Amherst and Wellesly College Anthropometric Tables

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Hitchcock



THE

ANTHROPOMETRIC TABLES

AMHERST COLLEGE.

1892.

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THE

* RESULTS OF ANTHROPOMETRY, *

AS DERIVED FROM THE MEASUREMENTS OF THE STUDENTS

IN AMHERST COLLEGE.

A PAPER PRESENTED TO THE AMERICAN ASSOCIATION FOR THE AD VANCEMENT OF PHYSICAL EDUCATION AT THEIR ANNUAL MEETING IN PHILADELPHIA, APRIL, 1899.

> AMHERST, MASS.: Press of Carpenter & Morehouse, 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
	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 heighth 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.

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Anthropometric Study of the Students of Amherst College. 6. TABLE OF HEIGHTS.—1822 MEASUREMENTS.

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Anthropometric Study of the Students of Amherst College. 7. TABLE OF PERCENTAGES.—2280 MEASUREMENTS. The black figures represent millimeters, kilograms and liters; the red, inches, pounds and cubbe inches.

		10		1	EIGH	TS.		1												- 4	GERT	THS.													I					BREAL	ADT	IS.				I	LI	ENG?	a.				ST	RENG	THE.				600
PHIR CENT.	wescier.	Total Control	looty.	dernum.	Navel.	Puber.	Knee.	Shiring.	Head.	Neck.	Chest Repost.	Chest Full.	Della.		1Dps.	Hight Thigh.	Left Thigh.	Eight Knee.	Left Knee.	Dishe Cald	suggest Carts.	Left Calf.	Kight Instep.	Left lastep.	Upper Right	Arm Contra't	Arm.	Upper Left.	Eight Ellere.	Left Ellow.	Right Forestm	Left Forestin.		Left Write.		Head.	Neck.	Shoubler.	Walst.	10ps.	Slaples.	Elght Shoulder	Left Shugder	Elght Elbow	Left Killow	and a war	Right Post.	Left Foot.	Herizontal	Transfer .		Back.	Dip	Pall	Lept	Elght Forestre	Left Foresrm.	Tetal.	CAPACITY
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30	57	7.4 0	6,6 1	380	1007	842	461	685	5400 22.0	342	85	90	0 7 4 97	7 3	172	1.5	492 0.4	349	13.	9 3	2 1	335	237	9.3	11	3 1	249 9.7	9.5	9.6	239	25	5 24	9 1	61 161		150	105	421 16.6	245	S17	18	9 36	1 36 3 14	3 45	8 17.	7 10	4 20	54 17	D 17	00 1	42 7	24	8	7 3	149	35 77.2	72.8	872	3.57
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0	51	2.4 6	625 1	319	932	795	432 17.0	853 25.7	345	324 12.8	80	5 S	13 6	64 3	230	663	459	329	33	0 5	14	2.5	224	221	1 2 10	1	927	221 5.7	229	224	23	4 9	1 1	53 15						301									10 16	13T 6	1.7	218	0	3 1	112	28 61.7	57.8	681	2.93

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.

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 tailest 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 classs of the tall men and the short men, the averages of each item, and the difference between them both in numbers and in personal

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.

			1.75	LLL DO	TEM-			
		Height.	Back,	Legs.	Forearms	Lungs.	Dip.	Pull Up.
Aggregates.	Class of '89, Class of '90, Class of '91, Class of '92,	1800 1816 1814 1805	3262 3343 3347 3262	3867 4285 3999 4249	897 935 834 906	328 348 326 312	152 168 115 156	195 203 167 197
700	erage,	1809	165	205	45	1.64	7.4	9.5

			SH	ORT M	IEN.			
		Height,	Back.	Legs.	Forearms	Lungs.	Dip.	Pull Up.
Aggregates.	Class of '89, Class of '90, Class of '91, Class of '92,	1680 1652 1651 1677	3017 3030 3080 3190	3507 3395 3443 3606	794 781 737 744	316 339 364 314	174 182 177 151	231 199 250 192
Di Di	erage, fference n measure, fference n per cent.,	1665	154 11 7.25	174 31 17.75	38 7 18.50	1.66 0.02 1.25	8.5 1.1 14.75	10.9

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

AN ANTHROPOMETRIC TABLE

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.

T			HE	ight	r.																GIR	rn.													1				m	REA	DTH					1	L	ENG	TH.					STR	ENG	TH.			1
WEIGHT.	Hadada	Stersum.	Navel	Puber	Pares.		- Section Co.	Bead.	Seck.	Chest repose.		Chest full.	Belly.	Hips.	Right Thigh.	Talk Which		Right Knee.	Left Knos.	Right Calf.	Lett Calf.	THE R. P. LANS.	Athen merch	Left Instep.	Upper Right Arm Control.	Upper Ace	Upper	Dish when	Kight Killow.	Left Ellow.	Eight Forearm.	Left Forearm.	Eight Wrist.	Left Wrist.	Head		- Lancar	Shoulders.	Walst.	mps.	Nipples.	Right Sheal.	Left Shoul-	Right Ellow	Left Elbow	Block Poor	and an extended	Left Foot.	of Arms.	Horizontal Length.	Lungs	Back.	Chest Dip.	Chest Pull Un.	Legs.	Right	Left	Tutal.	O. S.
5 51.0 10 55.1 10 55.1 10 55.5 101. 50 57.6 10 50.5	4 6 10 10 10 10 10 10 10 10 10 10 10 10 10	005 133 6,1 50 647 133 6,9 50 654 150 5.8 50 600 188 6.6 54 710 135	19 96 .6 87 80 95 .8 84 .7 20 .6 10 .3 99 .6 10 .1 00	2 79 5 83 10 80 2 82 2 82 1 100 34 8 83 11 83	0 6 0 11 12 4 0 11 0 6 0 17 12 6 13 11 14 4 16 10	02 5 7.0 10 82 5 7.4 10 13 8 7.8 10 10 8 1.1 10 10 8	53 1,6 6,1 79 6,6 6,6 6,7	345 21.5 350 21.4 536 21.5 560 21.0 564	304 12.8 300 12.0 008 13.3 342 13.5 348 15.7	80 81 82 84 84 85 85 85	5 4 3 3 4 3 4 3 9 3 9 1 9 3	48 3.9 61 3.9 84 8.7 80 5.4	004 96.1 675 96.6 97.8 204 27.7 718	890 101.6 842 101.3 850 33.5 872 36.4 882 54.7	400 18, 470 19, 400 19, 500 19,	4 4 4 7 11 4 6 4 6 5 11 5 11 5 11 5 11 5 11 5 1	50 1 50 1 50 1 6 1 10 1	129 2.9 3.5 3.5 149 3.7 3.3 149 3.7	230 13.0 530 13.3 344 13.5 349 13.7 354 14.0	314 12.3 330 13.4 339 12.5 33.3 341 341 13.4	33 12. 32 12. 33 12. 34 12.	2 2 3 0 3 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	124 6.8 6.8 7.0 7.0 7.1 7.1 7.1 7.1 7.1 7.1	224 8.8 8.8 9.0 9.1 9.1 9.1 9.1 9.1 9.4	258 10.1 265 20.4 273 30.8 283 11.1 289 11.4	937 9.0 934 9.3 943 9.7 949 9.7	22 8. 22 10 23 24 24 24 24 24	1 20 7 9 9 20 7 9, 1 9, 1 9, 1 9, 1 9, 1 9, 1 9, 1 9, 1	29 2 1.0 13 2 1.2 19 2 1.4 1.5 1.5 1.6 1.6	294 8.8 229 9.0 234 9.3 209 9.4 242 9.5	295 9.4 243 9.5 250 9.8 250 250 10.0	250 9.1 937 9.4 942 9.5 249 9.8 252 9.9	158 6.0 156 6.1 150 6.3 163 6.3 163	151 0.0 154 6.0 138 6.2 100 6.3 161 6.1	16 5. 16 5. 16 5. 15 5.	5 98 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	9 30 9 31 6 40 9 31 1 31 1 31 0 4 0 10	13 3 1.5 2 14 m 1.8 0 13 24 1.3 0 14 9 15 9	50 1.1 1.3 1.3 1.3 1.5 1.5 1.5 1.7	300 11.8 108 12.0 12.3 12.3 12.3 12.5	171 6.8 178 7.0 184 7.2 189 7.3	345 15.6 451 15.8 369 14.1 369 14.3	343 111.5 111.6 111.6 111.6 111.6 111.6 111.6	405 460 461 461 461 461 461	654 177 444 177 440 177 454	94 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	9 94 5 1 24 7 9 9 9 9 4 0 10	11 H 14 6 3 H 15 0 1 17 10 0 11 17 10 0	170 1 5.7 1 5.7 1 5.7 1 5.7 1 149 1 8.8 1	1687 64.5 64.5 65.8 66.2 60.2 709 67.3	0.7 1.56 0.8 1.78 1.78 1.10 2.20 1.1 2.41	99 218 104 229 117 258 124 273 130	0 1 2 1 4	3 4 6 7 8	121 261 124 123 130 149 149 141	50 01.7 50 01.7 55 77.8 57.8	26 57.1 29 68.1 31 68.1 35 71.1	500 001 001 574 401 401 401	99 11 11 11 11 11 11 11 11 11 11 11 11 1
0 61.6	I I	294 141 1.8 55	5 60	10 Bi	1 1	7 1	05	560 12.4	351 16.8	880 34,	8 3	0.5 5.4	730 98.7	895 35.1	314	1 N	0 1	130 6.3	330 16.7	847 11.7	34	3 2	42	241 8.5	290 11.4	250 30.3	25 9.5	91	10 1	0.7 0.7	201	256 10.1	D65 6.5	D83 6.4	15	10	1 6	18 g	10	335	196 7.7	373 16.7	971 16.5	953 353	430 18.	20	3 10	n 17	80 1	T100 53.4	1.4	130	0	9	109 373	\$9 95.0	87	453	3 3
10 65.4 10 65.4 114. 10 65.4 114. 10 140. 10 140. 10 141. 10 141.		230 142 8.5 54. 256 143 8.1 56. 170 143 8.9 57. 804 148 1.1 38. 827 136 1.9 79.	12 100 101 101 101 101 101 101 101 101 1	40 97 .9 34 17 90 .0 84 1 35 8 50 0 50 0 50 0 36	4 8 35 111 11 11 11 11 11 11 11 11 11 11 11 1	0 9 1.0 5 90 2 1.3 5 90 8 1.5 5 1.5 7 1.5 7 1.5 7	DR 3.9 21 1.2 10 10 1.3 1.3 1.3	571 52.5 577 58.5 588 588 503 503 51.5	957 16.1 560 16.2 360 16.6 517 16.9 584 15.1	900 33. 940 35. 940 36. 940 37.	7 6 3 3 0 6 8 3 6 3 6 3 6 3 7 9 3 3	40 7.0 64 7.5 00 8.2 92 9.3	740 29.1 250 20.6 509 50.8 794 81.8 884 88.1	904 35.5 915 36.0 929 36.5 948 87.3 902 37.3	565 20. 581 20. 540 21. 540 21. 57 22.	5 50 5 20 1 50 9 20 1 54 4 21 1 56 1 50 1 50	19 12 13 13 13 14 15 15 15 15 15 15 15 15 15 15 15 15 15	6.5 6.5 6.5 128 6.7 80 5.0 5.0	368 14.3 369 36.5 372 16.7 280 15.0 15.0	350 13.0 300 14.1 364 14.3 374 14.7 381 15.0	35 18. 30 14. 31 14. 31 16. 31 16.	1 2 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	98 8.0 3.8 3.8 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	245 9.6 949 9.7 953 9.6 9.6 10.2 265 10.4	380 11.3 308 12.1 335 12.4 327 12.9 335 13.2	265 10.7 276 10.7 277 10.9 286 11.3 292 11.5	256 10.1 256 10. 256 11. 286 11.	25 3 10 4 25 5 16 5 16 7 18 7 18 9 20 9 10 8 21 3 10	13 2 13 2 13 1 13 1 13 1 13 1 13 1 14 2 14 2 15 1	9.8 9.8 254 (0.0 100 0.8 104 0.3 170 0.6	267 10.4 270 10.6 273 10.9 281 11.0 289 11.3	206 10.2 264 10.5 200 10.5 275 10.9 280 11.0	108 6.6 109 6.6 171 6.7 173 6.9 179 7.6	160 6.5 170 6.7 174 6.8 177 7.0	154 6.1 155 6.1 161 6.1 162 6.4	10 10 11 11 11 11 11 11 11 11 11 11 11 1	1 40 11 11 11 11 11 11 11 11 11 11 11 11 11	10 20 10 10 10 10 10 10 10 10 10 10 10 10 10	57 1.1 61 1.5 1.5 1.6 1.6 1.6 1.8 1.8	12.0 13.0 13.1 13.1 13.8 11.3 14.5 13.6 13.6 13.6	200 7.9 204 8.6 200 8.2 217 8.6 222 8.8	277 34.0 282 15.0 588 15.5 597 15.6 405 33.9	373 14.8 380 15.0 187 15.3 295 13.6 402 15.8	600 19.3 472 19.6 428 19.5 480 10.1 404 10.4	455 18.2 471 18.2 476 18.3 485 19.1 480 18.4	962 10. 208 10. 270 10. 273 10.	1 26 8 26 5 10 6 27 6 10 9 27 8 10 9 27 9 10	3 18 3 77 8 18 1.5 71 10 18 1.6 71 5 18 5 18 7 19 7 19	08 1 1.7 (29 1 1.0 (00 1 1.8 (1.8 (1.9 1 1.2 (1.2 (1.2 (1.3	700 68.9 (769 60.6 (789 70.4 800 71.7 841 72.4	1.5 3.00 1.6 3.01 1.7 3.66 2.0 4.60 2.2 6.53	149 328 150 331 160 333 178 293 194 428	7 8 10 12 14	10 11 12 14 16	173 285 184 405 190 430 219 485 288 585	41 90.4 43 94.3 46 101. 50 110. 53 116.	39 96.0 41 90.4 43 42 1 100 8 110	507 507 51111 542 5 110 604 6 131 644 2 140	9 4 56 2 7 4 17 2 2 4 94 3 4 4 10 3 4 3





