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The Science of Grading Clothing Patterns

By HARRY SIMONS



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Book S6

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The Science of Grading Patterns

for

Men's Boys' and Children's Clothing



By

HARRY SIMONS

Technical Editor of

The Clothing Designer and Manufacturer

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no 1

INTRODUCTION.



THIS book is published in response to urgent requests from craftsmen, for a dependable work on grading. There being no such work in print or anything approaching it, I have undertaken to meet this need. As the publisher and the technical editor of THE CLOTHING DESIGNER AND MANUFACTURER, I have had the opportunity of investigating all grading systems and have, therefore, devised a system which I believe to be entirely scientific, simple and efficient. In my investigations, I have been aided by a thorough experience as designer with some of the leading houses, and as consulting designer and manufacturer for the trade, generally.

Designers and cutters need not hesitate to utilize this system, as the author stands back of it. If instructions are followed, accurate results are positive.

The diagrams here published are of the latest style garments, such as Raglans, Balmacaans, Balmaroons, Mantle coats, etc., and also of the regular garments. Grading linings is likewise treated, as properly graded linings is a help to good fitting and also conduces to economy in materials.

Patterns of all kinds, boys', children's and women's, can be graded by the same system.

Purchasers of this book are entitled to free information and advice from the author on any of the points involved.

A great deal of time, pains and expense, has been invested in this work, and the price I consider a modest payment for the service given.

Sincerely,

70 Fifth Avenue,
New York City.

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Grading To-day.

PATTERN grading is a true science. It demands a precise knowledge of human proportions of the variations occasioned by growth. It requires minute calculation in the production of diagrams and also accuracy, which is as vital to the system as it is in architecture.

The procedure is that of making a diagram for a given size and then grading off rotatively, according to a scale, using the preceding diagram to shape from point to point. In this way, the same lines and effects are given to each pattern. Each set of sizes should be marked, so as to distinguish them from other sets in order to insure against mistakes.

The divisions allowed in this book is 1 inch in front for 1 sizes, $1\frac{1}{2}$ inch at side seam of forepart for 4 sizes, and $1\frac{1}{2}$ inch at side seam of back for 4 sizes. It is strictly adhered to except where otherwise stated. A full inch is allowed in the width for both the increase or decrease of every size. The fallacy of using 5 divisions on this allowance is very apparent even considering the argument advanced by those using it. If anything the larger sizes should have a greater allowance than the smaller, speaking only of the width of the size. The author of this book has used both. The allowance at shoulder is given as $\frac{1}{6}$ of an inch up to size 42 for every four sizes. You will note in both the Stout Sack and Corpulant Sack a different allowance is given on the back. Wherever there is any deviation from the regular grade it is so stated.

The grade of the linings is very important as it is the only way to insure a perfect set. If the model is made proper it should save the cost of fitting and prepare the garment right to the machine. The shoulders are graded to keep the correct proportion throughout. On the corpulant sack grade a clear idea is given how the sizes over 46 are to be graded.

DIAGRAM I.

DRAW line ABCD.

Place the back at point A and the bottom at point F and see that the center seam of back is in the same position as when drafted.

B-L is the breast line. C-M is the waist line, and D-N is the bottom.

B to O is 1 inch.

B to P is 1 inch.

Draw line OG, which gives you the increase and decrease for the neck sizes. Draw line P-H, which establishes the different widths of shoulder for the different sizes.

Point R is half way between H and G.

Draw line B-R, which is used as a guide line.

I is the sleeve notch of back.

Draw line B-I.

Draw line B-J.

Parallel B-J to point K.

Extend line A-L-M and N. This gives you all the construction lines for grading the back.

DIAGRAM II.

FROM G to 2 is $4\frac{6}{10}$ of an inch, which is used as the division of four sizes. Parallel from G-A to point 2, which establishes point 3.

Parallel from G-R to point 2, which establishes point 4. Then parallel G-H to point 2, which establishes point 5. This gives you the increase for four sizes on the shoulder and neck.

L to 6 is a $\frac{1}{2}$ inch. M to 7 is a $\frac{1}{2}$ inch. N to 8 is a $\frac{1}{2}$ inch.

Parallel L-K to 6, which gives you point 9. J to 10 is the same distance as K to 9. Then take the back and draw line 10-5, which intersects the line I, establishing point 11. This gives you the complete grade of back for four sizes from 36 to 40.

DIAGRAM III.

EXTEND lines AGRHIJKLMN. backward and forward.

Space the different sizes using the same divisions.

You will note that from 2 to 3, which is from 40 to 44, is only 3 divisions, for after size 42, it jumps a division, at every even size. This scheme can be followed from 42 up. You will also note that this is carried out only at the neck, shoulder and armhole, for at the blade and side seam, every size is marked and the sizes are given full proportions.

This finishes the grade of the back.

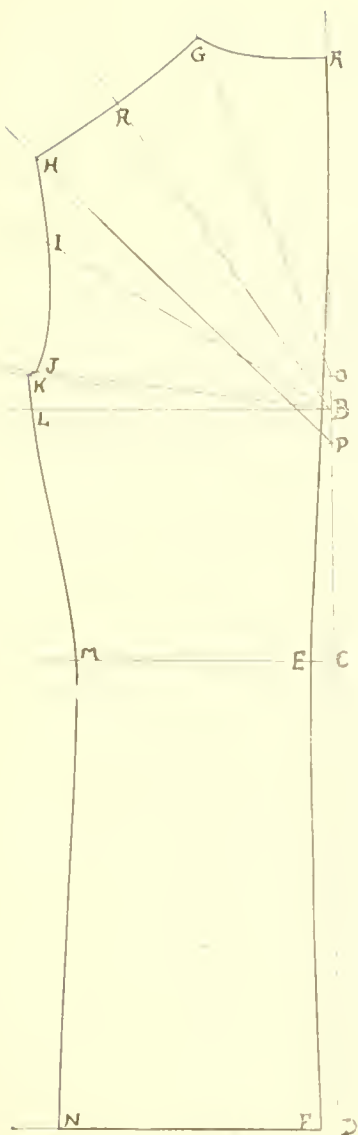


DIAGRAM I.

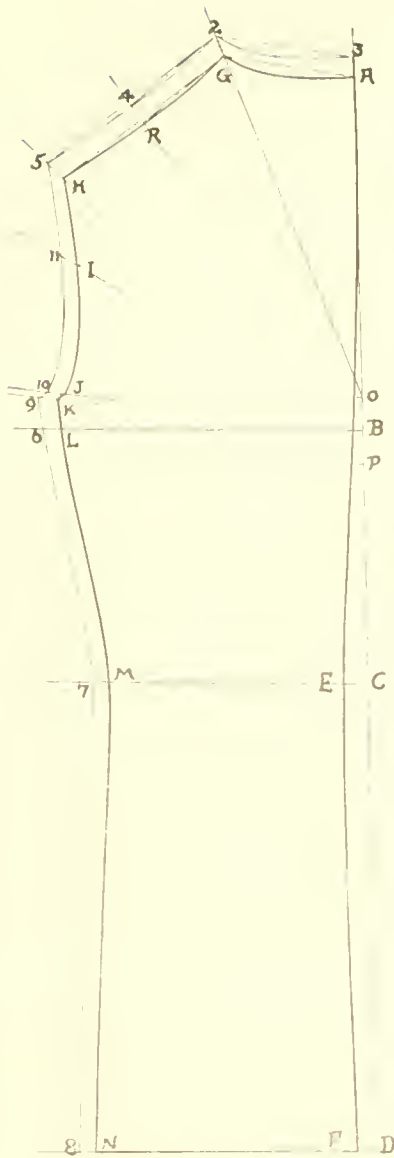


DIAGRAM II.

DIAGRAM III.

DIAGRAM IV.

GRADING THE FOREPART.

MARK out the forepart, as illustrated, and put the breast line MN and waist line RP on it. Draw line BC, so that it strikes the front of armhole at point A, the notch. This establishes point C, which is the center point for lines EC, DC, BC, JC and KC. Parallel L from line CK. Then parallel line F from line EC. H to G is $1\frac{3}{4}$ inches. Draw line GI. Extend the breast line at point M and N. Parallel line F to O. Extend the waist line at points R and P. S is a guide line and should be made parallel to PR. Draw line T parallel to S. Draw line U parallel to R. Draw line V parallel to U.

POCKETS.

From 2 to 3 is $3\frac{1}{4}$ inches. 3 to 4 is $1\frac{1}{4}$ inch. Draw line 2-4. Parallel 5 from line 2-4. 6 to 7 is $1\frac{1}{4}$ inch. 7 to 8 is $1\frac{1}{4}$ inch. Draw line 6-8. Parallel line 9 from 6-8.

LOWER POCKET.

Draw lines Y-A and Z-A. Y to 10 is $1\frac{1}{4}$ inch and Y to 12 is $1\frac{1}{4}$ inch. Z to 11 is $1\frac{1}{4}$ inch. Z to 12 is $1\frac{1}{4}$ inch.

These divisions are used for four sizes.

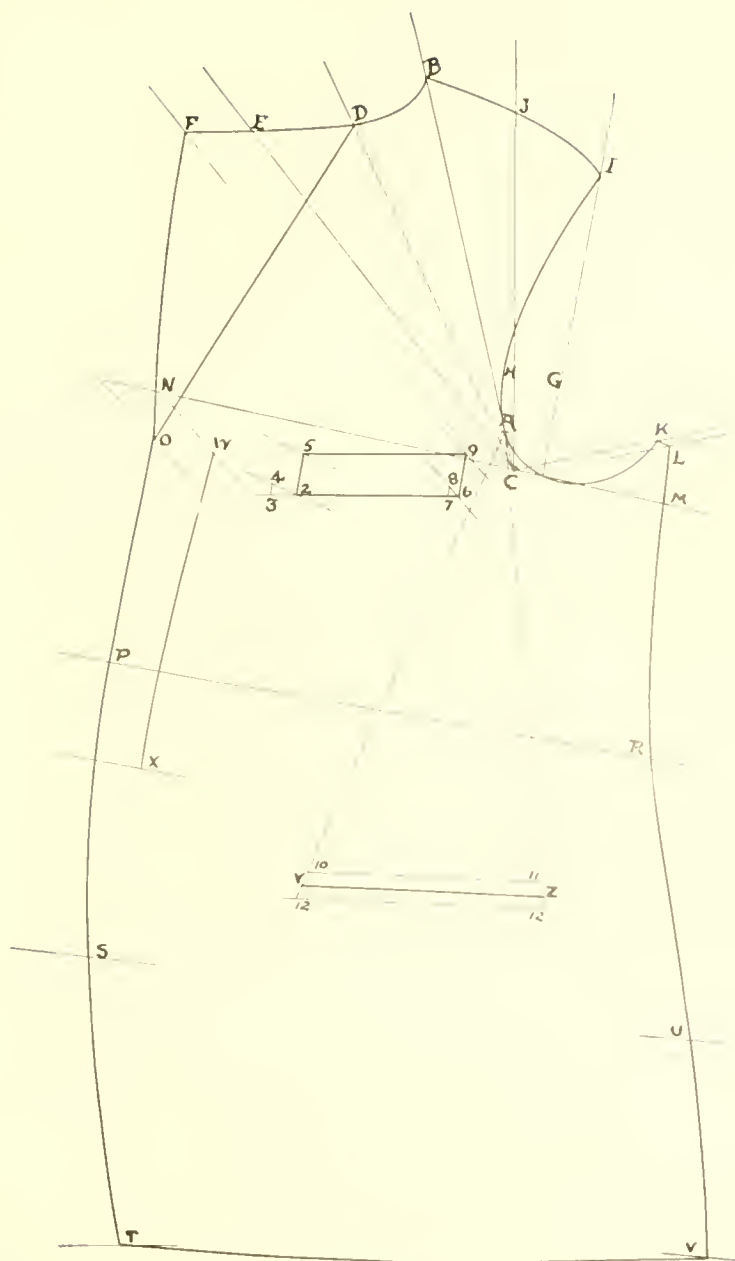


DIAGRAM IV.

DIAGRAM V.

FOREPART.

B TO 13 is $\frac{4}{6}$ inches.

Parallel from D-B to 13, establishing point 16.

Parallel from E-B to 13, establishing point 17.

Parallel F-B to 17, establishing point 18.

Parallel C-E to F.

N to 19 is 1 inch.

Parallel N-O to 19, establishing 20.

P to 21 is 1 inch.

S to 22 is 1 inch.

T to 23 is 1 inch.

This gives you the neck and front for four sizes.

Parallel B-J to 13, establishing point 14.

Parallel B-I to 13, establishing point 15.

K to 24 is a $\frac{1}{2}$ inch.

L to 25 is a $\frac{1}{2}$ inch.

Parallel from L-M to 26, establishing point 25.

When using the inch measure on line M-19 for the front increase for four sizes, see that this inch is $\frac{1}{16}$ less; in other words a small inch.

BUTTONS

W to 30 is the same distance as O to 20.

X to 31 is 1 inch.

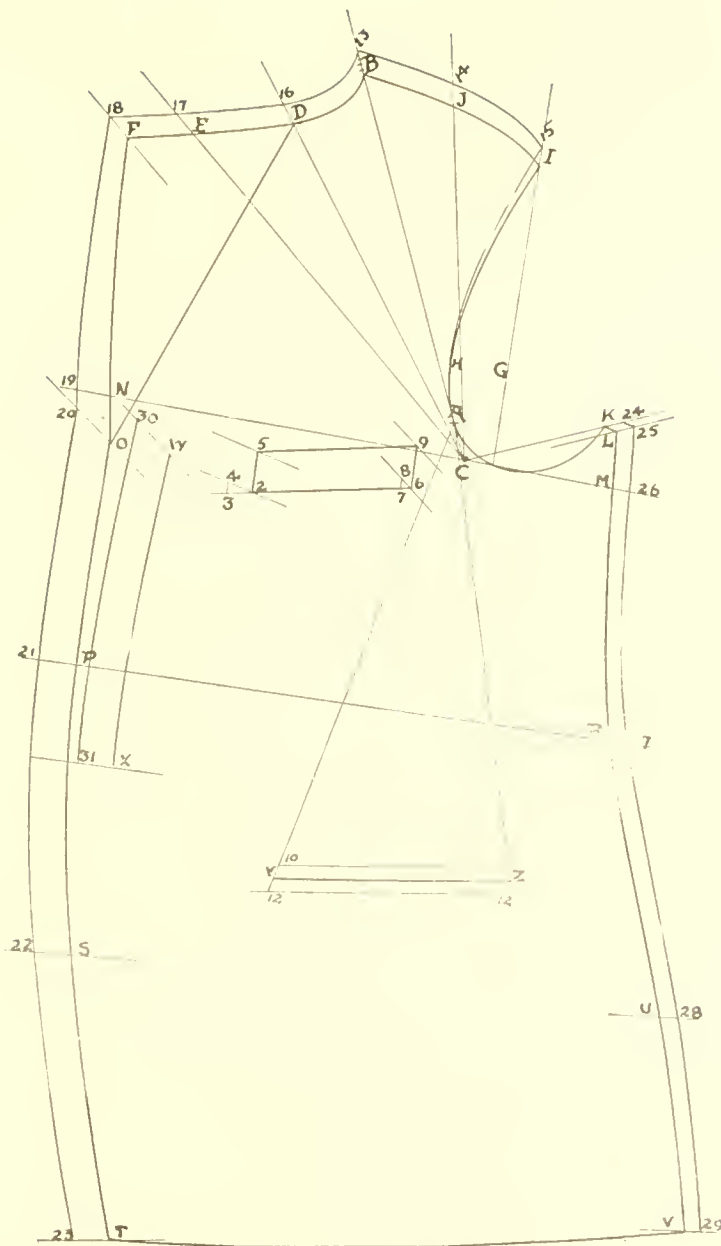


DIAGRAM V.

DIAGRAM VI.

FOREPART.

YOU will note on this diagram that after size 42 on the waist line or line W, at the front, that I make an extra division from 42 to 44. This carried out from the waist line down, so as to harmonize with the increase of proportions in the waist for the larger sizes. You will also note that at point H the hollow part of armhole, that I draw a line and space off the increase of front arm scye, which I get by drawing the line from the shoulder to the notch of armhole. At the pocket from size 40 to 44, I go out in front instead of down; otherwise the grade is carried out the same as the four sizes from 36 to 40.

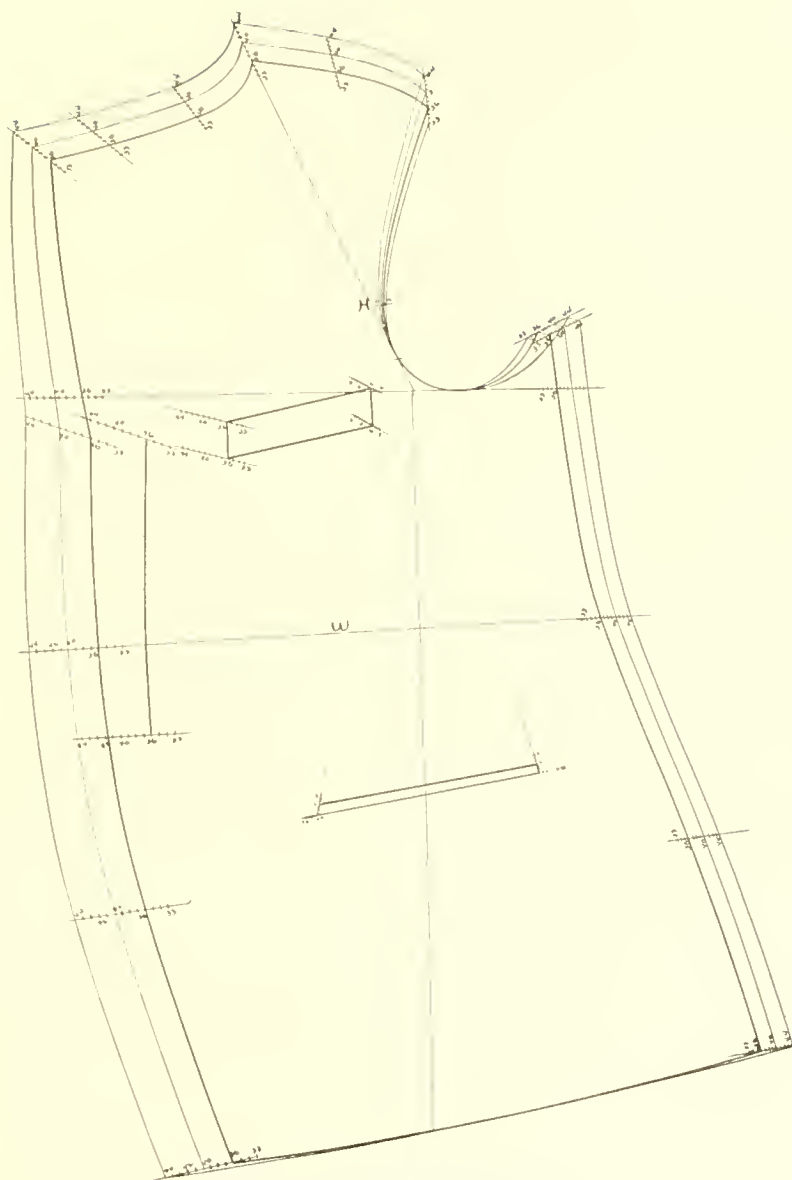


DIAGRAM VI.

