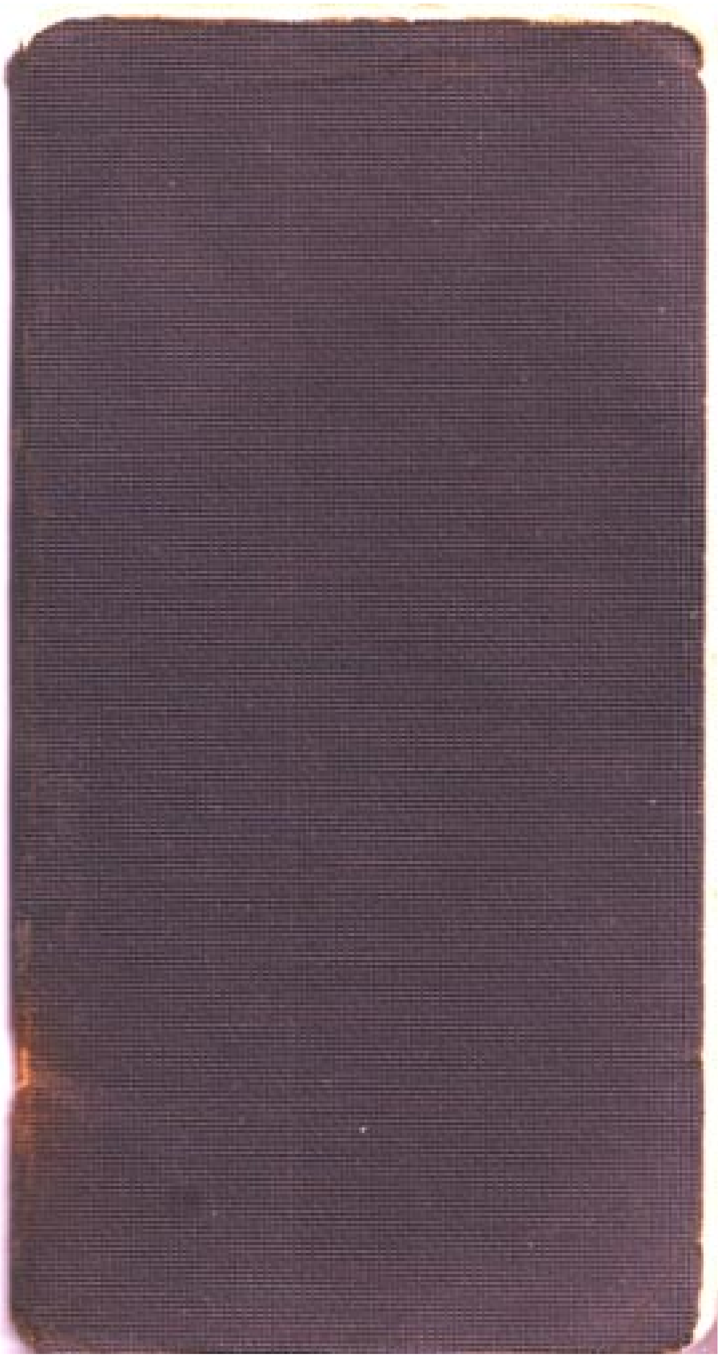

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Ashenhurst's

Cloth Structure Tables

Compiled on Strictly Scientific Principles by

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PREFACE.

In compiling and publishing these Tables I am fully conscious that I am subjecting myself to the probability of severe criticism. I have done so before. When I published my Tables of Diameters of Threads, as far back as 1884, I incurred the same risk, but every subsequent writer, some with, others without acknowledgment, have adopted them or deductions made from them, and no one has yet to my knowledge, challenged their accuracy.

In working out these Tables I have endeavored to give the number of threads per inch which will produce the most perfect cloth under average conditions, and I have based my calculations upon observations of the best fabrics, covering a period of over twenty years.

Of course the conditions which apply to one pattern will not necessarily apply to all patterns. The process of finishing and other conditions come in as factors, and it would be impossible to frame either rules or tables which would apply equally to all cases, but I have endeavored to meet this by giving in each combination of counts the number of threads which will give the best cloth under the conditions for which they are calculated, that is permitting the greatest amount of curvature in the weft and the least in the warp, and varying them as the ratio of the counts used vary, but I have also worked out the lowest and the highest possible number of threads which may be used in such combination, so that the manufacturer may know how far we may go in either direction without destroying the stability of structure or making his cloth too stiff or rigid to use for the purpose for which it is intended.

The accompanying rules as to the number of picks per inch of weft, twist of yarn, alteration of weights, etc., are intended to assist in the production of perfect cloths, or as near perfect as the conditions under which they may be produced, such as price, weight, etc., will permit; and at the same time to save intricate calculations and the experiments which enevitably accompany the making of samples when the true laws are not clearly understood.

Years of experiment with known cloths have proved that the basis upon which they are compiled is the truest and that they may prove useful and reliable is the only wish of the author.

THOS. R. ASHENHURST.

Ashenhurst's Cloth Structure Tables.

THE USE OF THE TABLES.

The primary object of these Tables is to enable a manufacturer, superintendent of a mill, designer or any one to whose care the production of fabrics is entrusted to produce a fabric perfect, or as near perfect as possible, and both the Tables and Rules are framed with a view to meeting that object.

The general instructions on the sheets themselves will show their uses. For instance: take any one of the tables and find the counts of warp at the head of the column, and the counts of weft at the side, both of which are proposed to be used, and running along both the horizontal lines and vertical columns the square corresponding with the two will give the minimum number of threads which may be used in a plain cloth of those two counts in the left hand top corner; the maximum which may be used in the right bottom corner, and that which will give the most perfect structure in the center, and in heavier type; so that an increase or decrease in weight may be made without risk of destroying the qualities of stability on the one hand or making the cloth too stiff or rigid on the other. The Tables apply to the warp threads only, as considerably more latitude may be, and is, given in the weft threads for many reasons, but the accompanying rules will explain more than a general description:

Table A is for Worsted Warp and Worsted Weft.

Table B.—Cotton or Spun Silk Warp and Weft.

Table C.—Cotton or Spun Silk Warp and Worsted Weft.

Table D.—Woolen Warp and Woolen Weft.

Table E.—Cotton or Spun Silk Warp and Woolen Weft.

Then, as already explained, find the square corresponding to the counts of the two yarns to be used, on the tables referring to the two materials and the numbers of ends per inch for minimum, maximum and perfect structure will be found for a plain cloth.

TO CHANGE PATTERN.

When any other than a plain cloth is to be made there must be a change in the number of threads. There are two rules: one a rough and ready method which gives some approximation to truth and the other a strictly true and scientific method. Suppose a four thread twill cloth is to be made, weft passing over two and under two warp threads alternately, as sometimes expressed thus, $\frac{2}{2}$. The pattern will consist of four threads and there will be two points of intersection of weft with the warp. Then if both materials are of the same counts the general rule would be to take a common proportion. Suppose that 52 ends would give perfect structure for plain cloth. Thus 4 threads + 2 intersections = 6, as against 4 threads + 4 intersections in plain cloth. Therefore as 6 : 8 : : 52 : 69.3. This is not strictly true as in working out the tables a suitable allowance has been made for the bending of the threads in the cloth, consequently the number of threads per inch given in the table represents so many triangles, including both the diameter of the warp thread and the weft thread, as well as the space required for the proper degree of bending; hence the correct method in changing the pattern is to take each intersection in the pattern as a triangle whose base is represented as a fraction of an inch and each thread where no intersection occurs at its own diameter only, and add them together to find the space occupied by one pattern, and that multiplied by the number of threads in the pattern will give the number per inch. In the present case there are 52 ends of 30s worsted per inch in a plain cloth to change to a four end twill, so that each angle or intersection is $\frac{1}{52}$ of an inch. The diameter of this thread is $\frac{1}{130}$ of an inch, thus two threads and the bases of the two triangles will be $(\frac{1}{130} + \frac{1}{130}) + (\frac{1}{52} + \frac{1}{52}) = \frac{1}{65} + \frac{1}{26} = \frac{65 \times 26}{65 + 26} = \frac{1}{18.57}$ of an inch, the space occupied by one pattern, and as there are four ends in the pattern 18.57 X 4 = 74.28 ends per inch for the twill cloth as against 52 in the plain one. This rule will work out correctly for every pattern, whatever the counts or combination of counts may be, when the pattern is an ordinary twill running at an angle of 45 degrees, not necessarily in the cloth but on paper, or in other words where the pattern moves one end at each succeeding pick. Where such is not the case the conditions will be altered as will be shown.

WHEN WARP OR WEFT PREDOMINATES ON THE SURFACE.

Whenever the warp or weft predominates largely on the surface in the order of interweaving, as in satins, or when the twill runs at an angle of 60 degrees or more with the warp or weft, then there must be more warp if the twill is in the direction of the warp, either thicker threads or more of them, than would be used for an even twill at an angle of 45 degrees. If the twill runs across the piece at an angle of 30 degrees or less then the weft must predominate, just as with a warp face satin there must be more warp than weft, and a weft face satin the reverse, and it is better to have that material which predominates on the face fine and a proportionately large number of threads. It is impossible to lay down a rule to apply to every pattern but it may serve in a general way that for a five thread satin or twill $\frac{4}{1}$ that the maximum number to make a good cloth would be 75 per cent of the number of threads which would lie side by side in one inch as given in the accompanying Table of Diameters: Following the strict rule as laid down for, say a cotton warp and weft satin, warp on the surface, counts of warp $\frac{1}{50}$'s and weft 36s then there would be two intersections in the five threads composing the pattern, and as for a plain cloth 33 ends per inch gives the best structure there would be $(\frac{1}{36} \times 2) + (\frac{1}{204} \times 3)$ to find the number of patterns per inch, ($\frac{1}{204}$ in the diameter of 50s cotton) hence there would be 21.52 pattern per inch, and 21.52 X 5 = 107.6 ends per inch; or to take the maximum given in the tables $(\frac{1}{84} \times 2) + (\frac{1}{204} \times 3)$ = 25 patterns per inch and 25 X 5 = 125 ends per inch. It is better to work by mean in the tables than go to the extremes for the purpose of retaining flexibility. A satin may be made with as many ends per inch as would lie side by side, but it is generally undesirable.

TO FIND PICKS PER INCH.

In a plain cloth, or twill cloth, where warp and weft are equal in counts and material, there should be approximately the same number of picks as ends per inch. In practice it is often better to have the weft a little thicker than the warp. In other cases where the two materials are not the same, or where pattern becomes an element in the case, make the basis one-half the number of threads which would lie on one inch as given in the tables of diameters, and add or deduct 10 per cent for the maximum or minimum, except in cases such as already referred to of satins or patterns with a weft surface, and low angled twills, where the threads must lie as closely together as possible.

FANCY CLOTHS WITH YARNS OF DIFFERENT COUNTS.

In many cases cloths are made with yarns of different counts or different materials; in such cases the best method is to find the average count of the combination and then refer to the tables. If the two materials are different they must be reduced to the same denomination. Thus suppose 2-40s cotton and 2 36s worsted are being used in combination with equal number of threads in the pattern, thus: 2-40s cotton is $\frac{20 \times 840}{560} = 30$s worsted (single), and 2-40s worsted combined with 30s would give an average count of 24 s. (See rule for finding average count, page 14.)

This rule may be applied in almost all cases of fancy goods.

TO CHANGE THE WEIGHT OF A CLOTH.

A cloth may be altered in weight, made heavier or lighter, and the same character of structure retained. In doing this the fact must be borne in mind that the diameter of threads vary in the ratio of the square root of the counts; hence the rule will be:

Rule:—As the weight of the required cloth is to the weight of the given cloth, so is the square root of the counts in the given cloth to the square root of counts in the required cloth.

This is the true rule, but it may be simplified in

working by squaring the weights, so as to raise them to the same power as the counts and avoid extracting roots. Thus the rule will be: as the weight squared of the required cloth is to the weight squared of the given cloth, so is the counts of the given cloth to the counts of the required cloth.

Example: A cloth is made with 24s warp, in any material and it is desired to increase the weight by one eighth. Then the heavier cloth will bear to the lighter one the ratio of 9 to 8; hence as $9^2 : 8^2 : : 24 : X$, or $\frac{8 \times 8 \times 24}{9 \times 9} = 19$, nearly; or that would be the counts required. The number of ends per inch must now be found, for a heavier count must have fewer threads. Then suppose the original cloth had 56 ends per inch it would be as $9 : 8 : : 56 : X$ or $\frac{8 \times 56}{9} = 49\frac{7}{9}$ for the heavier cloth.

It must always be borne in mind that light cloths are fine, and heavy cloths are coarse; that is, thicker threads and fewer of them for the same structure.

TO CHANGE FROM ONE COUNT TO ANOTHER AND FIND ENDS OR PICKS PER INCH.

This is simply a part of the last rule or a reversal of the last portion and will read: "As the given count is to the required count, so are the ends of the given cloth squared to the ends of the required cloth squared."

Example: If there are 56 ends per inch of 24s and it is desired to change to 19s how many ends per inch should there be? Then as $24 : 19 : : 56^2 : x^2$, or $\sqrt{\frac{19 \times 56 \times 56}{24}} = 50$. or there would be 50 ends per inch. There is a slight error between 50 and $49\frac{7}{9}$ given in the previous example due to the fact that the first part of the previous illustration gave a little less than 19, but the full number was adopted.

If it is required to change from one number of threads per inch to another, the above rule would simply be reversed, that is: As the ends of the given cloth squared is to the ends of the required cloth squared, so is the given counts to the required counts, thus reversing the above example as $56^2 : 50^2 : : 24 : 19$, or $\frac{50 \times 50 \times 24}{56 \times 56} = 19$.

