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*Human Proportions  
in Growth.*

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# HUMAN PROPORTIONS IN GROWTH,

BEING

The Complete Measurement

OF THE HUMAN BODY.

For every Age and Size during the Years of Juvenile Growth.

WITH FULL INSTRUCTIONS

FOR USE IN PROPORTIONING CLOTHING.

By DANIEL EDWARD RYAN.

New-York:

GRIFFITH & BYRNE, PRINTERS.

1880.

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Book, Tables of Height and Width, No. \_\_\_\_\_



TO

**J. B. West, Esq.**

THE FRIEND,

WHOSE COUNSELS AIDED AND WHOSE APPRECIATION INSPIRED

MY EFFORTS TO EXCEL;

WHOSE JUDICIOUS CRITICISM, DIRECTED BY A PROFOUND

KNOWLEDGE OF THE ART WE BOTH PROFESS,

GUIDED MY LABORS;

I DEDICATE THIS WORK.

THE AUTHOR.



## Preface.

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**I**N submitting this work to the members of my Profession and to the Trade generally, I take advantage of the author's privilege of a Preface, to make a few remarks. When, some years ago, I determined to make a special study of Childrens' Garments, I found, on entering this branch of the business, an utter absence of all means for the production of children's garments by system and proportions of age and size. Beyond a few good patterns held by a limited number and guarded with extreme jealousy, no definite knowledge of the Juvenile Clothing business seemed to exist. Whatever good patterns there were in the country were originated in the most of cases experimentally; and by a constant system of revision, based on a close observation of the requirements of living subjects, were toned down to correct proportions and fit. The amount of trial involved in the production of good patterns on such a basis, made them of great value, and almost impossible to obtain. As to any system by which to reproduce them and the proportions upon which they were based, it was unknown, or if known, WAS A DEAD SECRET.

I determined to attain a thorough and exhaustive knowledge of the law of growth and the proportions of the human body during all the years of juvenile growth, and of the harmony of the growing form of any size. I turned to nature, and dealt only with the living subject. After the labor of years in measuring children of all ages and sizes, and compiling the averages into a system of common sense tables, I have the pleasure to know that my work is completed, and that it is my high privilege to be able to benefit others, be it ever so little, by supplying the lights that have guided me to success.

With no purpose of eventually placing this work before the public, I have labored on it, inspired only by professional pride and the enthusiasm of discovery. I am not yet fully convinced of the wisdom of publishing, and feel a hesitation to become the pioneer in a field where others have left no guide or standard of comparison to aid the public or myself in judging this work; but I yield to the urgent requests of many kind friends to place it within the reach of all, and if I succeed in winning the consideration of a Profession of which I am proud to be a member, by adding something useful and beneficial to the common stock of knowledge, I am amply repaid for many trials and sacrifices.

DANIEL EDWARD RYAN.

### Second Preface.

In offering a Second Edition of this work to the Public, I herewith tender my thanks for the warm reception given the First Edition. The work has been distributed from Bangor, Maine, to Astoria, Oregon, and between the two extremes seems to have given unqualified satisfaction, as not one word has been written or spoken against its claims as an absolute and practical guide in the production of correctly proportioned clothing patterns. What few errors crept into the first edition have been corrected in this one, and some important practical additions have been made, which will be found of especial value. The generous welcome given to *Human Proportions in Growth* has convinced me that my friends, who urged and encouraged me to issue, were prophets; not mine the wisdom. Gratefully and with still higher ambition I will pursue my professional career, stimulated by a high conception of our "Master Art," to aid its growth as a profession to the position of a peer among the highest.

THE AUTHOR.

## Introductory.



WITH this work, the author submits a few preliminary remarks as to its origin, intent, and scope. It originated from the complete measurement of over twenty-six hundred children, boys and youths, taken in different parts of the country, from Massachusetts to California, and of all classes of people, who were measured by the author personally. Also, from the reports of managers of institutions containing large numbers of boys,—and lastly from the proportions that form *the base of average* of the stocks of the leading manufacturing and retail houses of America.

The *law of growth*, on a strictly anatomical basis, has been in the first place obtained through the living subject, and the demands of the "Clothing Trade" complied with by harmonizing the proportions to suit the *practical standard required* in the productions of patterns and clothing.

From a technical or medical standpoint, the proportions are not absolute to nature in every case, and the slight changes made have been as just stated, to give a practical basis to insure a result thoroughly proved to be an entire success. This work supplies a standard of proportion in widths, or properly girths, for juveniles of every age, based on the practical average for each age, with a corresponding scale of height dividing the figure into parts from head to foot in such a manner that every length in any garment can be instantly located to suit the height of figure or the prevailing fashion, thus insuring uniformity in sets of patterns.

The principle laid down and adapted to the growth of the figure comprehends every change of fashion for all time to come; and finally the work supplies the clothier with an absolutely safe guide by which to size and age Juvenile Clothing. In its scope all garments are included,—anything needed to proportion;—a shirt or an ulster, a glove or a shoe, a shirt collar or cuff, a wrist band or a pant's bottom will be found for immediate use.