DIAGRAM VII.

TOP Sleeve.—AEDCBFH is the top sleeve.

Space the ball in three sections, as shown by points EDC.

Point A is the sleeve notch.

Draw lines AB, AC, AD and AE.

B to G is 4 6 inches, for four sizes.

Parallel from BC to G, establishing point H on line AC.

Parallel CD to H, establishing point I on line AD.

Parallel from DE to I, establishing point J on line AE.

F to K is $\frac{1}{4}$ inch, for four sizes.

H to L is $\frac{1}{4}$ inch, for four sizes.

Use the top sleeve to shape line LK, KG and GHIJA, which completes the top sleeve. The larger and smaller sizes can be used on the same divisions.

DIAGRAM VIII.

UNDER SLEEVE.

BHGFDEIJC, is the under sleeve.

Place the inseam of top sleeve at point B and C, as illustrated.

Point A is the notch of top sleeve.

Space off the under sleeve line DB in three sections, as indicated by points FGH. Then draw lines AD, AF, AG and AH.

D to K is 4 6 inch for four sizes.

Parallel line DK to EL.

E to L is 4 6 inches.

Parallel DK to FM, FM to GN, and GN to HO.

I to P is $\frac{1}{4}$ inches. J to R is $\frac{1}{4}$ inches.

Shape the lines RP, PL, LK and KEMNOB, which completes the grade of under sleeve for four sizes. The larger and smaller sizes can be graded up and down using the same divisions.

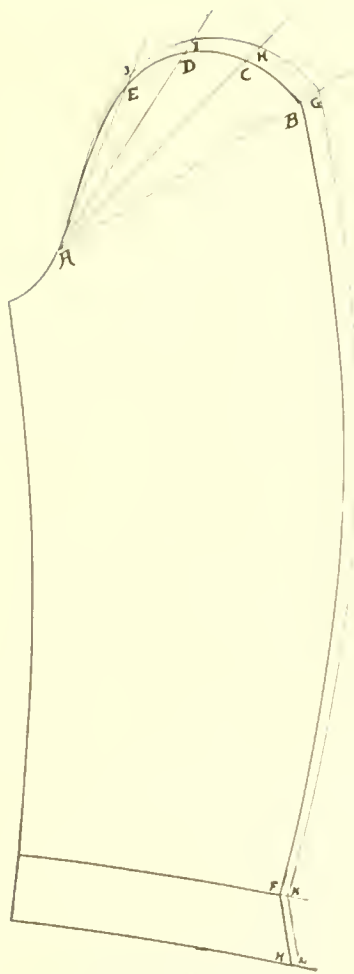


DIAGRAM VII.

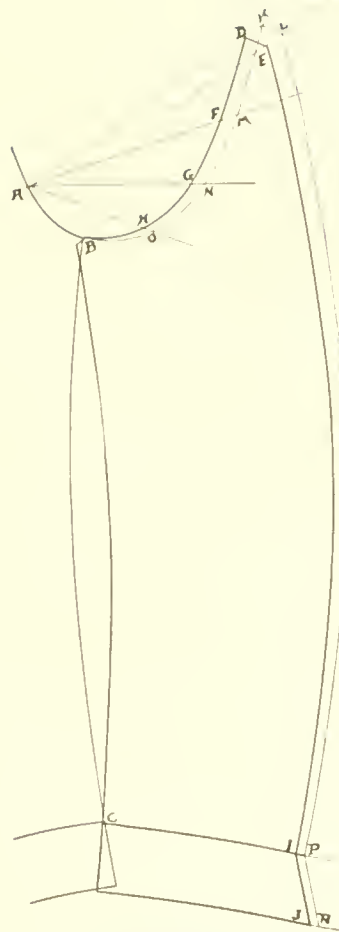


DIAGRAM VIII.

DIAGRAM IX.

TOP SLEEVE.

SPACE off the increase and decrease of sizes, as indicated.

From 36 to 35 and 35 to 34 and 34 to 33, are respectively one-half inch apart, which is indicated by the letters DEFGHIJK. This shows the decrease in length of sleeve from size 36 to size 33.

Square up from point A to B.

B to C is 3 16 inch.

Draw line A-C, which gives you the width of turn-up at bottom at bottom of sleeve.

Parallel A-C to 36, which gives you line 33-36, at the bottom of sleeve.

DIAGRAM X.

UNDER SLEEVE.

SPACE off the increase and decrease of sizes as indicated at the top of sleeve.

From 36 to 35 and 35 to 34 and 34 to 33, are respectively one-half inch apart, which is indicated by the letters DEFGHIJK. This shows the decrease in length of sleeve from size 36 to size 33.

Square up from point A to B.

B to C is 3 16 inch.

Draw line A-C, which gives you the width of turn-up at bottom of sleeve.

Parallel A-C to 36, which gives you line 33-36, at the bottom of sleeve.

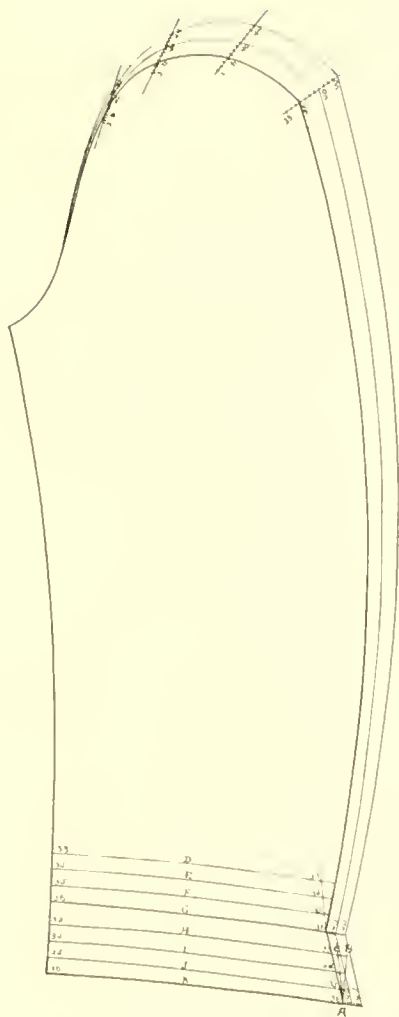


DIAGRAM IX.



DIAGRAM X.

DIAGRAM XI.

COLLAR.

THE collar is graded from the drafting position in the neck. After placing the collar just as it is drafted, draw lines A-C, B-D, and B-E. At the point where the collar intersects line A-C, point F is established.

F to G is 4 6 inch, the same as forepart.

X is the point of intersection of collar and line B-D.

E is at the same point.

Parallel F-X to G, establishing Z.

Parallel X-E to Z, establishing T.

Parallel F-H, which is the point of collar to G, establishing point I.

Draw line G-I.

Parallel line F-G to point H, establishing line J.

J to K is the increase of back for four sizes (measure increase of back from grade.)

Draw line H-K.

Parallel H-K to L, giving you line L-N.

Parallel L-N to O, giving you line O-P.

L-N and O-P is the same distance as H-K.

Draw line R.

Parallel E-T to U, giving you line U-V.

U-V is the same distance as E-T.

Draw line V-P, which gives you point S on line R.

This completes the grade for four sizes of collar. This collar should measure exactly for every size. The collar increases accordingly for the larger and smaller sizes.

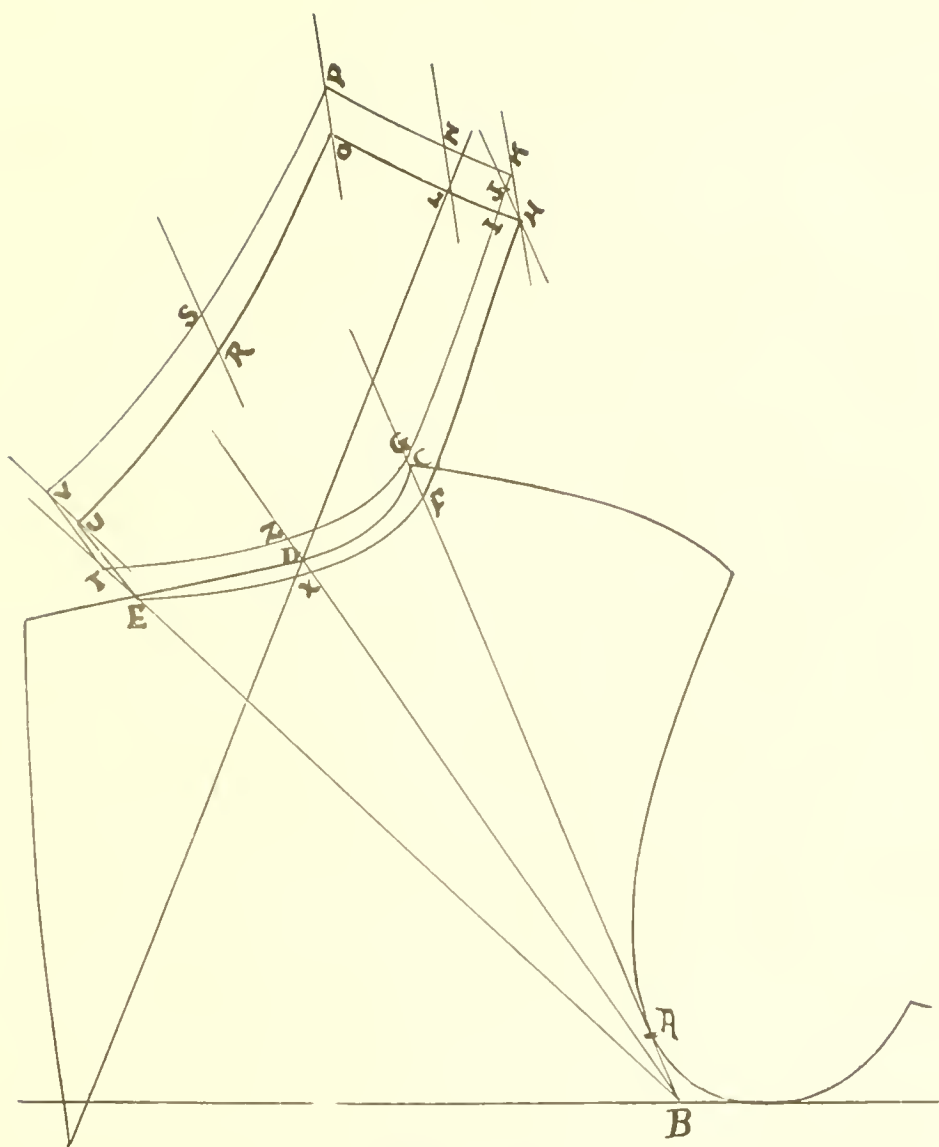


DIAGRAM XI.

DIAGRAM XII.

LESSON 2. UNDER COLLAR.

THIS shows the under collar as carried out from size 33 to 44. There is no variation whatever, as will be seen by the illustration.

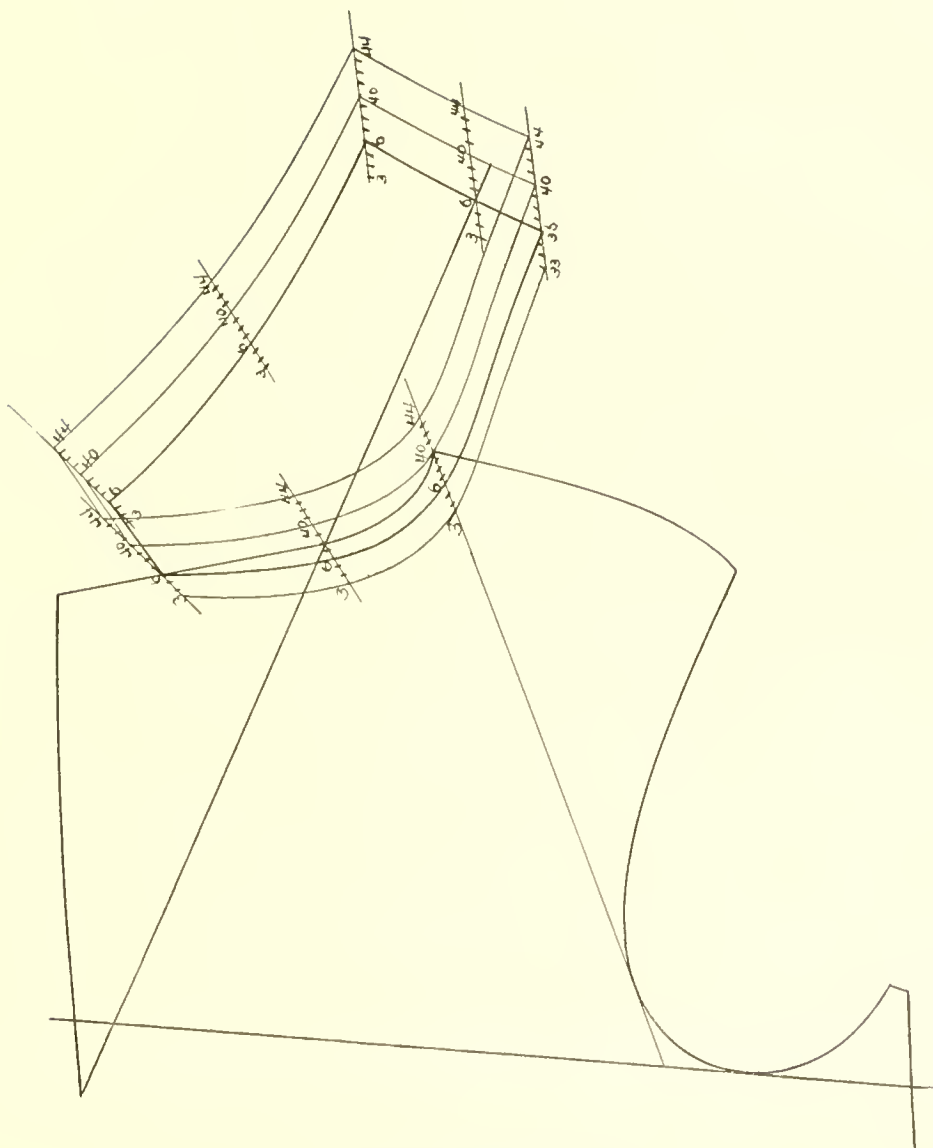


DIAGRAM XIII.

STOUT.

Back.

BN is the breast line.
CO is the waist line.
DP is the seat line.
SR is the bottom.
B to F is 1 inch.
B to G is 1 inch.
Draw lines FH, BI, GJ, BK, BL.
Parallel line BL to M.
H to 3 is $\frac{1}{2}$ inch.
Parallel HA to 3, establishing point 2.
Parallel HI to 3, establishing point 4.

Parallel HJ to 3, establishing point 5.
N to 9 is $\frac{1}{2}$ inch.
Parallel NM to 9, establishing point 8.
L7 is the same distance as M8.
Draw line 5-7, which intersects line K-B at 6.
OI9, P11 and R12, is the same distance as N9.
This back is for sizes 40 to 44, and is graded with the same proportions for larger and smaller sizes.

DIAGRAM XIV.

FOREPART.

JBU is the breast line.
LR is the waist line.
MP is the seat line.
NO is the bottom.
Draw lines CB, DB, SB, FB, GB, and HB.
Parallel line GB to point 7 and 8.
Parallel line HB to point 1.
K18 is parallel to I-16.
T23 is parallel to S22.
W to X is $1\frac{3}{4}$ inches.
Draw line XE.
C to 9 is 4 6 inch.
Parallel CD to 9 establishing point 10.
Parallel CE to 9 establishing point 12.
U to 24 is $\frac{1}{2}$ inch.
Parallel UT to 24 establishing point 23.
S-22 is the same as T-23.
R to 25 is $\frac{5}{8}$ inch.
O to 27 is $\frac{5}{8}$ inch.

Parallel CF to 9 establishing point 12.
Parallel FG to 12 establishing point 13.
7-14 and 8-36 is the same as G-1.
Parallel CH to 9, establishing point 15.
Parallel HI to 15, establishing point 16.
J to 17 is 1 inch.
L to 19 is $1\frac{1}{4}$ inches.
Draw 19-17 which intersects line K at 18.
M to 29 is $1\frac{1}{4}$ inches.
N to 21 is $1\frac{1}{4}$ inches.
P to 26 is $\frac{5}{8}$ inch.
O to 27 is $\frac{5}{8}$ inch.
Z to 34 is $\frac{1}{4}$ inch.
Y to 33 is $\frac{1}{4}$ inch.

The Vee remains in the same place, with the exception that it raises and lowers with the pocket.

BREAST POCKET.

3456 is the breast pocket.
5 to 30 is $3\frac{1}{4}$ inch.
30 to 29 is $1\frac{1}{4}$ inch.
Parallel 29-5 to 3.
Draw line 29-5.
Parallel 3-5 to point 29, which establishes point 28.
6 to 32 is $\frac{1}{4}$ inch.
Parallel to point 4 which gives

you 4-31.

Draw line V-35 and space into four divisions, which completes the draft from sizes 40 to 44. The same divisions can be used for larger and smaller sizes. This completes the stout grade.

The sleeves are graded the same as the regular sack.