TO CHANGE FROM ONE PATTERN TO ANOTHER AND FIND ENDS TO PRODUCE CLOTH OF THE SAME CHARACTER.

In the alteration of pattern the simple general rule turns upon the relative number of intersections in proportion to the number of threads in each pattern respectively. Thus a four end twill $\frac{2}{2}$ has four threads and two intersections, and a six end twill $\frac{3}{3}$ has six threads and two intersections, and a plain cloth has six threads and six intersections; hence, a four end twill cloth must contain more threads of the same counts than a plain, and a six end twill must contain more than a four.

If the cloth in the first instance has been made on the basis of these tables the second may be also with the same result; but if not, and the same character of cloth is required a general rule must be laid down.

Then taking the four and six end twills for the purpose of illustration, and supposing the four end twill had 80 ends per inch, to find the number required for the six end twill. In the first cloth as mentioned there are four threads and two intersections, or six units; in the second, six threads and two intersections, or eight units; therefore if the first cloth had 80 threads per inch the second would have $\frac{80 \times 6 \times 6}{4 \times 8} = 90$ threads per inch.

To make the matter more clear it may be given in the general rule, viz: As ends in the pattern of the cloth given multiplied by ends, plus intersection, in the pattern of the required cloth, is to the ends in the pattern of the required cloth, multiplied by ends, plus intersection in the pattern of the given cloth, so is the ends per inch of the given cloth to ends per inch of the required cloth.

Then to change from the four end twill with 80 ends per inch it would be:

As $4 \times (6 + 2) : 6 \times (4 + 2) :: 80 : 90$, or simplified $\frac{6 \times (4+2) \times 80}{4 \times (6+2)} = \frac{6 \times 6 \times 80}{4 \times 8} = 90$ The latter method is the simplest form of working, but the first rule explains the reason for it.

COUNTS OF FOLDED YARN.

To find the counts of a yarn composed of two threads twisted together the doctrine of combinations is employed. Let two threads A, B be twisted together then $\frac{A \times B}{A + B} = X$ the resulting count. Thus if the threads are 20s and 40s respectively in any material it would be $\frac{20 \times 40}{20 + 40} = \frac{800}{60} = 13\frac{1}{3}$, the counts.

To find one count to twist with a known count and produce a given count in the combination, the rule will be reversed. Thus let C be the resulting counts, then $\frac{A \times C}{A - C} = B$, the single count sought, as $\frac{20 \times 13\frac{1}{3}}{20 - 13\frac{1}{3}} = 40$.

When three or more threads are twisted together the combination is extended. Let the threads A, B, C be twisted together and D the resulting counts, then $\frac{A \times B \times C}{(A \times B) + (A \times C) + (B \times C)} = D$. Suppose A, B, C to be 40s, 30s and 20s respectively then $\frac{40 \times 30 \times 20}{(40 \times 30) + (40 \times 20) + (30 \times 20)} = 9\frac{3}{13}$.

The rule may be reversed in the same manner as the others. Thus let A, B, D be given to find C. Then $\frac{A \times B \times D}{(A \times B) - (A \times D) - (B \times D)} = C$, or $\frac{40 \times 30 \times 9\frac{3}{13}}{(40 \times 30) - (40 \times 9\frac{3}{15}) - (30 \times 9\frac{3}{13})} = 20s$.

When there are more than 3 threads the same rule will follow, the combinations on the under side of the line being always one less than the total number of threads. Thus if there are four threads A, B, C, D it will be

$$\frac{A \times B \times C \times D}{(A \times B \times C) + (A \times B \times D) + (A \times C \times D) + B \times (C \times D)}$$

and so on.

AVERAGE COUNTS.

The object of this rule is when fancy goods are being made to find the number of threads to make a perfect cloth. Suppose a cloth is made of one thread of 40s and one of 20s alternately. The cloth could not be built on either of them separately. Then the rule given above will find the resulting counts of the combination as $13\frac{1}{3}$s, but that implies that the two threads have been twisted and made into one, but being put into the cloth separately there are still two threads then $13\frac{1}{3} \times 2 = 26\frac{2}{3}$, the average counts, and upon this the cloth may be built.

The same rule will apply when there are three or more threads; find the resulting counts of the combination and multiply by the number of threads; the product will be the average counts.

TWIST OF YARNS.

In the cotton trade there is a general rule for finding the twist in a given count, viz: Multiply the square root of the count by $3\frac{1}{4}$ for weft and by $3\frac{3}{4}$ for warp. This is considered as standard yarn, and may be increased or decreased in yarns for specific purposes.

To make a similar standard for other materials as the relative counts are to each other, so is the relative twist. For instance cotton and worsted have 840 and 560 yards per hank respectively. Thus

$$\frac{3.25 \times 560}{840} = \frac{3.25 \times 2}{3} = 2.166 \text{ for weft and}$$

$$\frac{3.75 \times 560}{840} = 2.5 \text{ for warp, and the same with any}$$

other material.

Suppose a yarn is made with either more or less twist than this rule will give and it is desired to make another yarn of exactly the same character, then the general rule will apply. As the square root of one count is to the square root of another count so is the twist in one yarn to the twist in another. Or, as one count is to another count so is the twist of one squared to the twist of the other squared.

Example: Let a 20s yarn have 12 turns per inch how many should a 30s have? As $\sqrt{20} : \sqrt{30} :: 12 : X$ or as $20 : 30 :: 12^2 : X^2$, or $\sqrt{\frac{30 \times 12 \times 12}{20}} = 15$, **nearly**, or the number of turns required for 30s.

DIAMETERS OF COTTON THREADS.		DIAMETERS OF WORSTED THREADS.		DIAMETERS OF WOOLEN THREADS. American Run System.	
COUNTS	DIAMETERS	COUNTS	DIAMETERS	RUNS	DIAMETERS
10	92	10	75		
12	100	12	82		
14	108	14	89	1	40
16	116	16	95	1½	49
18	123	18	100	2	57
20	130	20	106	2½	63
22	136	22	111	3	69
24	142	24	116	3½	75
26	147	26	120	4	80
28	153	28	125	4½	85
30	159	30	130	5	89
32	164	32	134	5½	94
34	169	34	138	6	98
36	174	36	142	6½	102
38	178	38	146	7	106
40	183	40	150	7½	109.5
42	188	42	153	8	113
44	192	44	157	8½	116.5
46	196.5	46	160	9	120
48	200	48	164	9½	123
50	204	50	167	10	127
52	208	52	170		
54	213	54	174		
56	217	56	177		
58	221	58	180		
60	224	60	183		
62	228	62	186		
64	232	64	189		
66	236	66	192		
68	239	68	195		
70	242	70	198		
72	246	72	201		
74	249	74	203		
76	252	76	206		
78	256	78	209		
80	260	80	212		

The diameters should be written as fractions thus $\frac{1}{40}$ or $\frac{1}{40}$th of an inch, but given as they are it indicates the numbers which would lie side by side in one inch, but in all calculations for cloth structure they must be treated strictly as fractions. To find the diameter of any thread not given in the tables extract the square root of the yards per lb, and the answer will be the number of threads which will be side by side.

A COUNTS OF WARP.

COUNTS OF WEFT.

Weft \ Warp	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44
10	22 / 31 / 37	23 / 31 / 39	23 / 31 / 41	24 / 32 / 42	25 / 33 / 43	25 / 33 / 44	26 / 34 / 45	26 / 34 / 46	27 / 35 / 47	27 / 35 / 47	28 / 35 / 48	28 / 35 / 48	28 / 35 / 49	29 / 36 / 49	29 / 36 / 50	29 / 36 / 50	29 / 36 / 51	30 / 37 / 51
12	23 / 32 / 39	23 / 33 / 41	24 / 33 / 43	25 / 34 / 44	26 / 35 / 45	26 / 35 / 46	27 / 36 / 47	27 / 36 / 48	28 / 38 / 49	29 / 38 / 50	29 / 38 / 50	29 / 38 / 51	30 / 38 / 51	30 / 38 / 52	30 / 38 / 52	31 / 39 / 53	31 / 39 / 54	31 / 39 / 54
14	23 / 33 / 41	24 / 34 / 43	25 / 35 / 45	26 / 36 / 46	27 / 37 / 47	28 / 38 / 48	29 / 39 / 49	30 / 39 / 50	30 / 40 / 51	31 / 40 / 52	31 / 40 / 53	31 / 40 / 54	31 / 40 / 54	32 / 41 / 55	32 / 41 / 55	32 / 42 / 56	33 / 42 / 56	33 / 42 / 57
16	24 / 35 / 42	25 / 36 / 44	26 / 37 / 46	27 / 38 / 48	28 / 39 / 49	29 / 40 / 50	30 / 41 / 51	30 / 41 / 52	31 / 42 / 53	31 / 42 / 54	32 / 42 / 55	32 / 42 / 56	33 / 42 / 56	33 / 43 / 57	33 / 43 / 58	34 / 43 / 58	34 / 44 / 58	34 / 44 / 59
18	25 / 37 / 43	26 / 38 / 45	27 / 39 / 47	28 / 40 / 49	29 / 41 / 50	30 / 42 / 52	30 / 42 / 53	31 / 43 / 54	32 / 44 / 55	32 / 44 / 56	33 / 44 / 56	33 / 45 / 57	34 / 45 / 58	34 / 46 / 59	35 / 46 / 60	35 / 46 / 60	35 / 46 / 61	36 / 46 / 61
20	25 / 38 / 44	26 / 39 / 46	28 / 40 / 48	29 / 42 / 50	30 / 42 / 51	31 / 43 / 53	31 / 43 / 54	32 / 44 / 55	33 / 45 / 57	33 / 45 / 58	34 / 46 / 58	34 / 46 / 59	35 / 47 / 60	35 / 47 / 61	35 / 47 / 62	36 / 47 / 62	36 / 48 / 62	36 / 48 / 63
22	26 / 40 / 45	27 / 40 / 47	28 / 41 / 49	30 / 43 / 51	30 / 44 / 52	31 / 44 / 54	32 / 45 / 55	33 / 45 / 57	33 / 46 / 58	34 / 47 / 59	34 / 47 / 60	35 / 48 / 61	35 / 48 / 61	36 / 48 / 62	36 / 48 / 63	36 / 48 / 64	37 / 49 / 64	37 / 49 / 65
24	26 / 41 / 46	27 / 41 / 48	29 / 43 / 50	30 / 45 / 52	31 / 45 / 53	32 / 46 / 55	33 / 46 / 56	34 / 47 / 58	34 / 47 / 59	35 / 48 / 60	35 / 48 / 61	36 / 49 / 62	36 / 49 / 63	37 / 49 / 64	37 / 49 / 65	37 / 50 / 65	38 / 50 / 66	38 / 50 / 67
26	27 / 42 / 46	28 / 43 / 49	30 / 45 / 51	31 / 45 / 53	32 / 46 / 54	33 / 46 / 55	33 / 47 / 57	34 / 48 / 59	35 / 49 / 60	35 / 49 / 61	36 / 49 / 62	36 / 50 / 63	37 / 50 / 64	37 / 50 / 65	38 / 51 / 66	38 / 51 / 67	38 / 51 / 68	38 / 52 / 68
28	27 / 43 / 47	29 / 44 / 49	30 / 46 / 52	31 / 46 / 54	32 / 47 / 55	33 / 47 / 57	34 / 48 / 58	35 / 49 / 60	35 / 49 / 61	36 / 50 / 62	36 / 50 / 64	37 / 51 / 65	37 / 52 / 66	38 / 52 / 67	38 / 52 / 67	39 / 52 / 68	39 / 53 / 69	40 / 53 / 70
30	28 / 44 / 47	29 / 45 / 50	31 / 47 / 53	32 / 47 / 55	33 / 48 / 56	34 / 48 / 58	34 / 49 / 59	35 / 49 / 61	36 / 50 / 62	36 / 51 / 63	37 / 52 / 65	38 / 52 / 66	38 / 52 / 67	39 / 53 / 68	39 / 53 / 69	40 / 53 / 69	40 / 54 / 70	41 / 54 / 71
32	28 / 45 / 48	30 / 45 / 51	31 / 48 / 54	32 / 48 / 56	33 / 49 / 57	34 / 49 / 59	35 / 50 / 60	36 / 51 / 62	36 / 51 / 63	37 / 52 / 64	38 / 53 / 66	38 / 53 / 67	39 / 54 / 68	39 / 54 / 69	40 / 55 / 70	40 / 55 / 70	41 / 56 / 71	41 / 56 / 72
34	28 / 46 / 48	30 / 46 / 51	31 / 48 / 54	33 / 49 / 56	34 / 50 / 58	35 / 50 / 60	35 / 51 / 61	36 / 52 / 63	37 / 52 / 64	37 / 53 / 65	38 / 54 / 67	39 / 54 / 68	40 / 55 / 69	40 / 55 / 70	41 / 56 / 71	41 / 57 / 71	42 / 58 / 72	42 / 58 / 73
36	29 / 47 / 49	30 / 47 / 51	32 / 49 / 55	33 / 50 / 57	34 / 51 / 59	35 / 51 / 61	36 / 52 / 62	37 / 53 / 64	37 / 53 / 65	38 / 54 / 66	39 / 55 / 68	39 / 56 / 69	40 / 56 / 70	41 / 57 / 71	41 / 57 / 72	42 / 58 / 72	42 / 58 / 73	43 / 59 / 74
38	29 / 47 / 49	30 / 48 / 52	32 / 50 / 55	33 / 51 / 57	35 / 52 / 59	35 / 52 / 61	36 / 53 / 63	37 / 54 / 65	38 / 54 / 66	38 / 55 / 67	39 / 56 / 69	40 / 57 / 70	41 / 57 / 71	41 / 58 / 72	42 / 58 / 73	42 / 58 / 73	43 / 59 / 74	44 / 59 / 75
40	29 / 48 / 50	31 / 48 / 53	32 / 50 / 56	34 / 51 / 58	35 / 53 / 60	36 / 52 / 62	36 / 53 / 64	37 / 54 / 66	38 / 55 / 67	39 / 56 / 68	40 / 57 / 69	40 / 57 / 71	41 / 58 / 72	42 / 59 / 73	42 / 59 / 74	43 / 60 / 74	43 / 60 / 75	44 / 60 / 76
42	29 / 49 / 50	31 / 49 / 53	33 / 51 / 56	34 / 52 / 58	35 / 54 / 60	36 / 54 / 62	37 / 54 / 64	38 / 55 / 66	38 / 56 / 68	39 / 57 / 69	40 / 58 / 70	41 / 58 / 71	42 / 59 / 72	42 / 60 / 74	43 / 61 / 75	43 / 61 / 75	44 / 61 / 76	44 / 61 / 77
44	30 / 50 / 51	31 / 50 / 54	33 / 53 / 57	34 / 53 / 59	35 / 54 / 60	36 / 54 / 63	37 / 55 / 65	38 / 56 / 66	39 / 57 / 68	40 / 58 / 70	41 / 59 / 71	41 / 59 / 72	42 / 60 / 73	43 / 61 / 74	44 / 62 / 75	44 / 62 / 76	44 / 62 / 77	45 / 62 / 78
46	30 / 50 / 51	31 / 50 / 54	33 / 53 / 57	35 / 53 / 59	35 / 55 / 61	37 / 55 / 64	38 / 56 / 65	39 / 56 / 67	39 / 57 / 69	40 / 59 / 70	41 / 60 / 72	42 / 60 / 73	43 / 61 / 74	43 / 62 / 75	44 / 63 / 76	44 / 63 / 77	45 / 63 / 78	45 / 64 / 78
48	30 / 50 / 51	32 / 51 / 55	34 / 54 / 57	35 / 55 / 60	36 / 55 / 62	37 / 56 / 64	38 / 57 / 66	39 / 57 / 68	39 / 58 / 69	41 / 59 / 71	42 / 60 / 72	42 / 61 / 74	43 / 62 / 75	44 / 62 / 76	45 / 64 / 77	45 / 64 / 78	45 / 64 / 79	46 / 65 / 79
50	30 / 50 / 52	32 / 52 / 55	34 / 55 / 58	35 / 55 / 60	36 / 55 / 62	37 / 57 / 65	38 / 58 / 66	39 / 58 / 68	40 / 59 / 70	41 / 60 / 71	42 / 61 / 73	43 / 62 / 74	43 / 62 / 75	44 / 63 / 76	45 / 64 / 78	45 / 65 / 79	46 / 65 / 80	46 / 66 / 80
52	30 / 50 / 52	33 / 52 / 55	34 / 54 / 58	35 / 56 / 60	36 / 57 / 63	38 / 58 / 65	39 / 59 / 67	39 / 59 / 69	40 / 60 / 70	41 / 60 / 72	42 / 62 / 73	43 / 63 / 75	44 / 63 / 76	44 / 64 / 77	45 / 65 / 79	46 / 66 / 80	46 / 66 / 81	47 / 67 / 82
54	30 / 50 / 52	33 / 52 / 55	34 / 55 / 59	36 / 56 / 61	36 / 56 / 63	38 / 58 / 66	39 / 60 / 68	40 / 60 / 70	41 / 61 / 71	42 / 61 / 72	43 / 63 / 74	44 / 64 / 75	44 / 64 / 77	45 / 65 / 77	46 / 66 / 79	46 / 67 / 80	47 / 67 / 81	47 / 68 / 82
56	31 / 51 / 53	33 / 53 / 56	35 / 55 / 59	36 / 57 / 62	37 / 57 / 64	38 / 59 / 66	39 / 60 / 68	40 / 61 / 70	41 / 62 / 71	42 / 63 / 73	43 / 65 / 75	44 / 65 / 76	45 / 66 / 77	45 / 66 / 78	46 / 67 / 81	47 / 68 / 81	47 / 68 / 82	48 / 69 / 83
58	31 / 51 / 53	33 / 53 / 56	35 / 56 / 59	36 / 57 / 62	37 / 59 / 64	39 / 60 / 66	40 / 62 / 68	40 / 63 / 70	41 / 64 / 72	43 / 65 / 74	44 / 66 / 76	44 / 66 / 77	46 / 67 / 78	46 / 67 / 79	46 / 68 / 80	47 / 68 / 81	48 / 69 / 83	48 / 69 / 84
60	31 / 52 / 54	33 / 54 / 57	35 / 56 / 60	36 / 58 / 63	37 / 59 / 65	39 / 61 / 69	40 / 62 / 69	41 / 63 / 71	42 / 63 / 73	43 / 65 / 74	44 / 66 / 75	45 / 67 / 77	46 / 68 / 79	46 / 68 / 80	47 / 69 / 81	48 / 69 / 82	48 / 70 / 83	49 / 71 / 84
	10	12	14	16	18	20	22	24	26	28/62								

