

Amherst and Wellesly College Anthropometric Tables

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Hitchcock



THE
ANTHROPOMETRIC TABLES

—OF—

AMHERST COLLEGE.

1892.

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Hitchcock

Anthropometric Tables



THE

*** RESULTS OF ANTHROPOMETRY, ***

AS DERIVED FROM THE MEASUREMENTS OF THE STUDENTS
IN AMHERST COLLEGE.

A PAPER PRESENTED TO THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF PHYSICAL EDUCATION AT THEIR ANNUAL MEETING IN PHILADELPHIA, APRIL, 1892.

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1892.

PHYSICAL MEASUREMENTS AS AFFORD- ING A BASIS FOR THE DETERMINA- TION OF THE IDEAL MAN.

More than a century ago, Sir Joshua Reynolds in England used this language :

“From reiterated experience and a close comparison of the objects of nature, the artist becomes possessed of a central form from which every deviation is deformity. * * * * And as there is one general form which belongs to the human kind at large, so in each of these classes there is one common idea and central form which is the abstract of the various individual forms belonging to that class. But I must add further, that though the most perfect forms of each of the general divisions of the human figure are ideal, and superior to any individual forms of that class, yet the highest perfection of the human figure is not to be found in any one of them. It is not in the Hercules, nor in the Gladiator, nor in the Apollo ; but in that form which is taken from them all, and which partakes of the activity of the Gladiator, of the delicacy of the Apollo, and the muscular strength of the Hercules.”

The object of this article is not to exhibit on paper or in figures the ideal human form, but believing there is an ideal form as conceived in the Divine mind, and that this ideal is by no means as yet present to us in the bodies of our young men ; but to show that the studies here presented may give us some glimpses of this ideal, and how we may approximate to it. Or, perhaps it is better to say that these studies show us what is the best human form and proportion as it actually exists to-day, and then from the special and peculiar excellencies as brought out in these researches, we can set ourselves to work to see if we cannot elevate the average to a higher ideal.

But firstly let us bring up a little past history of the study of the human form in ideal.

The Sanscrit manuscript written in the early Christian centuries is the oldest literature on this subject. It is called the Silpi Sastri, and with great exactness and precision divides the human body into nine portions, and 480 parts.

The hair,	15
The face,	55
The neck,	25
The chest,	55
From the chest to the navel,	55
Thence to the pubes,	53
" " knee,	90
The knee itself,	30
The leg and foot,	102
	<hr/>
	480

And by a most "occult" administration of a tangle of squares, circles and triangles it was "demonstrated" in this manuscript what the perfect human form might be expected to resemble.

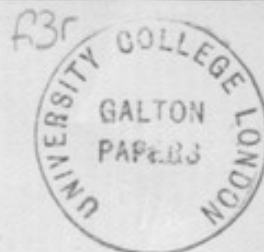
A Greek sculptor Polykleitus about 400 years B. C. has left a treatise called the "canon" on human proportions. This was illustrated by a marble statue called Doryphorus, or Spear Bearer, which was said to have been of "perfect proportions." But the model has disappeared.

Phidias, still later, employed twenty models, borrowing from each of them the most beautiful parts "permitting him to arrange them with all the necessary strength and dignity."

And other schemes have been devised, and have perished, by other lesser lights among artists ancient and modern, endeavoring to tell us what is the perfect or ideal human form.

But near the beginning of the present century, as scientific methods have come to the front to confirm or overthrow theory as it may be true or false, the artistic conception has been asked to wait a little while, until patient, plodding, scientific investigation shall show us what we now have on hand to enable us to try and construct the artistic ideal.

And the first investigator in this field of research is no less a man than Baron L. A. G. Quetelet of Belgium, in the prime of his activities from 1850 to 1870. His work which we find under the different captions of "proportions," "superficial extent," "development," "measure of the different faculties" and "theory of probabilities of the human body" he most carefully carried out by observation, experiment, and use of the doctrine of means and averages over an immense field of investigation. And to Baron Quetelet we must give the title of the Father of Anthropometry.



Since the year 1884, the American Association for the Advancement of Physical Education has received, and there have been read at its annual meetings many papers on anthropometry and its kindred subjects. It has also adopted a definite method of ascertaining the proportions of the human body mainly as derived from measurements made in colleges, schools and the Y. M. C. associations.

Working in the very close direction of the method adopted by this association, the Department of Physical Education in Amherst College has been making a prolonged and careful study of the physical statistics of all of the nearly 3000 students who have been connected with this Institution during the last thirty years. The results of study have been carefully preserved, collected and tabulated in several different ways, and the most important of them are appended to this paper. It has not, however, been the design in it all, to labor according to any preconceived theory or model, but merely to gather together the facts, and then find out the law or method which they seem to outline or foreshadow.

This large mass of measurements has been looked at, arranged and tabulated in the following different ways.

The first one is in the common method of taking the AVERAGE of each item of all the students measured. This means, adding together the measures of each student, and then dividing the amount by the total number of students observed. This is to be found under the table of THE AVERAGE STUDENT.

As twenty-one years is considered by common law to be the date of arriving at full manhood, the measurements of those who were between TWENTY-ONE AND TWENTY-TWO YEARS OF AGE are arranged and exhibited under the table THE STUDENT TWENTY-ONE YEARS OLD.

For the sake of further unfolding the subject, these measurements have been arranged and tabulated according to the doctrine of MEANS, OR, OF MEAN PROPORTIONS. The method of securing this, is, to arrange all the items in groups with a common difference, from the least to the greatest, when we readily find the group with the largest number, which represents the MEAN number of the whole. This is found under table 3, or the one OF THE STUDENT OF MEAN PROPORTIONS.

Another way of illustrating these results is the grouping of all the items by the AGES OF THE INDIVIDUALS. The ages as studied here have been from sixteen to twenty-six. This is THE TABLE OF AGES.

The PERCENTILE METHOD is another way of expressing the results of these measurements. This method is analogous to that of the

"means." The items here are all arranged in order from the greatest to the least, when five per cent. are counted off for the first division, ten more for the second, and so on down to fifty per cent., which corresponds very closely with the "average," or "mean," as already described. These five divisions indicate a measure above the fifty per cent. Then another division of ten per cent. indicates forty per cent. below the fifty per cent. division; and another ten, per cent, thirty more below, and so on to the minimum of five per cent.