As to whom it can be used by to advantage: it ought to be in the office of every manufacturer, jobber or retailer of clothing, and should be supplied to all traveling Clothing salesmen. It is needed by the managers of Juvenile Clothing departments; by those receiving or executing special orders for children's garments; by merchant tailors; by clothing cutters of all branches; by students of cutting; and by every man and woman connected with the production of Juvenile clothing or patterns.

Its uses and advantages are more fully stated in the following extract from WEST'S REPORT OF FASHIONS, Fall, 1879-80:

“We call attention to the work on Human Proportions, by Mr. Ryan, a small sketch of which appears in this Magazine. This work has been more thoroughly mentioned from time to time in the Monthly. The reader does not get a definite idea of the value of this master-piece from the short notice given by the Author. The production is undoubtedly worthy of appreciation, and we could not speak too highly of it: first, from our own knowledge; and secondly, from the expressions given by those who are using it. We are of the opinion that every person, in any way connected with Merchant Tailoring, as well as Clothing, should have one in his pocket.”

“The condensed form in which it is gotten up is admirable, and worthy of consideration. It is made to fold and goes into an envelope that can be carried in the breast pocket, and at the same time contains a complete set of Proportions for boys, for children, and for youths, from the time of dropping their swaddling clothes until they arrive at manhood. The reason that Cutters and Merchant Tailors should have this is because it runs into men's garments and contains many indispensable things. No one is a Cutter unless he understands the production of juvenile garments. A Cutter may learn to measure and cut men's garments and commit the same to memory; but the production of juvenile garments he could not. Mr. Ryan has been years compiling this work, and uses it every hour in the day, and could not conduct the business he does without it. *I have one in my pocket, and I do not see how I could get along without it. I am using it all the time, and recommend others to have the work.*

J. B. WEST.”

A close and careful study of the Index Column and of the parts noted by corresponding letters on Table of Height, and the application of Height Scale to illustrate the study, will insure a clear understanding of it in a few minutes.

## How to use the Table of Height.

MAKE CLOSE REFERENCE TO THE INDEX COLUMN, AND APPLY THE HEIGHT SCALE AS EACH EXAMPLE IS GIVEN.

**T**HE human form, (when proportionate,) by the natural law of stature is divided into eight equal parts or sections, the location and extent of each being clearly defined, as (1) the head, (2) the shoulders, (3) the body to natural waist, (4) the hips and seat to fork, (5) the thighs, (6) the knees, (7) the calves, (8) the ankles; each part being one eighth of the entire height, which, by subdividing each part into eight, gives sixty-four parts for the entire height.

ILLUSTRATION. A figure sixty-four inches high, divided as above, gives eight parts each eight inches, or one inch for each sixty fourth part of the height.

A figure seventy-two inches high (six feet). One-eighth of seventy-two is nine, thus giving eight parts each nine inches, which being sub divided to one-eighth of nine inches, gives one and one-eighth inches for each sixty fourth of the entire height.

A figure thirty-two inches high. One-eighth of thirty two is four, thus giving eight parts each four inches, which being sub-divided to one-eighth of four inches, gives one half-inch for each sixty-fourth of the entire height.

The heights of ALL figures are to be divided into or considered as composed of sixty-four parts, of which eight parts form each section.

The leg is one-half the entire height of the body, less one sixty-fourth; or the fork point is one sixty-fourth below the center of body, n.

The table of height is based on a scale of one-eighth of an inch to the inch, and all heights on the page, and their smallest subdivisions or fractional parts, can be instantly found by dropping the HEIGHT SCALE on to the line of height used, placing the X end of scale on line B, and from there down, every cross section of the body will be indicated in full inches.

ILLUSTRATION To find the lengths of a forty-nine inches height, drop the height scale, as instructed, on line B, and it will indicate  $12\frac{1}{2}$  to natural waist, 18 to largest part of the seat,  $19\frac{1}{2}$  to the fork point,  $24\frac{3}{4}$  to the middle of thigh,  $28\frac{7}{8}$  to the upper part of knee hollow and also to top of knee cap,  $34\frac{1}{2}$  to middle of calf,  $40\frac{3}{4}$  to the ankle, and 43 to sole of foot.

For a fifty-five inches height, the measures will be 14, 20,  $21\frac{3}{4}$ ,  $27\frac{3}{4}$ ,  $32\frac{1}{4}$ ,  $38\frac{3}{8}$ ,  $45\frac{7}{8}$ , and  $48\frac{3}{8}$ .

For a sixty-eight inches height, the measures will be 17,  $24\frac{1}{2}$ ,  $26\frac{3}{4}$ ,  $34\frac{1}{8}$ ,  $39\frac{7}{8}$ ,  $47\frac{3}{4}$ ,  $56\frac{3}{4}$ , and  $59\frac{3}{4}$ .