Weft \ Warp	30	32	34	36	38	40	42	44
62	44 / 67 / 75	45 / 67 / 78	46 / 68 / 79	47 / 69 / 81	47 / 70 / 82	48 / 71 / 83	48 / 71 / 84	49 / 72 / 85
64	44 / 67 / 77	45 / 68 / 78	46 / 69 / 80	47 / 70 / 81	48 / 70 / 82	48 / 71 / 83	49 / 72 / 85	49 / 72 / 86
66	45 / 68 / 77	45 / 68 / 79	46 / 69 / 80	47 / 70 / 82	48 / 71 / 83	49 / 71 / 84	49 / 72 / 85	50 / 73 / 86
68	45 / 69 / 78	46 / 69 / 80	47 / 70 / 81	48 / 71 / 83	48 / 72 / 85	49 / 72 / 86	49 / 73 / 86	50 / 73 / 87
70	45 / 69 / 78	46 / 70 / 80	47 / 71 / 81	48 / 72 / 83	48 / 72 / 84	49 / 73 / 85	50 / 73 / 87	50 / 74 / 88
72	46 / 70 / 79	46 / 71 / 80	47 / 72 / 82	48 / 73 / 84	49 / 73 / 85	49 / 74 / 86	50 / 74 / 87	51 / 75 / 88
74	46 / 70 / 79	46 / 71 / 81	47 / 72 / 82	48 / 73 / 84	49 / 74 / 85	50 / 74 / 86	50 / 75 / 87	51 / 76 / 88
76	46 / 71 / 79	47 / 72 / 81	47 / 73 / 83	48 / 74 / 84	49 / 74 / 85	50 / 75 / 86	51 / 76 / 88	51 / 77 / 89
78	46 / 71 / 80	47 / 72 / 81	47 / 73 / 83	48 / 74 / 84	50 / 75 / 86	50 / 76 / 87	51 / 76 / 88	51 / 77 / 90
80	47 / 72 / 81	47 / 73 / 82	48 / 74 / 84	49 / 75 / 85	50 / 75 / 87	51 / 76 / 88	51 / 77 / 89	52 / 77 / 90
	30	32	34	36	38	40	42	44

Instructions For Use.

The Counts of Warp are represented by the vertical columns and the Weft by the horizontal lines.

To find the ends per inch for any combination of counts, find the Counts of Warp at the head of the column and Counts of Weft down the side, then run the finger down to the square corresponding with each and the figures in the left hand top corner represent the lowest number of threads which may be used, those in the right bottom the maximum, and the center figures those which will give the most perfect structure.

The Tables are constructed for plain cloths. The number of threads for any pattern may be worked from them.

JOURNAL PRINTING CO., JAMESTOWN, N. Y.

ASHENHURST'S Cloth Structure Tables.

For finding the number of threads per inch in a Cloth in any combination of counts or materials.

TABLE A.

For Worsted Warp and Worsted Weft.

Warp / Weft	46	48	50	52	54	56	58	60	
	30 / 37 / 51	30 / 37 / 52	30 / 38 / 52	31 / 38 / 53	31 / 38 / 54	32 / 39 / 56	33 / 39 / 57	34 / 39 / 58	10
	31 / 39 / 55	32 / 40 / 55	32 / 41 / 56	33 / 41 / 56	34 / 42 / 57	34 / 42 / 58	34 / 43 / 59	35 / 43 / 60	12
	33 / 42 / 57	34 / 43 / 58	34 / 43 / 58	34 / 43 / 59	35 / 44 / 60	36 / 44 / 61	36 / 45 / 60	36 / 45 / 62	14
	35 / 44 / 60	35 / 44 / 60	36 / 45 / 61	35 / 46 / 61	36 / 46 / 62	36 / 46 / 62	36 / 47 / 62	36 / 48 / 63	16
	36 / 47 / 62	36 / 47 / 62	36 / 47 / 63	36 / 47 / 63	36 / 47 / 64	37 / 48 / 64	37 / 49 / 64	37 / 49 / 65	18
	37 / 48 / 64	37 / 48 / 64	37 / 48 / 65	38 / 49 / 66	38 / 49 / 66	38 / 50 / 66	38 / 50 / 67	39 / 50 / 67	20
	38 / 49 / 66	38 / 49 / 66	38 / 49 / 67	39 / 50 / 67	39 / 50 / 68	39 / 51 / 68	40 / 52 / 69	40 / 52 / 69	22
	38 / 50 / 67	39 / 51 / 68	39 / 51 / 69	39 / 51 / 69	40 / 52 / 70	40 / 52 / 70	40 / 53 / 71	41 / 53 / 71	24
	39 / 52 / 69	39 / 52 / 69	40 / 53 / 70	40 / 53 / 71	41 / 54 / 71	41 / 54 / 72	42 / 54 / 72	42 / 54 / 73	26
	40 / 53 / 70	41 / 54 / 71	41 / 54 / 71	41 / 54 / 72	42 / 55 / 73	42 / 55 / 74	42 / 56 / 74	43 / 56 / 74	28/62