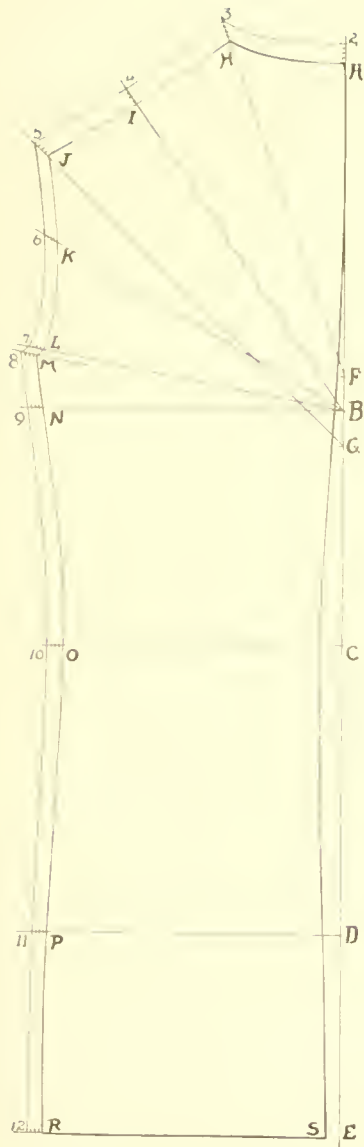


DIAGRAM XV.

VEST. — BACK.

Draw line AEBFCD.

Place the top of back at point A, so that the waist line will be $\frac{3}{4}$ inch from point C.

B to E is 1 inch.

B to F is 1 inch.

Draw lines EG, FH, BI, BJ, BK and CL.

Extend M to 9.

G to 3 is 4 6 inch.

Parallel GA to 3, establishing point 2.

Parallel GH to 3, establishing point 4.

Parallel HI to 4, establishing point 5.

K to 7 is 1 inch.

Draw line 5-7, which intersects BJ at 6.

L to 8 is 1 inch.

M to 9 is 1 inch.

This completes the back for four sizes from 36 to 40.

The larger and smaller sizes can be had by grading up and down.

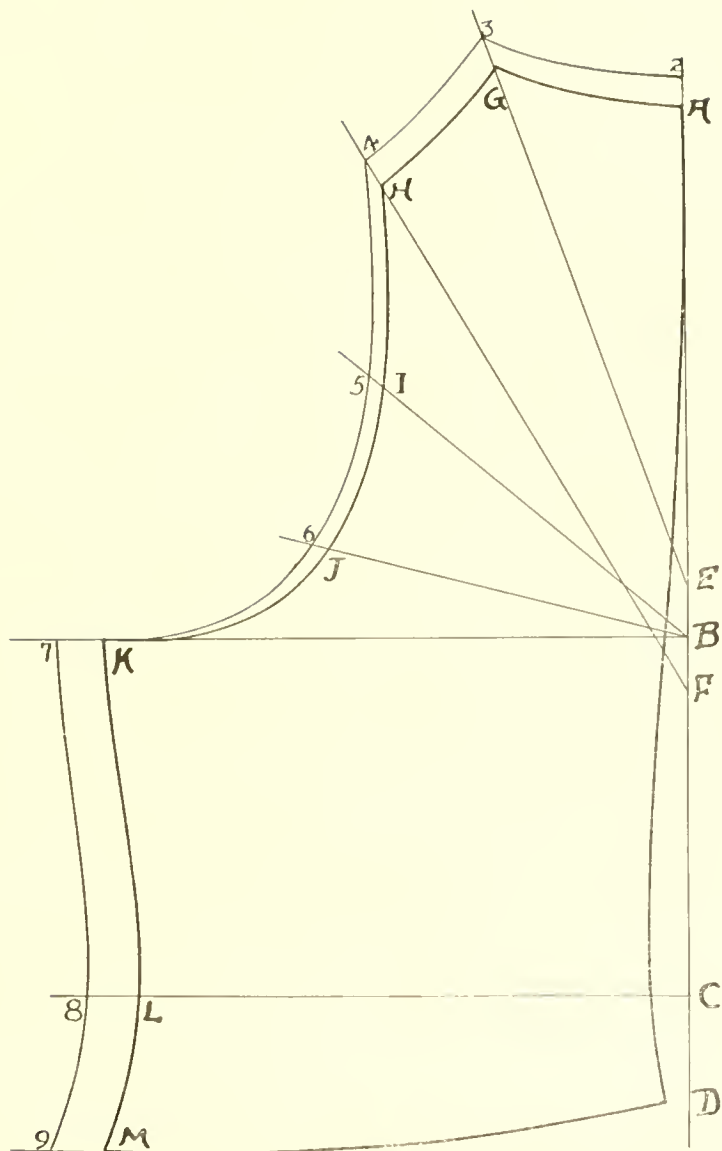


DIAGRAM XV.

DIAGRAM XVI.

VEST. — FOREPART.

YOU will note that this vest grade is somewhat similar to the sack with the exception of the side seam.

GI is the breast line.

HJ is the waist line.

Draw line CA, establishing point B on the breast line.

Draw line WB.

Y to Z is $1\frac{3}{4}$ inches.

Draw line ZX.

Draw lines BD, BE, and BF.

Extend the lines of pocket OR and NP and of the lower SU and TV.

C to 2 is 4 6 inch.

Parallel CW to 2, establishing point 10.

Parallel CX to 2, establishing point 11.

Parallel CD to 2, establishing point 3.

6 to G is 1 inch.

6 to G is 1 inch.

Parallel GF to 6, establishing point 5.

Draw line 3-5, using forepart as shaper, which intersects line BE, establishing point 4.

H to 7 is 1 inch.

L to 8 is 1 inch.

M to 9 is 1 inch.

K to 12 is $\frac{3}{8}$ inch, which is used only from sizes 42 to 44, the natural increase of waist.

Draw line I-13-12.

O to 15 is $\frac{3}{4}$ inch.

N to 14 is $\frac{3}{4}$ inch.

R to 16 and P to 17 is $\frac{1}{4}$ inch, each.

S to 18 and T to 20 is $\frac{3}{4}$ inch.

U to 19 and V to 21 is $\frac{1}{4}$ inch, each.

This completes the grade for vest. For larger and smaller sizes, it is carried out the same as the sack.

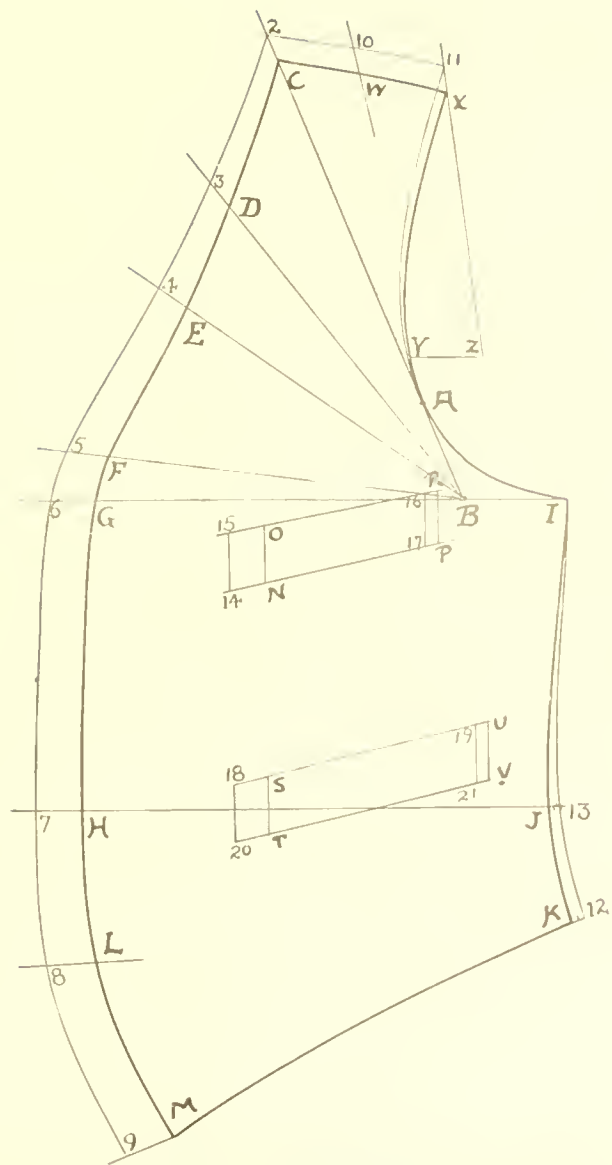


DIAGRAM XVI.

DIAGRAM XVII.

STOUT VEST.—BACK.

Draw line ABCDEF.

B to C is 1 inch.

B to D is 1 inch.

Draw lines CG, HD, IB, JB, KB.

LB is the breast line.

MP is the waist line.

G to 3 is $1\frac{1}{2}$ inch.

Parallel the same as the regular vest.

L to 8 is 1 inch.

M to 9 is $11\frac{1}{4}$ inches. N to 10 is $11\frac{1}{4}$ inches. This gives you the proportionate increase of waist.

This grade is for four sizes, from 40 to 44. For the larger and smaller sizes use the same divisions.

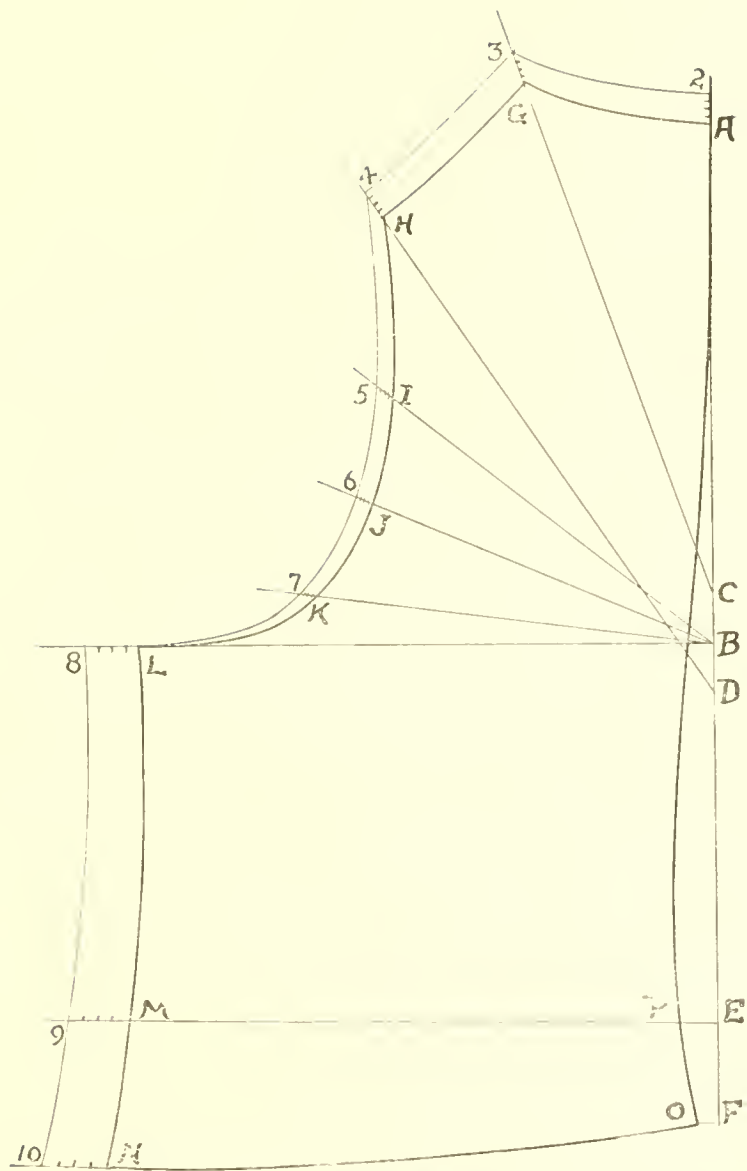


DIAGRAM XVII.

DIAGRAM XVIII.

STOUT VEST.—FOREPART.

IP is the breast line.

JR is the waist line.

Draw line CAB.

Draw lines D-B, C-B, F-B, G-B and H-B.

2 to 3 is $1\frac{3}{4}$ inches, same as regular vest.

Draw line 3-E.

Draw lines X-12 and K-13.

C to 4 is $4\frac{1}{6}$ inch.

Parallel to point 6 and down to H-9, the same as regular vest.

I to 10 is 1 inch.

J to 11 is $1\frac{1}{4}$ inches.

X to 12 is $1\frac{1}{4}$ inches.

K to 13 is $1\frac{1}{4}$ inches.

POCKETS.

M to 14 and N to 17 is $\frac{3}{4}$ inch.

L to 15 and C to 16 is $\frac{1}{4}$ inch.

U to 21 and V to 20 is $\frac{3}{4}$ inch.

T to 18 and W to 19 is $\frac{1}{4}$ inch.

The vee remains in the same place and is lengthened according to the front of the lower pocket. This grade is for four sizes, and can be increased and decreased for the larger and smaller sizes by the same proportions.

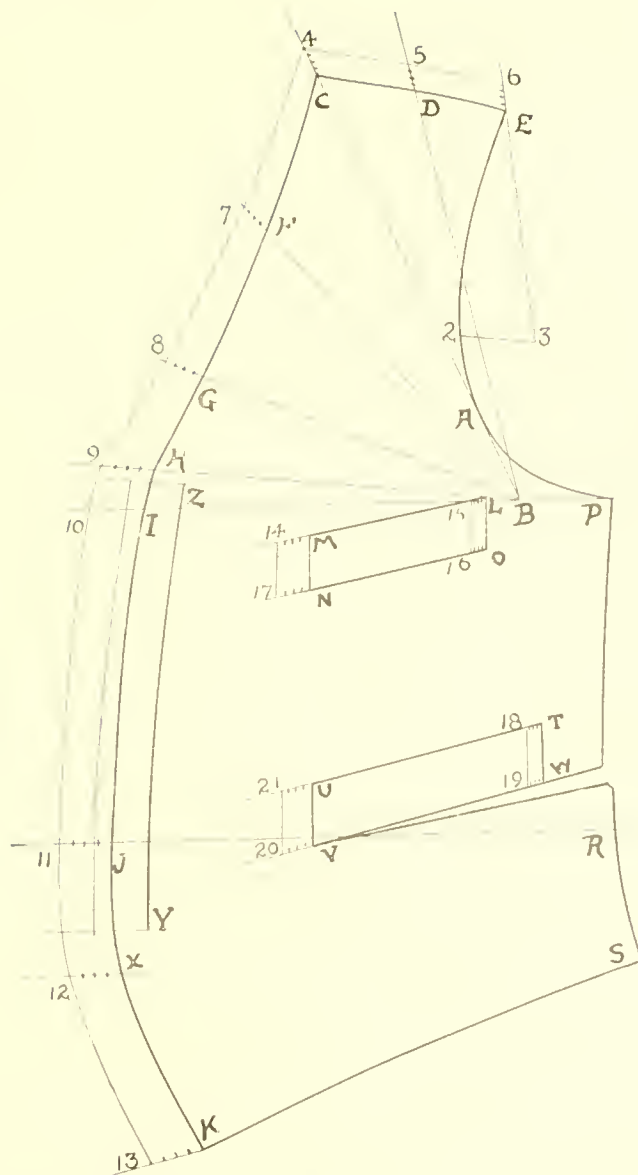


DIAGRAM XVIII.

DIAGRAM XIX.

PANTS.—FOREPART.

JD is the seat line.
HE is the knee line.
GF is the bottom.
O is $\frac{1}{2}$ way between J and D.
MA is the waist line.
N is $\frac{1}{2}$ way between M and A.
Draw line NO and OR.
Extend line MA.
A to 4 is $\frac{1}{2}$ inch.
Square up from 4 to 5.
4 to 5 is $\frac{1}{2}$ inch.
Draw line A-5.
M to 2 is $\frac{1}{2}$ inch.
2 to 3 is $\frac{1}{2}$ inch.
Draw line M-3.
Space off M-J in three parts, then draw lines O-L and O-K.
Space off A-D in three parts, then draw lines O-B and O-C.
Parallel A-B to point 5, establishing point 7.
Parallel B-D to point 7 establishing point 8.
Space off from D to 8 on five divisions.
Draw line 7 to the fourth division of D-8, which intersects line O-C,
at point 9.
Draw line 5-3.
Parallel M-L to point 3, establishing point 11.
Parallel L-J to point 11, establishing point 12.
Divide J-12 into 5 divisions.
Shape the crotch J-13 to the fourth division of J-12.
Use $\frac{1}{4}$ inch for four sizes at the knee at H and E for four sizes between
34 and 38.
38 to 42 use $\frac{1}{8}$ inch.
The same amounts are to be applied at the bottom G and F.
These sizes are increased and decreased according to these proportions,
with the exceptions at the front of waist, which you will note that I give
 $\frac{1}{2}$ inch from 3 to point 17 and from 17 to 16, 1 inch. Then I draw line 3-16
and space it into four divisions, which gives me the natural increase of the
front rise on the larger sizes.
Draw line 16-18, which finishes the diagram.