This illustrates the general application of the Height Scale for all heights. Its special application is based on the requirements of style and fashion, as they may change the lengths of garments.

### THE LOCATION OF LENGTH FOR GARMENTS.

Children's Jackets, Blouses, etc. and Men's, Youths' and Boys' Sacks range from I to K. The style lengths generally prevailing up to 1880 are given by lines RR, SS, TT.

Walking Coats and Business Frocks range from K to one-half of K-L; present style about K. Waists of Frocks, full or style length, one quarter of F-G, below F, and Business Frocks from one-half to one inch longer.

Double Breast Frocks, full length, range from one-half of K-L to M. Present style about L.

Overcoats range from L to N, present style about M for Children, Boys and Youth, and one-quarter of M-N below M for extra long coats for Children from two to six years.

Ulsters range from N to one-half of O-P, present style about N.

Knee Pants are short in proportion for small sizes, and long for large boys. A



grade line would start the three years old at  $m$ , and run down to one half of  $m-x$  at ten years. This is about the general requirement of trade.

Cuffs of under coats should not make up less than the size of the fist ( as per Table of Width.) but for general trade make up to one inch larger, as for an eleven fist a twelve inch cuff.

Children's one piece Kilt Suits range from  $m$  to  $x$ , present style one-third of  $m-x$ , below  $m$ . Kilt Skirts, including a two inch waist band, range from  $r$  to  $x$ , less one-quarter of  $r-g$ . Style length changes very slightly: present style about one half of  $m-x$ .

Children's Shirt Waists. Length to the waist seam,  $b$  to  $r$  and one quarter of  $r-g$ . A button band is to be added, the width is of minor importance, and not estimated in the length proper.

Sailor Blouse length,  $b$  to three-quarters of  $r-g$ . This gives all the fold-over required; add hems.

Shirt lengths,  $b$  to  $k$ .

Capes for Raglans and Inverness, and plain capes to button on, etc. Length  $b$  to about  $n$ . Plain capes about three quarters of  $r-g$ , below  $r$ . The latter are shortest.

Cloaks range in length from  $k$  to  $l$ , present style one-half of  $k-l$ .

Long Blouse Jackets to go with a kilt skirt range from  $n$  to  $k$ , present style  $k$ .

Vests, back length, from  $b$  to one-half of  $r-g$ , and forepart length from  $b$  to  $n$  for children, and from  $b$  to  $g$  for boys and youths. This length of forepart is to be applied from the shoulder point to bottom of vest at front. It gives a long vest of present style. The length ranges from one half of  $r-l$  to  $l$ .

Length to knee  $r$ , to one-half of  $l-m$ .

Forearm length of sleeves,  $e$  to  $d$ , can be used to obtain the correct inside length.

#### LOCATION AND SIZE OF POCKETS.

The style of garments and their lengths govern to some extent the location of pockets, but on general principles, and in conformity to the height of figure, the hip pockets for under coats should be located two-thirds of  $r-g$ , below  $r$ , and for overcoats three-quarters of  $r-g$  below  $r$ .

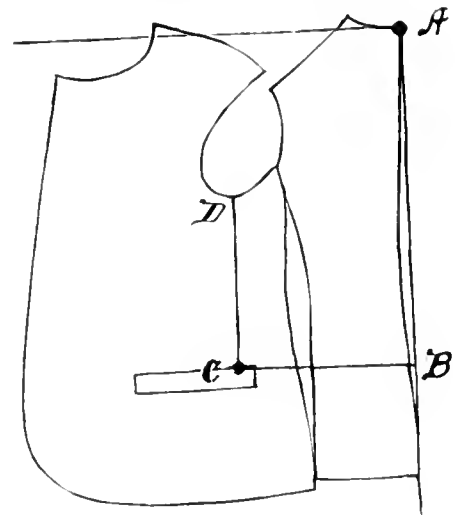
ILLUSTRATION To obtain the proper distance down for an under coat pocket for a forty-nine inches height. Two-thirds of F-G will be found to be  $16\frac{1}{8}$  inches from line B, three-fourths of the distance, for an overcoat, will be found to be  $16\frac{5}{8}$  inches. Apply either amount from the socket bone (line B,) down the back seam of the pattern, and right opposite that amount on the forepart, locate the pocket.

This method is based on the forepart and back being in a joining position, and placed within a square. For a fifty-five inches height the amounts will be: under coat 18, overcoat  $18\frac{1}{2}$ . For a sixty-eight inches height, under coat 22, overcoat  $22\frac{3}{4}$ .

The diagram given will fully illustrate the location of pockets.

A is the socket bone; B the length found to be two-thirds or three-fourths of F-G below F; C is a point at right angles out from the back line, and under the center of seye.

Swing the back part of pocket on point C, and range it with the bottom.



#### SIZE OF POCKET MOUTHS.

Here to some extent fashion decrees a standard, but there is a natural guide and a uniformly correct one,—*the size of the hand*. In all cases, the size of the hand is one-fourth the size of the breast, or nine inches hand to thirty-six inches breast measure.