ANTHROPOMETRIC TABLE

Arranged according to the percentages at the left, from the measurements of fifteen hundred Wellesley students. The black figures indicate millimeters and kilograms; the red, inches and pounds. "Lung Capacity" is given in litres and cubic inches.

Measurements Taken and Compiled by M. Anna Wood, Wellesley College, Wellesley, Mass.

51					111	EDGE	IT.														G	RTH												DEP	TH.	B	REAL	DTH.					LEN	GTH				5T1	RENG	TH.	
FRA CR	AGE,	WESGREE	Halada	Shing	Knee.	Pales	Name	Sternam.	Head.	Neck.	Cheek	Chart full	Nieds Rib.	Nieth Rib	full.	The same	ALC: N				Resto La	Cours.	Ashle R.	Ankle L.	Isotop R.	hattep L.	Uparmill.	Uparm L.	Kilow R.	Ellery L.	Foresteam	Write B.	Wrist L.	Chank	Abdomes,	Head.	Neck.	and the same of	Hips.	Nipples.	Sheatfer Ethers R.	Shoulder Elbow L.	The R.	Elbow Tip L.	Foot R.	Foot L.	March I	Legs.	Chest,	Freezesk.	Persami.
	20.6	75-3	17	5 91	7 45	5 52	E 100	1419	501	34	6 6	0 9	04 21	13 5	0 2	42 10		90 49	6 40	1 4	4 3	n 31	6 13	n ag	140	*4.5	1/0	311	F20	1971 1	99 ×	4 17	100	274	100	100	110	806	etc 3	Ng 24	0 307	325	400	400	stig	20 mg 12		H 12		10	35
ă	RG-0	2111	17	10. 90	5 45	1 15	E 206	9 1404	- 5%	5 A)	19 A	M 8	83/ 31	21 2	532	16: 10	45 6	80 4	4	7 #	10 3	6 35	3 23	0 23	440	A300	315	500	454	190 1	ez h	A 10	166	900	812	High	110	20/5	194 3	72 N	37	130	459	457	101	PSR 13	ark .	15	5 50	39	3.5
i		60-6	1 10	HE PA	6 44	e he	1. 10gr	N April	575	33	上と		9 70	20 7	6 G	of g	0 0	ey 6	1 3	M 3	10 N	7 30	0-1	200	257	215	300	300	Agg.	40 A	AS A	B 100	154	199	200	160	104	394	145 3	60 Q-0	30	6 255	WES	ACC	957	25% 17	260	20 14	0 10	3/5	300
,	10.7	99-7	13189	NC 10	65 40	p. 34	S) som	0.1324	574	134	90.2	AL: N	pt 66	80) 2	13 6	291.90	(H) (d)	00) 60	37	4 3	51 30	7 39	0 300	1 (88)	(ASH	439	2011	1995	PHS I	ngo z	20 1	(f) 16	000	198	1998	126	100	390 -	148 31	54 . 49	1 36	2 350	445	410	866	ASS 12	rodi libor	No. 12	6 31	.35	20
	40.10	BILLS	10 10	E 57	75 162	g) Sin	g() post	x) x3/is	534	31	661.30	3 8	WIC 16	10 2	15 0	60 gr	(6) 50	151 50	41:32	2 32	3 3	a 3h	200	211	0.00	245	PQ01	Mrg.	Sept.	105 1	35 4	12 : 15		150	196	1105	.100	350	F35 3	163 21	21 35	2 -345	· . 654	448	Xel	245 H	(Ab)	22 14	4 12	100	- 25
i	\$0.4		14	(K) - 85	W 40	(t) : 8 to	00 1000	U 1351	111-908	55/34	180.195	13.5 - 50	gr 64	040 (5)	26 6	57 0	430 - 52	50: 40	30 37	141 35	50 34	35	71 - 417	3 317	200	- 2001	250s :	ATAL .	200 1	1971 - 2	58 8	10.1131	15%	450	1551	11/2	1105	108 : 1	100 31	66 22	1004	C 151	4405	415	747	9.8 do	77	11	75 188	300	27
	30.11	ga.s	-	p 200	2 44	F . 50	1 .995	7366	11:300	100	9.7	S N	PH -95	10	9 9	90 90	13 37	27 37	7 35	野沙	90 33	4 35	2	9 915	845	286	250	777	A979 1	154 7	25 2	म् ।	1 151	186	HIG	152	142 -1	105	153 34	pt 21	- 351	399	430	435	340	945 H	00	10 11	10 30	. 70	- 85
	100	180/	5159	C 36:			25,20%		No.		510				-31.25		1 1 1 S	74 S	1 3	11 16 40 y	4 3	9 35	9 3-4 0 80	8-5 8- 84	3-9	900	479	77E	F34	91 3	F .	6.0 N 15	6.1	7:3	7(3) 15a	5.2	\$13 15 200 3	121-3	10 11 H	E 5.6	10-5	348	434	452	9-7	9-6 69 883-16	195	5 264	6,65,1	63-p.	57.3
																	4 5	7 5	2 30	0 15	24	1 34	211	911	204	280	AZP	PER CO	E75 4	189 - 8	49 81	(a) 150	254		179	*55	102 3	70 8	15 At	214	340	1-3950	437	470		94 10					1(1-1) No.
	20.0	335) 35-9	No.	10, 75	4 41	21 279	7 10	0 1324	591	31	14 21	11 - 79	(I) (I)	14 .2	10	54 . 9	0 8	50 33	9 30	T 35	\$ 34	1 341	F00	31.839	CUBAD	89	924	2000	MATE OF	MO 3	ER D	NO 1153	1153	129	127	154	104 3	105	at 33	90 : 912	344	344	429	472	961	Del fig.	291 5 4	5 9	45	97	94
	100	\$10.5 \$4-9			0 41	1 28	1 1071	C 1315	55	31	3 71	2 6	00 00	19 6	(D) (d)	49 9	11 52	25 33	3 35	4 3	21	7 36	200	200	- 219	200	921	170	220 I	135 3	40 41	S 151			125 T	155	106 1	290	104 3	M - 30	261	349	687	475	4.60	2-1 fq #30:16		4 9	K 10	86	31
		130.5	() fg	5 35-	3 16.	1 30-	1 15-1	1 114	20.	12.	京神	132	6 4	-10 At	-6 21	A 15	g m	40.20	80 13-	9 15	9 13	4 13-	fi-1	5.4	5.0	8.6	10.7 H	r-gily	F 18	9 5	2 2.4	63	6.	7-	5.9	6- 1	6.1 34	-4 7	-S 11	45.30	19-9	(tp-g	15-3	10-7	24	9-6 fe	194	4 209	41 59-5	52.50	50.7
	7000	119-4	66	0 35-	3 16	994	35.1	19.4	\$ 100 M	10.	河源	5 2	-1 26	0,25	15 34	學加	10, 20	A 20.	6 13-	8,12	41 15	3 73-0	5 8-1	3-4	18-5	8-5	0.0	40	10 8	9 5	6 8-	6,	5.0	6.6	5.5	6.	41 31	13 1	-7 38	S \$17	134	134	10.7	16-7	9-4	9-3 45	./B 130	300	5 (0-3	37-5	49-5
	19-5	附	100	9 23-	1 1	327	120	1300	語	10.	1 35								3 15	7 15	일본	식됐	200	25	13	17.5	900	104 (I)	1-0 1	3 1	S A	121	150	124 0-9	171 0.7	101	104 3	13	19 4	8.1	15.5	150	82	AP0 15-5	27	問旨	id red	1 194	1872	15.7	40.7
	19-5	1150	2	7 35	12	37		11.0	85	18	S A	30 10		19.00	割り	31	48					3 15-				8-4			6514	9 5	6 34	54				10	2 in	(-) B	Ta Mil	d 8.15	H°.	13-4	440 18.5	#1X 10-4	告	哲情	5 14	100	n gill	55:1	450
	19-3	\$13.0 \$13.0			A 15-	300				16	5 L	1 2	3 4	3 2	의 의	9 30 - 34	2 50	13 53	1 de	3 6	1 13	320	7-9	900 5-	24	3-3	ZH (-) H	3	13 3	7 5	1 4	123	118	171 0-7	6.6	1-9 1-9	100 J	58	4 4	4 2-9	75	111	615	815 10-3	9.2	14 18	20 11	4 176	51-0	p.4	49:1
	19.1	863	120	36	1 40	30		1256	0.865	100	見器	4 17	5 50			N 35	1 2	S 58	清	A H	3 32	9 19-3	7-9	7-9	212 5-3	1-3	355 1 10-2 1	243	101 A	6 5	3 8-	145	3-7	169	154 5-5	5-5	17 1	SS 8	4 8	1 195 a 2-5	132	世	4/15 10-3	4/(). 101.0	458 9-1	232 150 2-1 60	3 10	100	100	20.7	+411
	15.11	99.8 109.3	16	0 12-	3 45	423	900	\$479 5016	363	30	100	32	a 600 14 30	100	S (0)	8 86 -5 33	L E	* (Pa	g 15	118	10.15	T 181	33	73	811 5-3	5-3	*55 P	51 A	10 5	5 8	1 35	馬	145 5-7	0.0	154 5-4	117	25 6	10 1		9 190 2-7		13-	412	411 16,1	851 9-1	230 15	10 10	Si sog	3 45-5		41.79
	15.5	45.5 102.6	28	5 34	1 12	79	38	1070	545	P.	0 69 3 49	5 20	N 23	10 10	0 9	(5) Sq (3) 33	3 20	16 51 3 70	1 13	2 31 13	3 12	6 12.	0 2:7	2-7	200	9-1 1-1	151	P(1)	317 1 1-5 6	4 8	40	# 545 5-5	144 5-2	164 515	150 6-3	545 5-7	18 1	1.5	T. d	4 22	377	340	55.7	900	200 0-	205 15 0- 61	8 0	9	0 al-3	65	39-1
								100a 1 40-2				17	3 13	1 8	* 52 -11 21	6 5j	9 30	6 50	いな	75	5 Jo 19 18	6 231	. 75	73	5.1	305 3.1	9-3	15/3	14 3	3 A	9 7	144	143	stic fire	157 6-3	144 5-7	93 3 3-7 1	pdi a	15 AU	0 2-S	10.3	383	15-9	404 15-0	840 8-9	## 13 6-9 6	1	0 0 0 187	7 41-9	80 86-3	31-1
	15.1	801.6 201.6	2	3 32	일류	P	200	12go	Ser.	111	1 0	L 21	5 55 10 00	10 M	1 5	84	S 40	0 10 10 10	3 24 8 54		7 10	1 2 H	0 2-5	27.5	5.	5.	20	258	5-3 S	10 2 13 7	8 2		145	100 5-3			91 J	MP 1	95 ag	H 21-3	3H 10.0	18.0 18.0	400 15-5	15-7	224	13 2	1 7	3 136	4 37-3	89- 81-9	35-3
	12-7	44+1 50+1	1 151 2 59	1 2	4 15	717	5 Jg -1	1451	534	111.	9 00	9 11 N	3 50	S 04	7 9	6 50	6 47 -7 18	9 19	8 30	3 35 5 12	5 30 -6 10	9 17 2	10g	17-3	2.9	7.9	9.5	6130	5.0.0	04 n	8 7-	141	5-5	150	150	9.6	88 3 3-5 1	100	18 80	10.34	184	313	35.0	15-5	5.7	841 15 5-7 50	VE 00	10 5 11 131	S 15	17 37-5	33.1
		48-3	216	1 2K	7 20	200	88a 5 34-3	101	53A 80-1	R54	1 25	79	1 10	g 64 84	1 55	1 25	2 45	0 gh	3 15	31	E 6g	F/S	151	154	7.5	105	201	138	905 B	30 63	5 15	E AUS	135	151	166	140	50 3 3-3 5	IP I	PS 10	124	305	372	391	359	arb B.d	015 to		5 5	74	15	14
																																														211 14 5-3 (1					