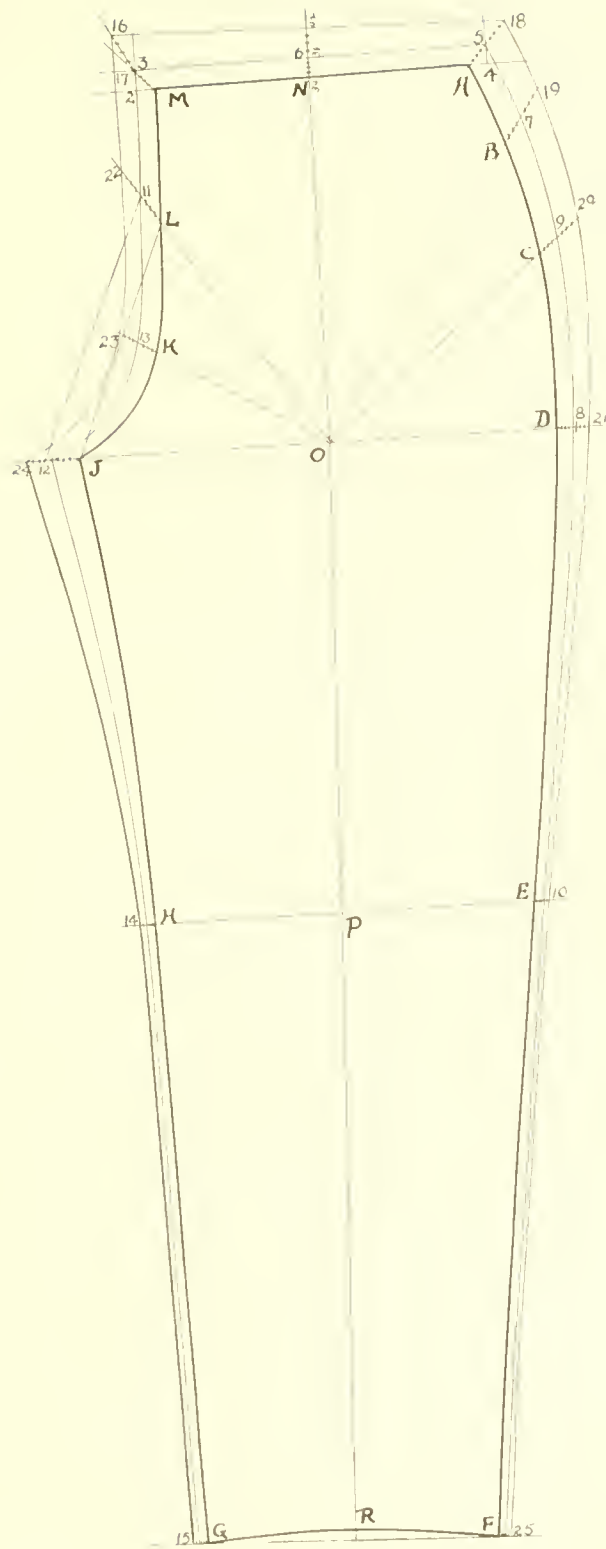


DIAGRAM XIX.

DIAGRAM XX.

PANTS.—BACK.

H-C is the seat line.

G-D is the knee line.

F-E is the bottom line.

T is half way between H and C.

Square up from T to M.

V is half way between F and E.

Draw line T-V.

Prolong line O-A. Also N-L.

L to 4 is $\frac{1}{2}$ inch. Square up from 4 to 5.

4 to 5 is $\frac{1}{2}$ inch.

Draw line L-5.

A to 2 is $\frac{1}{2}$ inch.

Square up from 2 to 3.

2 to 3 is $\frac{1}{2}$ inch.

Draw line A-3.

Parallel A-3 to O.

Parallel O-8 to N.

Parallel O-8 to P, giving you P-9.

B is half way between A and C.

Draw line B-T.

Draw lines K-T, J-T and I-T.

Parallel L-K to 4, giving you point 12 on line K-T.

Parallel K-H to 12, giving you point 13 on line T-H.

Draw line 12, 13 to the fourth division of H-13 (H-13 is divided into five divisions, same as forepart).

This gives you points 14 and 15, where line 12-13 intersects lines T-J and T-I, respectively.

Parallel A-C to 2, giving you point 10.

Divide C-10 into 5 divisions, then draw line 3-10 to the fourth division of C-10.

D to 17 is $\frac{1}{4}$ inch.

G to 16 is $\frac{1}{4}$ inch.

F to 18 is $\frac{1}{4}$ inch.

E to 19 is $\frac{1}{4}$ inch.

This diagram is for sizes 34 to 38 and can be carried out to the larger and smaller sizes on the same proportions, with the exception of the knee and bottom, which are reduced to $\frac{1}{8}$ inch for four sizes after size 38.

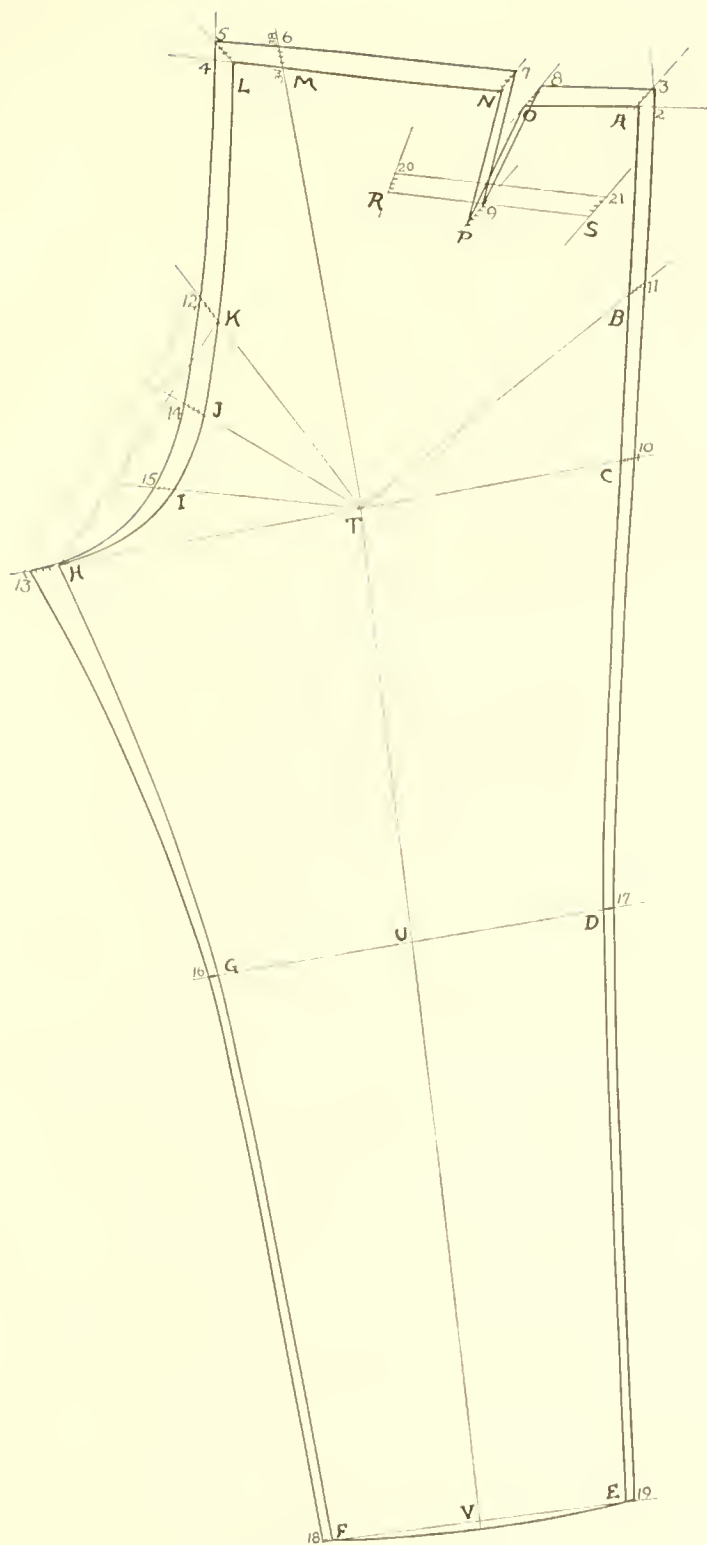


DIAGRAM XX.

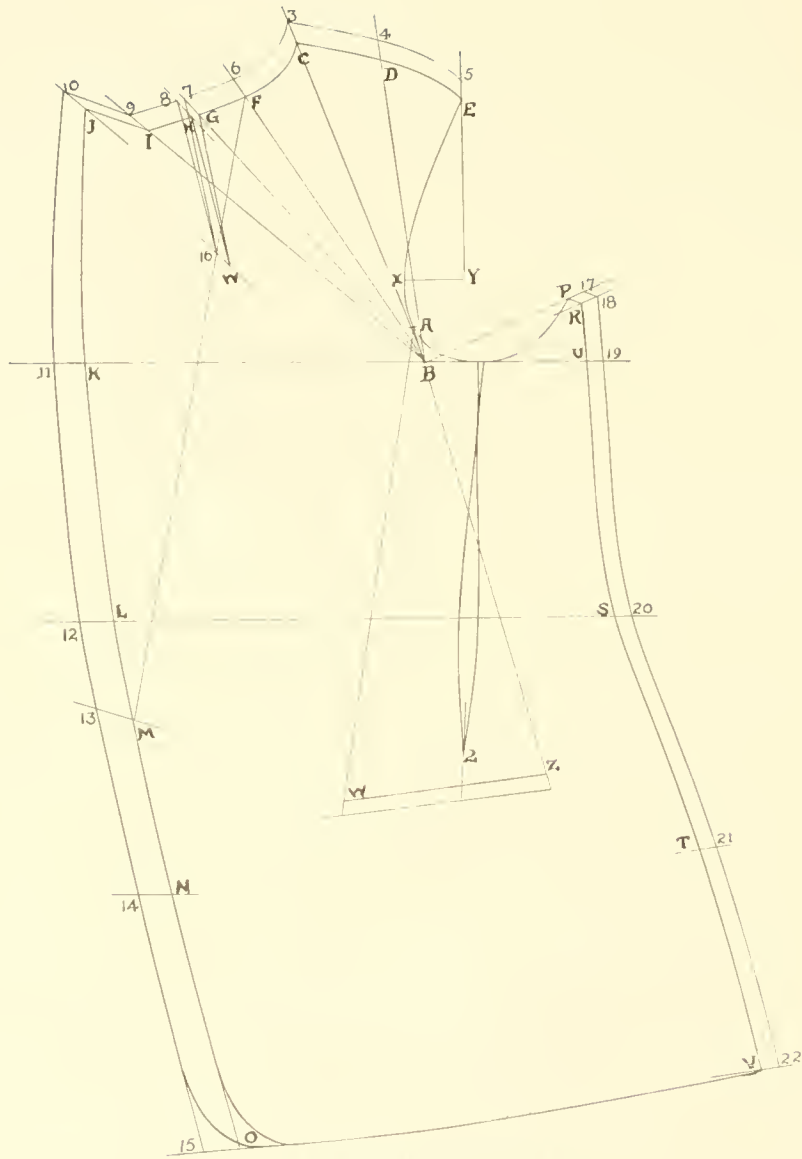


DIAGRAM XXI.

TUXEDO.—FOREPART.

The tuxedo is graded the same as a regular sack. In grading the vee at neck, line G-B is parallel to line H. Line W-16 is parallel to 8-H. M-13 is parallel to J-10.

The pocket and under arm vee are graded similar to sack.

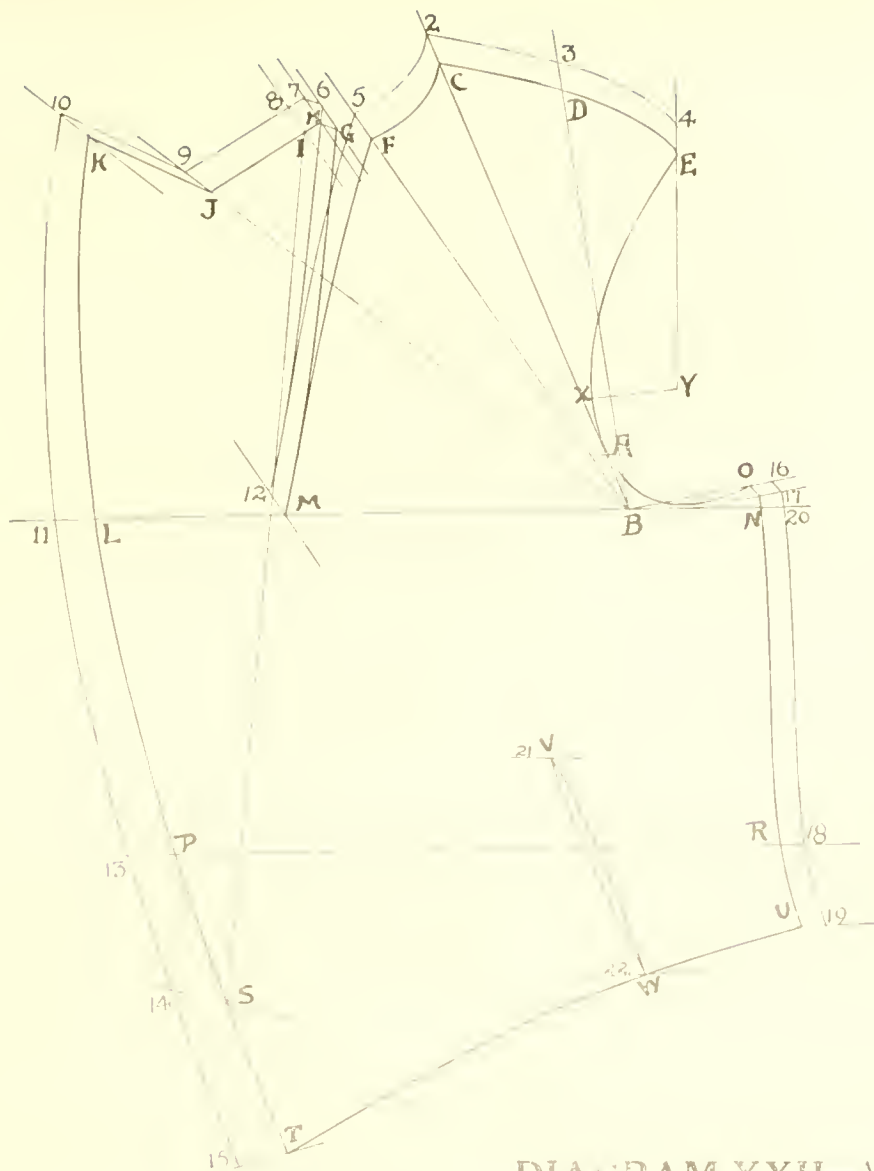


DIAGRAM XXII—A.
FULL DRESS. — FOREPART.

LN is the breast line.
PR is the waist line.
Draw lines CB, DB, FB, JB.
X to Y is $1\frac{3}{4}$ inches.
Draw line Y-E.
Parallel line F-B to GHI and M.
Parallel line J-B to K.
Draw line S and parallel to K.
Draw line BO and parallel it to N.
Draw line U-19 and parallel to R-18.
C to 2 is 4 6 inch.
Parallel C-F to 2, to establish point 5.
6-G, 7-H, 8-I and 12-M is the same distance as 5-F.
Parallel C-J to 2, to establish point 9.

Parallel J-K to 9, to establish point 10.
L to 11 is 1 inch.
P to 13 is 1 inch.
T to 15 is 1 inch.
Draw line 13-15 which establishes point 14.
O to 16 is $1\frac{1}{2}$ inch.
N to 20 is $1\frac{1}{2}$ inch.
R to 18 and U to 19 is $1\frac{1}{2}$ inch.
V to 21 is $1\frac{1}{4}$ inch and W to 22 is $1\frac{1}{4}$ inch.
V-21 and W-22 are parallel to the waist line.

This grade is for four sizes. The same proportions are used for the larger and smaller sizes. The side-body, back and skirt, are graded similar to the frock.

DIAGRAM XXII.

FROCK.—FOREPART.

IJ is the breast line.

TL is the waist line.

Draw lines BK, BD, BC, BF, BG.

Parallel BG to H.

T to U is $13\frac{1}{4}$ inches.

Draw line UE.

C to 2 is 4.6 inches, the same division as on the sack coat.

Parallel from C to D and C to E, same as sack.

Parallel forward from C to H, same as sack coat.

T to 9 is 1 inch.

Parallel from T to R, establishing point 10.

N to 11 is 1 inch.

K to 14 is $\frac{1}{2}$ inch.

J to 16 is $\frac{1}{2}$ inch.

L to 17 is $\frac{1}{2}$ inch.

M to 18 is $\frac{1}{2}$ inch.

Line PO is the Front Vee.

P to 13 is $1\frac{1}{4}$ inch.

O to 12 is $1\frac{1}{4}$ inch.

Tis is for four sizes. The remainder of forepart is carried out on the same scheme as the sack.

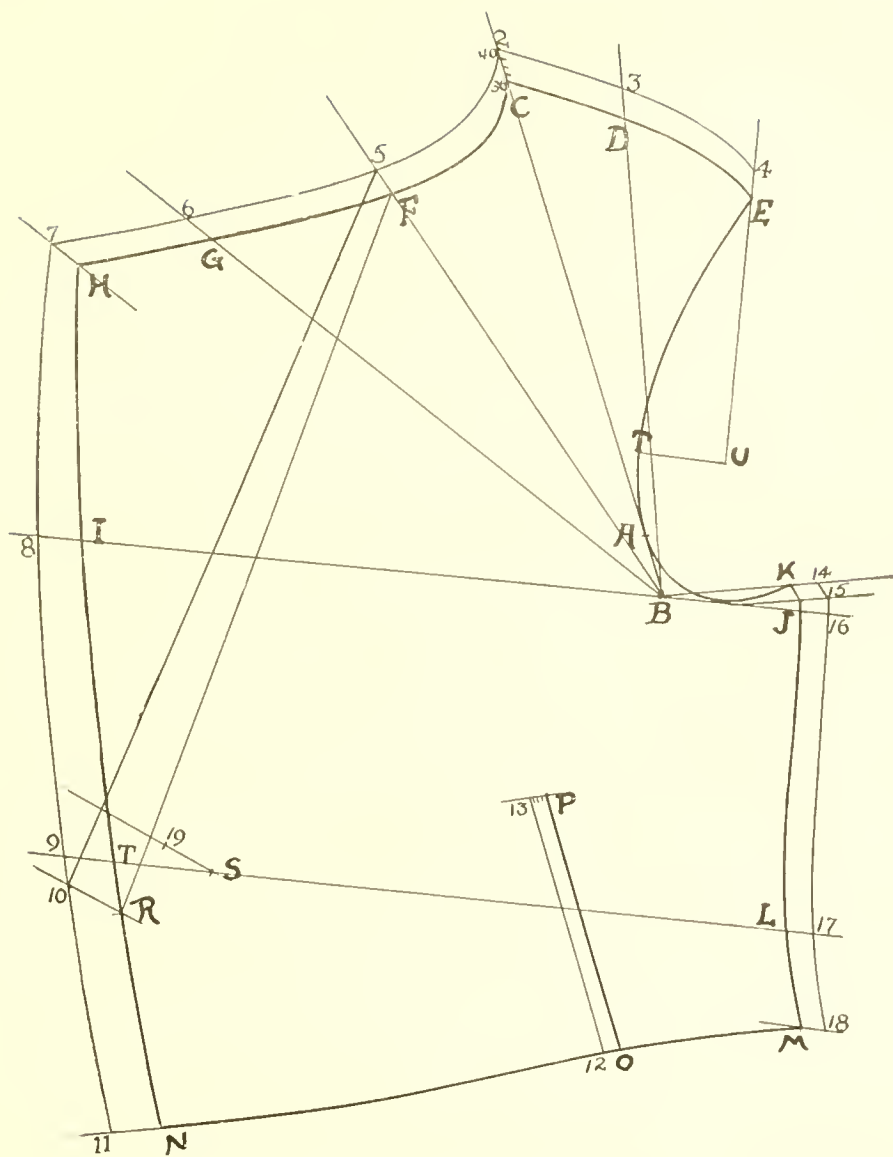


DIAGRAM XXII.