The last table is that with STATURE for a basis of comparison. Here all the items are grouped together under the differing body heights, from the lowest to the highest with the variation of one centimeter, or about half an inch in each group. For instance, taking the lowest group measuring 1600 m. m. or 63 inches, all men of this height—1600 to 1609—are tabulated together and each of the fifty-four items averaged to secure the standard of measurements for men of the height of 1600 m. m., or 63 inches. Then the other heights, 1610, 1620 and so on up to 1830 m. m., or 72 inches, are tabulated in the same manner. This is the table represented By HEIGHTS.

Thus are brought side by side six different ways of studying the anthropometric results obtained from the students of Amherst College. And it certainly is both instructive and interesting to see the close relation of results in these different methods, and very likely if we feel that we must adopt one of these several methods, we shall have to be on our guard lest we should need the advice of the countryman to the traveler who inquired which was the best of three roads before them, "all of them lead you there, but whichever one you take before you get there you'll wish you had taken the other."

For, without doubt, age, weight, stature and per cent. are each important factors in this problem, when we are to treat it in a cosmopolitan manner. But for educational and developmental study, where so much of the need of physical training now lies, for the training, strengthening and developing weak and poorly developed bodies, the STANDARD OF STATURE seems the safest and surest to work from. The painter and sculptor certainly makes his dimensions of size according to the height of the subject he is placing on canvas or in marble. There are certain limits to the outline of the tall person which he would not give to a shorter figure, even if the age were exactly the same. He would not add the encumbrance of fat to the figure short and chubby, even though the theory was ever so strong that just so much adipose must be there all the same, no matter

what the lengths of the bone so warmly covered up might be. And it seems rational to suppose that the capacity and size of the vital organs, and the strength of the muscles, to move the longer or shorter levers will be proportioned to the length of trunk and limb, rather than to the mere weight of the tissues. Also the facts are established, beyond doubt, long ago, that the size of the lungs and some other vital organs, depends in each individual case upon the bodily stature, so many additional cubic inches of lung capacity for each inch of stature. And as strength of muscle depends on the number rather than the length of its fibers, we shall see that the long arm or leg needs a thicker muscle to move it than does a shorter one. Hence the trunk, arm or leg of the person a little longer than another of exactly the same age or weight, would require a little longer girth measure, to endue it with the strength proportioned to the size.

It will not, however, be right to dismiss this subject without presenting to this association the opinion of Mr. Charles Roberts, the foremost authority on anthropometry in Great Britain to-day. In treating of the subject in "index columns, age columns and result columns," he sums up the whole by saying, "the total height being the most characteristic and important measurement of the body, the arrangement of the table of heights has been made the model for all the rest."

In concluding, it seems safe to say, that the examination of the tables constructed on Bodily Stature as a datum give strong support to the idea that this element is the determining basis for an anthropometric standard whether of the ideal man, or for rational deductions and prescriptions for a better or more normal rate and quality of bodily growth.

It is a pleasure and privilege to say that the preparation and printing of these tables, and the offer of a copy to each member of this association is made possible by the endowment of a "contingent fund" for anthropometric, and its kindred work in Amherst College by Dr. Rufus P. Lincoln in New York.

Anthropometric Study of the Students of Amherst College.

The black figures represent millimeters, kilograms and liters: the red, inches, pounds and cubic inches

Anthropometric Study of the Students of Amherst College.

6. TABLE OF HEIGHTS.—1322 MEASUREMENTS.

The black figures represent millimeters, kilograms and liters: the red, inches, pounds and cubic inches.

March, 1892.

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The black figures represent millimeters, kilograms and liters; the red, inches, pounds and cubic inches

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ON SOME RELATIONS OF HUMAN STATURE TO MUSCULAR STRENGTH.

It seems to be a prevailing idea, that the physical strength of men when ascertained by comparative tests and in bodies well proportioned to the height is greatest in those of shorter bodily stature. Of course the acts of leaping, walking, throwing a ball and similar feats would be better exhibited by men of longest limbs, because of longer leverage of trunk, arm, and leg. But when the muscles of a man are made to contract upon his own weight alone, we have been apt to think that the man of short joints has a better mechanical advantage against gravity than has the longer limbed fellow.

Such has certainly been the notion with the Physical Education Department at Pratt Gymnasium, Amherst College. But in order properly to test this opinion by numerical and statistical facts, some special observations have just been made at our Anthropometric Laboratory. Following the arrangement and method accepted by the American Association for the Advancement of Physical Education, the six strength tests of back, legs, forearms, lungs, dip and pull up, have been used for this study. These were taken of the twenty tallest men and the twenty shortest men in the classes of '89, '90, '91 and '92, and they have been collated, arranged, and averaged for the best purposes of comparison.

The accompanying tables show the aggregates of the items selected in each class of the tall men and the short men, the averages of each item, and the difference between them both in numbers and in per cent.

We find as a result of the study that the average height of the tall men is 1809 m. m. or 71.3 inches, and that of the short men is 1665 m. m. or 65.5 inches. And as the average of a college student for the past 31 years has been 1725 m. m. or 67.9 inches, it shows a wider range between the average and the short students than the reverse.

We also find the per cent. of difference between the tall and the short men, in the three points in which the tall men surpassed the short ones was 14.50. And the three points where the short men surpassed the tall ones gave an average of 10.25 per cent. So that taking the whole six items of comparison together we find 4.25 per cent in favor of the tallest men.

As far then as this little study is concerned it seems to show that the idea that the men of short stature exceed those of tall stature in test measurements of strength is erroneous.

The Department here has taken the ground that the Stature (bodily height) is the normal or proper standard for physical work. That according to a man's height we should apportion his work, prescribe for his health, predict his development and construct the typical man, or as Mr. Charles Roberts puts it "the total height being the most characteristic and important measurement of the body, the arrangement of the table of heights has been made the model for all the rest." And this monograph showing that the men above the average height give a greater range of strength than those below it, and that the strongest men are among the tallest, give great promise to the proposition that stature is an all important factor in the study of anthropometry.

TABLE OF TEST MEASUREMENTS OF BODILY STRENGTH BETWEEN TALL AND SHORT MEN IN AMHERST COLLEGE, MARCH, 1893.