For undercoats, hip pockets are three-fourths the size of hand, and breast pockets one half the size of hand, with one-half inch added to both for tacks. To overcoats add one inch for each.

For cash or ticket pockets, one-third the size of hand.

Vest pockets one-half the size and vest watch pockets one-third the size of hand.

Trousers pockets:—front, two-thirds of hand; pistol pockets one-half size of hand.

Upright hand pockets for coats, two-thirds the size of hand.

This method can be successfully applied to size all pockets, no matter what may be the changes of style, as it is a natural basis to work by and from,—a proportion of the hand in all cases.

FORMULA CONDENSED, BREAST 36, HAND 9.

|                                  |            | Proportion of Hand  | Add | Total.          |
|----------------------------------|------------|---------------------|-----|-----------------|
| Hip or Skirt Pockets,            | Undercoat, | 3-4—6 $\frac{3}{4}$ | 1-2 | 7 $\frac{1}{4}$ |
| Do.                              | Overcoat,  | 3-4—6 $\frac{3}{4}$ | 1   | 7 $\frac{3}{4}$ |
| Breast Pockets,                  | Undercoat, | 1-2—4 $\frac{1}{2}$ | 1-2 | 5               |
| Do.                              | Overcoat,  | 1-2—4 $\frac{1}{2}$ | 1   | 5 $\frac{1}{2}$ |
| Cash or Ticket Pockets,          | Undercoat, | 1-3—3               | 1-2 | 3 $\frac{1}{2}$ |
| Do.                              | Overcoat,  | 1-3—3               | 1   | 4               |
| Upright Hand Pockets,            |            | 2-3—6               |     | 6               |
| Trousers Corner or Side Pockets, |            | 2-3—6               |     | 6               |
| Do. Pistol Pockets,              |            | 1-2—4 $\frac{1}{2}$ |     | 4 $\frac{1}{2}$ |
| Vest, Lower Pockets,             |            | 1-2—4 $\frac{1}{2}$ | 1-2 | 5               |
| “ Watch “                        |            | 1-3—3               | 1-2 | 3 $\frac{1}{2}$ |

The foregoing lengths, given to include what is in general use up to 1880, show where they occur on the human form in reference to its entire height, and the special section for each garment. In addition to their value as giving the standard lengths of the present great clothing stocks of the country, they will be found of the greatest value as a reference and guide in the future for making proportional changes.

The basis of proportions being given for a fashionable stock of clothing suitable to the present time, the following is the method of changes for every possible demand for all time to come

It being known that a garment has been changed to a longer or shorter style than previously cut, it is only necessary to observe how much it is changed by its proportional length on any one height, and its proportional length on all other heights can be instantly ascertained. For instance, if Sack Coats have been changed to reach the middle of the hand, we find that location to be one-half of I-K, which on a sixty-eight inches height gives a 30 $\frac{1}{2}$  coat, on a sixty-four inches height a 28 $\frac{1}{2}$  coat, and on a sixty inches height a 27 coat: so that the length forms a proportion of the distance between the fork, I, and the middle of the thigh, K.

This is the method and the principle used to establish lengths of all garments. No matter what kind of a garment, be it ever so long or short, its length is located in some one of the sections of the body. Its location in that section is noted as a **part or quantity of it by division**, and the same section of any other height is to be similarly divided to learn the same relative position, by which to establish a full length for any other garment.

As a final example.—If an overcoat, reaching ten inches from the sole of the foot, is found to be right on a boy ten years old; and a set of patterns is desired of four to ten years; we apply the height scale to fifty-one inches height, noting ten inches up from sole of foot. We find that location to be about two-thirds of  $M-N$ , and two-thirds of  $M-N$  from line  $B$  is  $34\frac{3}{4}$  inches; then two-thirds of  $M-N$  on height thirty-nine inches, four years, is located: from line  $B$  to the two-thirds is found to be  $26\frac{1}{2}$  inches, which gives for the latter age a garment reaching to within seven and one-half inches of the sole of foot. This would be in harmony with the entire height, and the same distance from the sole of the foot in proportion to the height of the four years figure.

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NOTE.—All divisions of sections of the body are to be noted from line  $B$  *down*, as one-third of  $F-G$  would be one-third of that space below  $F$ , or five-eighths of  $J-K$  would be five-eighths below  $J$ .

## Table of Widths.

### SCALE OF BREAST OR SEAT.

**A**T lower right hand corner of the Table of Width, will be found a set or table of scales to be used for either breast or seat measure. They are in reduced form, being one-quarter of an inch to the inch, and each scale represents one half of the entire breast or seat measure, divided into eighteen parts. They are given from twenty to fifty inches breast or seat, and the full size of either is indicated by the column of numbers at the right hand side, which makes the selection of a scale readier than by numbering each scale to one half the breast or seat measure.