46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	Weft
41 / 55 / 72	42 / 55 / 72	42 / 56 / 73	42 / 56 / 73	43 / 57 / 74	43 / 57 / 75	43 / 58 / 75	44 / 58 / 76	44 / 58 / 76	44 / 58 / 77	45 / 58 / 77	45 / 58 / 78	45 / 59 / 78	45 / 59 / 79	46 / 59 / 79	46 / 60 / 80	47 / 60 / 81	47 / 60 / 81	30
42 / 57 / 73	43 / 57 / 74	43 / 58 / 74	43 / 58 / 75	44 / 58 / 75	44 / 58 / 76	45 / 58 / 77	45 / 58 / 77	45 / 59 / 78	45 / 59 / 78	46 / 59 / 79	46 / 60 / 79	46 / 60 / 80	47 / 60 / 80	47 / 60 / 80	47 / 61 / 81	48 / 61 / 81	48 / 61 / 82	32
43 / 59 / 74	43 / 59 / 74	43 / 59 / 75	44 / 59 / 76	44 / 59 / 76	45 / 59 / 77	45 / 60 / 78	46 / 60 / 79	46 / 60 / 79	46 / 60 / 80	46 / 60 / 80	47 / 60 / 80	47 / 61 / 81	47 / 62 / 81	48 / 62 / 82	48 / 62 / 82	48 / 62 / 83	48 / 62 / 83	34
43 / 59 / 75	43 / 60 / 76	44 / 60 / 76	44 / 61 / 77	45 / 61 / 77	45 / 61 / 78	45 / 61 / 79	46 / 62 / 80	46 / 62 / 80	47 / 62 / 81	47 / 62 / 82	47 / 62 / 82	48 / 63 / 83	48 / 63 / 83	48 / 63 / 84	49 / 63 / 84	49 / 63 / 85	49 / 63 / 85	36
44 / 60 / 76	45 / 60 / 77	45 / 61 / 78	45 / 62 / 79	46 / 62 / 79	46 / 62 / 80	46 / 63 / 80	47 / 63 / 81	47 / 64 / 81	48 / 64 / 82	48 / 64 / 82	48 / 64 / 83	49 / 64 / 84	49 / 64 / 84	49 / 64 / 85	49 / 65 / 86	50 / 65 / 86	50 / 65 / 87	38
44 / 61 / 77	45 / 61 / 78	45 / 62 / 79	46 / 62 / 80	46 / 63 / 80	47 / 64 / 81	47 / 64 / 81	47 / 65 / 82	48 / 65 / 82	48 / 65 / 83	49 / 66 / 83	49 / 66 / 84	49 / 66 / 85	49 / 66 / 85	50 / 66 / 86	50 / 66 / 87	50 / 67 / 87	51 / 67 / 88	40
45 / 62 / 78	45 / 62 / 79	46 / 63 / 80	46 / 63 / 81	47 / 64 / 81	47 / 64 / 82	48 / 65 / 83	48 / 65 / 84	48 / 65 / 84	49 / 66 / 86	49 / 66 / 85	49 / 66 / 85	50 / 66 / 86	50 / 67 / 86	50 / 67 / 87	50 / 67 / 87	51 / 67 / 88	51 / 68 / 89	42
45 / 63 / 79	46 / 63 / 80	46 / 64 / 81	47 / 64 / 81	47 / 65 / 82	48 / 65 / 83	48 / 65 / 84	49 / 66 / 86	49 / 66 / 85	49 / 67 / 86	50 / 67 / 86	50 / 67 / 86	50 / 67 / 87	50 / 67 / 87	51 / 67 / 88	51 / 68 / 88	51 / 68 / 89	51 / 69 / 90	44
46 / 64 / 80	46 / 65 / 81	47 / 65 / 82	47 / 66 / 83	48 / 66 / 83	48 / 66 / 84	49 / 66 / 85	49 / 67 / 85	50 / 67 / 86	50 / 67 / 86	50 / 68 / 87	50 / 68 / 87	51 / 68 / 88	51 / 69 / 88	51 / 69 / 89	52 / 70 / 89	52 / 70 / 90	52 / 70 / 91	46
46 / 65 / 81	47 / 66 / 82	47 / 66 / 83	48 / 67 / 83	48 / 67 / 84	49 / 67 / 85	49 / 67 / 86	50 / 68 / 86	50 / 68 / 87	51 / 69 / 87	51 / 69 / 88	51 / 69 / 88	52 / 70 / 89	52 / 70 / 90	52 / 70 / 90	53 / 71 / 91	53 / 71 / 91	53 / 71 / 92	48
47 / 66 / 82	47 / 67 / 83	48 / 67 / 83	48 / 67 / 84	49 / 68 / 85	49 / 68 / 86	50 / 68 / 86	50 / 69 / 87	51 / 69 / 88	51 / 69 / 88	52 / 70 / 89	52 / 70 / 89	52 / 70 / 90	53 / 71 / 91	53 / 71 / 92	53 / 71 / 92	53 / 72 / 93	53 / 72 / 93	50
47 / 66 / 83	48 / 68 / 84	48 / 68 / 84	49 / 68 / 85	49 / 68 / 86	50 / 69 / 86	50 / 69 / 87	51 / 70 / 88	51 / 70 / 89	52 / 70 / 90	52 / 71 / 90	52 / 71 / 90	53 / 71 / 91	53 / 72 / 92	53 / 72 / 92	53 / 72 / 93	54 / 73 / 94	54 / 73 / 94	52
48 / 68 / 83	48 / 69 / 84	49 / 69 / 85	49 / 69 / 86	50 / 70 / 87	50 / 70 / 87	50 / 71 / 88	51 / 71 / 89	51 / 71 / 89	52 / 71 / 90	52 / 72 / 90	53 / 72 / 91	53 / 72 / 92	53 / 72 / 93	54 / 73 / 93	54 / 73 / 94	55 / 74 / 94	55 / 74 / 95	54
48 / 69 / 84	49 / 70 / 86	49 / 70 / 86	50 / 70 / 87	50 / 70 / 88	51 / 71 / 88	51 / 72 / 89	52 / 72 / 90	52 / 72 / 90	53 / 72 / 91	53 / 73 / 91	53 / 73 / 92	54 / 73 / 93	54 / 74 / 93	54 / 74 / 94	54 / 74 / 95	55 / 75 / 96	56 / 75 / 96	56
49 / 70 / 85	49 / 70 / 86	50 / 71 / 87	50 / 71 / 87	51 / 72 / 88	51 / 72 / 89	52 / 73 / 90	52 / 73 / 91	53 / 74 / 91	53 / 74 / 92	54 / 74 / 93	54 / 74 / 93	54 / 74 / 94	55 / 75 / 94	55 / 75 / 95	56 / 76 / 96	56 / 76 / 97	56 / 76 / 97	58
49 / 72 / 85	50 / 72 / 86	50 / 72 / 87	51 / 72 / 88	52 / 73 / 89	52 / 73 / 90	52 / 74 / 91	53 / 74 / 91	53 / 75 / 92	54 / 75 / 93	54 / 76 / 94	54 / 76 / 94	55 / 76 / 95	55 / 76 / 95	56 / 76 / 96	56 / 77 / 97	56 / 77 / 98	57 / 77 / 98	60
49 / 72 / 86	50 / 73 / 87	51 / 73 / 88	52 / 73 / 89	52 / 74 / 90	53 / 74 / 91	53 / 75 / 92	53 / 75 / 92	54 / 75 / 93	54 / 76 / 94	54 / 76 / 95	54 / 77 / 96	55 / 77 / 96	55 / 77 / 96	56 / 77 / 97	56 / 77 / 98	56 / 78 / 98	57 / 78 / 99	62
50 / 73 / 87	51 / 73 / 88	51 / 74 / 89	52 / 74 / 90	52 / 75 / 91	53 / 75 / 92	53 / 76 / 92	53 / 76 / 93	54 / 76 / 94	54 / 76 / 94	55 / 77 / 95	55 / 77 / 96	56 / 78 / 97	56 / 78 / 97	56 / 78 / 98	57 / 78 / 98	57 / 79 / 99	58 / 79 / 100	64
50 / 73 / 87	51 / 73 / 88	51 / 74 / 89	52 / 74 / 90	53 / 75 / 91	53 / 75 / 92	53 / 76 / 93	54 / 77 / 94	54 / 77 / 94	55 / 78 / 95	55 / 78 / 96	56 / 78 / 97	56 / 78 / 97	57 / 78 / 98	57 / 79 / 98	58 / 79 / 99	58 / 79 / 100	58 / 80 / 101	66
51 / 74 / 88	51 / 75 / 89	52 / 75 / 90	52 / 76 / 91	53 / 76 / 92	53 / 77 / 93	54 / 77 / 94	55 / 78 / 95	55 / 78 / 95	55 / 78 / 96	56 / 79 / 97	56 / 79 / 97	57 / 79 / 98	57 / 80 / 99	57 / 80 / 99	58 / 80 / 100	58 / 81 / 101	58 / 81 / 101	68
51 / 75 / 88	52 / 76 / 89	52 / 76 / 90	53 / 77 / 91	53 / 77 / 92	54 / 78 / 93	54 / 78 / 94	55 / 78 / 95	55 / 79 / 96	55 / 79 / 96	56 / 79 / 97	57 / 80 / 98	57 / 80 / 98	58 / 80 / 99	58 / 81 / 100	58 / 81 / 101	58 / 81 / 102	59 / 82 / 102	70
51 / 76 / 89	53 / 76 / 90	52 / 76 / 91	53 / 77 / 92	54 / 78 / 93	54 / 78 / 94	54 / 79 / 95	55 / 79 / 96	56 / 79 / 97	56 / 80 / 97	57 / 80 / 98	57 / 81 / 99	58 / 81 / 100	58 / 81 / 100	58 / 82 / 101	59 / 82 / 101	59 / 83 / 103	59 / 83 / 103	72
52 / 76 / 89	53 / 77 / 90	53 / 77 / 91	54 / 78 / 92	54 / 78 / 93	55 / 79 / 94	55 / 79 / 95	55 / 80 / 96	56 / 80 / 97	57 / 81 / 98	57 / 81 / 99	57 / 82 / 100	58 / 82 / 100	58 / 82 / 101	58 / 82 / 101	59 / 83 / 102	59 / 83 / 103	60 / 83 / 103	74
52 / 77 / 90	52 / 77 / 91	53 / 78 / 92	53 / 78 / 93	54 / 79 / 94	55 / 79 / 95	55 / 80 / 96	56 / 80 / 97	56 / 81 / 98	57 / 81 / 99	57 / 82 / 99	58 / 82 / 100	58 / 82 / 101	58 / 82 / 101	58 / 82 / 101	59 / 83 / 102	60 / 84 / 103	60 / 84 / 104	76
52 / 77 / 91	53 / 78 / 92	53 / 79 / 93	54 / 79 / 94	55 / 80 / 95	55 / 81 / 95	55 / 81 / 96	56 / 81 / 97	56 / 81 / 98	57 / 81 / 99	58 / 82 / 100	59 / 82 / 100	59 / 83 / 101	59 / 83 / 101	59 / 84 / 102	60 / 84 / 103	60 / 85 / 104	61 / 85 / 105	78
52 / 78 / 91	53 / 79 / 92	54 / 80 / 93	55 / 80 / 94	55 / 81 / 96	56 / 81 / 96	56 / 82 / 97	56 / 82 / 98	57 / 82 / 99	58 / 83 / 100	58 / 83 / 101	59 / 84 / 101	59 / 84 / 102	59 / 85 / 103	60 / 85 / 104	60 / 85 / 104	60 / 86 / 105	61 / 86 / 106	80
46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	

B

COUNTS OF WARP.

COUNTS OF WEFT.

Each cell gives: top-left figure, centre figure, bottom-right figure.

	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44
10	27 37 46	28 38 48	29 39 50	29 40 51	30 41 52	31 41 53	32 42 55	32 42 56	33 42 57	33 43 57	34 43 58	34 43 59	35 43 60	35 43 60	35 43 61	35 44 61	36 44 62	36 44 62
12	28 38 48	29 41 50	30 42 52	31 43 53	32 44 55	33 44 56	33 45 57	34 46 59	34 46 59	35 46 60	35 47 61	36 47 62	36 47 63	36 47 64	37 48 64	37 48 65	38 48 66	38 48 66
14	28 40 49	30 43 52	32 44 54	33 45 56	33 46 57	34 46 58	35 47 60	35 48 61	36 48 62	37 48 63	37 49 64	38 49 65	38 49 66	38 50 67	39 50 67	39 50 69	40 50 69	40 51 69
16	29 42 50	31 45 53	33 46 56	34 47 58	34 47 59	35 48 60	36 48 62	37 49 64	37 49 65	38 50 66	38 50 67	39 51 68	39 51 69	40 52 70	40 52 70	41 53 71	41 53 72	42 53 72
18	30 44 52	32 46 54	33 46 57	34 48 58	35 49 61	36 50 62	37 50 64	38 51 65	38 51 66	39 52 68	40 52 69	41 53 70	41 54 71	42 54 72	42 55 72	43 56 74	43 56 74	43 56 75
20	31 47 54	33 48 56	34 48 58	35 49 60	36 50 63	37 51 64	37 52 65	39 53 67	39 53 68	40 54 70	41 54 71	42 55 72	42 56 73	43 56 74	43 57 75	44 57 76	44 58 77	45 58 78
22	32 48 55	34 49 58	35 50 60	36 51 62	37 51 64	38 52 66	39 54 67	40 55 69	40 55 71	41 56 72	42 56 73	42 57 74	43 58 75	44 59 76	44 59 77	45 59 78	45 60 79	46 60 80
24	32 49 56	34 51 59	35 52 61	37 53 64	38 53 65	39 54 67	40 55 69	41 56 71	41 57 72	42 58 73	42 59 74	43 60 75	44 60 76	45 61 77	45 61 78	46 61 80	46 61 81	47 61 82
26	33 50 57	34 52 60	36 53 62	37 54 65	39 54 66	39 55 68	40 56 70	41 57 72	42 59 73	43 59 75	43 60 76	44 61 77	45 62 78	46 63 79	47 63 81	47 63 81	47 63 82	48 63 83
28	33 52 57	35 53 60	37 54 63	38 55 66	39 56 68	40 57 70	41 58 72	42 60 73	43 60 75	44 61 76	44 61 77	45 62 79	46 63 80	47 64 81	48 64 82	48 64 82	48 64 83	49 65 85
30	34 53 58	35 54 61	37 55 64	38 56 67	40 57 69	41 58 71	42 59 73	42 61 74	43 62 76	44 63 77	45 63 79	46 64 80	47 64 82	47 65 82	48 65 83	48 65 83	49 66 84	50 67 86
32	34 55 59	36 55 62	38 56 65	39 57 68	41 58 70	42 60 72	42 61 74	43 62 75	44 63 77	45 64 79	46 65 80	47 66 82	47 66 83	48 67 84	49 67 85	50 68 86	50 68 87	51 68 88
34	35 55 60	36 56 63	38 57 66	39 58 69	41 60 71	42 61 73	43 62 75	44 63 76	45 64 78	46 65 80	47 66 82	47 67 83	48 68 84	49 68 85	50 69 87	50 69 88	51 70 90	52 70 90
36	35 56 60	36 56 63	38 58 67	40 60 70	42 61 72	43 63 74	44 64 76	45 65 77	46 66 79	47 67 81	47 68 82	48 69 84	49 69 85	50 70 87	50 71 88	51 72 89	52 72 90	53 72 91
38	35 56 61	37 58 64	39 59 67	40 61 70	42 63 73	43 65 75	44 65 77	45 66 78	47 67 80	48 68 82	48 69 83	49 70 85	50 70 87	50 71 88	51 72 89	52 73 90	52 73 91	53 74 92
40	35 57 61	37 59 65	39 61 68	41 63 71	42 65 74	44 66 76	45 66 78	46 67 80	47 68 81	48 69 82	48 70 84	50 71 86	50 71 88	51 72 89	52 73 90	53 74 91	53 75 92	54 75 93
42	35 57 61	38 60 65	40 62 69	41 64 72	43 66 74	44 67 77	45 68 79	46 68 80	47 70 82	48 70 83	49 71 84	50 72 87	51 73 89	52 73 90	52 74 91	53 75 93	54 76 94	55 77 95
44	36 58 62	38 61 66	40 63 70	42 65 72	43 67 75	45 68 78	46 69 79	47 70 81	48 71 83	49 72 85	50 73 86	51 74 88	52 75 90	53 75 91	53 76 92	54 76 94	55 77 95	55 78 96
46	36 59 62	38 61 66	40 63 70	42 65 73	44 67 76	45 69 78	46 70 80	47 71 82	48 72 84	49 73 86	51 74 87	51 75 89	52 75 90	53 76 92	54 77 93	54 78 94	55 78 95	56 79 97
48	36 60 63	38 62 67	40 64 70	42 66 74	44 68 76	45 70 79	47 71 81	48 72 83	49 73 85	50 74 87	51 75 88	52 76 90	53 76 91	53 76 93	54 77 94	55 79 96	56 79 97	56 80 98
50	37 61 63	39 63 67	41 65 71	43 67 74	44 69 77	46 71 79	47 72 82	48 73 84	49 73 86	50 74 88	51 75 90	52 76 90	52 77 92	54 78 94	55 79 95	55 79 96	56 80 98	57 81 99
52	37 62 64	39 64 67	41 66 71	43 68 74	44 69 77	46 71 79	47 73 82	48 74 84	50 75 86	51 76 88	51 77 90	52 78 92	53 78 93	54 79 95	55 80 96	56 81 97	57 82 99	58 82 100
54	38 63 64	40 65 68	41 67 72	43 69 75	45 71 78	47 72 80	48 74 83	49 75 85	50 76 87	51 77 89	52 78 91	53 79 92	54 80 94	55 81 95	56 82 97	57 82 98	58 83 100	58 83 100
56	38 63 65	40 66 69	42 67 72	43 69 75	45 71 78	47 73 81	48 74 83	50 76 86	51 77 88	52 79 90	53 80 92	54 80 94	54 81 95	55 82 96	56 83 97	57 83 99	58 84 101	59 84 102
58	38 64 66	40 66 68	42 68 72	44 70 76	46 72 79	48 74 82	49 75 84	50 77 86	51 79 88	53 81 90	54 81 93	55 82 95	55 82 96	56 83 97	57 84 98	58 84 100	58 85 101	59 85 102
60	38 64 68	41 67 69	43 69 73	45 71 76	46 73 79	48 75 82	49 76 84	51 77 86	52 79 88	52 81 91	54 82 92	54 83 95	55 83 96	56 83 98	57 84 99	58 85 101	59 86 102	60 86 103
	10	12	14	16	18	20	22	24	26	28/62	54 83 94	55 83 96	56 84 97	57 84 98	57 84 99	58 85 101	59 86 102	60 87 104