Also the measures of Miss_

, taken

, 189 , by

WELLESLEY COLLEGE GYMNASIUM,

LUCILE EATON HILL, M. ANNA WOOD, Director, Examiner.

ANTHROPOMETRIC TABLE.

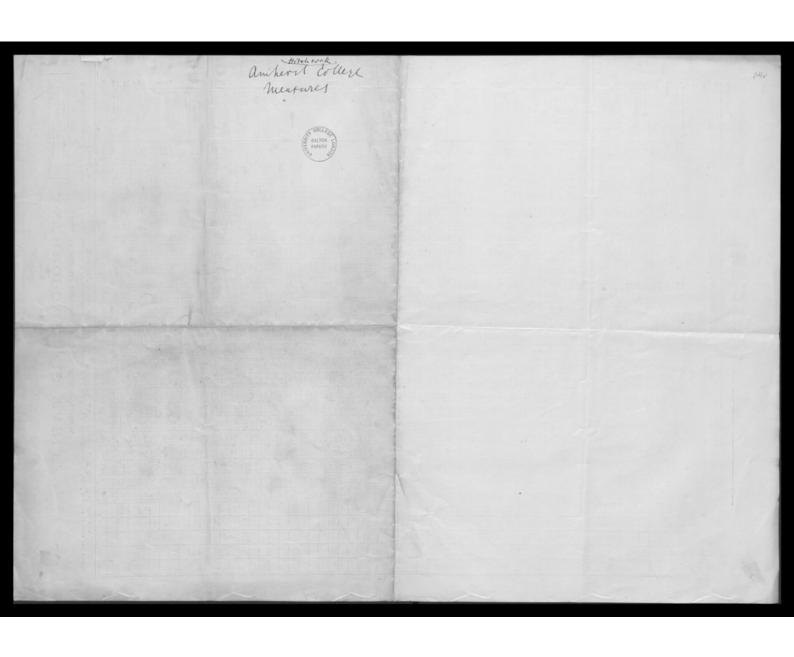
Compiled from the Measurements of 1100 Wellesley Students.

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 "Pilosity" is meant the amount of the body covered by hair. Compiled by M. Anna Wood, May, 1890.

	-Lang	Capa	icary	1.0 111	ires in	*** ***	DEC EN	LARES.	Ly	2 1100	ny n	, men			ant of	r rate	roux :	epere	u oy	warr.		mprin	a oy		N.N.O.	rr oou,	- sway,	reyo			-
Hei	ght in m.m.	1480	1490	1300	1510	1520	1530	1540	1510	1560	1570	1580	1.590	1000	1610	1629	1650	1640	1650	1660	1629	1680	1690	1700	1710	1720		**	***	****	*****
Hei	ght in locker	58.3	38.7	59.1	29,5	59.8	60.2	60.6	61.	61.4	61.8	62.2	62.6	63.	63.4	63.8	64.2	64.6	65.	63.4	65.7	66.1	66.5	65.9	67.3	67.7					
		*****			18-4	19-5				19-10											24.0										
Ap		47.9	48.4	49.7	49.9	49.5	30.9	51.5	31,9	51.5	19-9	31.5	35.4	55.4	33.6	54.6	19-10	56.9	19-9	19-7 57.6	29-2	18-7	10.	39.1	59.2	21-1	-		-		
We	ight	790	207.5	797	110.8	110.8	110	815	113.5	115.5 822	115.5	115.5	837	118.6	845	835	123	196.5	127.4	128.	128.2	131. 870	181.8	873	151.5 875	132.5					
	Sitting	33.3	31.3	31.4	31.6	31.9	32.	32.	32.4	32.4	32.6	82.7	33.	53.5	33.3	33.7	34.1	34.1	34.1	34.1	34.2	34.5	24.3	34.4	34.4	34.4					
	Knee	379 14.9	15.1	385	387	390 15.4		15.5	396 15.6	401 15.7	15.7	402 15.8	15.9	15.9	410 16.1	16.1	16.4	16.4	418 16.4	420 16.5	16.7	16.9	17.1	17.1	17.1	17.1					
-	Pubes	27.8	712	29.2	731	733 78.8	734 28.8	29.1	746	733 29.6	763 50.	30.1	269 20.2	723 20.4	781 80.7	281 30.7	795 51.8	799 31,4	803	807	819	822 32.4	823 82.4	826 32.5	830	833 32.8					
6	Navel	581 34.6	884 54.8	892 55.1	905 53.6	300	920	924 36.4	36.6	949	945	37.4	958	965	967	954	999	293 39.1	998 39.3	999 39,3	1917 59.8	1004	1017	1029	1002	1033					
		1215	1220	1222	1223	1361	1932	1262	1265	1976	1284	1285	1289	1310	1516	1327	1334	1345	1550	1365	1576	1380	1549	1390	1206	1399					
	Sterson	542	544	344	48.2 346	346	348	549	330	550	330	330	330	51.6	351	50.0	30.6	52.9 555	133	55.7	333	557	334	54.7 558	140	363					
	Head	21.4 218	21.5	21.5	21,5	21.5	20.6	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.8	21.8 012	21.6	21.8	21.8	21.9	31.9	21.9	22. 314	22.1 316					
	Nock	710	11.8	11.7	11.8	11.9	11.9	11.9	11.9	12.	12. 234	12.	235	12.3	744	19.1 744	745	749	12.3	19.5	255	12.3	737	12.4 765	765	12.4					
	Chest	28.2	28.3	26.5	28.5	28.5	28.5	28.5	28.6	28.7	26.9	28.9	28.9	29.1	29.3	29.3	29.5	29.5	29.5	29.6	29.7	29.7	29.8	30.1	30.1	30.1					
	Chest Fell	20.3	774 30.5	30.5	280	782 20.8	263	785 30.8	31.	31.1	31.1	794 71.8	292 31.4	81.5	31.5	803	31.7	813	814 52.1	815	816	820	820 32.5	823 32.4	823 32.4	82.5					
	Nigh lith	560 22.	365 72.7	22.4	22.7	23.2	23.8	610	24.	610 24.	24.2	614 24.2	21.2	613 24.2	24.7	24.2	617 94.5	24.5	24.5	24.3	617 24.5	24.8	26.8	617	617	21.3					
	Nisth Rib Full .	26.2	665 26.2	065	26.2	665 26.2	26.7	663 26.2	26.2	26.7	006 M.2	26.3	96.3	673	672	655	685	588 27.1	691 27.2	696 17.3	695 27.3	698 27.3	695 27.5	695	693 97.3	693 17.3					
		602 23.7	606 23.8	606 23.8	609	620	620 24.4	620 24.4	620	622	622	423	623	633	624 24.6	624	634 24.6	625	628	631	635	637	639	639	639	639					
	Waist	866	868	870	870	850	875	#25	876	906	876	24.5 926	876	876	878	24.6 A83	893	809	906	24.8	914	25.1	915	915	915	917					
	Hips	54.1	34.2	34.3	338	24.3 540	34.5 345	34.4	34.5	34.5	34.5	34.3	547	543	34.3	558	554	55.4	33.6	35.7	363	565	364	364	364	563			-	-	
	Thigh B.	21.2 534	21.2 554	33.2	21.2	21.3	21.5 545	345	21.5	343	21.6	346	21.6	346	91.7 346	21.7	21.8 354	21.9	72. 557	22. 560	22.1	22.1	361	22.2	363	27.2			-		-
	Thigh L	21.1	21.1	23.2	21.2	21.5	21.5	21.5	21.5	345	21,5	31.5	21.5	346	21.5	21.8	355	21.9	21.9	22.	22. 557	22.	357	22.1	32.1	22.2				-1	
	Knee R	13.2 334	13.2 334	354	13.2	13.2	15.4	343	13.6	15.6	344	345	13.6	347	347	13.7	11.8	14.	14.	14.	14.1	14.1	14.1	14.1	14.1	14.2					_
	Knee L	15.2	13,2	33.7	18.2	13.2	13.4	13.5	15.5	11.6	18.6	13.6	15.7	13.7	13.7	13.7	33.7	15.8	16.	14.	14.	14.	14.1	14.1	14.1	16.1					
	Calr R	12.6	12.8	13.1	15.1	13.1	13.2	13.3	387 13.5	337	337 13.3	357 13.5	339 13.4	13.4	13.4	339 15.4	13.4	339 15.4	13.4	339 15.4	13.4	339 15.4	13.4	15.4	15.4	15.4					
14	Calf L	12.6	12.8	330	330 13.	330 13,	13.	334 13.2	574 18.2	304 31.2	335 13.2	335	13.3	13.8	337	13.3	357 13.5	337	11.4	10.4	339	15.4	339	13.4	13.4	15.5					
1	Ankle E	7.6	7.6	7.6	7.6	7.6	195	197	198 7.8	7.8	7.9	7.9	7.9	7.5	291 7.9	202	202	202	205 5.1	8.1	200 8.1	230 8.3	210 8.3	8.3	211 8.3	212 8.4					
-	Ankle L	7.5	190 7.5	191	192	193 7.6	195 7.6	196	7.7	197	200 7.3	200	200 7.0	7.9	7.9	202	202 8.	202 K	204	205 8.1	205	200 8.3	210 6.3	211	211 8.3	2112 8.3					
	Instep R	206 5.1	206 8.1	206 8.1	907	208 8.2	209 8.5	210 8.5	230 6.5	210	230	211	212	215	218	215	214	915 8.5	216	216	217	215	219	220	220	222					
	Instep L	294 5.1	205 5.1	204 5.1	206	207	208 8.2	208	208 8.2	209	209	210 8.5	2112 8.4	212	212	212 8.4	215	213	214	234	215 8.5	228	218 8.6	219 8.7	220 8.7	221 8.7					
		257	257	257	257	257	207	263	264 10.4	264 10.4	264	264 10.4	264	264	264	264	264	264	264	265	265	267	268	270	271	273					
	Up. Arm H.	353 3.9	253	251	200	235	258	210	359	257	258	250	259	258	258	257	230	200	200	261	263	265	265	264	265	270					
	Up. Arm L	213	F13	214	213	217	232	219	221	221	771	221	221	228	225	10.1	10.2	206	217	207	228	229	230	230	231	231	-		-		
	Ellow R	213	8.4 213 8.4	234	214	216	236	8.7	6.7 218	8.7	216	9.7 220	220	220	920	220	221	223	223	223	725	9.1	250	200	9.1	201				-	-1
	Ellow L	8.4 206	200	8.5 T10	210	210	210	8.6 210	211	8.6 211	911	913	8.7 215	8.7	215	8,7 215	8.7 913	214	216	8.8	219	222	223	253	9.1 223	9.1 223	-		-	-	-
	Fore Arm R	200	200	8.3	200	209	8.5 200	9.5	8.5	210	8.5	8.4 211	8.5	8,5	211	8.5	8.5 215	8.5 213	8.5 E14	8.5	8.7	219	8.8	8.8	8.8 239	8.8		-		4	
	Fore Arm L	8.1 145	9.3	143	8.3	8.3	8.3	8.3	146	8.3	8.8	147	148	8.3	8.3 148	8.5	8.4	8.4	8.5	8,5	8.5	8.4 132	8.7	153	8.7	107			_		_
	Wrist R	3.6	3.6	5.6	3.6	5.7	5.7	5.7	5.7	5.7	5.7	3.8	5.8	5.8	5.8	5.9	5.9	5.9	5.9	5.9	3.9	6.	6.	6.	6.1	6.2			-		
- 3	Wrist L	5,5	141 5.5	5.5	3.6	145 5.6	3.6	144 5.7	145 5.7	345 5.7	5.7	146 5,7	146 5.7	3.7	5.8	3.8	3.6	5.8	130 5.9	5.9	5.9	3.31	5.9	6,	6.	6.1					
į.	Chest	160 6.5	6.3	160	6.3	6.3	6.3	163	6.4	163	163	164 6.5	164	6.5	164	6,5	165	165	163	6.6	168	6.6	168	6.6	6.7	6.7					
Day 1	Abdomes	7.1	185 7.5	188	188	188	188 7.4	188	189	200 7.5	210	204 8.1	205	296 8.1	205	900 8.1	206 8.1	206 8.1	206	906 8.1	218 8.4	215	216	217	2117	217					
	Head	144	144	144	164	144	146	146	165	146	146	146	144	146	147	147	147	147	148	148	148	148	148	148	148	150					
		93	33	93	98	- 53	93	5.7	93	93	95	55	95	95	93	5,8	3.8	57	57	28	3.8	5.8	100	100	3.8	5.9					
	Neck	341	343	3.6	352	354	3.6	334	354	8.7	855	3.7	3.7	341	3.7	3.7	3.7	3.8	3.8	3.8	266	3.9	349	3.5	370	872		-	-		-
and a	Shoulders	13.4	208	208	299	211	214	214	714	14.	214	214.1	915	14.2	14.2	216	218	218	14.4 218	218	218	218	14.6 23.8	218	212	14.7					-
â	Waist	505	9.7	8.2	8.8	368	8.5	201	8.5	8.5	8,5	8.5	8.5	314	8.5	8.5	8.6	8.4	8.6 220	8.6	8.6	8.6	8.6	8.6	8.7	8.7					-
	Ніра	11.5	11.9	12.	12.	201	12.2	12.2	12.5	12.3	12.3	12.5	12.4	12.4	12.4	12.4	12.4	12.6	12.6	12.4	12.6	12.4	12.6		15.7	12.7					
	Nipples	7.7	2.7	160	8.1	7.9	7.9	8.	8.1	8.	8.1	8.1	8.1	8.1	6.1	905 8.1	906 8.1	208 8.2	208 8.2	8.3	8.3	8.4	5.4	8.4	8.4	8.5					
	Shoulder Elbow IL	308 12.3	12.4	515 12-4	318 12.5	12.6	12.7	12.9	327 12.9	12.9	329	550 15.	336 13.2	13.2	337	339 13.4	341 13.4	346 13.4	346 13.6	347	331 15.8	552 13.3	334 13.9		354 14.	14.1					
	Shoulder Elbow L	19.1	12.4	315 12.4	12.5	112.6	320 12.6	326 12.8	12.9	327	530 13.	330 13.	334 13.2	356	597 15.5	338 13.3	341 13.4	545 15.6	345	347	334 15.8	55g 13.9	353	550	354	538 14.1					
-	Ellow Tip R	388 15.3	394 15.5	396 15.5	398	15.7	403 15.8	15.9	407 14.	16,1	614	455	420 14.5	421	421 16.5	16.6	427 16.8	429 16.9	483 17,	484 17.1	485. 17.1	455	436 17.1	456	439 17.3	442 17.4					
- 1	Ellow Tip L	288	294 15.5	13.5	398 15.6	399 15.2	601 15.7	15.9	405 15.9	16.	412 16.2	414	420 16.5		421 16.5	422 16.6	427 16.8	429	455	654 17.1	433 17.1	685 17.1	436 17.1	436 17.1	439 17,3	840 17.3					
1	Foot R	218 8.6	222	223	224	225 8.3	226 8.9	226 8.9	227	228	255	235 9.2	235 9.2	236	236 9.3	937	237	258	241	242	943 9.5	243	243	947	\$17 9.9	252					
	Foot L.	215 8.5	120 8.7	223	224	225	225	226	227	118	229	230	251	233	334	234	9.5	207	240	212	243	243	243	217	231	255					
	The state of the state of	1439.	11105	1521.	ESSS.	1341.						9.1		9.2				9.3				9,5				1735					-1
	Streich of Arms	59,	39.5	50.8	200	60.6	51	61.8	61.8	53	56	52.4	55.6	100	10	50	64.6	65	65.2	63.5	61	66.6	62	68.1	68.1	63		-	-		-
	Back	170	77	200	801	80.1	112.4	116.8	116.8	116.8	123.5	91	123.5	127.0	150.1	130.3	150.1	100.1	152.5	134.5	134.5	100	105	110	120						
i	Legs	158.7	174.2	25	187.4	187.4	189.6	189.6	196.	194.	196.2	200.6		200.4			216.1				218.3										
100	Chest	48.5	50.7	50.7	24 52.9	32.9	55.1	55.1	55.1	35.1	25 55.1	25	57.5		57.3	57.5	57.3	57.3	26 57.8	37.3	57.3	57.3	26 57.3		59.5	39.5					
100	Fore Arm R	20 44,1	44.1	48.5	48.5	23 30.7	50.7	52.9	24 52.9	32.3	24 52.9	24 32.9	24 52.9	25 26.1	35	25 55.1	33.1 53.1	25 55.1	26 57.8	37.3	26 57.5	26 57.5	26 37.4	26 57.3	26 57.5	26 37.3					
3	Fore Arm L	46.3	41.9	66.8	44.1	46.3	21 46.3	46.5	21 46.5	46.3	20 44.1	20 44.1	21 46.5	44.1	21 46.3	21 46.5	22 48.5	21 46.3	50.7	46.8	48.5	20 44.1	46.3	48.5	48.5	50.7					
Lun	g Capacity	2.24 337	2.29 140	2.57 145	146	2.39 146	2.42	2.44	2.44	2.44 143			2.45 150		2.49 152	2.59 138	2.49 152	2.55	2.65 162	2.70 163	2.70 163	2.75	3.66	3.08 188	3.08	3.13 191					
	eity.	1.7				2.8	2.6	2.5	2.	2.1	2.2				2.	1.4							1.5	2.2	1.9	2.					
100000			400		-		-74	-		4.1	0.00	-	110	1.01	F3	1/6	1.6	1.93	4.	2.2	20 1	1.61	1/6/1	2.71	100	21					
*4	lso the measures of A	Viss								-	taken				+		18	, ,	by												