To find the circumference in inches of the different parts of the body in proportion to the breast or seat measure, the following is the method. A breast measure is known or selected, say twenty seven inches, and the size of scye, fist, wrist and neck is to be ascertained. On the Table of Width select scale 27, and place the Width Scale along the line extending out of that number, placing the X end of the scale even with the line AA, or right hand side of the table. With the scale held in that position, refer to the Column of Parts, and where the same number of parts on the Table of Width crosses the Width Scale, will be the size in inches, which in this case is scye  $12\frac{1}{2}$  inches, fist  $8\frac{1}{4}$ , wrist  $5\frac{1}{4}$ , and neck  $11\frac{1}{8}$  inches.

To ascertain the size in inches of parts proportioned to the seat measure, viz:—the thigh, knee, calf, bottom of knee pants and fork points, the size of seat being known,

a scale is selected on Table of Width to correspond, say thirty inches seat, and the Width Scale is placed on the line extending out of 30 on the Table, in the same manner as directed for the breast scale. Again refer to the Column of Parts, and where the same number of parts on the Table of Width crosses the Width Scale, will be the size in inches of each part, which in this case for a thirty inch seat will be, thigh  $16\frac{5}{8}$  inches, knee  $12\frac{5}{8}$ , calf  $10\frac{7}{8}$ , fork points  $4\frac{3}{4}$  inches. For size of thigh two parts have to be added to the Table of Width Scales, and the estimate made on twenty parts to each scale. The Column of Parts gives the size of thigh as twenty parts of the scale of the seat. To this is to be added one and a half inches and four seams, or two and one half inches in all. This addition is needed for ease and making up, as the twenty parts constitute the *undress tight thigh* measure, taken in the same manner as the seat measure.

The formula condensed will then be:

|  |            |  |            |
|--|------------|--|------------|
| Breast, . . . . .                                      | 27 inches. | Seat, . . . . .                            | 30 inches. |
| Scale, . . . . .                                       | 27 size.   | Scale, . . . . .                           | 30 size.   |
| Seye, $16\frac{1}{2}$ parts or $12\frac{1}{2}$ inches. |            | Thigh, 20 parts or $16\frac{5}{8}$ inches. |            |
| Fist, 11 " $8\frac{1}{4}$ "                            |            | Knee, 15 " $12\frac{5}{8}$ "               |            |
| Wrist, 7 " $5\frac{1}{4}$ "                            |            | Calf, 13 " $10\frac{7}{8}$ "               |            |
| Neck, $14\frac{3}{4}$ " $11\frac{3}{8}$ "              |            | Fork, $5\frac{5}{8}$ " $4\frac{3}{4}$ "    |            |



## General Remarks.

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My purpose in this work is to meet the requirements of the Clothing Trade, by supplying a practical basis on which to produce correctly sized patterns from which can be manufactured Clothing that will satisfy the demands of both seller and buyer in all parts of the country, and in fact, will adapt the work produced to the wants of the million.

This work will be used mainly by two classes: the professional cutters who will from it obtain the natural proportions of the body to use in connection with their own system of drafting, to size and age patterns correctly; and by those who desire to become thoroughly informed as to the sizes for children of all ages, and the proper proportions and measures of children's garments. To the former I would say, that any system of drafting that will fit a fine garment for a man, will answer for children's garments, with the exception that generally the shoulder must be made one-quarter to one-half inch longer, or the back the same amount shorter. The grand secret in cutting juvenile garments has been, not how to draft the patterns, but **what proportions to give them.** The common square with its divisions, and Human Proportions in Growth are all that is necessary.

The critic, ever watchful of faults, fallacies or failures, when he casts his searching eye along the line indicating the ages, and looks at the columns of height, size around, and general measurement for each age, will rise for an explanation, full of the happy discovery that there are persons longer or shorter, thinner or stouter than indicated by the measurements for each age, and will ask, "What are you going to do about them?"

If the Clothing trade of the country was conducted on the principle of accommodating exceptions, as such, there would be no limit; as every age would have to be dealt with by its proper average, and then all the grand exceptions to each age, from Barnum's Fat Boy to General Mite, taken in and provided for. Fancy such a stock!

There is an average height and size for each age during juvenile growth, and the great success of the Children's Clothing Trade is due to the fact that manufacturers have adapted their garments as nearly as possible to the proportions of the correct average for each age. In a stock of clothing sized for age, when a boy of eight years is as large as one of nine or ten years, he is provided with nine or ten year garments; when he is undersized, he is dealt with correspondingly in small garments, and is made happy with nicely proportioned garments,—as happy as I trust the critic is, with this brief explanation showing that exceptions are not treated as such, but dealt with according to their girth or height, irrespective of age, when their proportions and age do not correspond.

Correctly proportioned garments, perfect in balance, handsome in outline and shape, intended to fit only perfect forms, and not intended or cut to fit imperfect ones, have been the means used by the Clothing Trade to insure a success that is almost unprecedented. On general principles, a garment cut to correct proportions and handsome shape, will appear entirely superior and give more satisfaction to an ill shaped subject than one that fits the deformities of ordinary degree. Hence, the Clothing Trade fills every want by supplying a perfect covering for a perfect body, and a handsome disguise to cover artistically what is wanting in the imperfect one.