	30	32	34	36	38	40	42	44
64	55 83 94	56 84 96	56 85 97	57 86 99	57 86 100	59 88 102	60 87 104	61 87 105
66	55 84 95	56 85 97	57 86 98	58 86 100	58 87 101	59 87 103	60 88 107	61 88 107
68	55 84 95	56 86 97	57 86 99	58 87 100	59 81 102	60 89 104	61 89 105	62 90 106
70	56 85 96	56 87 98	57 87 99	58 87 101	59 88 102	60 89 104	61 90 106	62 91 107
72	56 86 96	57 87 98	58 87 100	59 88 102	59 89 102	60 89 104	61 90 106	62 91 107
74	56 87 97	57 87 99	58 88 101	59 89 102	60 89 103	60 90 105	61 91 107	63 92 108
76	57 87 98	57 88 99	58 89 100	59 90 102	60 91 104	61 91 107	61 92 107	63 93 108
78	57 88 98	58 89 100	59 90 101	60 91 103	60 92 105	61 93 106	62 93 105	64 94 106
80	57 89 99	58 90 100	59 91 102	60 92 102	61 92 106	62 93 107	63 94 109	64 95 110
	30	32	34	36	38	40	42	44

Instructions For Use.

The Counts of Warp are represented by the vertical columns and the Weft by the horizontal lines.

To find the ends per inch for any combination of counts, find the Counts of Warp at the head of the column and Counts of Weft down the side, then run the finger down to the square corresponding with each and the figures in the left hand top corner represent the lowest number of threads which may be used, those in the right bottom the maximum, and the center figures those which will give the most perfect structure.

The Tables are constructed for plain cloths. The number of threads for any pattern may be worked from them.

JOURNAL PRINTING CO., JAMESTOWN, N. Y.

ASHENHURST'S Cloth Structure Tables.

For finding the number of threads per inch in a Cloth in any combination of counts or materials.

TABLE B.

Cotton or Spun Silk Warp and Cotton or Spun Silk Weft.

46	48	50	52	54	56	58	60	
36 44 63	36 44 63	37 45 68	37 45 64	38 46 64	38 47 64	38 47 65	38 48 66	10
38 49 67	39 49 67	39 49 68	39 50 68	40 50 69	40 50 69	40 51 69	41 51 70	12
40 51 70	41 51 70	41 51 71	41 51 71	42 52 72	42 52 72	42 53 72	42 53 73	14
42 54 73	43 54 73	43 54 74	43 54 74	44 55 75	44 55 75	44 56 76	44 56 76	16
44 56 76	44 56 76	44 57 77	44 57 77	45 57 78	46 57 78	46 58 79	46 58 79	18
45 58 78	45 59 79	46 59 79	46 59 80	47 59 80	47 60 81	47 60 82	48 61 82	20
46 61 80	47 61 81	47 61 81	47 61 82	48 62 83	48 62 83	48 62 84	49 63 84	22
47 62 82	48 62 83	48 63 83	49 63 84	49 64 85	50 64 85	50 65 86	50 65 86	24
48 64 84	49 64 86	49 65 85	50 65 85	50 66 87	51 66 88	51 66 88	51 66 88	26
49 65 86	50 66 87	50 66 87	51 67 88	51 67 89	52 68 89	52 69 90	53 69 90	28

46	48	50	52	54	56	58	60	28/62	64	66	68	70	72	74	76	78	80	
50 67 87	51 68 88	51 68 90	52 69 90	52 70 91	53 71 92	54 71 93	54 71 93	54 72 91	55 72 95	55 72 95	55 72 96	55 72 96	56 72 97	56 73 97	56 73 97	57 73 98	57 73 99	30
51 69 89	52 70 90	52 70 91	53 71 92	53 71 93	54 72 94	55 72 95	55 72 95	55 73 96	56 73 96	56 74 97	56 74 97	57 74 98	57 74 98	57 75 99	57 75 99	58 75 100	58 76 100	32
52 71 90	53 71 91	53 72 92	54 72 93	54 73 94	55 73 95	55 74 95	56 74 96	56 74 97	56 75 97	57 75 98	57 75 99	57 75 99	58 75 100	58 76 101	58 76 101	59 76 102	59 77 102	34
53 73 92	53 73 93	54 73 94	54 74 96	55 74 96	56 75 96	56 75 97	56 76 97	57 76 98	57 76 99	57 77 99	58 77 100	58 77 100	59 77 101	59 78 101	59 78 102	60 78 103	60 79 103	36
54 74 93	54 75 94	56 75 95	55 75 98	56 76 97	56 76 98	57 77 99	57 77 99	57 77 100	58 77 100	58 78 101	59 78 102	59 78 103	59 78 103	60 79 104	60 79 104	60 79 105	61 80 106	38
55 76 94	55 76 96	56 77 97	56 77 98	57 78 98	57 78 99	58 78 100	58 79 101	58 79 101	59 79 102	59 80 102	60 80 103	60 81 104	60 81 104	61 81 105	61 81 105	61 81 106	62 82 107	40
55 77 96	56 78 97	56 79 98	57 79 99	58 79 100	58 79 100	58 79 101	59 80 102	59 80 103	60 80 104	60 81 105	61 81 105	61 82 106	61 82 106	61 82 107	62 83 107	62 83 108	63 83 109	42
56 78 97	57 79 98	57 79 99	58 80 100	58 80 100	59 81 101	59 81 102	60 81 103	60 82 104	61 82 105	61 82 105	61 83 106	62 83 106	62 83 108	63 84 108	63 84 109	64 84 109	64 85 110	44
56 79 98	57 80 100	58 80 100	58 81 101	59 82 102	59 82 102	60 82 104	60 82 105	61 83 105	61 83 106	61 83 107	62 84 107	63 84 108	63 84 109	63 85 109	63 85 110	64 86 111	64 86 112	46
57 80 99	58 81 100	58 81 101	59 82 102	59 82 103	60 83 104	60 83 105	61 84 106	61 84 106	62 85 107	62 85 108	63 85 109	63 86 110	64 86 110	64 86 111	64 88 112	65 87 112	65 87 113	48
58 82 100	58 82 101	59 83 102	59 83 103	60 84 103	61 84 105	61 85 106	62 85 107	62 86 107	63 86 108	63 86 109	62 86 110	64 87 111	64 87 111	65 87 112	65 88 112	65 88 113	66 88 114	50
58 82 101	59 83 102	59 83 102	60 84 104	61 85 105	61 85 106	61 86 107	62 86 108	63 87 108	63 87 109	64 87 110	64 88 111	64 88 111	66 89 112	65 89 113	66 89 114	66 89 115	67 90 116	52
59 84 102	59 84 103	60 85 103	61 85 105	61 86 106	62 86 107	62 87 108	63 87 109	63 88 110	64 88 111	64 88 112	64 89 112	65 89 113	65 90 114	66 90 114	67 90 115	67 91 116	68 91 117	54
59 84 103	60 85 104	61 85 105	61 86 106	62 87 107	63 88 108	63 89 109	64 89 110	64 89 111	65 89 112	65 89 113	65 90 114	66 90 114	66 91 115	67 91 116	67 92 117	68 92 117	68 93 118	56
60 85 104	60 86 105	61 86 106	61 86 107	62 87 108	63 88 109	63 89 110	64 90 111	64 91 112	65 91 113	65 91 114	66 92 114	66 92 115	67 92 116	68 92 116	68 93 117	69 93 118	69 94 119	58
60 87 105	61 87 106	62 88 107	62 88 108	63 88 109	64 89 110	64 89 111	65 90 112	65 91 113	66 91 114	66 92 114	67 93 116	67 93 116	68 93 117	68 94 117	68 94 119	69 95 119	69 95 120	60
61 88 105	61 89 106	62 89 107	63 89 108	63 89 110	64 90 111	64 90 112	65 91 113	65 92 114	66 93 115	67 93 116	67 94 117	68 94 118	69 95 118	69 95 119	59 95 120	69 96 121	70 96 121	62
61 88 106	62 89 107	63 90 108	63 90 109	64 91 111	65 91 112	65 91 113	66 92 114	66 93 115	67 94 116	67 95 117	68 95 118	68 95 118	69 96 119	69 96 120	70 96 121	70 97 122	71 97 123	64
61 89 107	62 88 108	63 91 109	64 91 110	64 92 112	65 92 113	65 92 114	66 93 114	67 94 116	67 95 117	68 95 118	68 96 119	69 97 120	69 97 120	70 97 121	70 97 122	70 98 123	71 99 123	66
62 91 107	63 92 109	63 92 110	64 93 111	64 93 112	65 93 114	66 94 114	67 94 116	67 96 117	68 96 118	68 96 119	69 96 119	69 97 120	70 98 121	70 98 122	71 98 122	71 99 123	71 100 124	68
63 92 108	63 93 110	64 93 111	64 93 111	65 94 113	66 94 114	66 95 115	67 96 116	68 97 118	68 97 118	69 97 120	69 98 120	70 98 121	70 99 122	71 99 123	71 99 123	72 100 124	72 101 125	70
63 92 109	64 93 110	64 94 111	65 95 112	65 95 114	66 96 115	67 96 116	68 97 117	69 98 118	69 98 119	69 98 120	70 99 121	70 99 122	71 100 123	71 100 124	71 100 124	72 101 125	73 101 126	72
[illegible] 93 109	64 94 111	65 95 112	65 96 113	66 97 114	67 97 116	68 98 116	68 98 117	69 99 119	69 99 120	70 99 121	70 100 122	71 100 123	71 100 123	72 101 124	72 101 125	73 101 125	73 102 126	74
[illegible] 94 110	64 95 111	65 96 112	66 97 114	66 98 115	67 98 117	68 99 117	68 99 117	69 100 120	69 100 121	70 100 122	71 101 123	71 101 124	71 101 125	72 101 125	72 102 125	73 102 126	73 102 127	76
64 95 111	65 96 112	65 97 113	66 98 116	67 99 116	68 99 117	69 100 118	69 100 119	68 101 121	70 101 122	70 101 123	71 102 123	72 102 124	72 102 125	73 103 125	73 103 126	73 103 127	74 103 128	78
64 95 111	65 96 113	66 97 114	67 98 116	68 99 117	68 99 118	69 100 119	69 100 120	70 101 121	70 101 123	71 102 123	71 102 124	72 102 125	73 103 126	73 103 127	74 104 128	75 104 129	75 105 130	80
46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	

C COUNTS OF WARP.

COUNTS OF WEFT.