DIAGRAM XXIII.

SIDEBODY.

Place the sidebody along the side seam of forepart, as indicated by points M and J.

GF is the breast line.

KH is the waist line.

Draw line BC and parallel to point D.

E is $\frac{1}{2}$ way between D and F.

Draw line BE and BK. Parallel BK to M.

C to 2 is $\frac{1}{2}$ inch.

D to 3 is $\frac{1}{2}$ inch.

Parallel D-3 to E-4 and parallel from E-3 to F-5.

H-6 and I-7 is the same distance as F-5.

L is $\frac{1}{2}$ way between C and M.

Parallel C-2 to L-8 and L-8 to M-9.

Use the same distance as M-9 at points G-10, K-11 and J-12.

This grade is for four sizes and the scheme can be carried out on the same proportions for small and larger sizes.

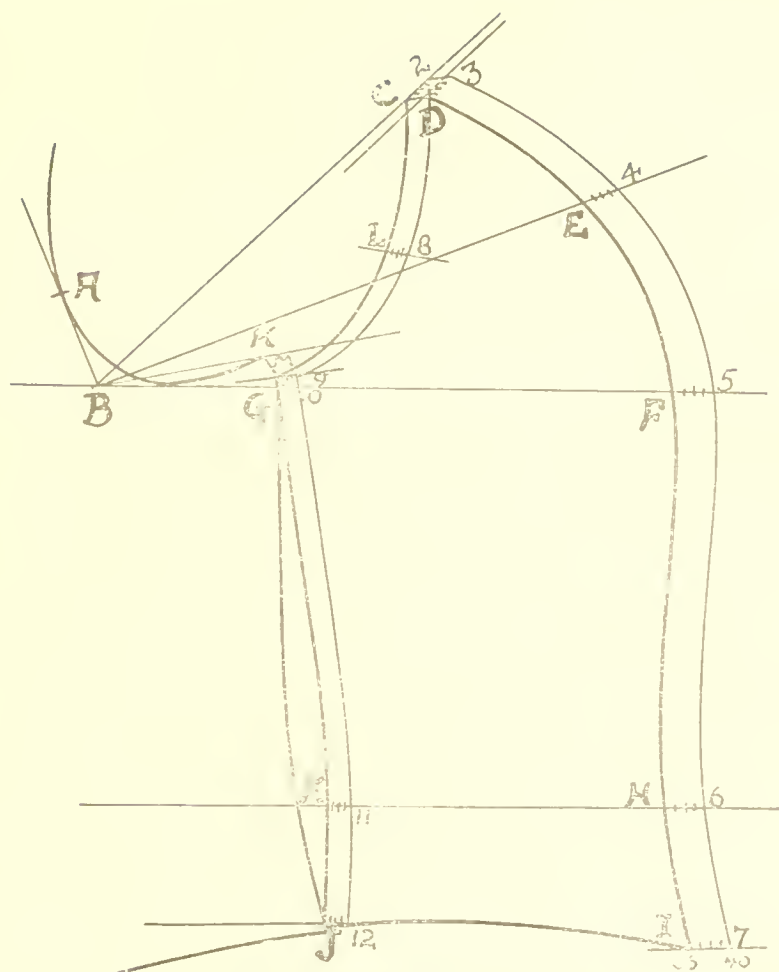


DIAGRAM XXIII.

DIAGRAM XXIV.

FROCK.—BACK.

CM is the breast line.

NS is the natural waist line.

OR is the fashionable waist line.

C to F is 1 inch.

C to G is 1 inch.

Draw lines IF, JC, KG and LC.

1 to 2 is 4/6 inch.

Parallel 1A to 2, establishing point 3.

Parallel IJ to 2, establishing point 4.

Parallel IK to 2, establishing point 5.

Parallel K1 to 5, establishing point 6.

Parallel LM to 6, establishing point 7.

Parallel NM to 7, establishing point 8.

O-9, P-10, and T-11, is the same distance as M-7.

This grade is for sizes 36 to 40; the remainder of the grade for larger and smaller sizes is carried out the same as the grade of regular sack.

DIAGRAM XXV.

REVERE.

ABCD is the reverse, size 36.

B to 3 and A to 2 is the same increase as the height of forepart. It increases and decreases in the same proportion.

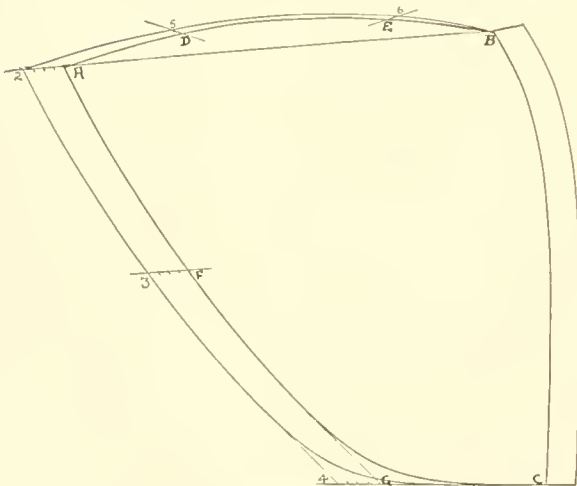


DIAGRAM XXVI.

S. B. FROCK.—SKIRT.

ABCG is the skirt, size 36.

Draw line AB.

A to 2 is the total increase of sidebody and forepart for 4 sizes.

3-F is the same as 2-A.

4-G is the same as 2-A.

Draw line 2-B.

Draw lines 5-D and 6-E and space into 4 sizes.

For the larger and smaller sizes use the same divisions.

DIAGRAM XXVII.

D. B. FROCK.—SKIRT.

ABCD is the skirt.

A to 2 is the total increase of sidebody and forepart for four sizes.

C to 3 is the same as A to 2.

Draw line 2-B.

Draw lines E. and F.

Space E-4 and F-5 into 4 sizes.

For the larger and smaller sizes use the same divisions.

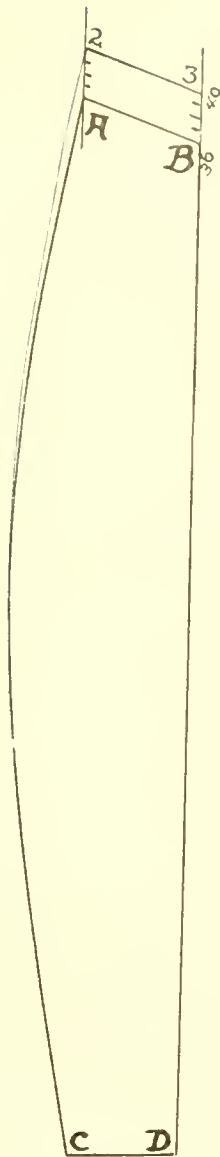


DIAGRAM XXV.

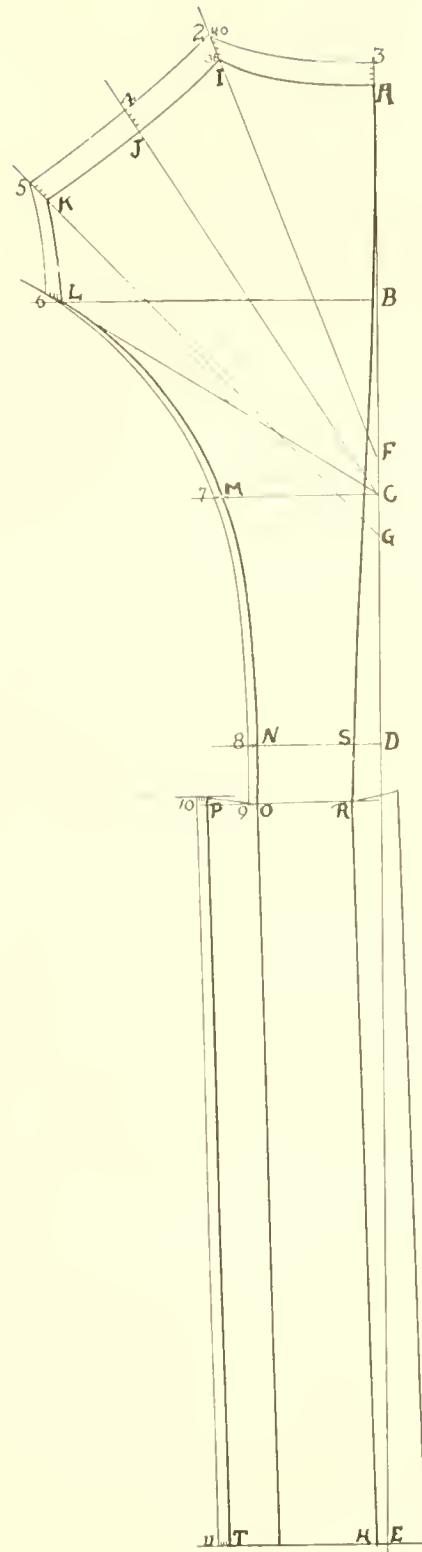


DIAGRAM XXIV.

DIAGRAM XXVIII.

OVERCOAT.—BACK.

ABCDE is the back construction line.

Place the back, as indicated, the same as when drafting.

B to C is 1 inch.

B to D is 1 inch.

Draw the construction lines the same as the sack coat.

Parallel the same as sack coat.

Use the same divisions 4 6 inch at the neck point and $\frac{1}{2}$ inch at the side, for four sizes.

Shorten the coat $\frac{1}{2}$ inch for each size from 36 to 32.

Point 21 is $\frac{1}{2}$ inch from line LM.

Draw line M-21, which gives you the natural decrease at bottom of side seam.

Raise the waist line $\frac{1}{4}$ inch from sizes 36 going down.

Point 20 is $\frac{1}{2}$ inch from line ML.

This gives you the natural decrease of side seam at waist.

All coats can be shortened and lengthened by the same method.

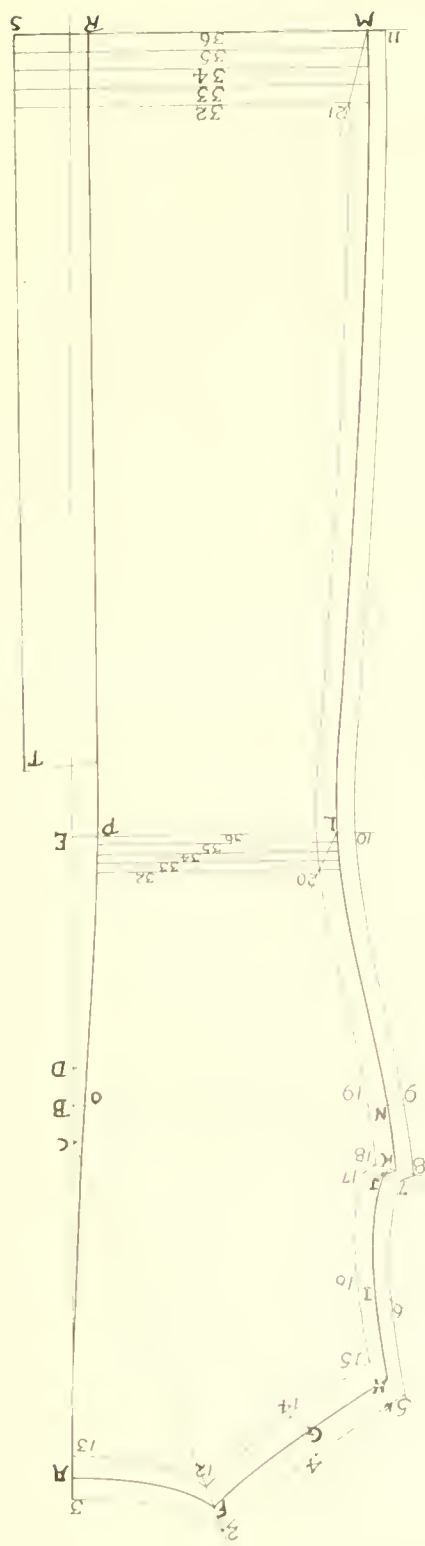


DIAGRAM XXVIII.

DIAGRAM XXIX.

FOREPART.

The forepart of the overcoat is graded the same as the forepart of the sack coat. All the construction lines are obtained by the same method. The waist line is raised, as indicated, from sizes 36 to 32, $\frac{1}{4}$ inch for each size. The length is also shortened $\frac{1}{2}$ inch on each size from sizes 36 to 32.

Point 28 is 1 inch from line JH.

Draw line H-28 and space into 4 divisions, which gives you the decrease at front.

Point 45 is $\frac{1}{2}$ inch from line ST.

Draw line T-45 and space into four divisions, or you can use the intersection lines of the different sizes.

POCKET.

W to 48 is 1 inch.

X to 49 is 1 inch.

Divide same into 4 sizes. This raises the pocket $\frac{1}{4}$ inch for every size from 36 to 32.

W to 18 and X to 19 is $\frac{1}{4}$ inch.

This division is for 4 sizes of pocket from 36 to 40. The vee lowers and raises in accordance with the pocket.

Y to 50 is 1 inch.

Y to 20 is $\frac{1}{4}$ inch.

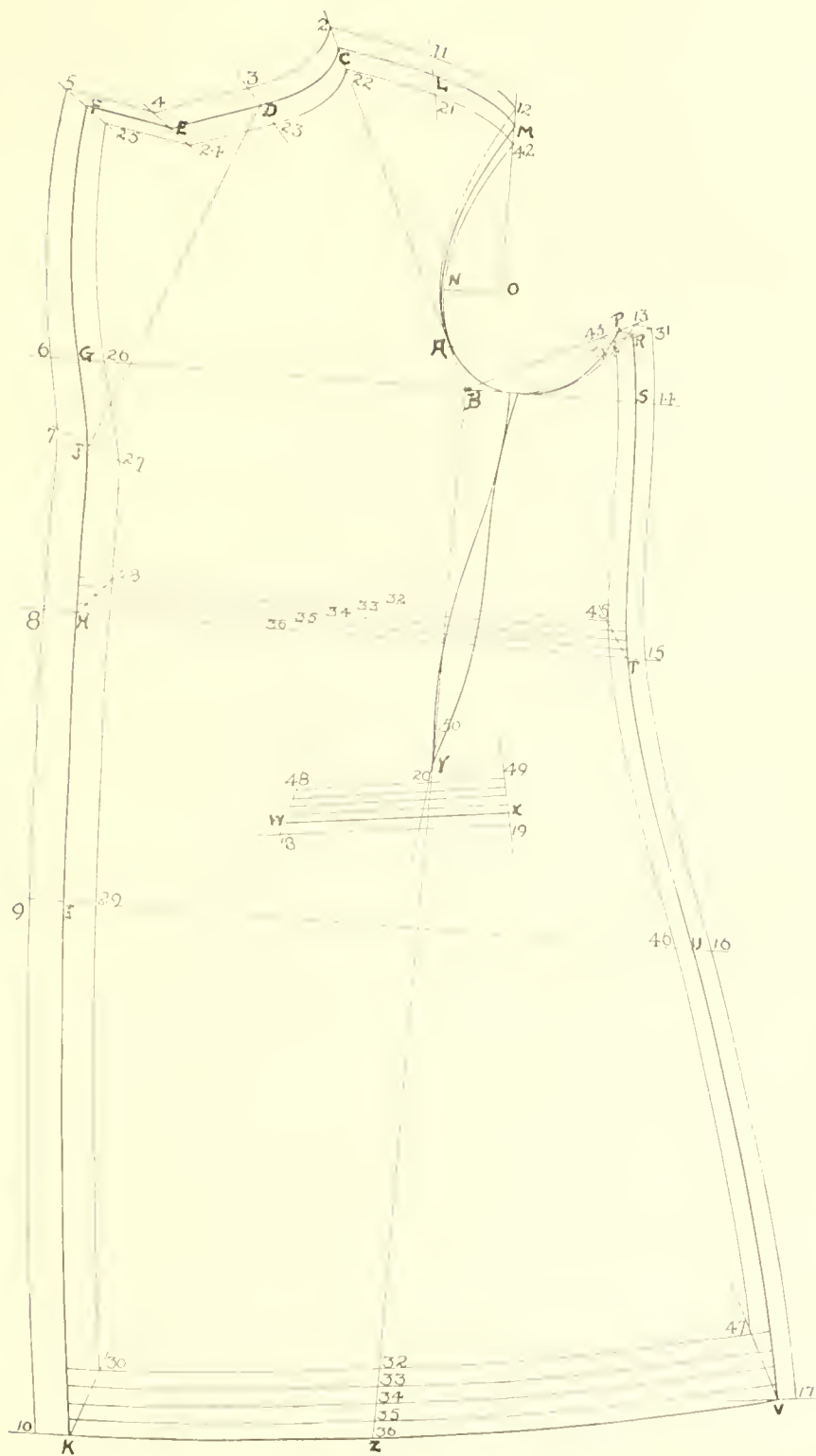


DIAGRAM XXIX.