TALL MEN.								
	Height.	Back.	Legs.	Forearms	Lungs.	Dip.	Pull Up.	
Aggregates.	Class of '89,	1800	3262	3867	897	328	152	195
	Class of '90,	1816	3343	4285	935	348	168	203
	Class of '91,	1814	3347	3999	834	326	115	167
	Class of '92,	1805	3262	4249	906	312	156	197
Average,	1809	165	205	45	1.64	7.4	9.5	
SHORT MEN.								
	Height.	Back.	Legs.	Forearms	Lungs.	Dip.	Pull Up.	
Aggregates.	Class of '89,	1680	3017	3507	794	316	174	231
	Class of '90,	1652	3030	3395	781	339	182	199
	Class of '91,	1651	3080	3443	737	364	177	250
	Class of '92,	1677	3190	3606	744	314	151	192
Average,	1665	154	174	38	1.66	8.5	10.9	
Difference in measure,	144	11	31	7	0.02	1.1	1.4	
Difference in per cent.,		7.25	17.75	18.50	1.25	14.75	14.75	

Height in millimeters; Back, Legs, Forearms and Lungs in kilos; and Pull and Dip in units.



42

CONSTRUCTED ON THE PERCENTILE METHOD.

Compiled from 2230 measurements of Amherst College students between 1884 and 1891. Arranged according to the percentage as indicated at the left. The black figures indicate Millimeters, Kilograms, Litres, and Units; the red Linear Inches, Pounds and Cubic Inches. The average age of the individuals observed is 20 years and 4 months.

[illegible]

DEPARTMENT OF PHYSICAL TRAINING, WELLESLEY COLLEGE

MEASUREMENTS TAKEN AND COMPILED BY M. ANNA WOOD, Wellesley College, Wellesley, Mass.

[illegible]

Also the measures of Miss _____, taken _____, 189____, by _____

ANTHROPOMETRIC TABLE.

Compiled from the Measurements of 1100 Wellesley Students.

Arranged according to Bodily Heights. In each item the figures above represent millimetres and kilograms; the figures below inches and pounds. "Age" is given in years and months. "Lung Capacity" in litres and cubic inches. By "Pliosity" is meant the amount of the body covered by hair. Compiled by M. Anna Wood, May, 1890.