	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44
10	24 32 41	24 33 42	25 34 44	26 34 45	27 34 46	27 35 47	28 35 48	28 35 49	29 36 50	29 36 50	29 36 51	30 36 51	30 37 52	30 37 52	30 37 53	31 37 53	31 37 53	31 37 54
12	24 33 43	25 35 44	26 36 46	27 36 47	28 37 49	29 37 50	29 38 51	30 38 52	29 39 53	30 39 53	31 39 54	31 39 54	32 40 56	32 40 55	32 40 56	33 40 57	33 40 57	33 40 57
14	25 34 45	26 36 46	28 38 48	29 38 50	29 39 51	30 39 52	31 40 54	31 41 55	32 41 55	32 42 56	33 42 57	33 42 58	34 43 56	34 43 59	34 43 59	35 43 60	35 43 60	35 43 61
16	27 38 45	27 38 47	28 39 50	30 40 51	30 41 53	31 41 54	32 42 56	32 43 57	33 43 57	34 43 58	34 44 59	35 44 60	35 44 61	36 44 62	36 45 62	36 45 63	36 45 63	37 45 64
18	27 38 46	28 40 49	29 41 51	31 42 53	31 43 55	32 43 56	33 44 58	33 45 58	34 45 59	35 45 60	35 46 61	36 46 62	36 46 63	37 46 64	37 47 64	37 47 65	38 47 66	38 47 66
20	27 40 47	29 40 50	30 42 52	31 43 54	32 44 56	33 44 57	34 45 59	35 46 60	35 46 61	36 47 62	37 47 62	37 48 63	38 48 64	38 48 65	39 49 66	39 49 67	39 49 67	40 50 68
22	28 40 48	29 41 51	31 43 54	32 45 56	33 45 58	34 46 59	35 47 61	36 47 62	36 48 63	37 49 64	38 49 65	38 49 66	39 50 68	39 50 68	40 51 68	40 51 69	40 51 70	41 52 70
24	28 41 49	29 42 52	32 44 54	33 45 56	34 46 58	35 47 60	36 48 62	36 49 63	37 50 65	37 51 66	38 51 67	39 52 68	40 52 69	40 52 70	41 53 70	41 53 71	41 53 72	42 54 72
26	29 42 50	30 43 53	32 45 55	33 46 57	34 47 59	35 48 61	36 49 63	37 50 64	38 52 66	38 52 67	39 52 68	40 53 69	40 53 70	41 53 71	41 54 72	42 54 72	42 54 73	42 55 74
28	29 42 51	30 44 54	32 46 56	33 48 58	35 49 60	36 50 62	37 51 64	38 52 66	39 53 67	39 54 68	40 54 70	41 55 71	42 55 72	42 55 72	43 56 73	43 56 74	43 56 75	44 57 76
30	29 43 51	31 45 54	33 47 57	33 49 59	35 50 61	37 51 63	38 52 65	39 53 67	39 54 68	40 55 70	41 56 71	41 56 72	42 56 73	43 57 74	43 57 75	44 57 76	44 58 77	45 58 78
32	30 44 51	31 46 54	33 47 58	35 48 60	36 50 62	37 52 64	38 54 66	39 54 68	40 55 69	40 56 70	41 56 72	41 57 73	42 57 74	43 58 75	43 58 76	44 58 76	45 59 77	45 59 78
34	30 44 52	32 47 55	34 48 58	35 49 60	36 51 63	37 53 65	39 54 67	40 55 69	40 56 70	41 57 71	42 58 73	42 58 74	43 58 75	43 59 76	44 59 77	45 59 77	46 60 78	46 60 79
36	30 45 53	32 47 55	34 49 59	35 50 61	36 52 63	38 54 65	39 55 68	40 56 69	41 57 71	41 58 72	43 59 74	43 59 75	44 59 76	44 60 77	45 60 78	46 61 79	47 61 81	47 62 82
38	30 45 53	32 48 56	34 50 59	35 51 61	37 53 64	38 55 66	40 56 68	40 57 70	41 57 72	42 59 73	43 59 75	44 59 76	44 60 77	45 61 78	46 62 80	47 63 81	48 63 83	48 64 83
40	30 46 53	33 48 56	35 50 60	36 52 62	37 53 64	39 55 66	40 57 68	40 58 70	41 58 72	42 59 74	43 60 76	44 60 77	45 61 78	45 62 79	46 63 81	47 64 82	48 65 84	48 65 84
42	31 46 53	33 48 56	35 51 60	36 53 63	37 54 65	39 55 67	40 57 69	41 58 71	42 59 73	43 60 75	44 61 77	44 61 78	45 62 79	46 63 81	47 64 82	47 64 83	49 65 84	49 66 85
44	31 48 53	33 49 56	35 51 60	36 53 63	38 55 66	39 56 68	41 57 70	41 59 72	42 60 74	43 61 75	44 62 77	45 62 78	46 63 80	47 64 82	48 65 83	48 65 84	49 66 85	50 67 86
46	31 48 54	33 49 57	35 52 61	37 54 64	38 55 66	39 57 68	41 58 71	42 59 73	43 61 74	44 61 76	45 62 78	46 63 79	46 64 81	48 65 83	48 66 84	49 66 85	50 67 86	50 68 87
48	31 47 54	34 50 57	35 53 61	37 54 64	38 55 67	40 57 69	41 58 71	42 60 73	43 61 75	44 62 77	45 63 78	46 64 80	47 65 81	48 66 83	49 67 84	49 67 85	50 68 86	51 69 87
50	31 47 54	34 51 58	36 53 62	37 55 64	39 56 67	40 58 70	41 59 72	42 61 74	44 62 76	45 63 78	46 64 79	47 65 81	48 66 82	49 67 83	49 68 85	50 68 86	50 69 87	51 70 88
52	31 48 56	34 51 58	36 54 62	38 55 65	39 56 67	40 58 70	42 60 72	43 61 74	44 62 76	45 63 78	46 65 80	47 66 81	48 66 82	49 67 84	50 69 86	50 69 87	51 70 88	51 70 89
54	32 49 56	34 52 59	36 54 62	38 56 65	39 57 68	41 59 71	42 61 73	43 62 75	44 63 77	45 64 79	47 66 81	48 67 82	48 67 83	49 68 85	50 69 87	50 69 88	51 70 89	52 71 90
56	32 49 56	35 52 59	36 55 63	38 56 65	39 58 68	41 60 71	42 61 73	43 62 75	44 63 77	45 65 79	47 66 81	48 67 82	48 68 84	49 69 86	50 70 87	51 71 88	52 71 89	52 72 91
58	32 50 58	35 53 60	37 55 63	38 57 65	40 59 69	41 61 72	43 62 74	44 63 76	45 64 78	46 66 80	47 67 82	48 68 83	49 69 84	50 70 86	51 71 87	52 72 89	52 72 90	53 73 92
60	32 50 57	35 53 60	37 56 63	39 57 66	40 59 69	42 61 72	44 63 76	45 64 78	45 65 78	46 67 81	46 67 82	49 68 83	49 69 85	50 70 87	51 71 89	52 72 90	52 72 91	53 73 92
	10	12	14	16	18	20	22	24	26	28/62								

	30	32	34	36	38	40	42	44
62	48 68 83	49 69 84	50 70 86	51 71 88	51 72 90	52 72 91	53 73 92	53 74 93
64	48 69 83	49 70 85	50 70 86	51 71 88	51 72 90	52 73 91	53 74 92	54 75 94
66	48 69 84	49 70 86	50 71 87	51 72 89	52 73 90	53 74 91	54 75 93	54 76 94
68	48 70 84	50 71 86	50 72 87	51 73 89	52 74 91	53 75 92	54 75 93	55 76 95
70	49 70 85	50 71 87	51 72 88	52 73 89	52 74 91	53 75 92	54 76 94	55 77 97
72	49 71 85	50 72 87	51 73 89	52 74 90	53 75 91	54 75 93	54 76 94	56 77 96
74	49 71 85	50 72 87	51 73 89	52 75 91	53 76 92	54 76 93	55 77 94	56 78 96
76	50 71 86	51 72 88	52 74 90	52 75 91	53 76 92	54 77 94	55 78 95	57 78 97
78	50 72 86	51 73 88	52 74 90	53 76 91	54 77 93	55 78 94	56 78 96	57 79 97
80	50 73 87	51 74 88	52 75 90	53 77 92	54 78 93	55 78 95	56 79 96	57 79 98
	30	32	34	36	38	40	42	44

Instructions For Use.

The Counts of Warp are represented by the vertical columns and the Weft by the horizontal lines.

To find the ends per inch for any combination of counts, find the Counts of Warp at the head of the column and Counts of Weft down the side, then run the finger down to the square corresponding with each and the figures in the left hand top corner represent the lowest number of threads which may be used, those in the right bottom the maximum, and the center figures those which will give the most perfect structure.

The Tables are constructed for plain cloths. The number of threads for any pattern may be worked from them.

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ASHENHURST'S Cloth Structure Tables.

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For finding the number of threads per inch in a Cloth in any combination of counts or materials.

TABLE C.

Cotton or Spun Silk Warp and Worsted Weft.

	46	48	50	52	54	56	58	60
10	31 37 54	32 37 54	32 38 56	32 38 55	32 38 56	32 38 56	33 38 56	33 38 57
12	33 40 56	34 40 58	34 41 58	34 41 58	34 41 59	34 41 59	35 41 60	35 41 60
14	35 43 61	35 43 62	36 44 62	36 44 62	36 44 63	36 44 63	37 44 64	37 45 64
16	37 45 64	37 45 64	37 46 65	38 46 65	38 46 66	38 46 66	38 46 67	39 47 67
18	38 47 66	38 47 66	39 48 67	39 48 68	39 48 68	39 48 69	40 49 69	40 49 70
20	40 50 68	40 50 69	40 50 70	41 51 70	41 51 70	41 52 71	42 53 72	42 54 73
22	41 52 71	41 52 71	41 52 72	42 53 72	42 53 73	43 53 74	44 54 75	45 55 76
24	42 54 72	42 54 73	42 54 74	43 55 74	43 55 75	44 55 75	44 55 76	45 56 77
26	43 55 74	43 55 75	43 55 76	44 56 76	44 56 76	44 56 77	45 56 78	45 56 79
28	44 57 77	44 57 77	45 57 78	45 58 78	46 58 79	46 58 79	46 58 80	47 59 80

	46	48	50	52	54	56	58	60	28/62	64	66	68	70	72	74	76	78	80
30	45 58 78	45 59 79	46 59 79	46 59 80	46 60 81	47 60 81	47 60 82	47 60 82	48 60 83	48 61 83	48 61 84	49 61 84	49 61 84	49 61 85	49 61 85	50 62 86	50 62 86	62 87
32	46 59 80	46 60 81	47 60 81	47 60 82	48 60 82	48 61 83	48 62 83	48 62 84	49 62 85	49 63 85	49 63 86	50 63 86	50 63 87	50 63 87	50 63 88	51 64 88	51 64 88	51 64 88
34	47 61 81	47 61 82	48 61 82	48 61 83	49 62 83	49 62 84	49 63 86	49 63 85	50 63 86	50 64 86	50 64 87	50 64 87	51 64 88	51 64 89	51 65 90	52 65 90	52 65 90	52 65 90
36	48 62 83	48 63 83	49 63 84	49 63 85	49 64 85	50 64 86	50 64 87	50 65 87	50 65 88	51 65 88	51 65 89	51 66 89	51 66 89	52 66 90	52 66 90	52 67 91	53 67 91	53 67 92
38	48 64 84	49 65 84	49 65 85	49 65 86	50 65 87	50 66 87	50 66 88	51 66 89	51 66 89	51 67 90	52 67 90	52 67 91	52 67 91	53 68 91	53 68 92	53 68 92	54 68 93	54 68 94
40	49 66 85	49 66 85	49 66 86	50 66 87	50 67 88	51 67 89	51 67 89	52 68 90	52 68 90	52 68 91	53 68 91	53 69 92	53 69 92	54 69 93	54 69 93	54 69 94	55 70 94	55 70 95
42	50 66 86	50 67 88	50 67 87	51 67 88	51 68 89	52 68 90	52 69 90	52 69 91	53 69 92	53 69 92	53 69 93	54 70 93	54 70 94	54 70 94	54 70 95	56 70 95	56 71 96	56 71 96
44	50 68 87	51 68 88	51 69 89	52 69 89	52 69 90	53 70 91	53 70 91	53 70 92	53 70 93	54 70 94	54 71 94	55 71 95	55 71 95	56 71 96	56 71 96	57 72 97	57 72 97	57 72 98
46	51 69 88	52 69 89	52 70 90	53 70 90	53 70 91	53 71 92	54 71 93	54 71 93	54 71 94	55 71 95	55 72 95	55 72 96	55 72 97	56 73 97	56 73 97	57 73 98	57 73 98	57 73 99
48	52 70 88	52 70 90	52 70 91	53 71 91	53 71 92	53 72 93	54 72 94	54 72 95	55 72 95	55 73 96	55 73 97	56 73 98	56 73 98	57 74 99	57 74 99	57 74 99	58 74 100	58 75 100
50	52 70 88	52 71 90	53 71 92	53 72 92	54 72 93	54 73 94	55 73 95	55 73 96	56 74 97	56 74 98	56 74 98	57 74 99	57 75 99	57 75 100	57 75 100	58 76 101	58 76 101	59 76 102
52	52 71 90	53 71 91	53 72 92	54 73 93	54 73 94	54 74 95	55 74 96	55 74 97	56 75 98	56 75 99	57 75 99	57 75 99	57 76 100	58 76 100	58 76 101	58 77 102	59 77 103	59 78 103
54	53 72 91	53 72 92	54 73 94	54 74 95	55 74 96	55 75 97	56 75 97	56 75 98	57 75 98	57 76 99	58 76 100	58 76 100	58 77 101	59 77 101	59 78 102	59 78 103	60 79 104	60 79 105
56	53 73 92	53 74 93	54 74 94	55 74 95	55 75 96	56 75 97	56 76 98	57 76 99	58 76 99	58 76 100	59 77 101	59 77 101	59 78 102	60 78 103	60 79 104	60 79 104	60 79 105	61 80 105
58	53 74 93	54 75 94	55 75 95	56 75 96	56 76 97	57 76 98	57 76 99	58 76 100	58 77 100	59 77 101	59 78 102	59 78 102	60 79 103	60 79 104	60 80 104	61 80 105	61 80 106	61 81 107
60	54 74 93	54 75 94	55 75 95	56 75 96	56 76 97	57 76 98	58 76 100	58 77 101	59 78 101	59 78 102	60 79 103	60 79 103	60 80 104	61 80 104	61 80 105	61 80 106	61 81 107	62 82 108
62	54 74 94	55 75 95	56 75 96	56 75 97	57 76 98	58 76 99	58 77 100	59 78 101	59 79 102	59 79 103	60 80 104	60 80 104	61 81 105	61 81 105	61 81 106	62 81 107	62 82 108	63 83 109
64	54 75 96	55 75 96	56 76 97	56 76 98	57 77 99	58 77 100	59 78 101	60 78 102	60 80 103	60 80 104	60 81 104	61 81 105	61 81 106	61 81 107	61 82 108	62 82 108	62 83 109	63 83 110
66	55 76 95	55 76 97	56 77 98	57 78 99	58 78 100	58 79 101	59 80 102	60 80 103	60 81 104	60 81 104	61 81 105	61 82 106	62 82 107	62 83 108	62 83 109	63 84 109	63 84 110	64 84 110
68	55 77 96	56 77 98	57 78 99	57 79 99	58 80 100	59 81 101	59 81 102	60 82 103	60 82 104	61 82 105	61 83 106	62 83 107	62 84 108	63 84 109	63 84 109	64 85 110	64 85 110	64 85 111
70	56 78 96	56 78 98	57 78 99	57 79 100	58 80 101	59 81 102	60 81 103	60 82 104	61 82 105	61 83 106	61 83 107	62 84 108	62 85 109	63 85 109	63 86 110	64 86 111	65 86 111	65 86 112
72	56 78 97	57 78 99	57 79 100	58 80 100	59 81 101	60 82 103	60 82 104	61 83 104	61 83 105	61 84 106	62 84 107	63 85 108	63 86 109	64 86 110	64 87 110	65 87 111	65 87 112	65 87 113
74	56 78 97	57 79 99	58 79 100	58 80 101	59 81 102	60 82 103	60 82 104	61 83 105	61 83 106	61 84 107	62 84 108	63 85 109	64 86 110	64 87 110	64 87 111	65 88 111	66 88 112	65 88 114
76	57 78 98	57 79 99	58 80 100	58 81 102	58 82 103	60 83 104	60 83 105	61 83 106	61 84 107	62 84 108	63 85 109	64 86 110	64 87 110	65 88 111	65 88 112	65 88 113	65 89 114	66 89 115
78	57 79 98	58 80 100	59 81 101	59 82 103	60 83 104	60 83 105	61 84 106	61 84 107	62 85 108	62 86 109	63 86 109	64 87 110	64 87 111	65 88 111	65 88 113	66 89 113	66 89 114	67 90 115
80	57 80 98	58 81 101	58 82 102	59 83 103	60 84 104	61 84 105	61 85 106	62 86 108	63 86 109	63 87 110	64 87 110	64 88 111	64 88 112	65 89 112	65 89 113	66 90 115	66 90 116	67 91 117
	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80