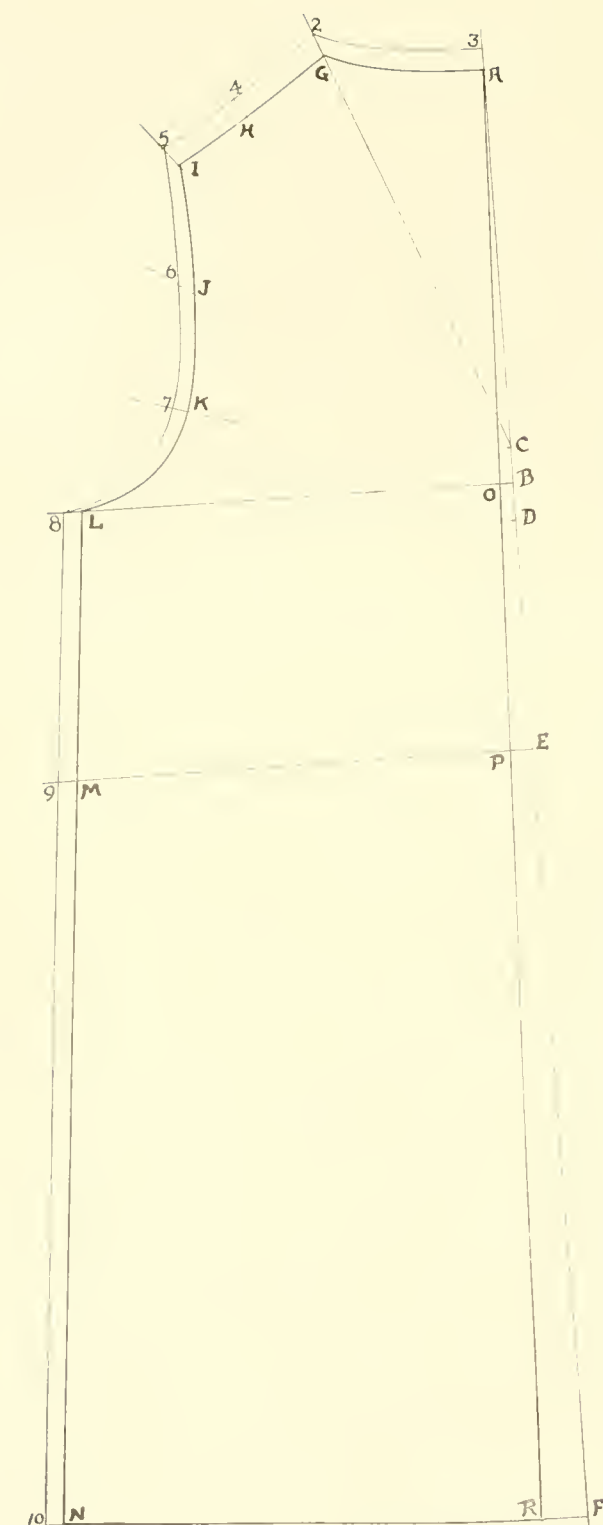


DIAGRAM XXX.

DIAGRAM XXX.

BALMAROON OVERCOAT. BACK.

The back is graded with same construction lines as the regular overcoat, $\frac{4}{6}$ inch at G-2 and $\frac{1}{2}$ in. at points L-8, M-9 and N-10, which are the allowances for four sizes.

Parallel I-J to point 5, establishing point 6.

Parallel J-K to point 6, establishing point 7.

The same allowance as on the regular overcoat, can be used for the larger and smaller sizes.

DIAGRAM XXXI. FOREPART.

The forepart is also the same as the forepart of regular overcoat. The only exception in this grade is the pocket, which we allow $\frac{1}{2}$ inch for four sizes.

Y to 21 is $\frac{1}{2}$ inch.

25 to 22 is $\frac{1}{2}$ inch.

Z to 23 is $\frac{1}{2}$ inch.

30 to 24 is $\frac{1}{2}$ inch.

N-14 is parallel to J-10.

O-15 is parallel to L-12.

The same allowance as on the regular overcoat, can be used for the larger and smaller sizes.

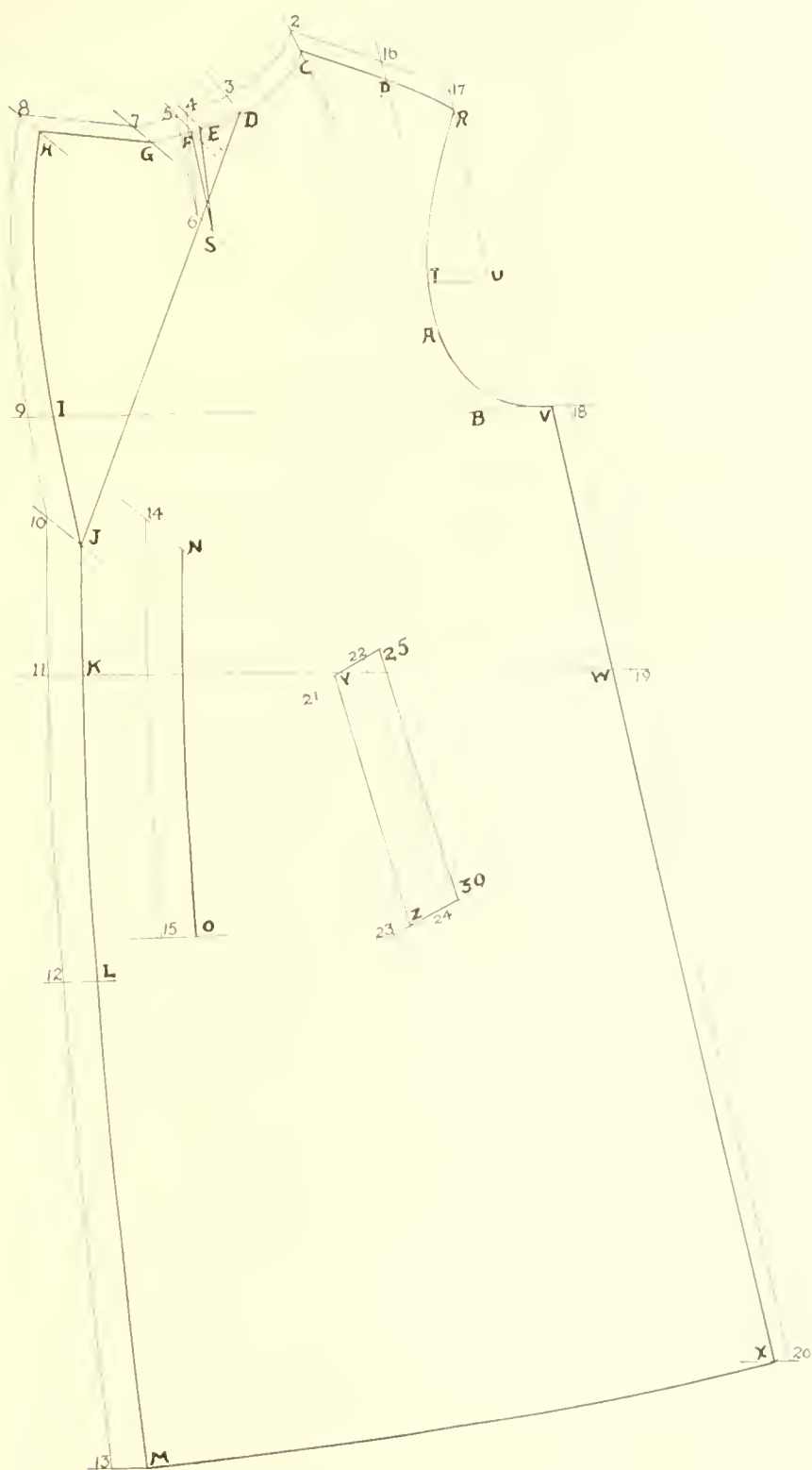


DIAGRAM XXXII.

BALMAROON SLEEVES.

CB is the base line.

A is $\frac{1}{2}$ way between C and B.

J is $\frac{3}{8}$ inch from A.

K is $\frac{3}{8}$ inch from A.

H-I is the bottom.

O to N is $\frac{3}{4}$ inch.

Square up from K to M.

Square up from J to L.

Space off MB in about three equal parts.

Space off LC in about three equal parts.

M to 3 and L to 2 is 4.6 inch.

B to 10 and C to 6 is $\frac{1}{2}$ inch.

H to 7 and I to 12 is $\frac{1}{4}$ inch.

Parallel E-L to point 2 to establish point 4.

Parallel D-E to point 4 to establish point 5.

Parallel M-F to point 3 to establish point 8.

Parallel F-G to point 8 to establish point 9.

Shape the head and side seam, as indicated which finishes the grade for four sizes. The same allowances are made for the larger and smaller sizes.

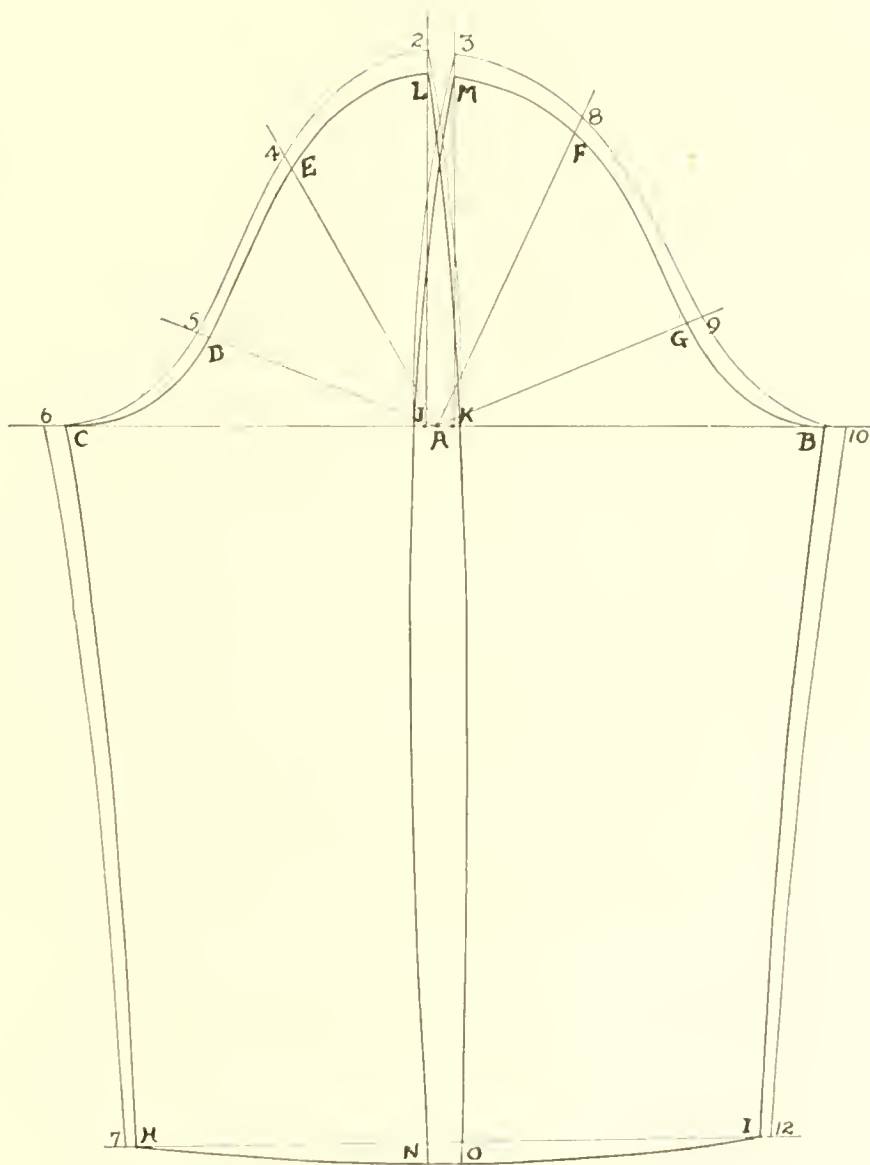


DIAGRAM XXXII.

DIAGRAM XXXIII.

RAGLAN.—BACK.

A to B is 1 inch.

Draw line BC, BE, AF, AG.

AJ is the breast line.

KL is the waist line.

C to 2 is $4\frac{1}{6}$ inch.

Parallel from CD to 2, establishing point 3.

J to 8 is $\frac{1}{2}$ inch.

Parallel JH to 8, establishing point 7.

G-6 is the same as H-7.

Draw line 4-6, which intersects line A-F at point 5.

K-9 and M-10 is the same as J-8.

The balance of the back is graded the same as the regular overcoat, using the same proportions on the larger and smaller sizes.

DIAGRAM XXXIV.

TOP SLEEVE.

Place both parts of top sleeve, as illustrated. Draw line AB.

C is $\frac{1}{2}$ way between 6 and 7.

Draw line CD and CE.

Parallel CD to G. Parallel CE to F.

D to 2 and G to 3 is $4\frac{1}{6}$ inch, each.

E to 8 and F to 9 are $4\frac{1}{6}$ inch each.

Draw lines CH and CJ.

Draw line 3-A, which intersects line CH at point 4.

Parallel from FJ to point 9, establishing point 11.

Parallel BJ to point 11, establishing point 12.

O to 13 is $\frac{1}{4}$ inch.

Draw lines L-5 and K-10, which are used as guide line.

This finishes the grade for 4 sizes. Same proportions for the larger and smaller sizes.

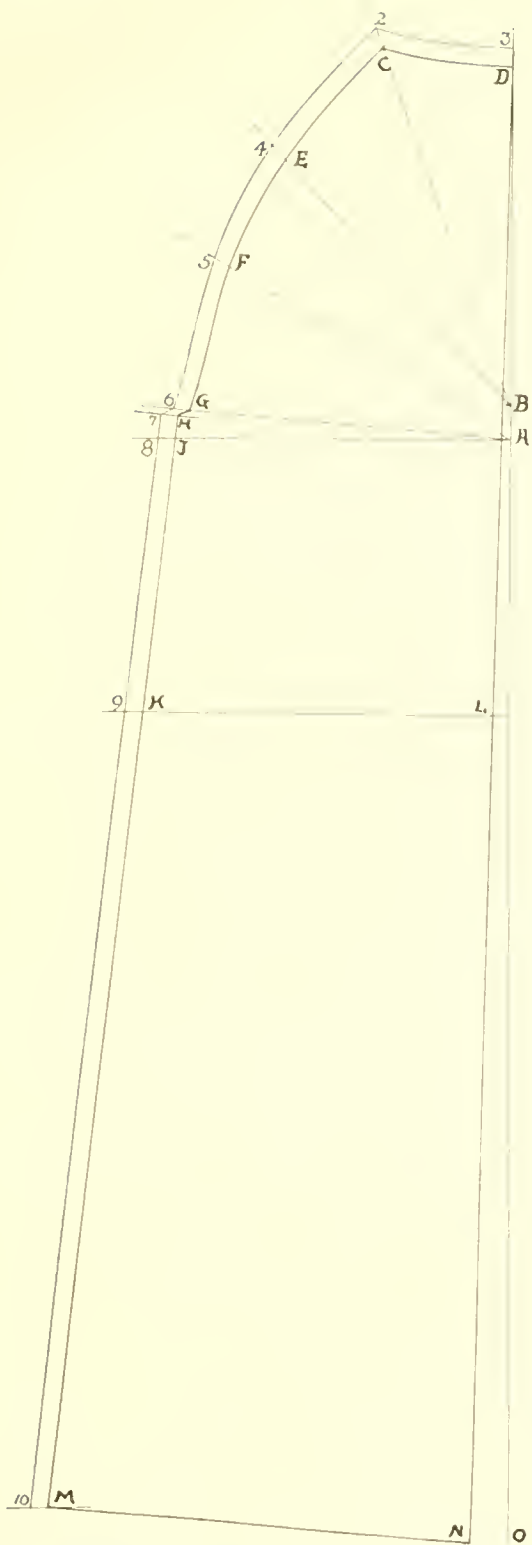


DIAGRAM XXXIII.

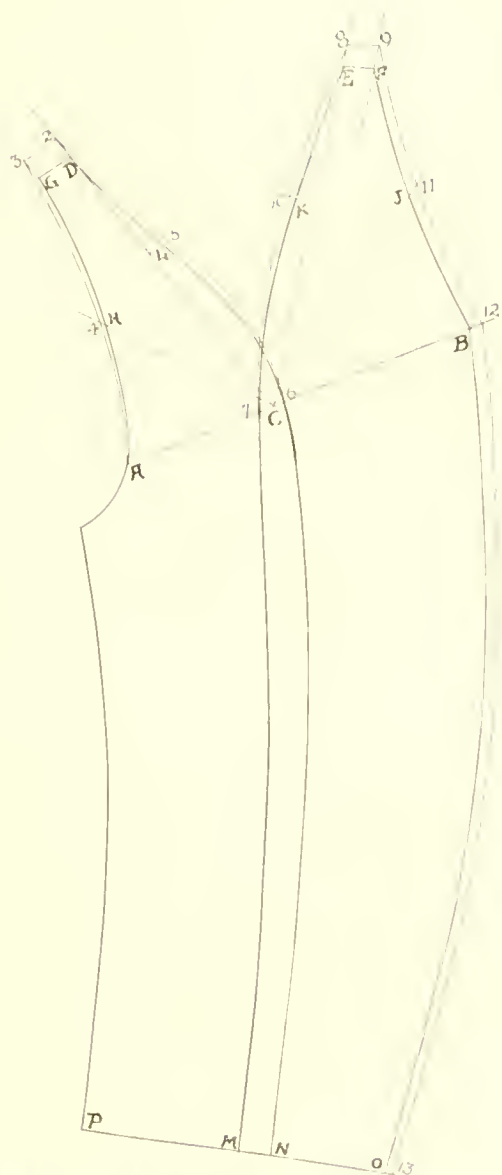


DIAGRAM XXXIV.

DIAGRAM XXXV.

RAGLAN.—FOREPART.

GM is the breast line.

NO is the waist line.

Draw line CAB.

C to 2 is 4 6 inch.

Parallel C-2 to J.

J-3 is the same as C-2.

Parallel forward from C, respectively from points D and E.

Draw line F-6 parallel to E-5.

N to 9 is 1 inch.

Parallel NH to 9, establishing point 8.

Draw line 6-8, which intersects line B-G at 7.

P-10 and 5-11 is the same as N-9.

Draw line BK.

Parallel BK to L.

M-15 is $\frac{1}{2}$ inch.

O-16, R-17 and T-18 is the same as M-15.

Parallel ML to 15, establishing point 14.

K-13 is the same as L-14.

Draw line U-12, which is used as a guide line.

This finishes the grade for four sizes, from 36 to 40. The same proportions can be used for the larger and smaller sizes.