	1480	1490	1500	1510	1520	1530	1540	1550	1560	1570	1580	1590	1600	1610	1620	1630	1640	1650	1660	1670	1680	1690	1700	1710	1720	1730	1740	1750	1760	1770	1780	1790	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Height in inches	58.3	58.7	59.1	59.5	59.8	60.2	60.6	61.0	61.4	61.8	62.2	62.6	63.0	63.4	63.8	64.2	64.6	65.0	65.4	65.7	66.1	66.5	66.9	67.3	67.7	68.1	68.5	68.9	69.3	69.7	70.1	70.5	70.9	71.3	71.7	72.1	72.5	72.9	73.3	73.7	74.1	74.5	74.9	75.3	75.7	76.1	76.5	76.9	77.3	77.7	78.1	78.5	78.9	79.3	79.7	80.1	80.5	80.9	81.3	81.7	82.1	82.5	82.9	83.3	83.7	84.1	84.5	84.9	85.3	85.7	86.1	86.5	86.9	87.3	87.7	88.1	88.5	88.9	89.3	89.7	90.1	90.5	90.9	91.3	91.7	92.1	92.5	92.9	93.3	93.7	94.1	94.5	94.9	95.3	95.7	96.1	96.5	96.9	97.3	97.7	98.1	98.5	98.9	99.3	99.7	100.1	100.5	100.9	101.3	101.7	102.1	102.5	102.9	103.3	103.7	104.1	104.5	104.9	105.3	105.7	106.1	106.5	106.9	107.3	107.7	108.1	108.5	108.9	109.3	109.7	110.1	110.5	110.9	111.3	111.7	112.1	112.5	112.9	113.3	113.7	114.1	114.5	114.9	115.3	115.7	116.1	116.5	116.9	117.3	117.7	118.1	118.5	118.9	119.3	119.7	120.1	120.5	120.9	121.3	121.7	122.1	122.5	122.9	123.3	123.7	124.1	124.5	124.9	125.3	125.7	126.1	126.5	126.9	127.3	127.7	128.1	128.5	128.9	129.3	129.7	130.1	130.5	130.9	131.3	131.7	132.1	132.5	132.9	133.3	133.7	134.1	134.5	134.9	135.3	135.7	136.1	136.5	136.9	137.3	137.7	138.1	138.5	138.9	139.3	139.7	140.1	140.5	140.9	141.3	141.7	142.1	142.5	142.9	143.3	143.7	144.1	144.5	144.9	145.3	145.7	146.1	146.5	146.9	147.3	147.7	148.1	148.5	148.9	149.3	149.7	150.1	150.5	150.9	151.3	151.7	152.1	152.5	152.9	153.3	153.7	154.1	154.5	154.9	155.3	155.7	156.1	156.5	156.9	157.3	157.7	158.1	158.5	158.9	159.3	159.7	160.1	160.5	160.9	161.3	161.7	162.1	162.5	162.9	163.3	163.7	164.1	164.5	164.9	165.3	165.7	166.1	166.5	166.9	167.3	167.7	168.1	168.5	168.9	169.3	169.7	170.1	170.5	170.9	171.3	171.7	172.1	172.5	172.9	173.3	173.7	174.1	174.5	174.9	175.3	175.7	176.1	176.5	176.9	177.3	177.7	178.1	178.5	178.9	179.3	179.7	180.1	180.5	180.9	181.3	181.7	182.1	182.5	182.9	183.3	183.7	184.1	184.5	184.9	185.3	185.7	186.1	186.5	186.9	187.3	187.7	188.1	188.5	188.9	189.3	189.7	190.1	190.5	190.9	191.3	191.7	192.1	192.5	192.9	193.3	193.7	194.1	194.5	194.9	195.3	195.7	196.1	196.5	196.9	197.3	197.7	198.1	198.5	198.9	199.3	199.7	200.1	200.5	200.9	201.3	201.7	202.1	202.5	202.9	203.3	203.7	204.1	204.5	204.9	205.3	205.7	206.1	206.5	206.9	207.3	207.7	208.1	208.5	208.9	209.3	209.7	210.1	210.5	210.9	211.3	211.7	212.1	212.5	212.9	213.3	213.7	214.1	214.5	214.9	215.3	215.7	216.1	216.5	216.9	217.3	217.7	218.1	218.5	218.9	219.3	219.7	220.1	220.5	220.9	221.3	221.7	222.1	222.5	222.9	223.3	223.7	224.1	224.5	224.9	225.3	225.7	226.1	226.5	226.9	227.3	227.7	228.1	228.5	228.9	229.3	229.7	230.1	230.5	230.9	231.3	231.7	232.1	232.5	232.9	233.3	233.7	234.1	234.5	234.9	235.3	235.7	236.1	236.5	236.9	237.3	237.7	238.1	238.5	238.9	239.3	239.7	240.1	240.5	240.9	241.3	241.7	242.1	242.5	242.9	243.3	243.7	244.1	244.5	244.9	245.3	245.7	246.1	246.5	246.9	247.3	247.7	248.1	248.5	248.9	249.3	249.7	250.1	250.5	250.9	251.3	251.7	252.1	252.5	252.9	253.3	253.7	254.1	254.5	254.9	255.3	255.7	256.1	256.5	256.9	257.3	257.7	258.1	258.5	258.9	259.3	259.7	260.1	260.5	260.9	261.3	261.7	262.1	262.5	262.9	263.3	263.7	264.1	264.5	264.9	265.3	265.7	266.1	266.5	266.9	267.3	267.7	268.1	268.5	268.9	269.3	269.7	270.1	270.5	270.9	271.3	271.7	272.1	272.5	272.9	273.3	273.7	274.1	274.5	274.9	275.3	275.7	276.1	276.5	276.9	277.3	277.7	278.1	278.5	278.9	279.3	279.7	280.1	280.5	280.9	281.3	281.7	282.1	282.5	282.9	283.3	283.7	284.1	284.5	284.9	285.3	285.7	286.1	286.5	286.9	287.3	287.7	288.1	288.5	288.9	289.3	289.7	290.1	290.5	290.9	291.3	291.7	292.1	292.5	292.9	293.3	293.7	294.1	294.5	294.9	295.3	295.7	296.1	296.5	296.9	297.3	297.7	298.1	298.5	298.9	299.3	299.7	300.1	300.5	300.9	301.3	301.7	302.1	302.5	302.9	303.3	303.7	304.1	304.5	304.9	305.3	305.7	306.1	306.5	306.9	307.3	307.7	308.1	308.5	308.9	309.3	309.7	310.1	310.5	310.9	311.3	311.7	312.1	312.5	312.9	313.3	313.7	314.1	314.5	314.9	315.3	315.7	316.1	316.5	316.9	317.3	317.7	318.1	318.5	318.9	319.3	319.7	320.1	320.5	320.9	321.3	321.7	322.1	322.5	322.9	323.3	323.7	324.1	324.5	324.9	325.3	325.7	326.1	326.5	326.9	327.3	327.7	328.1	328.5	328.9	329.3	329.7	330.1	330.5	330.9	331.3	331.7	332.1	332.5	332.9	333.3	333.7	334.1	334.5	334.9	335.3	335.7	336.1	336.5	336.9	337.3	337.7	338.1	338.5	338.9	339.3	339.7	340.1	340.5	340.9	341.3	341.7	342.1	342.5	342.9	343.3	343.7	344.1	344.5	344.9	345.3	345.7	346.1	346.5	346.9	347.3	347.7	348.1	348.5	348.9	349.3	349.7	350.1	350.5	350.9	351.3	351.7	352.1	352.5	352.9	353.3	353.7	354.1	354.5	354.9	355.3	355.7	356.1	356.5	356.9	357.3	357.7	358.1	358.5	358.9	359.3	359.7	360.1	360.5	360.9	361.3	361.7	362.1	362.5	362.9	363.3	363.7	364.1	364.5	364.9	365.3	365.7	366.1	366.5	366.9	367.3	367.7	368.1	368.5	368.9	369.3	369.7	370.1	370.5	370.9	371.3	371.7	372.1	372.5	372.9	373.3	373.7	374.1	374.5	374.9	375.3	375.7	376.1	376.5	376.9	377.3	377.7	378.1	378.5	378.9	379.3	379.7	380.1	380.5	380.9	381.3	381.7	382.1	382.5	382.9	383.3	383.7	384.1	384.5	384.9	385.3	385.7	386.1	386.5	386.9	387.3	387.7	388.1	388.5	388.9	389.3	389.7	390.1	390.5	390.9	391.3	391.7	392.1	392.5	392.9	393.3	393.7	394.1	394.5	394.9	395.3	395.7	396.1	396.5	396.9	397.3	397.7	398.1	398.5	398.9	399.3	399.7	400.1	400.5	400.9	401.3	401.7	402.1	402.5	402.9	403.3	403.7	404.1	404.5	404.9	405.3	405.7	406.1	406.5	406.9	407.3	407.7	408.1	408.5	408.9	409.3	409.7	410.1	410.5	410.9	411.3	411.7	412.1	412.5	412.9	413.3	413.7	414.1	414.5	414.9	415.3	415.7	416.1	416.5	416.9	417.3	417.7	418.1	418.5	418.9	419.3	419.7	420.1	420.5	420.9	421.3	421.7	422.1	422.5	422.9	423.3	423.7	424.1	424.5	424.9	425.3	425.7	426.1	426.5	426.9	427.3	427.7	428.1	428.5	428.9	429.3	429.7	430.1	430.5	430.9	431.3	431.7	432.1	432.5	432.9	433.3	433.7	434.1	434.5	434.9	435.3	435.7	436.1	436.5	436.9	437.3	437.7	438.1	438.5	438.9	439.3	439.7	440.1	440.5	440.9	441.3	441.7	442.1	442.5	442.9	443.3	443.7	444.1	444.5	444.9	445.3	445.7	446.1	446.5	446.9	447.3	447.7	448.1	448.5	448.9	449.3	449.7	450.1

Hitchcock
Amherst College
Measures





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A STUDY
IN
ANTHROPOMETRY
RELATING TO
PHYSICAL GROWTH IN A LIMITED TIME.

PHYSICAL GROWTH OF AMHERST STUDENTS.

