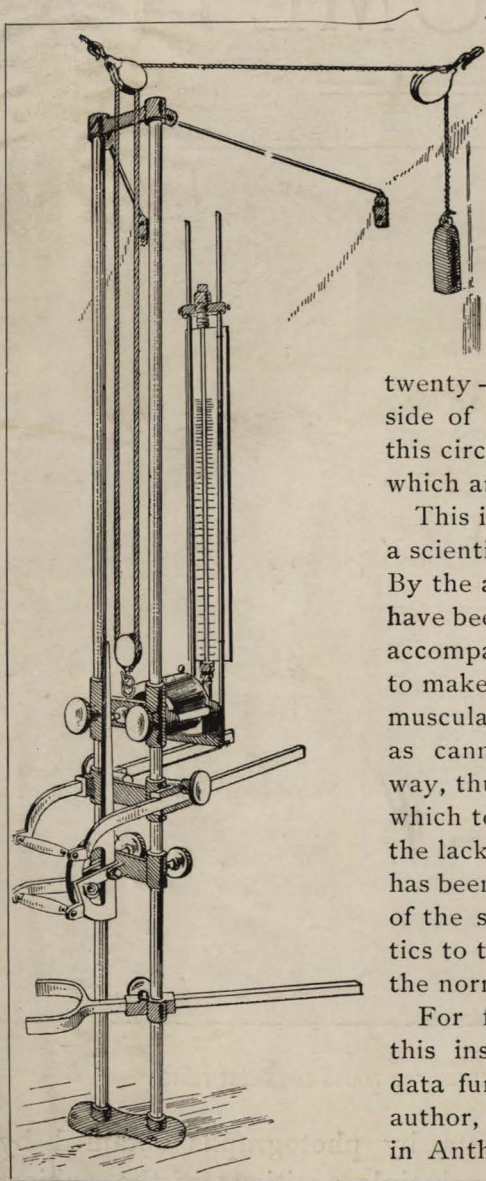


The Universal Dynamometer.



THE accompanying cut represents DR. KELLOGG'S UNIVERSAL MERCURIAL DYNAMOMETER specially adapted to testing the strength of the individual groups of muscles in the human body. Every important group of muscles in the body can be tested with this instrument, numbering twenty-five in all, counting only one side of the body. (See fourth page of this circular for list of the different tests which are made.)

This instrument furnishes the basis for a scientific study of muscular dynamics. By the aid of the percental charts which have been constructed from it, and which accompany the instrument, it is possible to make a graphic representation of the muscular capacity of an individual, such as cannot be obtained in any other way, thus furnishing accurate data upon which to base a prescription for exercise, the lack of which, up to the present time, has been the greatest obstacle in the way of the scientific application of gymnastics to the correction of deviations from the normal standard of symmetry.

For further information concerning this instrument and the value of the data furnished by it, see paper by the author, "A New Dynamometer for Use in Anthropometry."*

* The charts above referred to were exhibited, and a description of this dynamometer was given, at the International Statistical Congress, held in Chicago, in August, 1893. For a copy of the paper, address the author, or Modern Medicine Pub. Co., Battle Creek, Mich.

specimen
GN
53
4550

THE UNIVERSAL DYNAMOMETER.



(REDUCED CUT SHOWING POSITION FOR TAKING DIFFERENT TESTS.)

The above cut represents, by photographs obtained by means of a flash light, the principle positions of the subject and adjustments of the Universal Dynamometer in testing the different muscular groups of the body.

Arranged from the Measurements of 100 Adult WOMEN, taken and compiled under the direction of J. H. KELLÖG, M. D., Battle Creek, Mich.

EXCEPT WHEN OTHERWISE INDICATED, QUANTITIES ARE EXPRESSED IN POUNDS AVOIRDUPOIS.