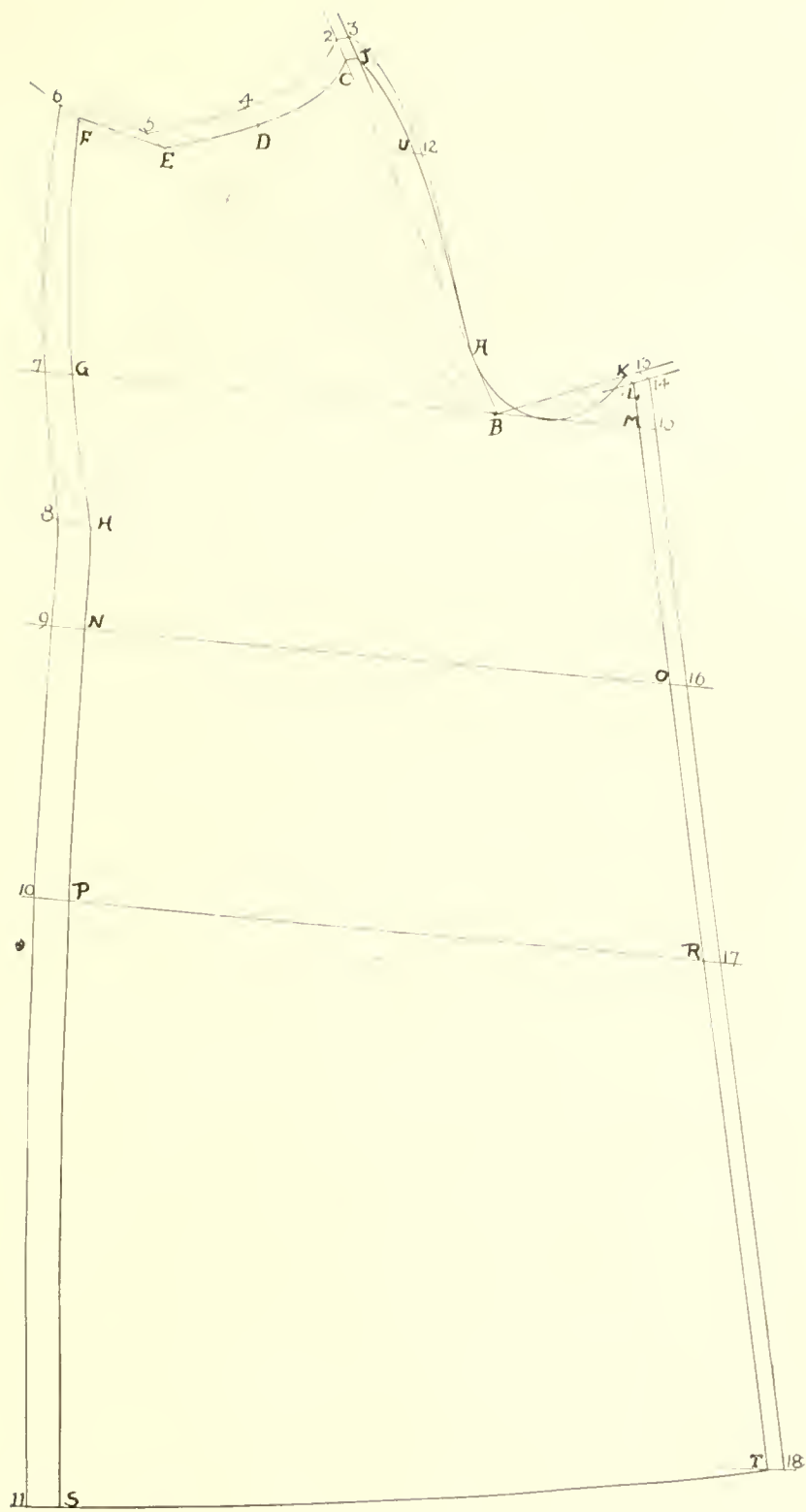


DIAGRAM XXXV.

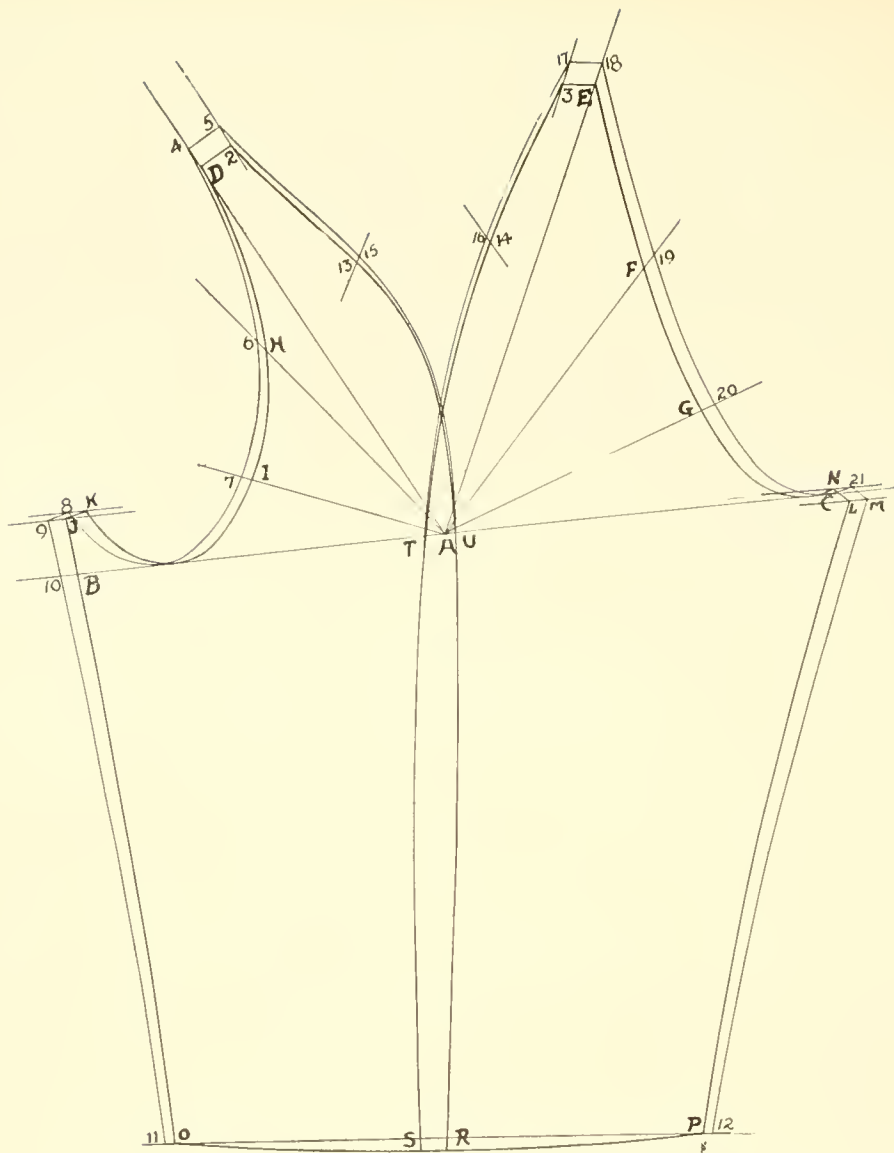


DIAGRAM XXXVI.

BALMACAAN.--SPLIT SLEEVE.

T HE back and the forepart of the Balmacaan is graded the same as the Raglan, which is illustrated in the previous diagram. Place the two halves of sleeve, as shown.

Draw line BC.

A is $\frac{1}{2}$ way between T and U.

S to R is $\frac{3}{4}$ inch.

U to T is $3\frac{1}{4}$ inch.

Draw lines AE, and AD.

Draw lines AH, AI, AF, and

AG.

Parallel line DA to point 2.

Parallel line AE to point 3.

D to 4 is $\frac{4}{6}$ inch.

5 to 2 is $\frac{4}{6}$ inch.

E to 18 is $\frac{4}{6}$ inch.

3 to 17 is $\frac{4}{6}$ inch.

Parallel EF to 18, establishing 19.

Parallel FG to 19, establishing 20.

Parallel AC to N.

N to 21 is $\frac{1}{2}$ inch.

Parallel AC to L.

LM is $\frac{1}{2}$ inch.

P to 12 is $\frac{1}{4}$ inch.

Draw line 17-T. Draw line 14-16.

Draw line 5-U. Then draw line 13-15.

Parallel DH to 4, establishing 6.

Parallel HI to 6, establishing 7.

Parallel BA to J and K.

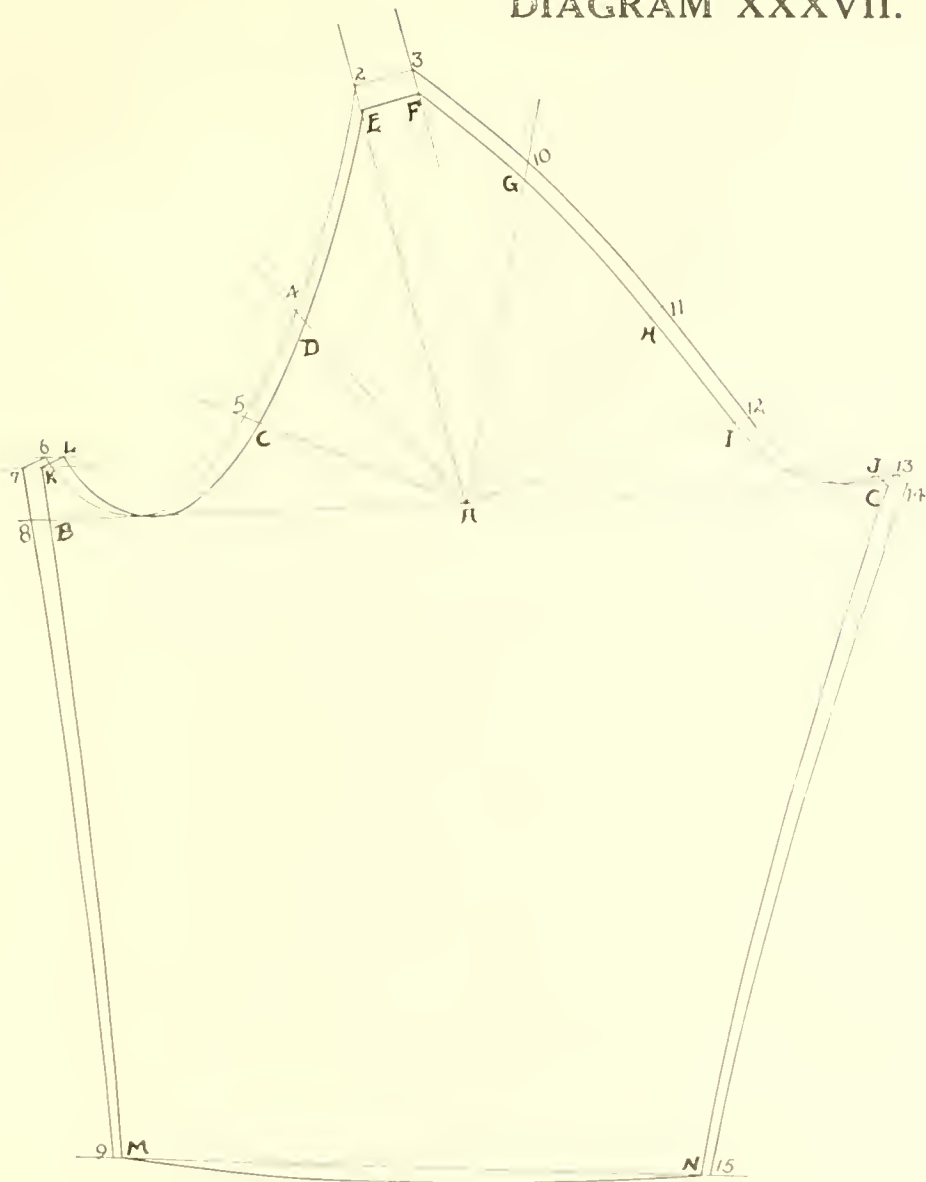
K to 8 is $\frac{1}{2}$ inch.

J to 9 is $\frac{1}{2}$ inch.

O to 11 is $\frac{1}{4}$ inch.

Draw line 9-11, establishing point 10, which completes the grade for four sizes. Use the same proportion on the larger and smaller sizes.

DIAGRAM XXXVII.



WHOLE SLEEVE, BALMACAAN.

Draw line BC.
 A is $\frac{1}{2}$ way between B and C
 Draw lines AE, AD, AC, AG,
 AH, HI.
 Parallel EA to F.
 E to 2 is 4 6 inches.
 3 to F is 4 6 inch.
 Parallel FG to 3, establishing
 point 10.
 Parallel HG to 10, establishing
 point 11.
 Parallel IH to 11, establishing
 point 12.
 Parallel AC to J.

J to 13 is $\frac{1}{2}$ inch.
 C to 14 is $\frac{1}{2}$ inch.
 Parallel ED to 2, establishing
 point 4.
 Parallel CD to 4, establishing
 point 5.
 Parallel AB to K and L.
 L to 6 is $\frac{1}{2}$ inch.
 K to 7 is $\frac{1}{2}$ inch.
 N to 15 and M to 9 are $\frac{1}{4}$ in.
 Draw lines 14-15 and 7-9,
 which finishes the grade for 4 sizes.
 Same proportion to be used on
 the larger and smaller sizes.

DIAGRAM XXXVIII.

MANTLE OVER COAT. COMBINATION BACK AND SLEEVES.

DEFG is the back construction line.
BAC is the breast line.
Square up from point A to I.
Draw line AD.
D to 2 is $\frac{4}{6}$ inch.
Parallel DI to 2, establishing point 3.
Draw line AJ.
Parallel AJ to K.
J to 4 is $1\frac{1}{2}$ inches.
K to 5 is $1\frac{1}{2}$ inches.
L to 6 is $\frac{1}{2}$ inch.
6 to 7 is $\frac{1}{4}$ inch.
Draw line L-7.
M to 8 is $\frac{1}{4}$ inch.
8 to 9 is $\frac{1}{2}$ inch.
Draw line M-9.
H to 14 is $\frac{1}{2}$ inch.
Parallel lines N-11, O-12 and P-13 from line AJ.
P to 13 is $\frac{1}{2}$ inch.
N to 11 and O to 12 are $\frac{1}{2}$ inch.
This completes the back from four sizes.
The forepart is graded the same as the Raglan forepart.

DIAGRAM XXXIX

SHOULDER CAPE.—BACK.

FCH is the back construction line.

FI is the center seam of back.

H to I is 1 inch. The amount the back is thrown in from line FH.

CB is the breast line.

Square up from A to D.

D to E is $4\frac{1}{6}$ inch.

E to 3 is $1\frac{1}{4}$ inch.

Draw line 3-D.

Parallel DF to 3 establishing point 2.

B to 5 is $\frac{1}{2}$ inch.

J to 6 is $\frac{1}{2}$ inch.

Drawline 3-5, establishing point 4 on line AG.

This grade is for four sizes. The same changes are made after size 42, as on the regular back.

COLLAR.

ABCDEF is the collar.

Grade from the back $4\frac{1}{6}$ inch for four sizes at points AB and C.

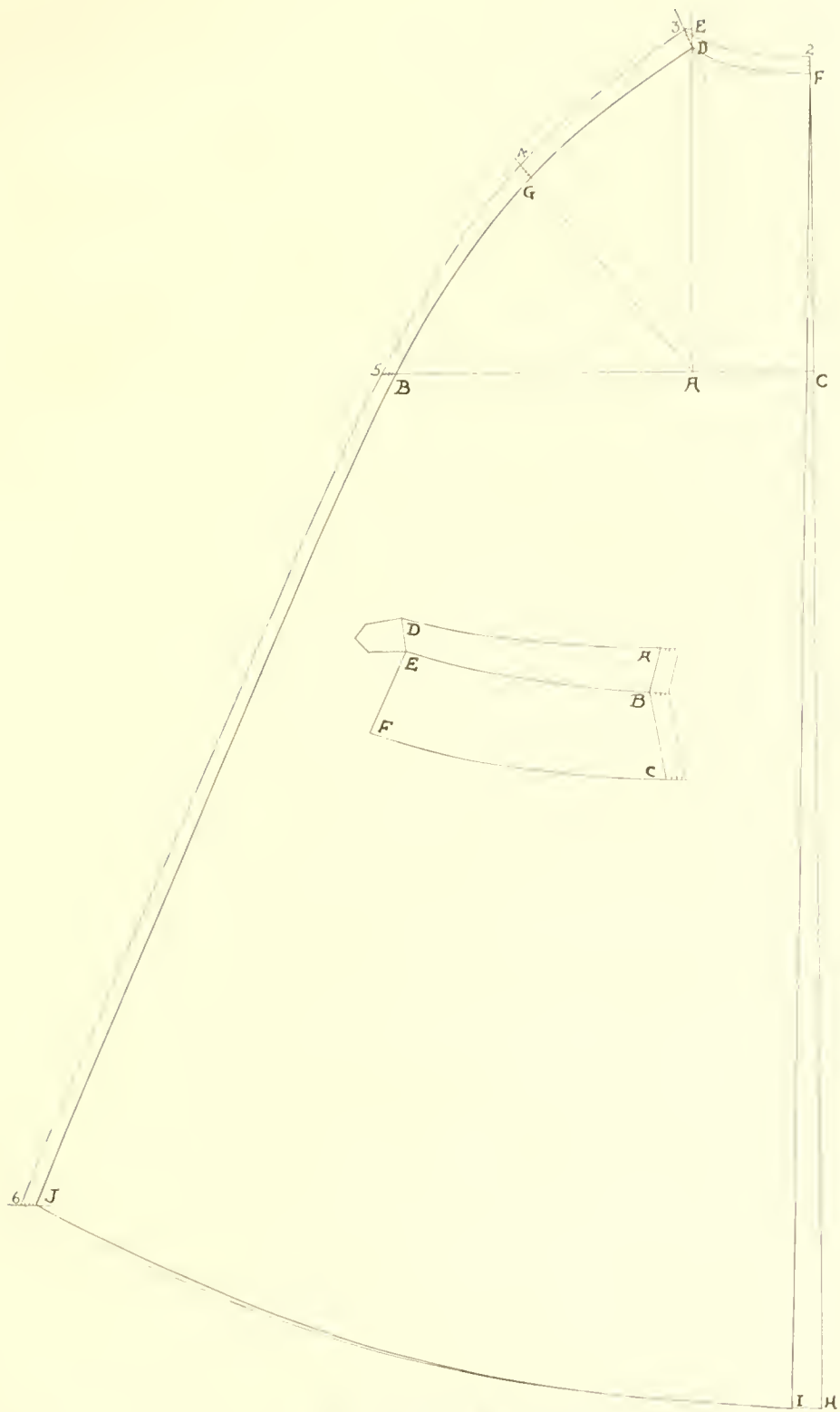


DIAGRAM XXIX

DIAGRAM XL.