The rate of growth, increase, or development of the physical and intellectual powers of the human being, is an interesting study in anthropology. At Amherst College there is a favorable opportunity for a portion of this study by comparing physical measurements of Freshman and Senior classes. There is offered to this program of the 13th Ladd Prize Exhibition of In-door Sports a comparison of the Freshman statistics of the last eleven years with those of the Senior year. The average age of the Freshman year has been 19 years, and of the Senior year three years and five months additional. The table on the next page shows the average of each item during the two years studied, the per cent. of increase in each item, and the grouping together of the items under, Bone Structure, Muscular Size, Vital Organs, Weight and Muscular Power. Under this grouping we find the items of the SMALLEST GAINS to be

Right and Left Girth of Foot,	0.39 p. c.
Height of Body,	0.64 "
Right and Left Elbow Tip,	0.77 "
Right and Left Shoulder Elbow,	0.81 "
Height of Pubes,	0.82 "

Also the LARGEST GAINS seem to be

The Dip,	56.67 p. c.
Total Strength,	25.13 "
Strength of Lungs,	24.25 "
Strength of Legs,	24.17 "
Pull Up,	22.27 "
Strength of Forearms,	15.46 "

By arranging all the items in GROUPS REPRESENTING ESSENTIALLY STRUCTURE AND FUNCTION, we find an increase in

Bone Structure, of	1.31 p. c.
Muscular Size, of	4.47 "
Vital Organs, of	4.51 "
Bodily Weight, of	7.42 "
Muscular Power, of	24.90 "

From this little study in Anthropology we seem to help establish the fact, that in college students between nineteen and twenty-two years of age the essential development of the body and its powers is not along the line of structure and material growth, but principally in function. The framework and bulky tissues exhibit but a very small per cent. of growth, and the muscular and vital organs show a smaller per cent. of increase than does the total weight of the body, and even the external dimensions of the head give but one per cent. of growth, whereas the different tests of physical strength give almost a twenty-five per cent. increase during the college course.

It is a very significant fact that the highest increase of all the "Gains" is to be found in the Dip, which is the severest of the Strength Tests. The probable explanation of this is that the required daily exercise in the Dumb Bell Drill, which tends directly to the increase of chest, back and arm muscles, determines the character of the Dip and Pull Up. And the Physiological principle and Hygienic fact to be found here, is, that moderate, persistent and regular muscular use, determines a higher force value, than a shorter, more energetic and closely circumscribed muscular training FOR THE AVERAGE MAN IN THE LONG RUN. For the well marked athletic man, save perhaps the specialist who pitches the ball—does not give the highest records in the Dip and Pull Up.

Anthropometric Records of Amherst College.

Per cent. of gain between Freshman and Senior years.

	FRESHMEN.	SENIORS.	PER CENT OF INCREASE.	GROUPS OF STRUCTURE AND FUNCTION.
WEIGHT,	60.23	64.70	7.42%	Weight.
HEIGHT,	1722	1735	.76	Bone.
" Sternum,	1408	1418	.72	Bone.
" Navel,	1030	1039	.88	
" Pubes,	862	869	.82	Bone.
" Knee,	474	477	.64	Bone.
" Sitting,	893	909	1.80	Bone.
GIRTH, Head,	567	572	.89	Bone.
" Neck,	355	359	1.13	Muscles.
" Chest repose,	866	903	4.28	Vital Organs.
" Chest full,	919	947	3.03	Vital Organs.
" Belly,	723	753	4.16	Vital Organs.
" Hips,	883	908	2.84	Bone.
" Right Thigh,	507	527	3.93	Muscles.
" Left Thigh,	500	523	4.60	Muscles.
" Right Knee,	357	363	1.70	Bone.
" Left Knee,	356	363	1.97	Bone.
" Right Calf,	342	354	3.51	Muscles.
" Left Calf,	341	352	3.23	Muscles.
" Right Instep,	243	247	1.65	Bone.
" Left Instep,	242	246	1.66	Bone.
" Upper Right Arm,	253	267	5.54	Muscles.
" Upper Left Arm,	246	262	6.51	Muscles.
" U. R. A. Contract'd,	287	314	9.77	Muscles.
" Right Elbow,	247	255	3.25	Bone.
" Left Elbow,	243	250	2.89	Bone.
" Right Forearm,	258	265	2.72	Muscles.
" Left Forearm,	253	260	2.77	Muscles.
" Right Wrist,	165	167	1.22	Bone.
" Left Wrist,	164	165	.61	Bone.
BREADTH, Head,	153	155	1.31	Bone.
" Neck,	107	111	3.74	Muscles.
" Shoulders,	426	445	4.47	
" Nipples,	193	204	5.70	
" Waist,	249	258	3.62	Vital Organs.
" Hips,	323	336	4.03	Bone.
Right Shoulder Elbow,	372	375	.81	Bone.
Left Shoulder Elbow,	370	373	.82	Bone.
Right Elbow Tip,	461	464	.66	Bone.
Left Elbow Tip,	459	463	.88	Bone.
LENGTH, Right Foot,	261	262	.39	Bone.
" Left Foot,	260	261	.39	Bone.
STRETCH OF ARMS,	1782	1794	.68	Bone.
HORIZONTAL LENGTH,	1731	1749	1.04	
STRENGTH of Lungs,	132	164	24.25	Muscular Power.
" Back,	133	154	15.80	Muscular Power.
" Legs,	149	185	24.17	Muscular Power.
" R. Forearm,	38.5	45.4	17.93	Muscular Power.
" L. Forearm,	35.4	40.0	13.00	Muscular Power.
" Dip,	5.33	8.35	56.67	Muscular Power.
" Pull,	8.67	10.60	22.27	Muscular Power.
LUNG CAPACITY,	4.03	4.33	7.45	Vital Organs.
TOTAL STRENGTH,	414	518	25.13	Muscular Power.
			Av. 6.08	

a—Kilos. b—Cmils. c—Litres. All others millimetres.

Average Measurements of Male and Female Students.