*Also the measures of Miss	, taken	*	18 , by	
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A STUDY

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 authropology. 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 Prise 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, Height of Body, 0.64 "Right and Left Elbow Tip, 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

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.

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 Ambrage 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 Gllege.

Per cent, of gain between Freshman and Senior years

WEIGHT,	FRESHMEN.	SENIORS.	PER CENT OF INCREASE.	GROUPS OF STRUCTURE AND FUNCTION
HEIGHT,	*60.23	64.70	7.42%	Weight.
Navel, 1030 1039 .88	1722	1785	.76	Bone,
Pubes	1408	1418	.72	Bone.
Kanee,	1030	1039	.88	
Sitting	862	869	.82	Bone.
GIRTII, Head, 567 572 .89 Bone. Neck, 355 359 1.13 Muscles. Chest repose, 866 903 4.28 Vital Organs. Chest full, 919 947 3.05 Vital Organs. Hips, 883 908 2.84 Bone. Right Thigh, 500 523 3.95 Muscles. Right Knee, 356 363 1.70 Bone. Right Knee, 356 363 1.70 Bone. Right Lott, 341 352 3.23 Muscles. Right Instep, 243 254 1.65 Bone. Left Knee, 356 667 5.54 Muscles. Right Lott Calf, 341 352 3.23 Muscles. Right Instep, 242 246 1.66 Bone. Left Instep, 242 246 1.66 Bone. Upper Right Arm, 253 266 5.54 Muscles. Upper Right Calf, 287 315 9.77 Muscles. Right Elbow. 247 255 3.25 Bone, Right Forearm, 258 266 2.72 Muscles. Right Forearm, 258 266 2.72 Muscles. Right Wrist, 165 167 1.22 Bone, Right Wrist, 165 167 1.22 Bone, Right Wrist, 165 167 1.22 Bone, Right Wrist, 164 165 61 Bone, Neck, 153 155 1.51 Bone, Shoulders, 426 445 4.47 Nipples, 193 204 5.70 Waist, 249 258 3.62 Vital Organs. Right Shoulder Elbow, 370 373 82 Bone, Alfips, 323 336 4.03 Bone, Left Robothers, 461 464 66 Bone. Elft Foot, 261 262 39 Bone, Right Shoulder Flow, 372 375 8.1 Bone. Ent Elbow Tip, 461 464 66 Bone. Ent Elbow	474	477	.64	Bone.
Neek, 355 359 1.13 Muscles.	893	909	1.80	Bone.
Chest repose, 866 903 4.28 Vital Organs. Chest full, 919 947 3.05 Vital Organs. Belly, 723 753 4.16 Vital Organs. Hips, 883 908 2.84 Bone. Right Thigh, 507 527 3.95 Muscles. Right Thigh, 500 523 4.60 Muscles. Right Knee, 357 363 1.70 Bone. Right Calf, 342 354 3.51 Muscles. Right Calf, 342 354 3.51 Muscles. Right Left Calf, 341 352 3.23 Muscles. Right Instep, 243 247 1.65 Bone. Left Instep, 243 246 1.66 Bone. Left Instep, 242 246 1.66 Bone. Upper Right Arm, 253 267 5.54 Muscles. Upper Left Arm, 246 262 6.51 Muscles. Right Elbow, 247 255 3.25 Bone, Right Forearm, 258 265 2.72 Muscles, Right Wrist, 164 165 61 Bone, Right Wrist, 165 167 1.22 Bone, Right Wrist, 164 165 61 Bone, Right Wrist, 164 165 61 Bone, Right Wrist, 164 165 61 Bone, Right Wrist, 164 166 61 Bone, Right Elbow, 243 250 2.89 Bone, Right Wrist, 164 166 61 Bone, Right Wrist, 164 166 61 Bone, Right Wrist, 165 167 1.22 Bone, Left Wrist, 164 166 61 Bone, Right Shoulder Show, 370 373 8.2 Bone, Waist, 249 258 3.62 Vital Organs, Right Shoulder Klbow, 372 375 81 Bone, Left Shoulder Elbow, 370 373 82 Bone, Left Shoulder Elbow, 370 373 82 Bone, Left Foot, 260 261 39 Bone, Left Elbow Tip, 461 464 66 Bone, Left Elbow Tip, 461 464 66 Bone, Left Elbow Tip, 461 464 66 Bone, Left Elbow Tip, 461 464 46 66 Bone, Left Elbow Tip, 461 464 46 66 Bone, Left Foot, 260 261 39 Bone, Left Elbow, 370 373 82 Bone, Right Shoulder Llows, 370 373 82 Bone, Right Shoulder Llows, 370 373 82 Bone, Left Foot, 260 261 39 Bone, Left Elbow Tip, 461 464 46 66 Bone, Left Elbow, 370 373 82 Bone, Right Shoulder Ribow, 370 373 82 Bone, Right Shoulder Ribow, 370 373 82 Bone, Left Foot, 260 261 39 Bone, Right Ribow Tip,	567	572	.89	Bone.
Chest repose, 866 903 4.28 Vital Organs. Chest full, 919 947 3.05 Vital Organs. Belly, 723 753 4.16 Vital Organs. Hips, 883 908 2.84 Bone. Right Thigh, 507 527 3.95 Muscles. Right Thigh, 500 523 4.60 Muscles. Right Knee. 357 363 1.70 Bone. Left Thigh, 342 354 3.51 Muscles. Right Calf, 342 354 3.51 Muscles. Right Calf, 341 352 3.23 Muscles. Right Instep, 243 247 1.65 Bone. Left Instep, 243 247 1.65 Bone. Left Instep, 242 246 1.66 Bone. Upper Right Arm, 253 267 5.54 Muscles. Upper Right Arm, 253 267 5.54 Muscles. Upper Left Arm, 246 262 6.51 Muscles. Right Elbow, 247 255 3.25 Bone, Right Forearm, 258 265 2.72 Muscles. Right Wrist, 164 165 61 Bone, Right Wrist, 165 167 1.22 Bone, Left Wrist, 164 165 61 Bone, READTH, Head, 153 155 1.31 Bone, Neek, 107 111 3.74 Muscles. Waist, 249 258 3.62 Vital Organs. Right Shoulder Elbow, 370 373 82 Bone, Right Elbow Tip, 461 464 66 Bone. Left Forearm, 461 464 66 Bone. Left Shoulder Elbow, 370 373 82 Bone, Right Elbow Tip, 469 463 88 Bone. Left Shoulder Elbow, 370 373 82 Bone. Left Forearm, 261 262 39 Bone. Right Elbow Tip, 461 464 66 Bone. Left Shoulder Elbow, 370 373 82 Bone. Left Forearm, 261 262 39 Bone. Right Elbow Tip, 461 464 66 Bone. Left Shoulder Elbow, 370 373 82 Bone. Left Shoulder Elbow, 370 373 82 Bone. Left Forearm, 261 262 39 Bone. Left Elbow Tip, 461 464 66 Bone. Left Elbow Tip, 469 463 88 Bone. Right Elbow Tip, 461 464 66 Bone. Left Foot, 260 261 39 Bone. Left Elbow Tip, 461 464 66 Bone. Left Foot, 260 261 39 Bone. Right Elbow Tip, 469 463 88 Bone. Right Elbow Tip, 460 464 66 Bone. Left Foot, 260 261 39 Bone. Right Elbow Tip, 461 464 66 Bone. Left Elbow Tip, 461 464 66 Bone. Left Elbow Tip, 469 463 88 Bone. Right Elbow Tip, 460 464 66 Bone. Left Elbow Tip, 460 464 66 Bone. Left Elbow Tip, 460 464 66 Bone. Left Elbow Ti	355	359	1.13	Muscles.
. Chest full,	866	903	4.28	Vital Organs.
Belly, 723 753 4.16 Fill Ofgans. Bight High, 883 908 2.84 Bone. Right Thigh, 507 527 3.95 Muscles. Muscles. Right Knee, 356 363 1.70 Bone. Bone. Right Knee, 356 363 1.97 Bone. Right Calf, 341 352 3.23 Muscles. Muscles. Right Calf, 341 352 3.23 Muscles. Right Instep, 243 247 1.65 Bone. Left Instep, 243 247 1.65 Bone. Left Instep, 242 246 1.66 Bone. Upper Right Arm, 253 267 5.54 Muscles. Muscles. Upper Right Arm, 253 267 5.44 Muscles. Upper Right Forearm, 246 262 6.51 Muscles. Muscles. Right Elbow. 247 255 3.25 Bone, Bone, Right Forearm, 258 250 2.89 Bone, Right Forearm, 258 260 2.77 Muscles, Right Wrist, 165 167 1.22 Muscles, Right Wrist, 164 165 61 Bone, Bone, BREADTH, Head, 153 155 1.31 Bone, BREADTH, Head, 153 155 1.31 Bone, Muscles. Waist, 249 288 3.62 Wital Organs. Right Shoulders, 426 444 4.47 Whyples, 193 204 5.70 Waist, 249 288 3.62 Wital Organs. Right Shoulder Elbow, 370 373 82 Bone. Left Elbow Tip, 461 464 666 Bone. Left Elbow Tip, 461 464 666 Bone. Left Elbow Tip, 461 464 666 Bone. Left Elbow Tip, 461 464 466 Bone. Left Elbow Tip, 461 464 464 466 Bone. Left Foot, 260 261 39 Bone. Left Elbow Tip, 461 464 466 Bone. Left Elbow Tip, 461 464 464 466 Bone. Left Foot, 260 261 39 Bone. Left Elbow Tip, 461 464 464 466 Bone. Left Elbow Tip, 461 464 466 Bone. Left Foot, 260 261 39 Bone. Left Elbow Tip, 461 464 466 Bone. Left Elbow Tip, 461 464 466 Bone. Left Foot, 260 261 39 Bone. Left Elbow Tip, 461	919	947	3.05	Vital Organs.
