI* trousers, B-6 helmet, PA-17-DI* gloves, A-6 boot,
A-4 coverall.

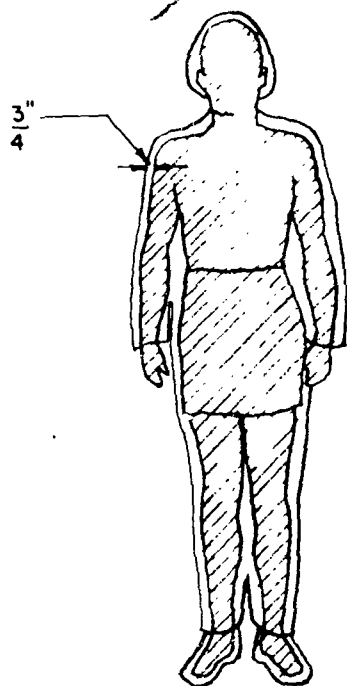
* Manufacturer's numbers: Thomas Quilt Factories, Denver, Colorado; General Electric Company, Bridgeport, Connecticut.

** Boot Measurements: A-6, medium: 12.8" long, 5.0" wide. A-6, large: 13.5" long, 5.3" wide. A-9, large: 13.2" long, 4.7" wide.

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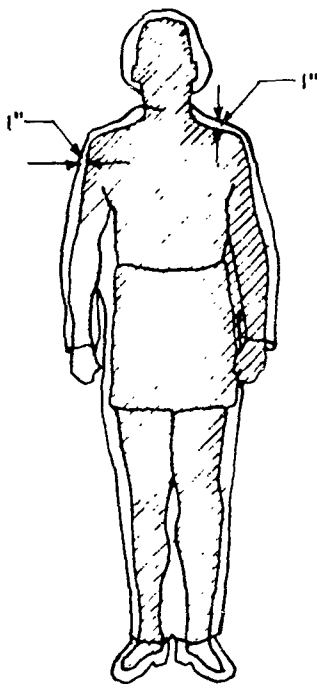
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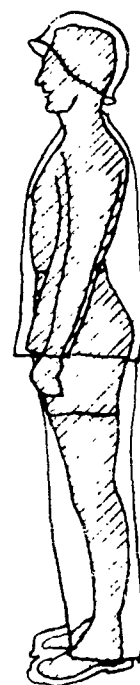
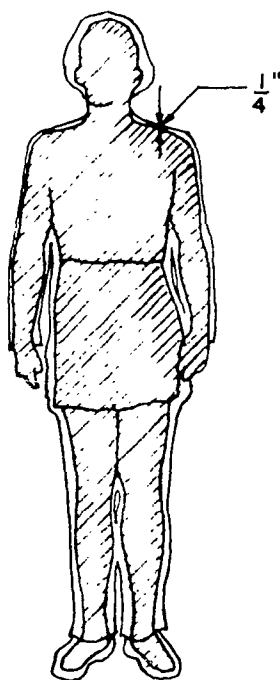
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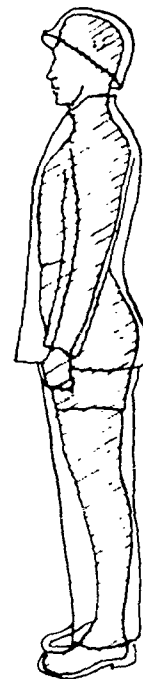
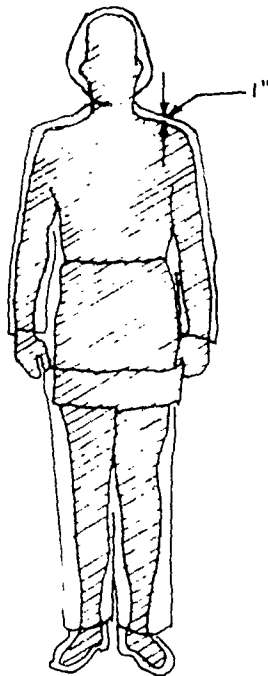
FIG.2