	AMHERST STUDENTS.		MT. HOLYOKE AND WELLESLEY STUDENTS.		DIFFER- ENCE.
	METRIC SYSTEM.	ENGLISH SYSTEM.	METRIC.	ENGLISH.	
WEIGHT,	*60.7	*133.8	55.2	121.6	11.2
HEIGHT,	1727	67.9	1591	62.6	5.3
“ Sternum,	1415	56.	1276	50.2	5.8
“ Navel,	1037	40.8	937	36.8	4.
“ Pubes,	862	33.9	784	30.8	3.1
“ Knee,	476	18.7	422	16.6	2.1
“ Sitting,	898	35.3	825	32.4	2.9
GIRTH, Head,	565	22.2	561	22.	.2
“ Neck,	350	13.7	323	12.7	1.
“ Chest repose,	870	34.2	750	29.5	4.7
“ Chest full,	924	36.3	801	31.5	4.8
“ Belly,	729	28.7	662	26.	2.7
“ Hips,	887	34.9	846	33.3	1.6
“ Right Thigh,	501	19.7	531	20.9	-1.2
“ Left Thigh,	503	19.8	531	20.9	-1.1
“ Right Knee,	359	14.1	353	13.8	.3
“ Left Knee,	358	14.1	351	13.8	.3
“ Right Calf,	344	13.5	337	13.2	.3
“ Left Calf,	343	13.4	336	13.2	.2
“ Right Instep,	245	9.6	214	8.4	1.2
“ Left Instep,	243	9.5	212	8.3	1.2
“ Upper Right Arm,	255	10.	248	9.7	.3
“ U. R. A. Contract'd,	291	11.4	255	10.	1.4
“ Upper Left Arm,	249	9.8	244	9.6	.2
“ Right Elbow,	249	9.8	219	8.6	1.2
“ Left Elbow,	244	9.6	219	8.6	1.
“ Right Forearm,	260	10.2	218	8.6	1.6
“ Left Forearm,	254	10.	216	8.5	1.5
“ Right Wrist,	165	6.4	147	5.7	.7
“ Left Wrist,	164	6.4	146	5.7	.7
BREADTH, Head,	154	6.0	147	5.8	.2
“ Neck,	108	4.2	90	3.5	.7
“ Shoulders,	431	16.9	364	14.3	2.6
“ Nipples,	193	7.6	188	7.4	.2
“ Waist,	249	9.8	210	8.2	1.6
“ Hips,	326	12.8	318	12.5	.3
Right Shoulder Elbow,	373	14.6	335	13.2	1.4
Left Shoulder Elbow,	371	14.6	334	13.1	1.5
Right Elbow Tip,	462	18.1	421	16.6	1.5
Left Elbow Tip,	459	18.0	418	16.4	1.6
LENGTH, Right Foot,	261	10.2	229	9.0	1.2
“ Left Foot,	260	10.2	229	9.0	1.2
STRETCH OF ARMS,	1787	70.3	1603	63.1	7.2
“ Back,	*126.2	*27.8	49.1	108	170
“ Legs,	*152.8	*336.8	67.8	149.4	187.4
“ R. Forearm,	*38.7	*85.3	22.0	48.4	36.9
“ L. Forearm,	*35.46	*78.3	19.2	42.3	36.
Capacity of Lungs,	*4.12	*251.4	2.39	143.8	105.6

a—Kilos. c—Litres. d—Pounds. e—Cubic Inches. All others, Millimeters, and Inches and tenths.



COMPARATIVE STUDY

* AVERAGE MEASUREMENTS *

Amherst, Mt. Holyoke and Wellesley Colleges.

THE COMPARISON.

It is the purpose of this paper to make a comparative study of the male and female figure as made from the examination of New England college students. The measurements from which the deductions are made, are the averages for five freshman years, compiled from statistics of about five hundred individuals, each, at Amherst, Mt. Holyoke, and Wellesley Colleges, between 1884-1889.

It is true that they are not data taken from fully developed manhood and womanhood, since the average age of each sex is approximately 19 years, and yet they seem to show that at this stage of the development of the human body, such conditions as will appear are true.

The stature of man is influenced by climate, occupation, surrounding circumstances, etc.; races having their own distinctive characteristics. Likewise, different classes in the same race are distinguished from each other but not in so marked a degree.

Many of the fundamental differences in regard to figure, which distinguish the male from the female, are established by common experience and scientific investigation; on these points our observation only corroborates such knowledge. For instance, in all the tests of strength, man is naturally the stronger as he is superior in the capacity of lungs. Such well known facts regarding the breadth of hips and waist are too well established to need any more than a passing confirmation.

Take first the matter of weight. One naturally supposes that the male weighs proportionately more than the female; but such is not the case. The figures declare an almost exact correspondence, each weighing 1.9 pounds for every inch of height.

The fact that the girth of the female thigh actually exceeds that of the male, is doubtless due not to the muscular development but to the presence of fat. An interesting fact is brought to light in comparing the girth and breadth of head and also of the neck. The difference in per. cent in girth of the head in favor of the male is only .007, while the difference in breadth is .045. This would seem to show that the antero-posterior diameter in woman is longer proportionally than the transverse diameter. This is more markedly evident in the neck, which shows a difference of .077 in girth and of .166 in breadth. That is, a woman's head and neck are more oval in shape than the man's.

Considering next the height from pubes to sternum and figuring in this case from total height as a basis, it appears that the male is over 7% taller than the female, but in length of trunk he exceeds her by 11%. The same is true as regards the distance between the pubes and navel, the male being 12% longer here than the female and only 7% taller. This conclusion is contrary to the usual theory that woman has a proportionally longer trunk than man. In the length of the lower limbs there is a difference of 9% in favor of the male; but in the length of the head and neck the female actually exceeds the male by .009%. So the difference lies here rather than in the length of trunk, or lower limbs.

Humphrey, in comparing the human figure with that of the lower animals, says that "in man the segments nearer the trunk are comparatively lengthy; the more distal ones being comparatively short. Thus, the thigh and arm are respectively longer than the leg and forearm," and "that the greater proportionate length of the thigh is one of the characteristics of the human figure." The result of this is, he says, "that strength is sacrificed to celerity and nicety of movement, as well as to a ready subservience to the will."

Leaving the lower kingdom and making the same comparison between the sexes of the human race it appears that the female follows out this same evolutionary progression to a greater proportionate degree than the male. Perhaps it was because she had the advantage of being last introduced, but more likely to give her the greater celerity and grace of movement.

The male is nearly 12% longer in the leg than the female and only 6% in the thigh. In the upper extremities, however, the measurements almost correspond, there being only one per cent. difference in favor of the male.

Such are some of the most apparent suggestions presented by these tables. But they are here offered in the printed form to any persons who may desire to examine them more minutely or give a different or more searching study to them.

I am indebted to the kindness of Miss Lucile E. Hill and M. Anna Wood of Wellesley, and Dr. Mary Cotton of Mt. Holyoke, for the measurements of their colleges.



Three Tables of Measurements of Students of Amherst College, 1890-1.