### Garments to Order or Measure.

A few lines under this head will show the great value of the work.

In the majority of cases where measures are sent by buyers, the most important ones are not taken, are missed, or are imperfect in one or many ways. With the full height and breast measure (the full height is generally taken with shoes on, and an inch must be deducted for heels before selecting the height in the table) every other measure can be learned with a very great certainty.



For example, a measure is received giving the breast measure 27, leg seam 24, and a few proof measures of minor importance, but no arm, sleeve, waist, hip, waist length coat length, pant bottoms, etc.

For a solution, turn to the Table of Width, and going down the left hand column to the third or breast line, select 27 breast and note all the proportions agreeing with it, as 27 breast,  $25\frac{1}{2}$  waist, 29 hip or seat,  $8\frac{1}{2}$  fist,  $11\frac{1}{4}$  neck of shirt,  $12\frac{1}{2}$  scye, etc. Observe next the proportions that agree with size of seat; next select the height that agrees with a 24 leg seam, which will be found in the second row of figures, and over the leg measure, 51 inches height; turn to the Table of Height, select 51 inches, and all the lengths that agree therewith will be correct. These will be, vest back length 15 $\frac{3}{8}$ , front length  $19\frac{1}{2}$ , pants to knee 17, side seam 31, leg seam 24, seat 29, waist  $25\frac{1}{2}$ , thigh  $16\frac{3}{8}$ , knee to style, (about one inch more than bottoms), bottoms  $15\frac{1}{4}$ , fork points  $4\frac{1}{2}$ .

In all cases the anatomical length of leg is to be rated one half inch longer than the leg seam of pants, as in this case the leg on table of height of 51 inches will be found  $24\frac{1}{2}$  inches. If the leg length was given as 23 instead of 24, all the lengths of or corresponding to 49 height should be used; if a 25 leg measure, the lengths of a 53 height, and so on.

Use the proportions of the full height for lengths of the body, the proportions of the breast measure for the sizes of upper parts of the body, and proportions of the seat for lower parts. Where the body is long and the legs short, or the reverse, use the scale of height adapted to leg length for all below 1, and the scale of height adapted to the body length for all between B and 1, when it is desired to cut garments to correspond.

In making patterns for the clothing manufacturing trade, use the Table of Height exactly as laid down; in order work as previously instructed.

## The Law of Growth.

The theoretical standard laid down of dividing the full height into sixty-four parts and eight sections of eight parts each, is thousands of years old, and correct in principle

when applied to proportionate forms. The modifications necessary to render it entirely practical as a basis by which to give all sizes of garments their appropriate lengths, have been defined in this work.

**Your attention is directed to the following explanation.**

During early childhood, the body is longer in proportion than the legs and arms. This disproportion decreases, by force of a natural law, as the child grows and brings the limbs into use, until at full growth the natural standard of proportion is reached. The Table of Height is based on this comparative disproportion during childhood; and the eight sections of the body are divided into four long sections for the upper and four short sections for the lower part. The discrepancy is not in the law or its application; and the requirements of the figure are met by a proper division of the unequal parts. The eight sections of the 32 height, instead of being equal parts of the entire height, are equal fourths respectively of the body above and below the fork, the disproportion decreasing little by little in each height, until at sixty-four inches height the proportionate division of eight equal parts, and the theoretical standard is reached.

In conclusion, it may be stated that the "Proportions in Growth" are for the period of juvenile growth. The harmony of the law is suspended at maturity when the body grows in girth unequally, the parts being affected by exercise, occupation or mode of life, so that the hands, feet, neck, calves, thighs, etc. are in proportion to breast, seat and height, only in an exceptional degree. Nevertheless, when the use of the Tables, and their application to the requirements of the figure are fully understood, all lengths and widths will be found within their scope. The author makes constant application to them in sizing patterns up to fifty breast and seven feet height, and this edition has had added to it an extra Table of Height, extending from six to seven feet, which will be found to complete the work for all practical heights of men.

## Explanation of Terms.

**LINE OF HEIGHT.**—The line extending perpendicular to the full length of figure from crown of head to sole of foot, or from a to q.

**LINE B.**—Is the line from which all measures for body lengths of garments start.

**LINE C.**—Is the natural socket bone line, but line b is substituted as a starting point, to give the difference in length required by the curved form of the human body.

**LINE I.**—Is the fork point line, from which all divisions of the leg measure lengths are to be estimated. Between lines t and r the rise of pants and division for fashion lengths of waist are to be made.

**INDEX.**—The index column on lower right hand corner of the table of height contains letters corresponding to letters on the lines of height which designate the different lines that divide the body into sections cross wise. Each cross line is explained in the body of the index opposite its letter.

**TABLE OF HEIGHT.**—Is a table containing all the lines of height of the human figure from 32 to 72 inches, with fractional parts between, and containing also all the cross lines that divide the body into parts.