TABLE E.

For Cotton Warp and Woolen Weft.

COUNTS OF WARP.

Counts of Weft	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40		1
1	16.1 / 18.5 / 27	16.4 / 18.7 / 28	16.7 / 19 / 29.1	17 / 19.1 / 29.6	17.3 / 19.3 / 30.1	17.6 / 19.5 / 30.5	17.8 / 19.8 / 31	18 / 19.9 / 31.2	18.1 / 20 / 31.4	18.3 / 20.1 / 31.7	18.5 / 20.2 / 32	18.5 / 20.3 / 32.1	18.6 / 20.4 / 32.3	18.7 / 20.5 / 32.5	18.9 / 20.5 / 32.7	19 / 20.6 / 32.9	1	11.5 / 14.7 / 20
1½	18.2 / 22.4 / 32.1	18.6 / 22.2 / 32.6	19.1 / 22 / 33	19.5 / 22.3 / 34	19.8 / 22.6 / 35	19.9 / 22.9 / 35.3	20.1 / 23.1 / 35.6	20.4 / 23.2 / 35.9	20.8 / 23.4 / 36.2	21 / 23.5 / 36.6	21.3 / 23.7 / 37	21.4 / 23.8 / 37.2	21.6 / 24 / 37.4	22.1 / 24.5 / 37.6	22.6 / 25.1 / 37.9	23.1 / 25.6 / 38.2	1½	12.7 / 15.8 / 22
2	20.3 / 24.3 / 35.2	20.9 / 24.7 / 36.2	21.5 / 25.1 / 37.3	21.9 / 25.5 / 38.1	22.4 / 25.9 / 38.9	22.7 / 26.2 / 39.5	23.1 / 26.5 / 40.1	23.4 / 26.6 / 40.6	23.6 / 26.8 / 41	23.9 / 27 / 41.5	24.2 / 27.3 / 42	24.4 / 27.5 / 42.3	24.6 / 27.6 / 42.6	25.5 / 28.7 / 42.9	26.4 / 29.8 / 43.1	27.4 / 30.9 / 43.5	2	13.6 / 16.4 / 23.7
2½	21.4 / 25.9 / 37.2	22.1 / 26.5 / 38.4	22.9 / 27.1 / 39.7	23.4 / 27.6 / 40.6	23.9 / 28 / 41.5	24.4 / 28.3 / 42.2	24.7 / 28.6 / 42.9	24.9 / 28.8 / 43.6	25.1 / 29.1 / 44	25.6 / 29.3 / 44.5	26 / 29.6 / 45	26.2 / 29.8 / 45.4	26.4 / 30 / 45.8	26.7 / 30.6 / 46	27 / 31.2 / 46.4	28.1 / 31.8 / 46.8	2½	14.1 / 17 / 24.4
3	22.6 / 27.6 / 39.2	23.4 / 28.3 / 41.1	24.3 / 29.1 / 42.1	24.9 / 29.6 / 43.1	25.5 / 30.1 / 44.2	25.9 / 30.4 / 44.9	26.3 / 30.7 / 45.7	26.7 / 31 / 46.3	27 / 31.4 / 47	27.4 / 31.7 / 47.6	27.6 / 32 / 48.1	28 / 32.2 / 48.6	28.3 / 32.4 / 49	28.5 / 32.5 / 49.4	28.7 / 32.6 / 49.8	28.9 / 32.8 / 50.1	3	14.6 / 17.3 / 25.3
3½	23.6 / 29.2 / 41	24.5 / 30.2 / 42.5	25.4 / 30.8 / 44	26 / 31.3 / 45.1	26.7 / 31.8 / 46.3	27.1 / 32.2 / 47.1	27.6 / 32.6 / 48	28 / 33 / 48.7	28.4 / 33.4 / 49.4	28.8 / 33.7 / 50	29.2 / 34 / 50.6	29.5 / 34.1 / 51.1	29.8 / 34.3 / 51.6	30 / 34.5 / 52	30.3 / 34.7 / 52.4	30.5 / 34.9 / 52.8	3½	15.1 / 17.8 / 26.1
4	24.7 / 30.9 / 42.8	25.6 / 32.2 / 44.4	26.5 / 32.5 / 46	27.2 / 33 / 47.2	27.9 / 33.6 / 48.4	28.4 / 34 / 49.3	29 / 34.6 / 50.3	29.4 / 34.9 / 51	29.9 / 35.3 / 51.8	30.3 / 35.6 / 52.5	30.7 / 35.9 / 53.2	31 / 36.1 / 53.7	31.3 / 36.3 / 54.2	31.6 / 36.6 / 54.7	31.9 / 36.8 / 55.1	32.1 / 37 / 55.6	4	15.7 / 18.4 / 26.6
4½	25.4 / 32 / 44	26.3 / 32.7 / 45.7	27.3 / 33.5 / 47.4	27.9 / 34 / 48.7	28.5 / 34.6 / 50	29.2 / 35.2 / 51	30 / 35.9 / 52	30.5 / 36.2 / 52.8	31 / 36.6 / 53.6	31.4 / 37 / 54.3	31.8 / 37.4 / 55.1	32.2 / 37.6 / 55.6	32.4 / 37.9 / 56.2	32.7 / 38.1 / 56.7	33 / 38.3 / 57.1	33.3 / 38.8 / 57.5	4½	15.9 / 18.5 / 27.2
5	26.1 / 33.2 / 45.3	27 / 33.6 / 46.6	28.1 / 34.9 / 48.9	28.6 / 35.2 / 49.7	29.2 / 35.5 / 51.6	30.1 / 36.4 / 52.7	31 / 37.4 / 53.8	31.5 / 37.8 / 54.6	32 / 38.2 / 55.4	32.4 / 38.7 / 56.2	32.9 / 39 / 57	33.2 / 39.2 / 57.6	33.6 / 39.5 / 58.3	33.9 / 39.7 / 58.8	34.2 / 39.9 / 59.2	34.5 / 40.1 / 59.8	5	16 / 18.5 / 27.6
5½	26.7 / 34 / 48.6	27.8 / 35 / 48.2	28.9 / 36 / 50.1	29.3 / 36.6 / 51.8	30.7 / 37 / 52.2	31.4 / 38.3 / 54	32.1 / 39 / 55	32.6 / 39.3 / 56	33 / 39.6 / 57.2	33.5 / 40 / 58	33.9 / 40.3 / 58.8	34.3 / 40.5 / 59.4	34.7 / 41 / 60	35 / 41.2 / 60.6	35.3 / 41.4 / 61.2	35.5 / 41.7 / 61.3	5½	16.4 / 18.5 / 28
6	27.3 / 35 / 47.4	28.4 / 36 / 49.3	29.6 / 37.1 / 51.3	30.1 / 38 / 53.9	31.5 / 38.9 / 54.5	32.4 / 39.7 / 56.2	33.4 / 40.5 / 58	33.6 / 40.7 / 58.4	33.9 / 41 / 58.8	34.4 / 41.5 / 59.7	35 / 42 / 60.6	35.4 / 42.2 / 61.3	35.8 / 42.5 / 62	36.1 / 42.8 / 62.6	36.4 / 43 / 63.2	36.8 / 43.3 / 63.8	6	16.4 / 19 / 28.4
6½	28 / 35.4 / 48.7	29.1 / 36.8 / 50.6	30.3 / 38.3 / 52.6	31.2 / 39.2 / 54.4	32.2 / 40.4 / 56.2	33.2 / 41.2 / 57.8	34.2 / 42 / 59.4	34.7 / 42.3 / 60.1	35.2 / 42.7 / 60.8	35.7 / 43.2 / 61.9	36.2 / 43.7 / 62.8	36.6 / 44 / 63.5	37.1 / 44.4 / 64.3	37.4 / 44.7 / 65	37.8 / 45 / 65.6	38.2 / 45.2 / 66.2	6½	16.6 / 19 / 28.5
7	28.8 / 35.8 / 50	29.5 / 37.7 / 52	31.1 / 39.5 / 54	32.2 / 40.7 / 56	33.4 / 41.9 / 58	34.2 / 42.7 / 59.4	35.1 / 43.5 / 60.8	35.7 / 44 / 61.8	36.3 / 44.5 / 62.9	36.8 / 45 / 63.7	37.4 / 45.4 / 65	37.9 / 45.9 / 65.8	38.4 / 46.4 / 66.6	38.8 / 46.7 / 67.2	39.2 / 47 / 68	39.6 / 47.2 / 68.7	7	16.7 / 19.1 / 28.9
7½	29 / 37 / 50.3	30.2 / 38.5 / 52.4	31.4 / 40.1 / 54.6	32.5 / 41.2 / 56.3	33.7 / 42.3 / 58.4	34.5 / 43 / 59.8	35.3 / 43.9 / 61.2	36 / 44.4 / 62.3	36.5 / 44.9 / 63.5	37.1 / 45.4 / 64.5	37.8 / 45.9 / 65.5	38.4 / 46.4 / 66.3	38.7 / 46.7 / 67.2	39.2 / 47.1 / 68	39.7 / 47.6 / 68.6	40 / 48 / 69.3	7½	17 / 19.2 / 29.3
8	29.2 / 38.3 / 50.7	30 / 39.5 / 53	31.8 / 40.8 / 55.2	32.9 / 41.8 / 57	34 / 42.8 / 58.9	34.6 / 43.5 / 60.8	35.6 / 44.3 / 61.7	36.2 / 44.8 / 62.9	36.9 / 45.3 / 64	37.5 / 45.8 / 65	38.1 / 46.4 / 66	38.6 / 46.7 / 66.8	39 / 47.1 / 67.7	39.5 / 47.7 / 68.4	40 / 48.2 / 69.2	40.4 / 48.8 / 70	8	17.1 / 19.2 / 29.5
8½	29.6 / 39 / 51.3	31 / 40.3 / 53.6	32.4 / 41.6 / 56	33.4 / 42.6 / 58	34.5 / 43.6 / 59.8	35.3 / 44.6 / 61.2	36.2 / 45.6 / 62.7	36.8 / 46 / 63.8	37.5 / 46.3 / 65	38.1 / 46.8 / 66	38.6 / 47.4 / 67.2	39.2 / 47.7 / 68	39.6 / 48.1 / 68.8	40 / 48.6 / 69.6	40.8 / 49 / 70.4	41.1 / 49.6 / 71.2	8½	17.2 / 19.3 / 29.8
9	30 / 39.7 / 52	31.4 / 41 / 54.4	32.8 / 42.4 / 56.7	33.9 / 43.4 / 58.2	35 / 44.5 / 60.7	35.9 / 45.7 / 62.2	36.8 / 46.9 / 63.7	37.4 / 47.1 / 64.9	38.1 / 47.3 / 66	38.8 / 47.8 / 67.2	39.5 / 48.5 / 68.4	39.9 / 48.8 / 69.2	40.3 / 49.1 / 70	40.8 / 49.4 / 70.8	41.2 / 49.9 / 71.6	41.8 / 50.4 / 72.4	9	17.3 / 19.8 / 30
9½	30.3 / 40.4 / 52.6	32.7 / 41.7 / 55	33.2 / 43.1 / 57.5	34.5 / 44.2 / 60.4	35.8 / 45.4 / 61.6	36.3 / 46.3 / 63	37.2 / 47.3 / 64.6	38 / 47.7 / 65.8	38.7 / 48.2 / 67	39.3 / 48.8 / 68.2	40.1 / 49.4 / 69.5	40.5 / 49.8 / 70.3	41 / 50.2 / 71.2	41.6 / 50.6 / 72	42 / 51 / 72.8	42.6 / 51.5 / 73.6	9½	17.4 / 19.4 / 30.2
10	30.7 / 41.1 / 53.3	32.8 / 42.4 / 55.8	33.6 / 43.8 / 58.3	34.8 / 45.5 / 60.4	36.1 / 46.3 / 62.5	37 / 47 / 64	37.8 / 47.7 / 65.6	38 / 48.9 / 66.8	39.3 / 49.1 / 69.1	40 / 49.6 / 69.3	40.7 / 50.3 / 70.6	41.2 / 50.8 / 71.5	41.8 / 51.3 / 72.5	42.2 / 51.7 / 73.1	42.7 / 52.1 / 74	43.2 / 52.5 / 74.9	10	17.5 / 19.6 / 30.4
	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40		1

TABLE D.