	AVERAGES OF 2000 MEASURES.		MEAN MEASURES OF 2086 STUDENTS.		AVERAGES OF STUDENTS 21 YEARS OLD.	
	METRIC SYSTEM.	ENGLISH SYSTEM.	METRIC.	ENGLISH.	METRIC.	ENGLISH.
WEIGHT,	61.2	134.9	64.0	141.1	63.1	138.5
HEIGHT,	1725	67.9	1720	67.7	1726	67.9
" Sternum,	1410	55.5	1410	55.5	1407	55.3
" Navel,	1030	40.6	1023	40.3	1025	40.4
" Pubes,	860	33.9	860	33.9	864	34.0
" Knee,	476	18.7	480	18.9	477	18.7
" Sitting,	903	35.5	910	35.8	903	35.5
GIRTH, Head,	572	22.5	570	22.4	572	22.5
" Neck,	349	13.8	350	13.8	356	14.0
" Chest repose,	880	34.6	880	35.6	892	35.1
" Chest full,	927	36.5	925	36.4	933	36.7
" Belly,	724	28.5	720	28.3	725	28.5
" Hips,	893	35.1	890	35.0	898	35.3
" Right Thigh,	517	20.3	515	20.3	521	20.5
" Left Thigh,	512	20.1	510	20.1	519	20.4
" Right Knee,	361	14.2	360	14.2	359	14.2
" Left Knee,	359	14.1	360	14.2	358	14.1
" Right Calf,	359	14.1	359	14.1	350	13.8
" Left Calf,	349	13.8	350	13.8	348	13.7
" Right Instep,	245	9.6	240	9.4	244	9.6
" Left Instep,	242	9.5	240	9.4	243	9.6
" Upper Right Arm,	257	10.1	260	10.2	264	10.3
" U. R. A. Contract'd,	295	11.6	293	11.6	294	11.5
" Upper Left Arm,	253	9.9	250	9.8	259	10.2
" Right Elbow,	251	9.8	250	9.8	253	9.9
" Left Elbow,	247	9.7	250	9.8	249	9.8
" Right Forearm,	267	10.5	270	10.6	266	10.5
" Left Forearm,	261	10.2	260	10.2	259	10.2
" Right Wrist,	166	6.5	165	6.5	166	6.5
" Left Wrist,	165	6.5	165	6.5	165	6.5
BREADTH, Head,	155	6.1	154	6.1	155	6.1
" Neck,	108	4.2	110	4.3	109	4.3
" Shoulders,	430	16.9	430	16.9	431	16.9
" Nipples,	198	7.8	200	7.9	200	7.9
" Waist,	250	9.8	250	9.8	256	10.1
" Hips,	323	12.7	320	12.6	327	12.9
Right Shoulder Elbow,	373	14.7	370	14.6	374	14.7
Left Shoulder Elbow,	371	14.6	370	14.6	374	14.7
Right Elbow Tip,	461	18.1	460	18.1	462	18.1
Left Elbow Tip,	459	18.1	460	18.1	459	18.1
LENGTH, Right Foot,	260	10.2	260	10.2	261	10.2
" Left Foot,	259	10.2	260	10.2	260	10.2
STRETCH OF ARMS,	1780	70.1	1770	69.7	1794	70.6
HORIZONTAL LENGTH,	1732	68.2	1730	68.1	1738	68.4
STRENGTH, of Lungs,	11.5	3.30	1.2	2.64	1.41	3.10
" Back,	137	302	150	330	146	321
" Chest dip,	6.0	6.0	4	4	7.3	7.3
" Chest pull up,	9.0	9.0	10	10	10.2	10.2
" Legs,	166	365	175	385	172	378
" R. Forearm,	41.5	91	40	88.2	41.5	91.3
" L. Forearm,	38.1	84	37	81.6	39.5	86.9
Capacity of Lungs,	3.77	230	3.90	238	4.23	250

a-Kilos. b-Inches. c-Libres. d-Pounds. e-Cubic Inches. All others, Millimeters, and Inches and tenths.

1891.

THE PROGRAM

TWENTY-SEVENTH

WINTER MEETING OF IN-DOOR SPORTS

AND HEAVY GYMNASTICS,

AND THE SCHEDULE OF THE

* 12th LADD PRIZE EXHIBITION *

PRATT GYMNASIUM, AMHERST COLLEGE,

MARCH 25,

* WEDNESDAY, AT 2 O'CLOCK IN THE AFTERNOON. *

JUDGES OF AWARD:

MR. E. H. FALLOWS, of New York,
MR. A. A. STAGG, Springfield, Mass.,
DR. E. P. HARRIS, Amherst, Mass.,
MR. W. A. HUNT, Amherst, Mass.,
MR. F. E. WHITMAN, Amherst, Mass.

The College Orchestra have kindly consented to give the audience the pleasure of their music.
Mr. R. M. BAGG, Leader. Mr. W. E. NASON, Manager.
First Violins, R. M. BAGG, and H. LEWIS. Second Violin, E. L. NORTON.
Clarinet, S. R. FLEET. Cornet, T. BRECK. Bass, F. M. TIFFANY.
Piano, H. G. KIMBALL.

The Glee and Banjo Clubs assisted by Tom. Browne, the king of whistlers, at College Hall to-night.
An entirely new program.



ORDER OF EVENTS.

Led by A. A. EWING, '92, College Gymnast.

ROPE CLIMB.

F. Allen, '91.	H. C. Wood, '93.
N. D. Alexander, '92.	H. A. Russell, '93.
E. P. Smith, '92.	H. B. Hallock, '93.
L. W. Griswold, '92.	A. B. Davidson, '93.
A. A. Ewing, '92.	C. Seymour, '94.
T. Coyle, '92.	

College Record, 34 seconds, E. P. Smith, '92.

PARALLEL BARS.

T. Coyle, '92.	T. Kimball, '93.
G. Pettengill, '92.	F. J. Raley, '93.
G. B. Brooks, '93.	F. Munson, '94.

HIGH KICK.

F. A. Hicks, '92.	G. Zug, '93.
F. R. Avery, '92.	A. Turner, '93.
W. W. Gregg, '92.	C. D. Norton, '93.
F. W. Cole, '93.	F. D. Edgell, '93.

College Record, 9 feet 1 inch, E. B. Ludington, '91.

PUTTING SHOT.

F. Allen, '91.	G. S. Raley, '92.
N. D. Alexander, '92.	F. D. Edgell, '93.
C. Burbank, '92.	R. L. Pellet, '94.
A. A. Ewing, '92.	

College Record, 37 feet 10 inches, N. D. Alexander, '92.

FENCE VAULT.

A. A. Ewing, '92.	A. V. Woodworth, '93.
R. L. Scott, '92.	S. R. Parker, '93.
L. W. Griswold, '92.	H. B. Hallock, '93.
F. R. Avery, '92.	E. H. Stedman, '94.
E. B. Brooks, '93.	