Hips	723	753	4.16	
Right Thigh, 507 527 3.95 Muscles.	883	908	2.84	
Left Thigh, 500 523 4.60 Muscles. Right Knee, 356 363 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. Left Elbow, 247 255 3.25 Bone, Right Forearm, 258 265 2.72 Muscles. Right Wrist, 165 167 1.22 Bone, Left Wrist, 164 165 6.1 Bone, BEADTH, Head, 153 1.55 1.31 Bone, Neck, 107 111 3.74 Muscles. Noek, 107 111 3.74 Muscles. Waist, 249 288 3.62 Vital Organs. Right Shoulder Elbow, 372 375 8.1 Bone. Left Shoulder Elbow, 370 373 82 Bone. Left Elbow Tip, 469 464 66 Bone. Left Elbow Tip, 461 464 66 Bone. Left Elbow Tip, 461 464 66 Bone. Left Elbow Tip, 469 463 88 Bone. Left Elbow Tip, 461 464 66 Bone. Left Elbow Tip, 461 464 66 Bone. Left Elbow Tip, 469 463 88 Bone. Left Elbow T	507	527	3.95	
Left Knee, 356 363 1.97 Bone. Right Calf, 341 352 3.54 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, 253 267 5.54 Muscles. Upper Left Arm, 253 267 5.54 Muscles. Right Elbow, 247 255 3.25 Bone, Muscles. Right Elbow, 247 255 3.25 Bone, Muscles. Right Elbow, 243 250 2.89 Bone, Bone, Carlotte,	500	523	4.60	
Left Knee, Right Calf, 342 Right Calf, 343 Left Calf, 341 So2 3.23 Muscles. Muscles. Muscles. Muscles. Muscles. Muscles. Bone. Left Instep, 243 247 L.65 Bone. Left Instep, 242 246 L.66 Bone. Upper Right Arm, 253 267 5.54 Muscles. Wital Organs. Bone. Muscles. Muscl	857	363		
Left Calf, 341 352 3.23 Muscles.	356	363	1.97	
Left Calf, Right Instep, 243 341 352 3.23 Muscles. Bone. Left Instep, 244 246 1.65 Bone. Upper Right Arm, 253 267 5.54 Muscles. Upper Left Arm, 246 262 6.51 Muscles. Upper Left Arm, 246 262 6.51 Muscles. Upper Left Arm, 247 255 3.25 Bone, Right Elbow, 247 255 3.25 Bone, Right Forearm, 258 265 2.72 Muscles, Right Forearm, 258 266 2.72 Muscles, Right Wrist, 165 167 1.22 Bone, Right Wrist, 165 167 1.22 Bone, Right Wrist, 164 165 1.61 Bone, READTH, Head, 153 155 1.31 Bone, READTH, Head, 154 1.55 Bone, READTH, Head, 154 1.55 Bone, READTH, Head, 155 1.55 1.55 Bone, READTH, Right Foot, 261 262 39 Bone, REATTH, Right Foot, 261 262 39 Bone, REATTH, Right Foot, 261 262 39 Bone, REATTH, Head, 178 1749 1.04 REATTH ARMS, REATT	342	354		
Right Instep, 243 247 1.65 Bone.	341	352	3.23	
Left Instep. 242 246	243	247	1.65	
Upper Right Arm, 253 267 5.54 Muscles.	242	246	1.66	
Upper Left Arm, 246 262 6.51 Muscles.	253	267	5.54	
U. R. A. Contract'd, Right Elbow, 247 255 3.25 Bone, Bone, Left Elbow, 248 250 2.89 Bone, Right Forearm, 258 265 2.72 Muscles, Right Forearm, 258 265 2.72 Muscles, Muscles, Left Forearm, 258 265 2.72 Muscles, Muscles, Muscles, Left Wrist, 165 167 1.22 Bone, Bone, Left Wrist, 165 167 1.22 Bone, Bone, Left Wrist, 164 165 61 Bone, BREADTH, Head, 153 155 1.31 Bone, Waseles, Neck, 107 111 3.74 Muscles. Nipples, Nipples, Nipples, 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. Left Shoulder Elbow, 370 373 82 Bone. Left Shoulder Elbow, 370 373 82 Bone. Left Shoulder Elbow, 164 464 66 Bone. Left Floot, 261 262 .39 Bone, LENGTH, Right Foot, 261 262 .39 Bone, LENGTH, Right Foot, 261 262 .39 Bone, Bone. LETTRETCH OF ARMS, 1782 1794 68 Bone. STRETCH OF ARMS, 1782 1794 68 Bone. Bone. STRETCH OF ARMS, 1782 1794 68 Bone. Bone. STRETCH OF ARMS, 1782 1794 68 Bone. Bone. Bone. 1886 Bone. 1897 1794 68 Bone. Bone. 1898 Bone.	246	262		- Carlotteror
Right Elbow. 247 255 3.25 Bone, Left Elbow. 243 250 2.89 Bone, Right Forearm, 258 265 2.72 Muscles, Left Forearm, 258 260 2.77 Muscles, Left Forearm, 258 260 2.77 Muscles, Left Forearm, 258 260 2.77 Muscles, Right Wrist, 165 167 1.22 Bone, Left Wrist, 164 165 .61 Bone, Right Wrist, 164 165 .61 Bone, Right High Muscles, 260 267 367 Muscles, Neck, 107 111 3.74 Muscles, Nipples, 193 204 5.70 Waist, 249 288 3.62 Vital Organs, Hips, 323 336 4.03 Bone, Hips, 323 336 4.03 Bone, Hips, 323 336 4.03 Bone, Hips, 327 375 .81 Bone, Left Shoulder Elbow, 370 373 .82 Bone, Right Elbow Tip, 461 464 66 Bone, Left Elbow Tip, 459 463 .88 Bone, Left Foot, 260 261 .39 Bone, Left Foot, 260 262 .39 Bone, Left Foot, 260 261 .39 Bone, Left Foot, 260 262 .39 Bone, Left Foot, 260 262 .39 Bone, Left Foot, 260 262 .39 Bone, Left Foot,		315		
Left Elbow, 243 250 2.89 Bone, Miscles, 258 265 2.72 Miscles, Miscles, 258 2665 2.72 Miscles, Miscles, Left Forcarm, 253 260 2.77 Miscles, Miscles, Right Wrist, 165 167 1.22 Bone, EREADTH, Head, 153 155 1.31 Bone, Miscles, 264 264 265 2.70 Miscles, 276 276 276 276 276 276 276 276 276 276	247	255		
Right Forearm, 258 265 2.72 Museles,		250		
" Left Forestru, 258 260 2.77 Muscles, Right Wrist, 165 167 1.22 Bone, 165 167 1.22 Bone, 166 167 1.22 Bone, 167 167 167 167 167 167 167 167 167 167				
Right Wrist,			707	
" Left Wrist, bar 164 165 61 Bone, BREADTH, Head, 153 155 1.31 Bone, Week, 107 111 3.74 Muscles. " Neek, 107 111 3.74 Muscles. " Shoulders, 426 443 4.47 " Nipples, 193 204 5.70 Vital Organs. " Waist, 249 258 3.62 Vital Organs. Bight Shoulder Elbow, 372 375 81 Bone. Left Shoulder Elbow, 370 373 82 Bone. Left Shoulder Elbow, 450 464 66 Bone. Left Elbow Tip, 461 464 66 Bone. Left Elbow Tip, 461 262 .39 Bone, LENGTH, Right Foot, 261 262 .39 Bone, LENGTH, Right Foot, 1781 1794 .88 Bone. HORIZONTAL LENGTH, 1781 1749 1.04 STRETCH OF AEMS, 1782 1794 .88 Bone. HORIZONTAL LENGTH, 1731 1749 1.04 STRENGH of Lungs, 1.32 1.64 24.25 Muscular Power. Back, 133 154 15.80 Muscular Power. " Back, 133 154 15.80 Muscular Power. " Back, 134 15.50 Muscular Power. " Back, 135 44 17.93 Muscular Power. " Lefts, 149 185 24.17 Muscular Power. " Lefts, 149 185 54.17 Muscular Power. " Lefts, 140 13.00 Muscular Power. " Lefts, 156, 67 10.00 22.27 Muscular Power. " Pull, 8.67 10.00 22.27 Muscular Power. " COTAL STRENGTH, 414 518 25.13 Muscular Power.				
BREADTH, Head. "Neek, 107 1111 3.74 Museles. "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, 261 262 .39 Bone. STRETCH OF ARMS, 1782 1794 .8 Bone. STRETCH OF ARMS, 1782 1794 .8 Bone. STRENGH of Lungs, 4.33 154 15.80 Muscular Power. "Back, 4.33 154 15.80 Muscular Power. "Legs. 4.49 185 24.17 Muscular Power. "Legs. 4.49 185 34.17 Muscular Power. "Legs. 4.54 40.0 13.00 Muscular Power. "Dip, 5.33 8.35 56.67 Muscular Power. Vital Organs. POTAL STRENGTH, 443 4.33 7.45 Vital Organs. Muscular Power. Vital Organs.	164	165		
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. Left Shoulder Elbow, 230 373 82 Bone. Left Shoulder Elbow, 261 262 .39 Bone. LENGTH, Right Foot, 261 262 .39 Bone. LENGTH, Right Foot, 261 262 .39 Bone. TREETCH OF ARMS, 1782 1794 .68 Bone. HORIZONTAL LENGTH, 1731 1749 1.04 STRENGH of Lungs, 4.32 1.64 24.25 Muscular Power Back, 4.33 154 15.80 Muscular Power Legs, 4.149 185 24.17 Muscular Power Legs, 4.149 185 24.17 Muscular Power Legs, 4.149 185 56.67 Muscular Power Lege, 5.33 8.35 56.67 Muscular Power Lege, 7.44 185 56.67 Muscular Power Lung CaPaCaCTY, 4.03 4.33 7.45 Vital Organs.				
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a-Kilos. b-Units. c-Litres. All others millimetres.