For Woolen Warp and Weft.

COUNTS OF WARP.

1½	2	2½	3	3½	4	4½	5	5½	6	6½	7	7½	8	8½	9	9½	10	Counts of Weft
12.7 / 15.8 / 22	13.6 / 16.4 / 23.7	16.1 / 17 / 24.4	14.6 / 17.3 / 25.3	15.1 / 17.8 / 26.1	15.7 / 18.4 / 26.6	15.9 / 18.5 / 27.2	16 / 18.5 / 27.6	16.1 / 18.5 / 28	16.4 / 19 / 28.4	16.6 / 19 / 28.8	16.7 / 19.1 / 28.9	17 / 19.2 / 29.3	17.1 / 19.2 / 29.5	17.2 / 19.3 / 29.8	17.3 / 19.3 / 30	17.4 / 19.4 / 30.2	17.6 / 19.6 / 30.4	1
14.1 / 18 / 24.5	15.2 / 19 / 26.3	16 / 19.8 / 27.6	16.5 / 20.1 / 28.6	17.1 / 20.5 / 29.6	17.5 / 20.9 / 30.4	17.9 / 21.2 / 31.1	18.2 / 21.4 / 31.6	18.6 / 21.8 / 32.2	19 / 22.2 / 32.7	19.2 / 22.4 / 33.1	19.5 / 22.6 / 33.5	19.6 / 22.8 / 34	19.7 / 22.9 / 34.2	19.8 / 22.3 / 34.6	19.8 / 23.1 / 34.8	19.9 / 23.2 / 35.1	20.4 / 23.3 / 35.4	1½
15 / 18.7 / 26.4	16.5 / 21 / 28.5	17.2 / 21.7 / 29.8	18 / 22.4 / 31.2	18.6 / 22.9 / 32.2	19.2 / 23.4 / 33.3	19.6 / 23.9 / 34	20 / 24 / 34.7	20.4 / 24.3 / 35.3	20.8 / 24.7 / 30	21 / 24.9 / 36.5	21.3 / 25.1 / 37	21.6 / 25.3 / 37.5	21.9 / 25.6 / 38	22.1 / 25.7 / 38.3	22.3 / 25.9 / 38.7	22.4 / 26 / 39	22.6 / 26.1 / 39.3	2
16 / 19.8 / 27.6	17.2 / 21.7 / 29.8	18 / 22.8 / 31.3	19 / 23.9 / 32.8	19.6 / 24.4 / 33.6	20.3 / 25 / 35.1	20.7 / 25.4 / 36	21.2 / 25.8 / 36.8	21.6 / 26.2 / 36.4	22 / 26.5 / 38.1	22.3 / 26.7 / 39.2	22.7 / 27 / 39.4	23 / 27.2 / 39.9	23.4 / 27.5 / 40.4	23.6 / 27.7 / 40.8	23.8 / 28 / 41.2	24 / 28.1 / 41.6	24.1 / 28.2 / 42	2½
16.5 / 20.1 / 28.6	18 / 22.4 / 31.2	19 / 23.9 / 31.8	19.9 / 25.4 / 34.5	20.6 / 26 / 35.7	21.4 / 26.7 / 37	21.9 / 27.2 / 38	22.5 / 27.7 / 39	22.9 / 28 / 39.8	23.3 / 28.3 / 40.3	23.7 / 28.6 / 41	24.1 / 29 / 41.8	24.4 / 29.2 / 42.3	24.7 / 29.5 / 42.8	25 / 29.7 / 43.3	25.3 / 30 / 43.8	25.5 / 30.2 / 44.2	25.8 / 30.4 / 44.7	3
17.1 / 20.6 / 29.6	18.6 / 22.9 / 32.2	19.6 / 24.4 / 33.9	20.5 / 26 / 35.7	21.4 / 27 / 36.1	22.2 / 28.1 / 38.5	22.8 / 28.6 / 39.5	23.4 / 29.1 / 40.5	23.8 / 29.5 / 41.6	24.3 / 29.9 / 42.1	24.7 / 30.5 / 42.9	25.8 / 31.2 / 43.7	25.5 / 30.9 / 44.2	25.8 / 31.2 / 44.6	26.1 / 31.4 / 45.3	26.5 / 31.7 / 45.9	26.7 / 32 / 46.3	27 / 32.2 / 46.8	3½
17.5 / 20.9 / 30.4	19.2 / 23.4 / 33.3	20.3 / 25 / 35.1	21.4 / 26.7 / 37	22.2 / 28.1 / 38.5	23.1 / 29.5 / 40	23.7 / 30 / 41	24.3 / 30.5 / 42.1	24.8 / 31 / 43	25.4 / 31.5 / 44	25.8 / 31.9 / 44.8	26.3 / 32.4 / 45.6	26.6 / 32.6 / 46.2	27 / 32.9 / 46.8	27.3 / 33.2 / 47.4	27.7 / 33.5 / 48	28 / 33.7 / 48.5	28.3 / 34 / 49	4
17.9 / 21.2 / 31.1	19.6 / 23.9 / 34	20.7 / 25.4 / 36	21.9 / 27.2 / 38	22.8 / 28.6 / 39.5	23.7 / 30 / 41	24.3 / 30.8 / 42.1	25 / 31.6 / 43.3	25.5 / 32.1 / 44.2	26.1 / 32.6 / 45.3	26.6 / 33 / 45.6	27.1 / 33.7 / 46.3	27.5 / 33.9 / 47.1	27.8 / 34.1 / 48.2	28.2 / 34.4 / 48.8	28.6 / 34.8 / 49.5	28.9 / 35.1 / 50	29.2 / 35.4 / 50.6	4½
18.2 / 21.4 / 31.6	20 / 24 / 34.7	21.2 / 25.8 / 36.8	22.5 / 27.7 / 39	23.4 / 29.1 / 40.5	24.3 / 30.5 / 42.1	25 / 31.6 / 43.3	25.7 / 32.7 / 44.5	26.3 / 33.2 / 46	26.9 / 33.8 / 46.6	27.4 / 34.4 / 47.4	27.9 / 35 / 48.3	28.3 / 35.2 / 49	28.7 / 35.4 / 49.7	29.1 / 35.8 / 50.4	29.5 / 36.2 / 51.1	29.8 / 36.4 / 51.7	30.2 / 36.8 / 52.3	5
18.6 / 21.8 / 32.2	20.4 / 24.3 / 35.3	21.6 / 26.2 / 36.4	22.9 / 28 / 39.6	23.8 / 29.5 / 41.6	24.8 / 31 / 43	25.5 / 32.1 / 44.3	26.3 / 33.2 / 46	26.8 / 33.6 / 47	27.4 / 34.1 / 48	27.9 / 34.6 / 49	28.5 / 35.1 / 49.9	29 / 35.8 / 50.2	29.2 / 36.1 / 50.9	29.8 / 36.5 / 51.5	30.3 / 37 / 52.5	30.6 / 37.5 / 52.9	31 / 38 / 53.3	5½
19 / 22.2 / 32.7	20.8 / 24.7 / 36	22 / 26.5 / 38.1	23.3 / 28.3 / 40.3	24.3 / 29.9 / 42.1	25.4 / 31.5 / 44	26.1 / 32.6 / 45.3	26.9 / 33.8 / 46.6	27.4 / 34.6 / 47.1	28 / 35.4 / 48.8	28.6 / 36.2 / 49.6	29.2 / 36.8 / 50.6	29.7 / 37.4 / 51.5	30.3 / 37.9 / 52.5	30.7 / 38.3 / 53.2	31.2 / 38.7 / 54	31.6 / 38.9 / 54.6	31.9 / 39.2 / 55.3	6
19.1 / 22.4 / 33.1	21 / 24.9 / 36.5	22.3 / 26.7 / 38.2	23.7 / 28.6 / 41	24.7 / 30.5 / 42.9	25.8 / 31.9 / 44.8	26.6 / 33 / 45.6	27.4 / 34.4 / 47.4	27.9 / 35.3 / 48.3	28.5 / 36 / 49.3	29.1 / 36.6 / 50.4	29.9 / 38.1 / 51.8	30.3 / 38.4 / 52.5	30.9 / 38.9 / 53.5	31.3 / 39.2 / 54.5	31.8 / 39.6 / 55.1	32.1 / 40 / 55.6	32.5 / 40.3 / 56.1	6½
19.5 / 22.6 / 33.5	21.3 / 25.1 / 37	22.7 / 27 / 39.4	24.1 / 29 / 41.8	25.2 / 31.2 / 43.7	26.3 / 32.4 / 45.6	27.1 / 33.7 / 46.3	27.9 / 35 / 48.3	28.5 / 36 / 49.6	29.2 / 37 / 50.6	29.9 / 38 / 51.8	30.6 / 39.1 / 53	31 / 39.4 / 53.8	31.5 / 39.8 / 54.6	31.9 / 40.2 / 55.4	32.4 / 40.6 / 56.2	32.8 / 41 / 57	33.3 / 41.5 / 57.7	7
19.6 / 22.8 / 34	21.6 / 25.3 / 37.5	23 / 27.2 / 39.9	24.4 / 29.2 / 42.3	25.5 / 30.9 / 44.2	26.6 / 32.6 / 46.2	27.5 / 33.9 / 47.1	28.3 / 35.2 / 49	28.7 / 36.2 / 50.1	29 / 37.3 / 51.2	30 / 38.3 / 52.5	31 / 39.4 / 53.8	31.5 / 40 / 54.7	32 / 40.5 / 55.6	32.5 / 41 / 56.6	33 / 41.5 / 57.2	33.4 / 41.9 / 58	33.9 / 42.4 / 58.8	7½
19.7 / 22.9 / 34.2	21.9 / 25.6 / 38	23.4 / 27.5 / 40.4	24.7 / 29.5 / 42.8	25.8 / 31.2 / 44.8	27 / 32.9 / 46.8	27.8 / 34.1 / 48.2	28.7 / 35.4 / 49.7	29.5 / 36.1 / 50.6	30.3 / 37.9 / 52.5	30.9 / 38.8 / 53.5	31.5 / 39.8 / 54.6	32 / 40.8 / 55.6	37.6 / 41.6 / 56.5	33 / 42 / 57.3	33.5 / 42.4 / 58.1	34 / 42.8 / 58.9	34.5 / 43.3 / 59.8	8
19.8 / 23 / 34.6	22.1 / 25.7 / 38.3	23.6 / 27.7 / 40.8	25 / 29.7 / 43.3	26.1 / 31.4 / 43.3	27.3 / 33.2 / 47.4	28.2 / 34.4 / 48.8	29.1 / 35.8 / 50.4	29.8 / 36.5 / 51.5	30.7 / 38.3 / 53.2	31.3 / 39.2 / 52.8	31.9 / 40.2 / 55.4	32.5 / 42 / 56.6	33 / 42.2 / 57.3	33.5 / 42.6 / 58.1	34 / 43.2 / 59	34.5 / 43.7 / 59.8	35 / 44.2 / 60.2	8½
19.8 / 23.1 / 34.8	22.3 / 25.9 / 38.5	23.8 / 28 / 41.2	25.3 / 30 / 43.6	26.5 / 31.7 / 45.9	27.7 / 33.5 / 46	28.6 / 34.8 / 49.5	29.5 / 36.2 / 51.1	30.3 / 37 / 52.5	31.2 / 38.7 / 54	31.8 / 39.6 / 55.1	32.4 / 40.6 / 56.3	33 / 41.5 / 57.2	33.5 / 42.4 / 58.1	34 / 43.2 / 59	34.6 / 44.1 / 60	35.1 / 44.6 / 60.8	35.6 / 45.1 / 61.7	9
19.9 / 23.2 / 35.1	22.4 / 26 / 39	24 / 28.1 / 41.6	25.5 / 30.2 / 44.2	26.7 / 32 / 46.3	28 / 33.7 / 48.5	28.9 / 35.1 / 50	29.6 / 36.4 / 51.7	30.6 / 37.5 / 52.9	31.5 / 38.9 / 54.6	32.1 / 40 / 55.6	32.8 / 41 / 57	33.4 / 41.9 / 58	34 / 42.8 / 58.9	34.5 / 43.7 / 59.8	35.1 / 44.6 / 60.8	35.6 / 45.2 / 61.7	36.1 / 45.9 / 62.6	9½
20.4 / 23.3 / 35.4	22.6 / 26.1 / 39.3	24.1 / 28.2 / 42	25.8 / 30.4 / 44.7	27 / 32.2 / 46.8	28.3 / 34 / 49	29.2 / 35.4 / 50.6	30.2 / 36.8 / 52.3	31 / 38 / 53.3	31.9 / 39.2 / 55.3	32.5 / 40.3 / 56.1	33.3 / 41.5 / 57.7	33.8 / 42.4 / 58.8	34.5 / 43.3 / 59.8	35 / 44.2 / 60.2	35.6 / 45.1 / 61.7	36.1 / 45.9 / 62.6	36.6 / 46.7 / 63.5	10
1½	2	2½	3	3½	4	4½	5	5½	6	6½	7	7½	8	8½	9	9½	10	

Note: These tables are in the order as published.