College Record, 7 feet 6 inches, C. F. Clark, '92.

SWINGING RINGS.

A. A. Ewing, '92.	G. B. Brooks, '93.
H. H. Waite, '92.	E. Bliss, '93.
W. T. S. Jackson, '92.	F. J. Raley, '93.

BATTLE BOARD.

C. L. Upton, '91.	G. Zug, '93.
A. A. Ewing, '92.	H. B. Hallock, '93.
R. W. Goodell, '92.	C. B. Hodgson, '93.
H. H. Waite, '92.	G. H. Fisher, '93.
C. E. Hildreth, '92.	

College Record, 7 feet 6 inches, C. L. Upton, '91.

SPARRING.

F. J. Lane, '92.	T. Trask, '93.
E. W. Babcock, '92.	W. Talcott, '93.
C. E. Burbank, '92.	J. Kemmerer, '93.
H. S. Nichols, '92.	A. W. Gill, '93.
G. S. Raley, '92.	O. H. Story, '93.

Heavy Weight.....

Light Weight.....

TUMBLING.

H. H. Waite, '92.	T. Kimball, '93.
G. T. Pettengill, '92.	E. Bliss, '93.
T. Coyle, '92.	F. J. Raley, '93.
G. B. Brooks, '93.	F. A. Crockett, '93.

STANDING HIGH JUMP.

F. B. Walker, '91.	G. B. Brooks, '93.
A. A. Ewing, '92.	A. B. Davidson, '93.
L. W. Griswold, '92.	F. W. Cole, '93.
M. A. Johnson, '92.	F. D. McAllister, '94.
L. T. Byron, '93.	

College Record, 4 feet 11 inches, F. A. Sibley, '91.

CLUB SWINGING.

G. W. Emerson, Jr., '92.	F. W. Beckman, '93.
L. Byron, '93.	M. A. Johnson, '92.
W. Tower, '93.	C. Emerson, '94.

WRESTLING.

W. C. Smalley, '92.	E. Bliss, '93.
W. Lewis, '92.	H. Russell, '93.
R. Scott, '92.	W. A. Talcott, '93.
C. Burbank, '92.	F. J. Raley, '93.
G. Furless, '92.	W. H. Ross, '93.
N. D. Alexander, '92.	F. D. Edgell, '93.
G. S. Raley, '92.	H. P. Gallinger, '93.
T. Coyle, '92.	E. M. Nourse, '93.
M. Baldwin, '93.	C. G. Wood, '93.
F. M. Lay, '93.	F. Munson, '94.

Heavy Weight.....

Light Weight.....

RUNNING HIGH JUMP.

W. T. S. Jackson, '92.	H. Hallock, '93.
G. L. Degener, '92.	F. Cole, '93.
A. A. Ewing, '92.	C. Bray, '93.
G. B. Shattuck, '92.	T. M. Kimball, '93.
L. Byron, '93.	C. H. Hodgson, '93.
G. Zug, '93.	

College Record, 5 feet 6 inches, E. B. Ludington, '91.

HORIZONTAL BAR.

T. Breck, '91.	T. Kimball, '93.
H. H. Waite, '92.	F. J. Raley, '93.
A. A. Ewing, '92.	G. B. Brooks, '93.

POLE VAULT.

C. Upton, '91.	G. W. Emerson, Jr., '92.
A. A. Ewing, '92.	G. B. Brooks, '93.
N. D. Alexander, '92.	H. B. Hallock, '93.
W. W. Tucker, '94.	

College Record, 9 feet 11 inches, A. Ewing, '92.

Heavy Weight.....

Light Weight.....

Anthropometric Results.

When working for a result, we are much more successful if we can get it in more ways than one.

The Department of Physical Education in Amherst College has been looking after an anthropometric college standard for about twenty-five years. To this end thousands of student measurements have been made and tabulated, and progress published from time to time as a supplement to Gymnastic Exhibition Programs. About thirty of these statements have been thus issued, which were preliminary to, and have aided in the preparation of the tables on the opposite page. We want to learn what are the Physical Data of the Typical or Ideal College Student, and to do this we know of no better way than to observe every student whom we can lay our hands upon, put our measuring appliances upon, and secure all the measures which show the proportions of the "Average" or the "Mean" student. And from this standpoint we must, by labor and study, find out how much proper cultivation and healthy work can better this present average condition: find out how much and how fast we can further develop the present student average body.

The past history of the Human Race shows us that we have been led forwards and upwards by the influences which have been conceived and partially developed in the Universities and Colleges—the world over. And if the intellectual and spiritual forces are found there, may we not expect that the body, the earthly partner of the soul, will be fairly represented by these men. For as the College fills its ranks from all grades of society, from what other source can we get a more general or comprehensive group to work upon, or gain an idea of a more fair representation of our universal physical man, than from this source? Therefore we offer as the most desirable materials for this purpose, the young men of our colleges, who have attained their majority in age, and are mainly of American origin. And for the results of this paper we bring the measurements of about 2000 students of Amherst College of the average age of twenty-one years and one month, in the tables on the opposite page.

The first column of these tables gives the observations of 2000 students as showing the AVERAGE MEASUREMENTS of the items designated. And by an average we mean the sum of all the measurements under each item divided by the number of the men observed, or as better expressed: "an average is obtained by dividing the sum of the values observed, by the number of observations."

But an average result is not entirely satisfactory. It does not assure us of the future since it is so much modified by the extreme values, those very large or very small. So that a more reliable method is the use of the DOCTRINE OF MEANS—the second table—rather than that of averages. And to quote again, "a mean is the value at which the largest number of observations occur, and it is obtained by arranging the men"—measures—"in groups, and noting the value of the group which contains the largest number of individuals." Thus for this student study 2086 individual measurements were separated into groups made by the variation of a few millimeters each, and the group containing the largest number is the record of the table. And while in any study averages and means always approach very nearly to each other, yet the central value, the real object sought for, is much more reliable if obtained through the doctrine of means rather than that of averages, because the result is not affected by extreme or exceptional cases.

To know the MEASUREMENTS OF THE MEN WHO ARE OF THE AVERAGE AGE OF ALL WHO ARE OBSERVED will certainly give additional light on the proportions of the physical pattern which we are to work from. The third table gives the average measures of 326 college men who were between 21 and 22 years of age.

There are thus presented here three distinct methods to help determine the pattern of the College Student. To these in due time it is hoped a percentile table may be added.