**HEIGHT SCALE.**—Is a scale divided into parts of one-eighth of an inch to the inch. It is to be used only on the lines of height, the quantities indicated by it are full inches.

**TABLE OF WIDTH.**—Is a miniature set of breast scales, of one-half the breast or seat measure, divided into eighteen parts. The table is arranged or reduced to a scale of one quarter of an inch to the inch.

**WIDTH SCALE.**—Is a scale to be used on the table of widths ONLY. It is arranged to a scale of one quarter of an inch to the inch, and indicates what any number of parts (of any scale) are in full inches.

**FORMULAS IN PROPORTIONS.**—Are rough and ready methods to be committed to memory, for use in the absence of the chart itself.

**PROPORTION IN PARTS.** The relative size of any part of the body, in proportion to the breast or seat, is indicated by the number of parts in the **COLUMN OF PARTS**; and the size in inches is obtained by applying the width scale to the table of widths on the line of the breast or seat measure scale:—where the same number of parts crosses the width scale that will be the size in inches.

**COLUMN OF PARTS.** This column indicates, by the number of parts that form a proportion of the breast or seat measure, the relative size of all other circumferences of the body; and the size, in inches, of any number of parts is ascertained by applying the width scale to the same number of parts on the table of widths.

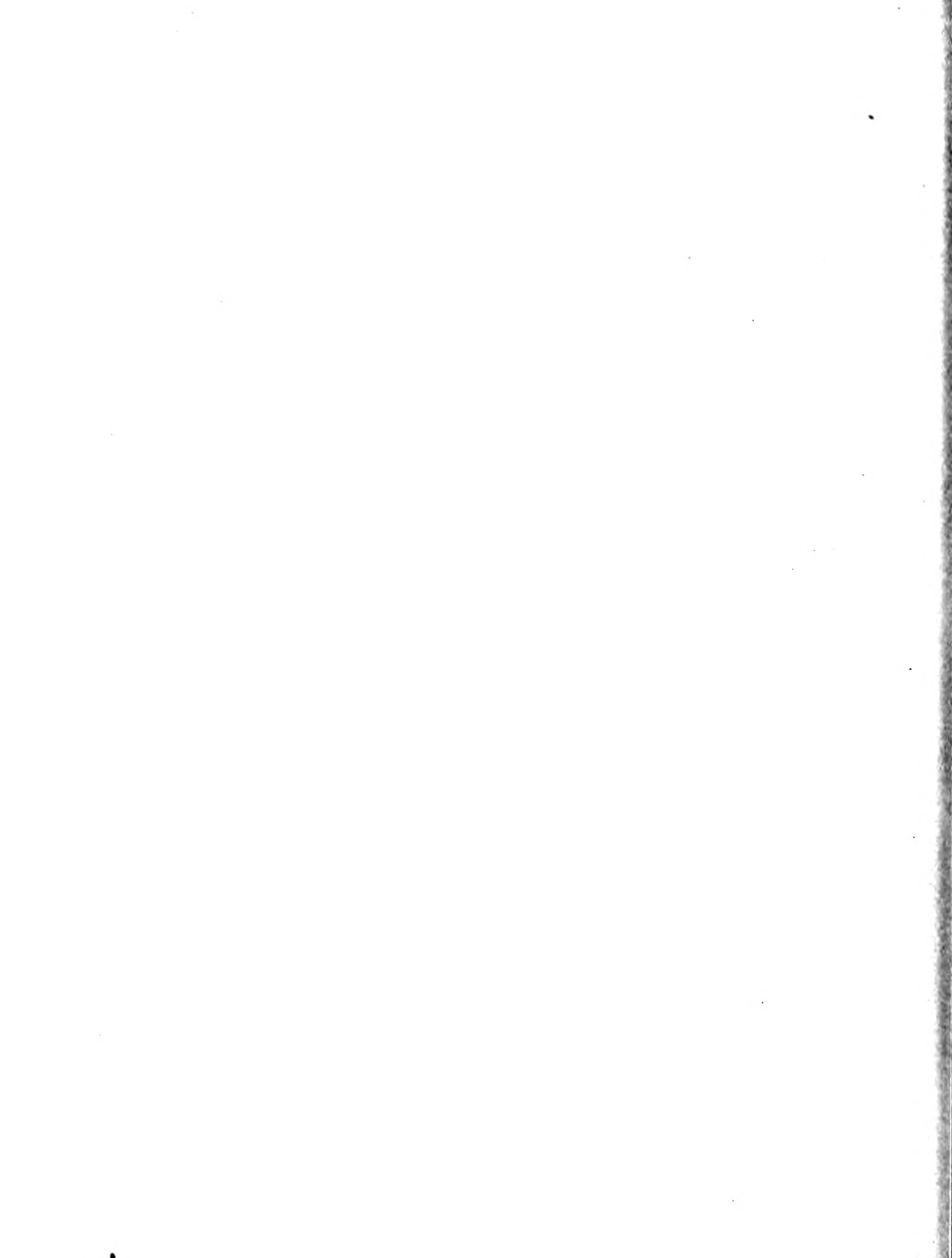
In the Table of Measures at the top of the Tables of Height and Width, the amounts under the line of Ages are given in inches, and the measure for any age will be found down the column under each age.