Average Measurements of Male and Female Students.

*	AMHERS	AMHERST STUDENTS.		MT. HOLYOKE AND WELLESLEY STUDENTS.	
	METRIC SYSTEM.	ENGLISH SYSTEM.	METRIC.	ENGLISH.	ENGLISH
WEIGHT,	*60.7	4133.8	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 repos	e, 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		19.7	531	20.9	-1.2
" Left Thigh.		19.8	531	20.9	-1.1
" Right Knee		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 Inste		9.6	214	8.4	1.2
" Left Instep		9.5	212	8.3	1.2
" Upper Righ		10.	248	9.7	.3
" U. R. A. Co		11.4	255	10.	1.4
ii Upper Left		9.8	244	9.6	.2
" Right Elbo		9.8	219	8.6	1.2
" Left Elbow		9.6	219	8.6	1.
" Right Fores		10.2	218	8.6	1.6
" Left Foresr		10.	216	8.5	1.5
" Right Wrist		6.4	147	5.7	.7
" Left Wrist,	1 164	6.4	146	5.7	.7
BREADTH, Head,	154	6.0	147	5.8	.2
" Neek,	108	4.2	90	3.5	.7
" Shoulde		16.9	364	14.3	2.6
" Nipples		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 Elbo		14.6	335	13.2	1.4
Left Shoulder Elbow		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 Fo		10.2	229	9.0	1.2
" Left Foo	7.00	10.2	229	9.0	1.2
STRETCH OF AR		70.3	1603	63.1	7.2
" Back,	*126.2	4278.	49.1	108	170
u Legs,	*152.8	4336.8	67.8	149.4	187.4
	rearm, *38.7	485.3	22.0	48.4	36.9
14. 11	rearm, *35.46	478.3	19.2	42.3	36.
Capacity of Lungs,	4.12	251.4	2.39	145.8	105.6









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 average are true.

will appear are true.

The stature of man is influenced by climate, occupation, surrounding circu 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 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 deablissed due not to the museulor development but to the presence of fat. An inter-

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 shows that the ward's.

in girth and of .166 in breadth. That is, a woman's head and neek are more oval in shape than the man's.

Considering next the height from pulses 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 pulses 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 progres-sion 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, 1800-1.

	AVERAGES OF 2000		MEAN MEASURES		AVERAGES OF STUDENT	
	_	SURES.	OF 2086 STUDENTS.		21 YEARS OLD.	
	METRIC SYSTEM.	ENGLISH SYSTEM.	METRIC.	ENGLISH.	METRIC.	ENGLISH.
WEIGHT,	*61.2	434.9	64.0	141.1	63.1	138.8
HEIGHT,	1725	67.9	1720	67.7	1726	67.9
se 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	856	14.0
44 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	859	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,	262)	11.6	295	11.0	301	11.0
Chhet riere sermi	253	9.9	250	9.8	259	10.2
Aright Antonn's	251	9.8	250	9.8	253	9.9
Liete Entony	247	9.7	250	9.8	249	9.8
angus a creaming	267	10.5	270	10.6	266	10.5
" Left Forearm, " Right Wrist,	261	10.2	260	10.2	259	10.2
Left Wrist,	166	6.5	165	6.5	166	6.5
BREADTH, Head,	165	6.5	165	6.5	165	6.5
" Neck,	155	6.1	154	6.1	155	6.1
" Shoulders,	108	4.2	110	4.3	109	4.3
" Nipples,	430	16.9	430	16.9	431	16.9
Waist,	198 250	7.8	200	7.9	200	7.9
" Hips,	323	9.8	250	9.8	256	10.1
Right Shoulder Elbow,	373	12.7	320	12.6	827	12.9
Left Shoulder Elbow,	371	14.7	370 370	14.6	374 374	14.7
Right Elbow Tip,	461	14.6		14.6		14.7
Left Elbow Tip,	459	18.1	460	18.1	462 459	18.1
LENGTH, Right Foot,	260	18.1	260	18.1	261	18.1
" Left Foot,	259	10.2	260	10.2	261	10.2
STRETCH OF ARMS,	1780	70.1	1770	10.2	1794	70.6
HORIZONTAL LENGTH,	1732	68.2	1770	69.7	1734	
STRENGTH, of Lungs,	*1.5	43.30	1.2	68.1	0.000	68.4 3.10
" Back,	*137	4302	150	2.64	1.41	321
" Chest dip,	°6.0		4	330		
" Chest pull up,	19.0	6.0	10	4	7.3	7.3
Legs,	*166	'9.0 '365	175	10 385	172	378
" R. Forearm,	41.5	491	40	88.2	41.5	91.3
" L. Forearm,	*38.1	484	87	81.6	39.5	86.9
Capacity of Lungs,	13.77	230	3,90	238	4.23	250
colored or range,	0.11	230	0.00	238	4.20	200

~≈1891.≈~~

THE PROGRAM



TWENTY-SEVENTH

WINTER MEETING OF IN-DOOR SPORTS

AND HEAVY GYMNASTICS,

* 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 Orehestra 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.

Clarinet, S. R. FLEET.

Cornet, T. BRECK.

Piano, H. G. KIMBALL.

Bass, F. M. TIFFANY.

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

ORDER OF EVENTS.

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

TUMBLING.

ROPE CLIMB.