PER CENT	HEIGHT (inches)	ARMS.										LEGS.										TRUNK.					RESPIRATION.					TOTAL STRENGTH.					PER CENT															
		WEIGHT	R. Hand Flexors.	R. Hand Flexors.	R. Hand Extensors.	R. Hand Extensors.	R. Forearm Pronators.	R. Forearm Pronators.	R. Forearm Supinators.	R. Forearm Supinators.	R. Arm Flexors.	R. Arm Flexors.	R. Arm Extensors.	R. Arm Extensors.	R. Deltoid.	R. Pectoralis.	R. Pectoralis.	R. Shoulder Rotators.	R. Shoulder Rotators.	R. Foot Flexors.	R. Foot Flexors.	R. Foot Extensors.	R. Foot Extensors.	R. Leg Flexors.	R. Leg Flexors.	R. Leg Extensors.	R. Leg Extensors.	R. Thigh Flexors.	R. Thigh Flexors.	R. Thigh Abductors.	R. Thigh Abductors.	R. Thigh Adductors.	R. Thigh Adductors.	Trunk Anterior.	Trunk Anterior.	Trunk R. Lateral.		Trunk R. Lateral.	Back Anterior.	Back Anterior.	Back R. Lateral.	Back R. Lateral.	Inspiration—Walk.	Inspiration—Walk.	Inspiration—Walk (inches).	Inspiration—Walk (inches).	Expiration—Normal.	Expiration—Normal.	Expiration—Spiralizer (inches).	Expiration—Spiralizer (inches).	ARMS.	LEGS.
1	68.57	119	110	105	25	60	55	72	65	60	60	55	60	90	90	95	90	80	300	300	300	88	80	145	140	168	165	170	168	120	115	111	105	115	490	140	135	28	65	65	165	220	6.5	5.0	200	5	1232	2337	1103	386	5058	1
2.5	68.06	110	107	103	24	59	53	71	64	57	57	61	90	89	92	82	76	284	278	84	80	125	118	159	154	156	154	98	104	110	99	110	446	132	127	26	63	53	152	183	5.5	3.7	217	1130	2155	1017	344	4645	2.5			
5	67.159	102	99	92	22	48	49	51	61	40	38	48	82	79	77	74	70	1263	256	78	70	108	104	131	127	136	134	88	95	106	90	103	386	121	122	25	60	48	129	158	4.5	1.51	224	1018	1936	914	288	4156	5			
10	66.01	108	101	88	19	43	43	48	46	35	33	44	42	43	42	71	63	63	61	62	2235	71	74	95	89	112	108	118	123	83	87	81	84	83	329	108	112	23	55	42	107	135	4.4	1.46	213	896	1724	807	243	3566	10	
15	65.41	101	94	81	16	39	39	45	42	32	32	42	38	37	37	67	58	58	57	57	2122	68	68	88	88	108	100	109	114	79	81	80	76	83	304	104	103	25	39	37	97	121	3.8	1.43	204	836	1615	745	219	3415	15	
20	64.81	98	91	77	17	36	36	42	39	30	30	39	34	33	33	63	53	53	53	53	2072	66	66	82	77	103	94	102	106	74	78	72	71	82	276	98	99	20	45	36	94	109	3.3	1.40	203	778	1518	691	197	3194	20	
25	64.41	97	90	74	16	34	34	40	36	29	29	36	32	32	32	59	50	50	50	50	2048	63	63	76	72	100	89	98	101	71	74	68	68	77	235	95	95	18	43	34	82	102	3.3	1.38	198	733	1447	637	184	3010	25	
30	63.91	96	89	71	15	33	33	37	33	27	27	33	29	29	29	56	46	46	46	46	1947	60	60	70	66	90	88	90	95	67	67	64	64	72	225	90	90	18	40	33	80	78	3.0	1.35	193	684	1372	597	162	2825	30	
35	63.725	95	88	70	14	32	32	36	31	26	26	31	28	28	28	53	44	44	44	44	1899	58	58	67	66	85	82	85	90	63	64	61	62	69	205	86	85	17	38	30	72	90	2.9	1.34	188	649	1307	550	163	2678	35	
40	63.322	94	87	68	13	31	31	35	29	24	24	28	26	26	26	53	44	44	44	44	1818	56	56	63	62	81	80	81	86	59	60	57	58	66	178	80	80	15	35	28	67	83	2.9	1.32	183	608	1230	508	162	2498	40	
45	63.120	93	86	67	12	30	30	34	28	22	22	28	24	24	24	50	47	47	47	47	1742	51	51	58	56	78	76	77	81	56	57	54	55	64	172	76	76	14	33	27	64	79	2.8	1.31	179	576	1170	484	144	2373	45	
50	62.817	92	84	65	11	29	29	33	27	21	21	27	23	23	23	46	45	45	45	45	1682	47	47	53	51	74	72	75	82	52	51	51	51	61	149	71	71	13	31	24	59	74	2.7	1.29	173	539	1099	436	134	2306	50	
55	62.614	90	82	63	10	28	28	32	26	20	20	26	22	22	22	43	42	42	42	42	1633	43	43	48	46	65	65	67	70	48	48	47	47	57	138	66	66	12	30	23	55	69	2.7	1.28	168	500	1015	397	129	2037	55	
60	62.415	89	80	61	9	27	27	31	25	19	19	25	21	21	21	42	41	41	41	41	1594	39	39	44	42	62	62	64	66	44	44	43	43	54	118	63	63	11	27	20	52	64	2.6	1.27	160	464	953	365	117	1906	60	
65	62.1105	87	78	59	8	26	26	30	24	18	18	24	20	20	20	40	39	39	39	39	1545	37	37	42	40	59	59	60	62	41	41	39	39	44	108	58	58	10	26	19	51	60	2.5	1.26	151	408	840	305	104	1710	65	
70	61.07	85	74	56	7	25	25	29	23	17	17	23	19	19	19	38	37	37	37	37	1497	35	35	40	38	56	56	57	59	37	37	35	35	41	105	51	51	9	25	17	49	55	2.4	1.25	144	371	714	275	89	1449	70	
75	60.914	84	73	54	6	24	24	28	22	16	16	22	18	18	18	36	35	35	35	35	1450	33	33	38	36	54	54	55	57	35	35	33	33	39	101	72	72	8	24	16	48	52	2.3	1.24	137	342	647	247	81	1317	75	
80	61.1	83	71	52	5	23	23	27	21	15	15	21	17	17	17	34	33	33	33	33	1403	29	29	34	32	52	52	53	55	33	33	31	31	37	99	70	70	7	23	15	46	50	2.2	1.23	130	318	621	218	69	1183	80	
85	60.7	81	69	50	4	22	22	26	20	14	14	20	16	16	16	32	31	31	31	31	1358	27	27	32	30	48	48	49	51	27	27	25	25	31	92	64	64	4	20	12	40	44	1.9	1.20	110	241	507	152	62	901	95	
90	61.103	79	67	49	3	21	21	25	19	13	13	19	15	15	15	28	27	27	27	27	1313	25	25	30	28	46	46	47	49	25	25	23	23	29	90	62	62	3	19	11	39	42	1.8	1.19	104	241	507	152	62	901	100	
95	60.7	77	65	47	2	20	20	24	18	12	12	18	14	14	14	26	25	25	25	25	1268	23	23	28	26	44	44	45	47	23	23	21	21	27	88	60	60	2	18	10	38	41	1.7	1.18	97	228	480	141	59	864	105	
100	60.5	75	63	45	1	19	19	23	17	11	11	17	13	13	13	24	23	23	23	23	1223	21	21	26	24	42	42	43	45	21	21	19	19	25	86	58	58	1	17	9	37	40	1.6	1.17	90	210	450	132	57	825	110	