SCALE IN INCHES
0 6 12 24



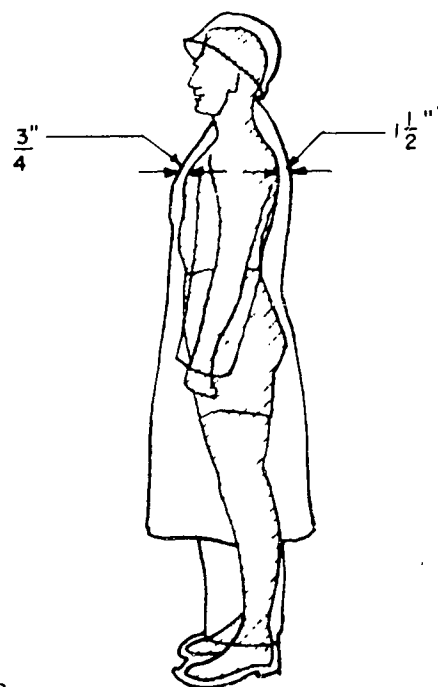
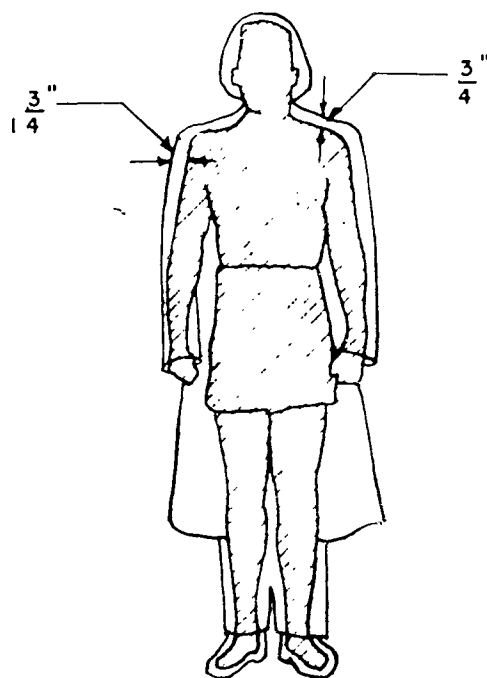
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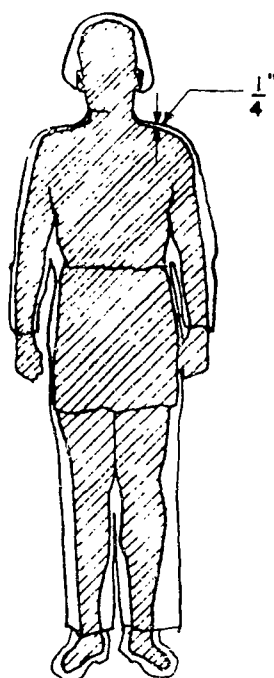
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Incl. #2

FIG.5



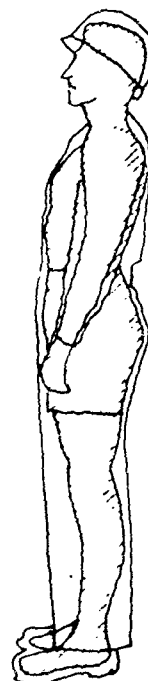
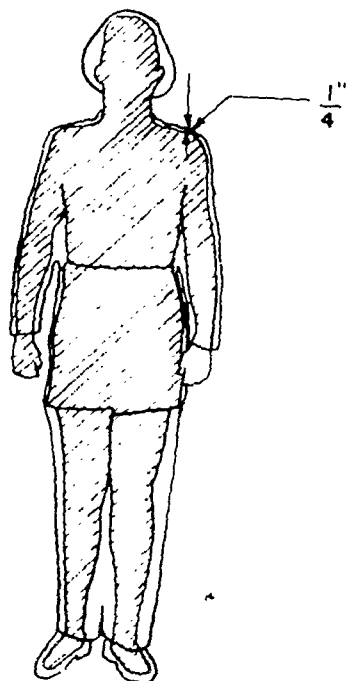
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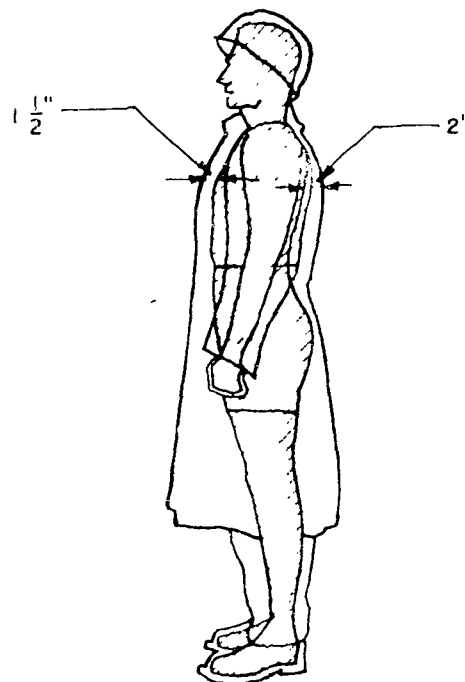
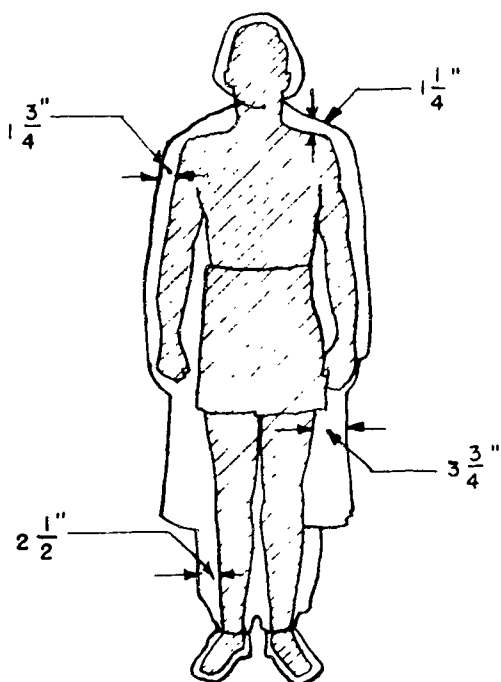
FIG. 7



SCALE IN INCHES
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FIG. 8



SCALE IN INCHES
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FIG. 9

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