SHOULDER CAPE.—FOREPART.

BC is the breast line.

Square up from A to D.

D to E is $\frac{4}{6}$ inch.

E to 2 is $\frac{1}{4}$ inch.

Draw line 2-D.

Parallel 2-D to 3.

3 to 4 is the same as D to 2.

Parallel D-11 to 2, establishing point 12.

Parallel D-5 to 2, establishing point 6.

Parallel line 6-5 to point 7 and 9.

7 to 8 and 9 to 10 are the same distance as 6 to 5.

B to 13 is 1 inch.

G to 14 and I to 15 is 1 inch.

C to 17 is $\frac{1}{2}$ inch.

H to 18 and J to 19 are $\frac{1}{2}$ inch.

Draw line AF, half way between 3 and C.

Draw line 4-17, which intersects line AF at 16.

This grade is for four sizes. The same proportions are used on the larger and smaller sizes.

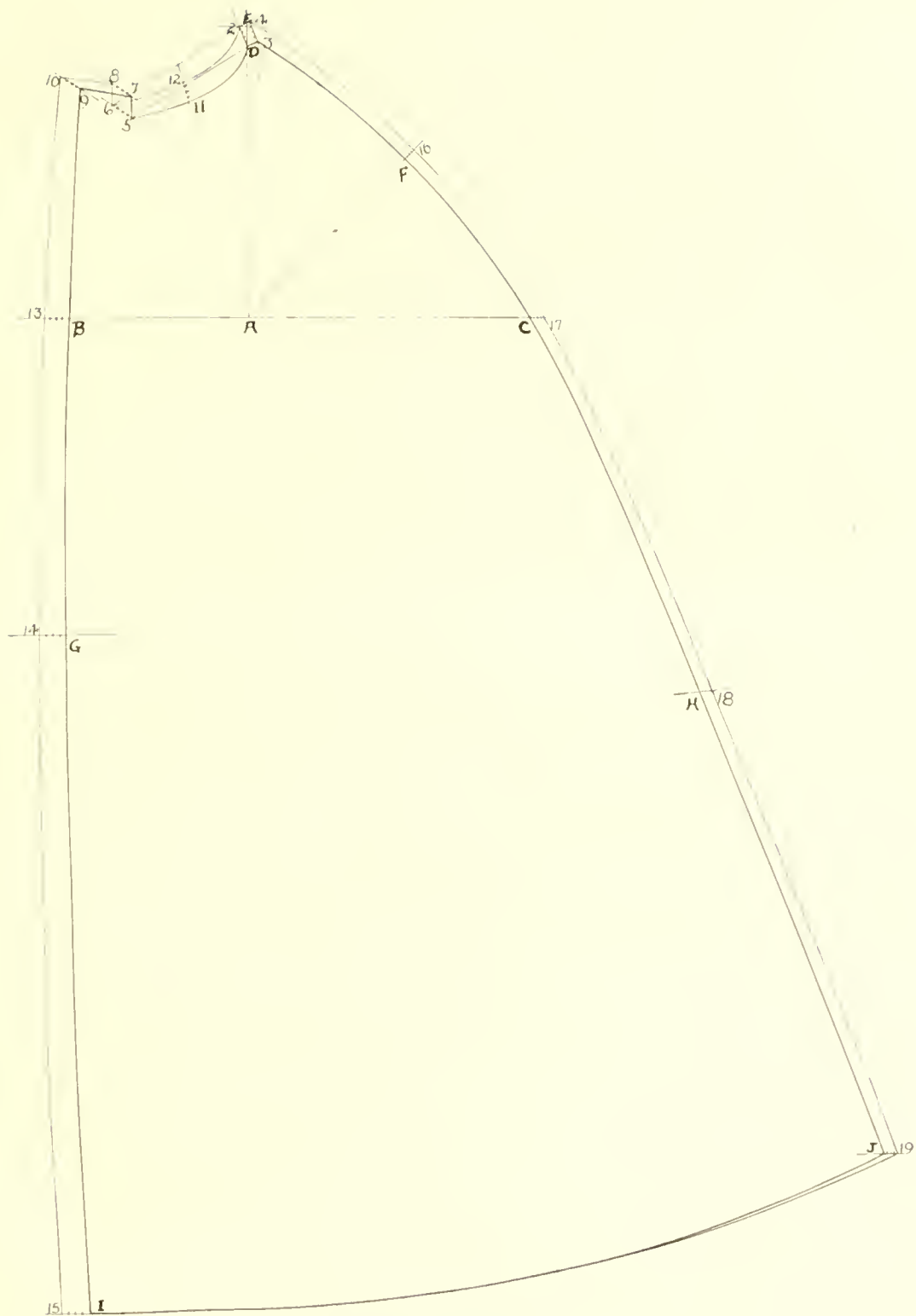


DIAGRAM XL.

DIAGRAM XLI.

CORPULENT.—BACK.

The corpulent sack is graded the same as the regular stout. The only difference is that the point of neck I to 2, $\frac{3}{8}$ inch, is allowed for four sizes instead of $\frac{1}{2}$ inch. This is parallel across the neck and shoulder. Otherwise, all construction lines are the same. The diagram, here illustrated, are for sizes 46 to 54.

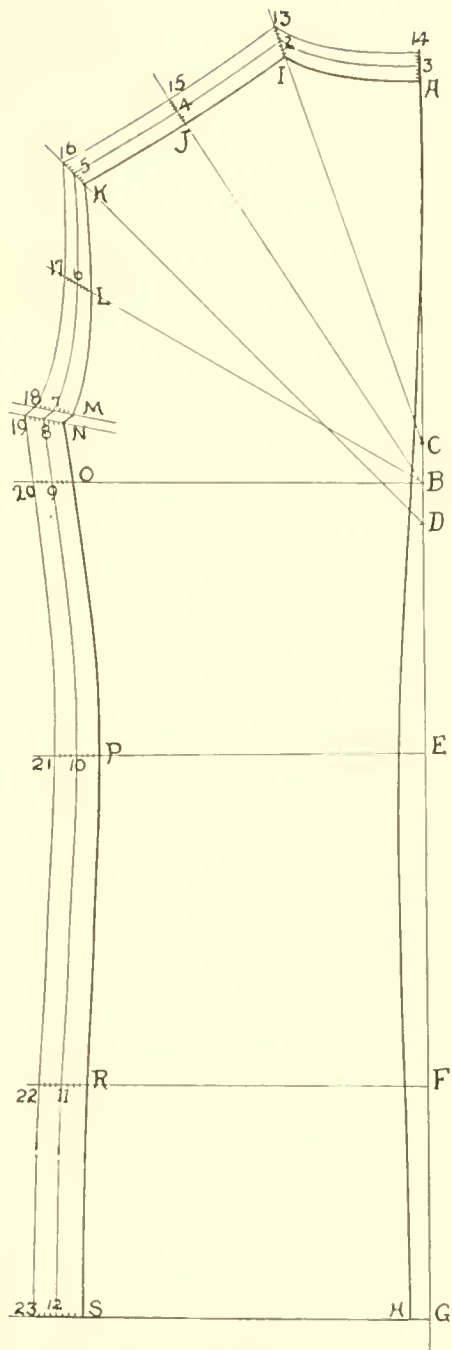


DIAGRAM XLI.

DIAGRAM XLII

CORPULENT.—FOREPART.

The forepart is graded the same as the regular stout forepart, with the exception that the shoulder point is thrown back, as illustrated by line KC. You will note that line BE is drawn from the pivot point B instead of going out $1\frac{3}{4}$ inches as on the regular stout grade.

The pocket does not graded lower on this grade. It extends forward only, $\frac{1}{4}$ inch from W to 21 and $\frac{1}{4}$ inch from 21 to 41.

The construction lines are the same as the regular stout, with the exception as stated above. The allowance at the waist from P to 12 is $1\frac{1}{4}$ inches for four sizes. From S to 18 it is $\frac{5}{8}$ inch for four sizes. On the breast line from J to 10, it is 1 inch for four sizes. From L to 17, it is $\frac{1}{2}$ inch for four sizes. The same proportions are used for the larger sizes from 50 to 54, as here illustrated.

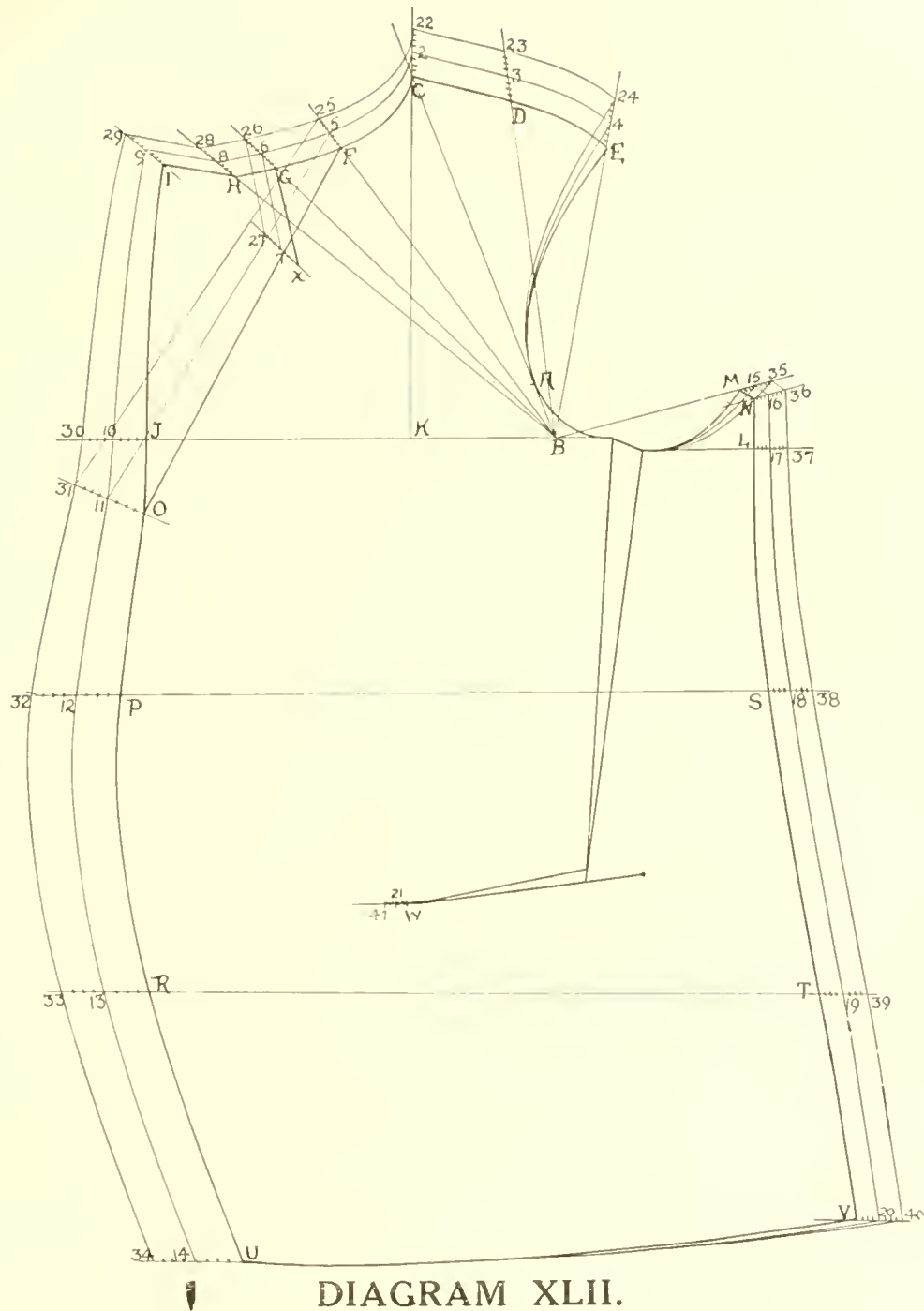


DIAGRAM XLIII.

LININGS.

All Linings patterns should be graded as to insure a perfect run of sizes, which illumintes fitting and prepares the coat direct to the machine.

LININGS.—BACK.

ABCDEFGHGIJK is the pattern of back.

LMKJRPONF is the lining pattern. The lining pattern is placed in the same position as when constructed.

Draw lines BF, CG and H. These lines are the same as those on the regular back grade.

Parallel line GC to O.

Parallel line H to PR.

F to N is $\frac{4}{6}$ inch.

Parallel line FL to N, establishing 2.

N to 3 is $\frac{4}{6}$ inch.

Parallel line NO to 3, establishing 4.

6 to I is $\frac{1}{2}$ inch.

J to 7 and K to 8 are $\frac{1}{2}$ inch.

P to 5 is $\frac{1}{2}$ inch.

Draw lines 2-N, N-3, 3-4, 4-5, 5-P and P-6-7-8, which completes the grade for four sizes. The balance of the grade can be carried out the same as the regular back.

DIAGRAM XLIV.

LININGS.—FOREPART.

BEIJDC is the forepart.

FG is the breast line.

HK is the waist line.

Draw line BA.

Place the lining as indicated by points 50, 56, 55, 52 and 51. The same as when constructed.

Draw line AB.

Parallel AB to point 50.

Draw line C.

Parallel C to point 51.

Draw line AD.

Parallel D to point 52.

50 to 60 is $4\frac{6}{8}$ inch, the same as on the regular forepart.

Parallel line 50-51 to 60, establishing point 61.

60 to 62 is $\frac{1}{2}$ inch.

53 to 63 is $\frac{1}{2}$ inch.

55 to 65 is $\frac{1}{2}$ inch.

68 to 58 is 1 inch.

67 to 57 is 1 inch.

56 to 66 is 1 inch, which completes the lining for 4 sizes.

For the larger and smaller sizes use the same divisions.

FACING.

1, 2, 3, 4, 5, 6, 7-27-18-10-9, is the facing. Place the facing in the same position as when constructed.

Parallel line AB to point 2.

Draw lines A-26 and A-3.

Parallel line A-3 to 4 and 5.

1 to 11 is $4\frac{6}{8}$ inch.

2 to 12 is $4\frac{6}{8}$ inch.

Parallel 1-26 to point 11, establishing point 25.

Parallel 1-3, to point 11, establishing point 13.

4-14 and 5-15 are the same as 3-13.

7-17, 27-37, 9-19, 10-20 and 18-28 are 1 inch.

This completes the facing for 4 sizes. Use the same divisions for the larger and smaller sizes.

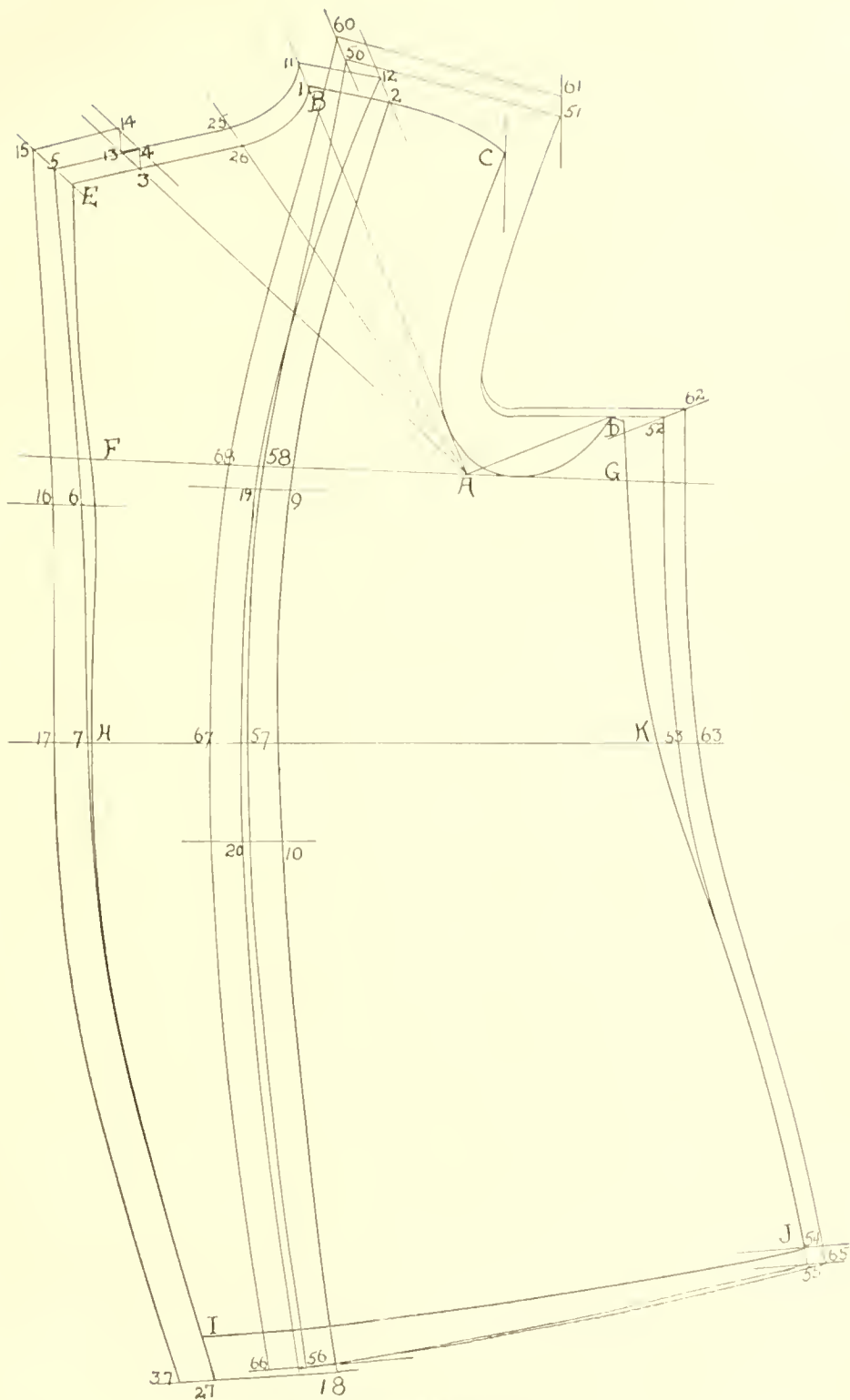


DIAGRAM XLIV.

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