F. Allen, '91, N. D. Alexander, '92, E. P. Smith, '92, L. W. Griswold, '92,			
E. P. Smith, '92,	H. C. Wood, '95, H. A. Russell, '93,	H. H. Walte, 92,	T. Kimball, '93,
		G. T. Pettengill, '92,	E. Bliss, '93.
	H. B. Hallock, 33,	T. Coyle, '92,	F. J. Raley, '93,
	A. B. Davidson, '93,	G. B. Brooks, 33,	F. A. Crockett, '93.
A. A. Ewing, '97,	C. Seymour, 74.	Co. Br. Briconni, Co.	A. M. Carrier and
T. Coyle, '92,		1.4	2nd
College Borord, 51 sec	and V. H. Smith No.	Ist	200
Cornege mocues, at me	min, h. r. cuntu, e-		
Ist	2nd	STANDING HIGH JUMP.	
4M	288	F. B. Walker, '91,	
PARALLEL BARS.			G. B. Brooks, 93,
		A. A. Ewing, 92,	A. B. Davidson, 93,
T. Coyle, '92,	T. Kimball, 93,	L. W. Griswold, 92,	F. W. Cole, '93,
G. Pettengill, '92.	F. J. Raley, '95,	M. A. Johnson, '92,	F. D. McAllister, '94.
G. B. Brooks, '93,	F. Munson, 94.	L. T. Byron, 363.	
to be become out		College Record, 4 feet 11)	Service M. A. different State
Zat	2nd	Conside mecanit's teer 117	sucura, r : A. otorey, m-
			2nd
HIGH KICK.		2st	2md
F. A. Hicks, '92,	G. Zug, '93,	CLUB SWINGING.	
F. R. Avery, '92.	A. Turner, '93.		H. M. Barbaran Sel
W. W. Gregg, '92,	C. D. Norton, 93.	G. W. Emerson, Jr., 7d	, F. W. Beekman, 90.
F. W. Cole, '93,	F. D. Edgell, '93.	L. Byron, '93, M. A. Johnson, '92,	
College Becord, 9 feet 1 h		W. Tower. 93,	C. Emerson, '94.
Cominge mecons, 9 rees 1 is	en, n. n. Lucingion, 91		
44	0.1	2st	2nd
Ist	2nd	281111111111111111111111111111111111111	
PUTTING SHOT.			
		WRESTLING.	
F. Allen, '91	G. S. Raley, '92,	W. C. Smalley, '92,	E. Bliss, '93,
N. D. Alexander, '92,	F. D. Edgell, 93,		H. Russell, '93,
C. Burbank, '92,	R. L. Pellet 94.	W. Lewis, '92,	
A. A. Ewing, '92,	He an a contract of the	R. Scott, '92,	W. A. Talcott, '93,
		C. Burbank, '92,	F. J. Raley, '93,
College Becord, 27 feet 10 in	thes, N. D. Alexander, 72.	G. Forbes, '92,	W. H. Ross, '93,
	2nd	N. D. Alexander, '92,	F. D. Edgell, '93,
Ist	200	G. S. Raley, '92,	H. P. Gallinger, '93,
MANAGE VALUE		T. Coyle, '92,	E. M. Nourse, '93,
FENCE VAULT.			C. G. Wood, '93,
A. A. Ewing, '92,	A. V. Woodworth, 93,	M. Baldwin, 93,	
R. L. Scott, '92.	S. R. Parker, 93,	F. M. Lay, '93,	F. Munson, '94,
L. W. Griswold, '92,	H. B. Hallock, 93,		
		Heavy Weight	***********
F. R. Avery, 72,	E. H. Stedman, '94.		
E. B. Brooks, '93,		Linkt Weinl	£
College Becord, 7 feet	buch, C. F. Clark, '92.		
24	2nd	RUNNING HIGH JUMP.	
	2nd		H. Hallock, '93,
SWINGING RINGS.	2nd	W. T. S. Jackson, 92,	H. Hallock, 93,
SWINGING RINGS.		W. T. S. Jackson, '92, G. L. Degener, '92.	F. Cole, '93,
SWINGING RINGS. A. A. Ewing, '92,	G. B. Brooks, '93,	W. T. S. Jackson, '92, G. L. Degener, '92, A. A. Ewing, '92,	F. Cole, '93, C. Bray, '93,
SWINGING RINGS. A. A. Ewing, '92, H. H. Walte, '92,	G. B. Brooks, '13, E. Bliss, '13,	W. T. S. Jackson, '92, G. L. Degener, '92, A. A. Ewing, '92, G. B. Shattuck, '92,	F. Cole, '23, C. Bray, '93, T. M. Kimball, '83,
SWINGING RINGS. A. A. Ewing, '92,	G. B. Brooks, '93,	W. T. S. Jackson, 92, G. L. Degener, 92, A. A. Ewing, 92, G. B. Shattuck, 92, L. Byron, 93,	F. Cole, '93, C. Bray, '93,
SWINGING RINGS. A. A. Ewing, '92. H. H. Walte, '92, W. T. S. Jackson, '92,	G. B. Brooks, 7G, E. Biliss, 7G, F. J. Raley, 7G.	W. T. S. Jackson, '92, G. L. Degener, '92, A. A. Ewing, '92, G. B. Shattuck, '92,	F. Cole, '23, C. Bray, '93, T. M. Kimball, '83,
SWINGING RINGS. A. A. Ewing, '92, H. H. Walte, '92,	G. B. Brooks, '13, E. Bliss, '13,	W. T. S. Jackson, 92, G. L. Degener, 92, A. A. Ewing, 92, G. B. Shattuck, 92, L. Byron, 93, G. Zug, 93,	F. Cole, '93, C. Bray, '93, T. M. Kimball, '93, C. R. Hogdon, '93.
SWINGING RINGS. A. A. Ewing, '92, H. H. Waite, '92, W. T. S. Jackson, '92, Ist	G. B. Brooks, 7G, E. Biliss, 7G, F. J. Raley, 7G.	W. T. S. Jackson, 92, G. L. Degener, 92, A. A. Ewing, 92, G. B. Shattuck, 92, L. Byron, 93,	F. Cole, '93, C. Bray, '93, T. M. Kimball, '93, C. R. Hogdon, '93.
SWINGING RINGS. A. A. Ewing, '92. H. H. Walte, '92, W. T. S. Jackson, '92,	G. B. Brooks, 7G, E. Biliss, 7G, F. J. Raley, 7G.	W. T. S. Jackson, 92, G. L. Degener, '92, A. A. Ewing, '92, G. B. Shattuck, '92, L. Byron, '93, G. Zug, '93, College Record, 5 feet 4\(\) to	F. Cole, '83, C. Bray, '93, T. M. Kimball, '83, C. R. Hogden, '93, ches, R. B. Ludington, '91.
SWINGING RINGS. A. A. Ewing, '92, H. H. Waite, '92, W. T. S. Jackson, '92, BATULE BOARD.	G. B. Brooks, 73, E. Bilss, 73, F. J. Raley, 73.	W. T. S. Jackson, 92, G. L. Degener, 92, A. A. Ewing, 92, G. B. Shattuck, 92, L. Byron, 93, G. Zug, 93,	F. Cole, '93, C. Bray, '93, T. M. Kimball, '93, C. R. Hogdon, '93.
SWINGING RINGS. A. A. Ewing, '92, H. H. Waite, '92, W. T. S. Jackson, '92, Ist. BATULE BOARD. C. L. Upton, '91,	G. B. Brooks, 763, E. Bliss, 763, F. J. Raley, 763. 24d	W. T. S. Jackson, 92, G. L. Degener, '92, A. A. Ewing, '92, G. B. Shattuck, '92, L. Byron, '93, G. Zug, '93, College Record, 5 feet 4\(\) to	F. Cole, '83, C. Bray, '93, T. M. Kimball, '83, C. R. Hogden, '93, ches, R. B. Ludington, '91.
SWINGING RINGS. A. A. Ewing, '92, H. H. Waite, '92, W. T. S. Jackson, '92, 2st. BATULE BOARD. C. L. Upton, '91, A. A. Ewing, '92,	G. B. Brooks, %0, E. Bibss, %3, F. J. Raley, %3.	W. T. S. Jackson, 92, G. L. Degener, 92, A. A. Ewing, 92, G. B. Shattack, 92, L. Byron, 93, G. Zeg, 93, College Record, 5 feet 64 in	F. Cole, '83, C. Bray, '93, T. M. Kimball, '83, C. R. Hogden, '93, ches, R. B. Ludington, '91.
SWINGING RINGS. A. A. Rwing, '92. H. H. Watte, '92. W. T. S. Jackson, '92. BATULE BOARD. C. L. Upton, '91, A. A. Ewing, '92. R. W. Goodell, '92.	G. B. Brooks, 7d, E. Bilss, 7d, F. J. Raley, 7d, 24d	W. T. S. Jackson, 92, G. L. Degener, 92, A. A. Ewing, 92, G. B. Shattock, 92, L. Byron, 93, G. Zog, 93, College Record, 5 fort 41 to HORIZONTAL BAR.	F. Cole, '93, C. Bray, '95, T. M. Kimball, '95, C. R. Hogden, '95, ches, R. B. Ludington, '91, 2 ⁶ d'.
SWINGING RINGS. A. A. Ewing, '92, H. H. Walte, '92, W. T. S. Jackson, '92, Jat. BATULE BOARD. C. L. Upton, '91, A. A. Ewing, '92, R. W. Goodell, '92, H. H. Walte, '92,	G. B. Brooks, %0, E. Bibss, %3, F. J. Raley, %3.	W. T. S. Jackson, 92. G. L. Degener, 92. A. A. Ewing, 92. G. B. Shattock, 92. L. Byron, 93. G. Zog, 93. Callege Record, 5 feet 4] in Ist. HORIZONTAL BAR. T. Breck, 91.	F. Cole, '95, C. Bray, '95, '95, C. Bray, '95, '95, '7, M. Kimball, '95, C. R. Hogdon, '95. ches, E. B. Ladington, 'W. 2fd'. T. Kimball, '98,
SWINGING RINGS. A. A. Rwing, '92. H. H. Watte, '92. W. T. S. Jackson, '92. BATULE BOARD. C. L. Upton, '91, A. A. Ewing, '92. R. W. Goodell, '92.	G. B. Brooks, 7d, E. Bilss, 7d, F. J. Raley, 7d, 24d	W. T. S. Jackson, 92, G. L. Degener, 92, A. A. Ewing, 92, G. B. Shattock, 92, L. Byron, 93, G. Zog, 93, College Record, 5 fort 41 to HORIZONTAL BAR.	F. Cole, '95, C. Bray, '96, T. M. Kimball, '95, C. R. Hogden, '95, ches, R. B. Ladington, '94, 2 ⁶ d. T. Kimball, '98, F. J. Baley, '96,
SWINGING RINGS. A. A. Rwing, '92. H. H. Waite, '92. W. T. S. Jackson, '92. BATULE BOARD. C. L. Upton, '91. A. A. Rwing, '92. R. W. Goodell, '92. H. R. Waite, '92. C. E. Hilberth, '92.	G. B. Brooks, '83, E. Bliss, '93, F. J. Raley, '93. 2nd	W. T. S. Jackson, 92. G. L. Degener, 92. A. A. Ewing, 92. G. B. Shattock, 92. L. Byron, 93. G. Zog, 93. Callege Record, 5 feet 4] in Ist. HORIZONTAL BAR. T. Breck, 91.	F. Cole, '95, C. Bray, '95, '95, C. Bray, '95, '95, '7, M. Kimball, '95, C. R. Hogdon, '95. ches, E. B. Ladington, 'W. 2fd'. T. Kimball, '98,
SWINGING RINGS. A. A. Rwing, '92. H. H. Waite, '92. W. T. S. Jackson, '92. BATULE BOARD. C. L. Upton, '91. A. A. Rwing, '92. R. W. Goodell, '92. H. R. Waite, '92. C. E. Hilberth, '92.	G. B. Brooks, 7d, E. Bilss, 7d, F. J. Raley, 7d, 24d	W. T. S. Jackson, 92. G. L. Degener, 92. A. A. Ewing, 92. G. B. Shattock, 92. L. Byron, 93. G. Zeg, 93. G. Zeg, 94. College Record, 5 fort 64 to HORIZONTAL BAR. T. Breck, 91. H. H. Walte, 92.	F. Cole, '95, C. Bray, '96, T. M. Kimball, '95, C. R. Hogden, '95, ches, R. B. Ladington, '94, 2 ⁶ d. T. Kimball, '98, F. J. Baley, '96,
SWINGING RINGS. A. A. Rwing, '92. H. H. Waite, '92. W. T. S. Jackson, '92. BATULE BOARD. C. L. Upton, '91. A. A. Rwing, '92. R. W. Goodell, '92. H. R. Waite, '92. C. E. Hilberth, '92.	G. B. Brooks, '83, E. Bliss, '93, F. J. Raley, '93. 2nd	W. T. S. Jackson, V2, G. L. Degener, V9, A. A. Brwing, V9, A. A. Brwing, V9, G. B. Shattack, V9, L. Byron, V8, G. Zog, V8, Catleys Brown, 5 fort 61 in Ist HORIZONTAL BAR. T. Breck, V1, H. H. Walte, V9, A. A. Ewing, V2,	F. Cole, '93, C. Bray, '93, T. M. Kimball, '95, C. R. Hogden, '93, ches, R. B. Latington, '94, 2 ⁸ ol T. Kimball, '93, F. J. Italey, '90, G. B. Brooks, '95,
SWINGING RINGS. A. A. Eveing, '92. H. H. Walte, '92. W. T. S. Jackson, '92. Zet. BATULE BOARD. C. L. Upton, '91. A. A. Ewing, '92. R. W. Goodell, '92. H. H. Walte, '92. C. E. Hilbreth, '92. Collage Record, I feet 6	G. B. Brooks, 763, E. Bibss, 763, F. J. Raley, 763. 2-of. G. Zug, 765, H. B. Hallock, 793, C. B. Hogolon, 793, G. H. Fisher, 790, hocks; C. L. Upton, 781.	W. T. S. Jackson, V2. G. L. Degeneer, V2. A. A. Bwing, V2. G. B. Shatteck, V2. L. Byron, V3. G. Zog, V3. G. Zog, V3. Gattege Broond, 5 fort 0j to Ist. HORIZONTAL BAR. T. Breck, V3. H. H. Walte, V2. A. A. Ewing, V2.	F. Cole, '95, C. Bray, '96, T. M. Kimball, '95, C. R. Hogden, '95, ches, R. B. Ladington, '94, 2 ⁶ d. T. Kimball, '98, F. J. Baley, '96,