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With this edition is introduced an Extra Table of Height, giving the proportions of length or height for forms from six to seven feet, which makes the work complete, not only for the period of juvenile growth, but for the extraordinary heights which we occasionally meet with. The Height Scale is to be applied in the same manner as on the regular table. It must be distinctly understood that the Extra Height Table is for proportions of height only, that the harmony of the law of growth exists during the years of juvenile growth only; but the methods and formulas laid down in the work can be used with safety for men's sizes up to forty or forty-two breast and seat measure, by a slight modification of the quantities above thirty-six breast.

**NOTE.**—When the Tables of Height and Width are worn out by the owner, they will be replaced at Two Dollars each, and the work complete at half price. *The old Tables must first be returned.* The Scales of Height and Width, made of satinwood, and on one stick, furnished complete for One Dollar.



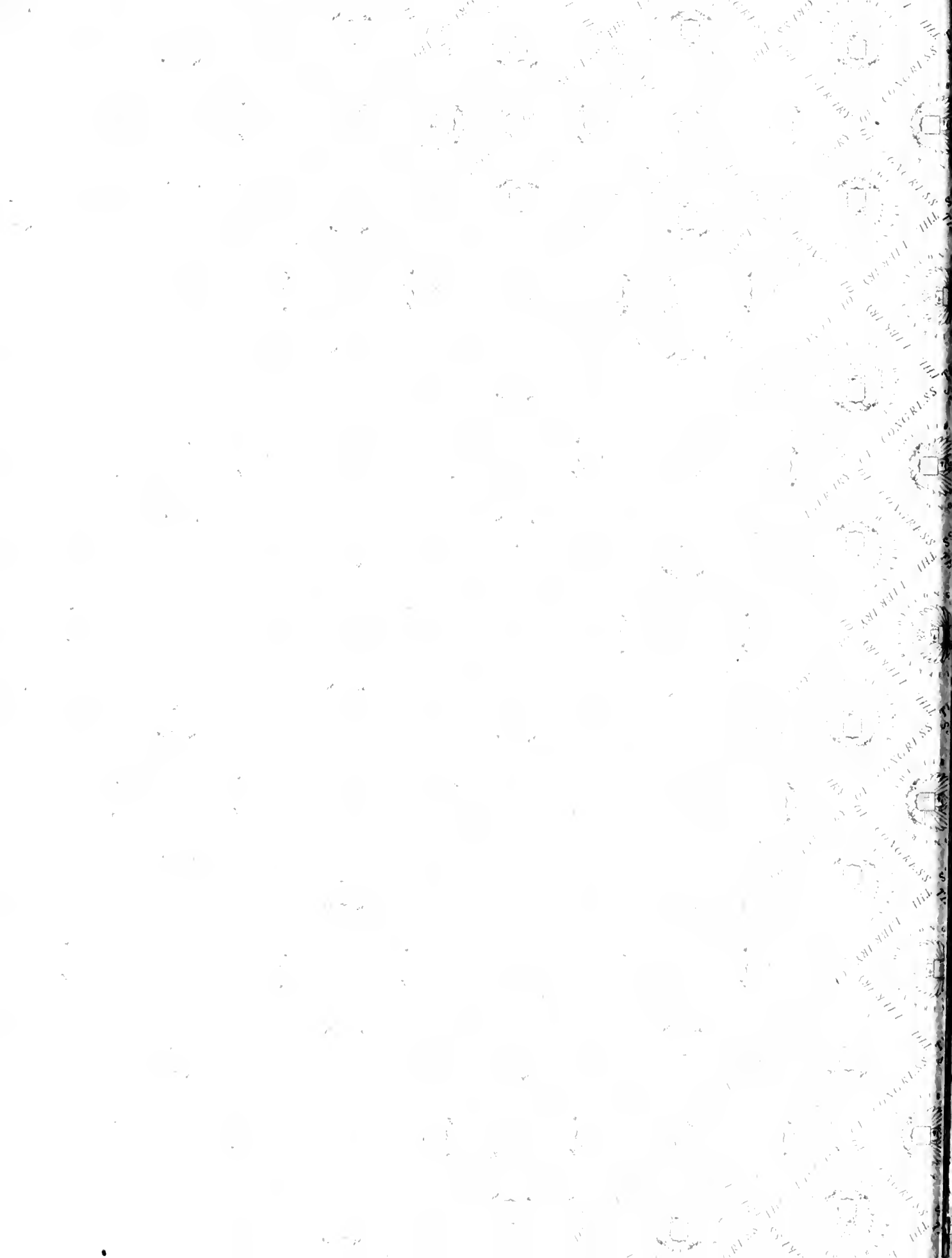














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