SWINGING RINGS. A. A. Eveing, '92. H. H. Walter, '92. W. T. S. Jackson, '92. Jat BATULE BOARD. C. L. Upton, '91. A. A. Kwing, '92. B. W. Goodell, '92. H. H. Walter, '92. C. E. Hildreth, '92. Collage Brown!, Ties 6	G. B. Brooks, 763, E. Bibss, 763, F. J. Raley, 763. 2-of. G. Zug, 765, H. B. Hallock, 793, C. B. Hogolon, 793, G. H. Fisher, 790, hocks; C. L. Upton, 781.	W. T. S. Jackson, 92. G. L. Degener, 92. A. A. Ewing, 92. G. B. Shattock, 92. L. Byron, 93. G. Zog, 93. G. Zog, 94. Callege Record, 5 feet 4] in Ist. HORIZONTAL BAR. T. Breck, 91. H. H. Walte, 92. A. A. Ewing, 92.	F. Cole, '93, C. Bray, '93, T. M. Kimball, '95, C. R. Hogden, '93, ches, R. B. Latington, '94, 2 ⁸ ol T. Kimball, '93, F. J. Italey, '90, G. B. Brooks, '95,
SWINGING RINGS. A. A. Ewing, 792, H. H. Walte, 792, W. T. S. Jackson, 722, Jat. BATULE BOARD. C. L. Upton, 791, A. A. Ewing, 792, R. W. Goodell, 792, H. H. Walte, 792, C. E. Hildreth, 792, College Record, 7 feet 61	G. B. Brooks, '93, E. Bilss, '93, F. J. Raley, '93. 2nd G. Zug, '98, H. B. Hallock, '93, C. R. Hogdon, '93, C. R. Hogdon, '93, lisches, C. L. Uptos, '94.	W. T. S. Jackson, 92. G. L. Degener, 92. A. A. Ewing, 92. G. B. Shattock, 92. L. Byron, 93. G. Zog, 93. G. Zog, 94. Callege Record, 5 feet 4] in Ist. HORIZONTAL BAR. T. Breck, 91. H. H. Walte, 92. A. A. Ewing, 92.	F. Cole, '93, C. Bray, '93, T. M. Kimball, '95, C. R. Hogden, '93, ches, R. B. Latington, '94, 2 ⁸ ol T. Kimball, '93, F. J. Italey, '90, G. B. Brooks, '95,
SWINGING RINGS. A. A. Ewing, '92. H. H. Walte, '92. W. T. S. Jackson, '92. Zet. BATULE BOARD. C. L. Upton, '91. A. A. Ewing, '92. R. W. Geodell, '92. H. H. Waite, '92. C. E. Hilbreth, '92. C. E. Hilbreth, '92. SPARRING. F. J. Lane, '92.	G. B. Brooks, 763, E. Bibss, 763, F. J. Raley, 763. 2-of. G. Zug, 765, H. B. Hallock, 793, C. B. Hogolon, 763, G. H. Fisher, 790, haches, C. L. Upton, 781, 2-of. T. Trank, 793,	W. T. S. Jackson, 72. G. L. Degener, 72. A. A. Ewing, 72. G. B. Shattock, 72. L. Byron, 76. G. Zog, 76. G. Zog, 76. G. Herring, 76. HORIZONTAL BAR. T. Breck, 79. H. H. Walle, 79. A. A. Ewing, 72. Jat. POLE VAULT.	F. Cole, '93, C. Bray, '93, T. M. Kimball, '95, C. R. Hogden, '93, ches, R. B. Latington, '94, 2 ^{flof} T. Kimball, '95, F. J. Baley, '95, G. B. Brooks, '95, 22nd
SWINGING RINGS. A. A. Ewing, '92, H. H. Walte, '92, W. T. S. Jackson, '92, Jot. BATULE BOARD. C. L. Upton, '91, A. A. Ewing, '92, R. W. Goodell, '92, H. H. Walte, '92, C. E. Hildreth, '92, College Record, 7 feet 61 SPARRING. F. J. Lane, '92, E. W. Babcock, '92, E. W. Babcock, '92,	G. B. Brooks, '93, E. Bilss, '93, F. J. Raley, '93. 2nd G. Zug, '93, H. B. Hallock, '93, C. R. Hogdon, '93, G. H. Pisher, '93. luches, C. L. Uptos, '94. 2nd T. Trask, '93, W. Talcott, '93,	W. T. S. Jackson, 92. G. L. Degener, 92. A. A. Ewing, 92. G. B. Shattock, 92. L. Byron, 93. G. Zeg, 93. Callege Record, 5 feet 61 to Ist. HORIZONTAL BAR. T. Breck, 91. H. H. Walte, 92. A. A. Ewing, 92. Ist. C. Upton, 91.	F. Cole, '93, C. Bray, '93, T. M. Kimball, '95, C. B. Hogdon, '93, ches, B. B. Ladington, '94, 25d T. Kimball, '98, F. J. Raley, '93, G. B. Brooks, '93, G. W. Emerson, Jr., '92,
SWINGING RINGS. A. A. Ewing, '92. H. H. Walte, '92. W. T. S. Jackson, '92. Zet. BATULE BOARD. C. L. Upton, '91. A. A. Ewing, '92. R. W. Goodell, '92. H. H. Walte, '92. C. E. Hilbreth, '92. C. E. Hilbreth, '92. SPARRING. F. J. Lane, '92, E. W. Babcock, '92. C. E. Brabank, '92.	G. B. Brooks, '63, E. Bibs, '93, F. J. Raley, '93. 2nd. G. Zug, '93, H. B. Hallock, '93, C. B. Hogolon, '93, G. H. Fisher, '90, haches, C. L. Upton, '91, 2nd. T. Trask, '93, W. Talcott, '93, J. Kemmerer, '93,	W. T. S. Jackson, 72. G. L. Degener, 72. A. A. Ewing, 72. G. B. Shattuck, 72. L. Byron, 78. G. Zog, 78. G. Zog, 78. G. Herring, 78. HORIZONTAL BAR. T. Breck, 79. H. H. Walte, 79. A. A. Ewing, 79. Jat. C. Upton, 71. A. Ewing, 79.	F. Cole, '93, C. Bray, '93, T. M. Kimball, '95, C. R. Hogden, '93, ches, R. B. Latington, '94, 2 ^d ol. T. Kimball, '93, F. J. Italey, '93, G. B. Brooks, '95, G. W. Emerson, Jr., '93, G. B. Brooks, '95,
SWINGING RINGS. A. A. Ewing, '92, H. H. Walte, '92, W. T. S. Jackson, '92, Jot. BATULE BOARD. C. L. Upton, '91, A. A. Ewing, '92, R. W. Goodell, '92, H. H. Walte, '92, C. E. Hildreth, '92, College Record, 7 feet 61 SPARRING. F. J. Lane, '92, E. W. Babcock, '92, E. W. Babcock, '92,	G. B. Brooks, '93, E. Bilss, '93, F. J. Raley, '93. 2nd G. Zug, '93, H. B. Hallock, '93, C. R. Hogdon, '93, G. H. Pisher, '93. luches, C. L. Uptos, '94. 2nd T. Trask, '93, W. Talcott, '93,	W. T. S. Jackson, 92. G. L. Degener, 92. A. A. Ewing, 92. G. B. Shattock, 92. L. Byron, 93. G. Zeg, 93. G. Zeg, 93. Callege Record, 5 feet 61 to Ist. HORIZONTAL BAR. T. Breck, 91. H. H. Walte, 92. A. A. Ewing, 92. Ist. C. Upton, 91. A. A. Ewing, 92. N. D. Alexander, 92. N. D. Alexander, 92. N. D. Alexander, 92.	F. Cole, '93, C. Bray, '93, T. M. Kimball, '95, C. B. Hogdon, '95, ches, B. B. Ladington, '94. 2fd. T. Kimball, '98, F. J. Raley, '93, G. B. Brooks, '93, G. W. Emerson, Jr., '93, G. B. Brooks, '93, H. B. Hallock, '93,
SWINGING RINGS. A. A. Ewing, '92, H. H. Walte, '92, W. T. S. Jackson, '92, Jot. BATULE BOARD. C. L. Upton, '91, A. A. Ewing, '92, R. W. Goodell, '92, H. H. Walte, '92, C. E. Hildreth, '92, College Record, 'feet 6 Joi. SPARRING. F. J. Lane, '92, E. W. Baboock, '92, C. E. Burbank, '92, L. E. Burbank, '93, L. E. Burbank, '94, L. E. Burbank, '9	G. B. Brooks, '93, R. Bilss, '94, F. J. Raley, '93. 2ed. G. Zug, '93, H. B. Hallock, '93, C. B. Hogdon, '93, C. B. Hogdon, '93, Inches, C. L. Upton, '94. 2ed. T. Trask, '93, W. Talcott, '93, J. Kemmerer, '93, A. W. Gill, '93,	W. T. S. Jackson, 72. G. L. Degener, 72. A. A. Ewing, 72. G. B. Shattock, 72. L. Byron, 78. G. Zog, 78. G. Zog, 78. G. Littge Broond, 5 fost 61 in Ist. HORIZONTAL BAR. T. Breck, 791. H. H. Walte, 792. A. A. Ewing, 792. Jst. POLE VAULT. C. Upton, 791. A. Ewing, 792. N. D. Alexander, 792. W. W. T. W. W. W. T. W. W. W. T. W.	F. Cole, '93, C. Bray, '93, T. M. Kimball, '95, C. R. Hogdon, '93, ches, R. B. Latington, '94, 2fol. T. Kimball, '93, F. J. Baley, '93, G. B. Brooks, '93, 2nd. G. W. Emerson, Jr., '92, G. B. Brooks, '93, H. B. Hallock, '83, cker, '94,
SWINGING RINGS. A. A. Ewing, 792, H. H. Walte, 792, W. T. S. Jackson, 722, Jat. BATULE BOARD. C. L. Upton, 791, A. A. Ewing, 792, R. W. Goodell, 792, H. H. Walte, 792, C. E. Hildreth, 792, College Record, 7 feet 6 Joi. SPARRING. F. J. Lane, 792, E. W. Baboock, 792, C. E. Burbank, 792, G. E. Burbank, 792, G. S. Raley, 792, G. S. Raley, 792, G. S. Raley, 792,	G. B. Brooks, '93, E. Bilss, '93, F. J. Raley, '93. 2nd	W. T. S. Jackson, 72. G. L. Degener, 72. A. A. Ewing, 72. G. B. Shattock, 72. L. Byron, 78. G. Zog, 78. G. Zog, 78. G. Littge Broond, 5 fost 61 in Ist. HORIZONTAL BAR. T. Breck, 791. H. H. Walte, 792. A. A. Ewing, 792. Jst. POLE VAULT. C. Upton, 791. A. Ewing, 792. N. D. Alexander, 792. W. W. T. W. W. W. T. W. W. W. T. W.	F. Cole, '93, C. Bray, '93, T. M. Kimball, '95, C. B. Hogdon, '95, ches, B. B. Ladington, '94. 2fd. T. Kimball, '98, F. J. Raley, '93, G. B. Brooks, '93, G. W. Emerson, Jr., '93, G. B. Brooks, '93, H. B. Hallock, '93,
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SWINGING RINGS. A. A. Ewing, '92. H. H. Walte, '92. W. T. S. Jackson, '92. Ist. BATULE BOARD. C. L. Upton, '91. A. A. Ewing, '92. R. W. Goodell, '92. C. E. Hilbreth, '92. C. E. Hilbreth, '92. C. E. Hilbreth, '92. SPARRING. F. J. Lane, '92, E. W. Babcock, '19. C. E. Burbank, '92. C. E. Burbank, '92. C. E. Burbank, '92. G. S. Rialey, '92. G. S. Rialey, '92.	G. B. Brooks, '93, E. Bilss, '93, F. J. Raley, '93. 2nd	W. T. S. Jackson, V2, G. L. Degener, V9, G. L. Degener, V9, A. A. Bring, V2, G. B. Shittes, V2, L. Byron, V8, G. Zog, V8, G. Zog, V8, G. Startes, V9, HORIZONTAL BAR. T. Breck, V1, H. H. Walte, V2, A. A. Ewing, V2, Ist. C. Upton, V1, A. Ewing, V2, N. D. Alexander, V2, W. W. T. T. College Becord, 9 feet	F. Cole, '93, C. Bray, '93, T. M. Kimball, '95, C. R. Hogdon, '93, ches, R. B. Latington, '94, 2fol. T. Kimball, '93, F. J. Baley, '93, G. B. Brooks, '93, 2nd. G. W. Emerson, Jr., '92, G. B. Brooks, '93, H. B. Hallock, '83, cker, '94,

Anthropometric Results.

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

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 Amberst College has been looking after an anthropometric college standard for about twenty-five years. To this end thouses and so 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 decelog 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 nost desirable materials for this purpose, the yoring 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 tw ways than one.

The Department of Physical Education in Amherst College has been looking

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.