Strength Measurements of Miss

Taken July 14 1891 Nov. 17 1891

Copyright 1891 by J. H. KELLÖG, M. D., Battle Creek, Mich.

The above chart represents the gain in total strength and improvement in symmetry resulting from exercise prescriptions based upon the data obtained with the Universal Dynamometer.

Different Tests Made with the Universal Dynamometer.

ARMS.

Right Hand Flexors
Right Hand Extensors
Right Deltoid

Right Forearm Pronators
Right Forearm Supinators
Right Shoulder Retractors

Right Arm Flexors
Right Arm Extensors
Right Pectorals

TRUNK.

Trunk Anterior
Trunk Posterior

Trunk Right Lateral
Neck Right Lateral

Neck Anterior
Neck Posterior

LEGS.

Right Foot Flexors
Right Foot Extensors
Right Leg Flexors

Right Leg Extensors
Right Thigh Flexors

Right Thigh Extensors
Right Thigh Abductors
Right Thigh Adductors

RESPIRATION.

Inspiration — Waist

Inspiration — Chest

Other tests may be arranged, but we have found the above sufficient for practical purposes.

PERCENTAL CHARTS.

Dr. Kellogg has prepared six different series of percental charts by a method described in his paper, entitled, "A New Dynamometer for Use in Anthropometry." A sample of one of these charts is shown on page three of this circular. The four series most recently prepared are based upon the examination of—

1. Two hundred healthy men, eighteen to thirty years.
2. Two hundred healthy women, eighteen to thirty years.
3. Six hundred men, sixteen to sixty years.
4. Six hundred women, sixteen to sixty years.

Series 1 and 2 are recommended for general use in connection with the dynamometer.

PRICE.

Either Series or Assorted, Printed on Strong Linen Paper,
Per Hundred, \$5.00.

OUTLINE CHARTS.

Dr. Kellogg has prepared a series of outline studies of the human body, comprising one hundred and eighteen figures arranged upon twenty-one charts, and showing the influence of neglect of muscular development, incorrect poise, and bad posture in producing asymmetry and deformities of the body and the displacement of the liver, stomach, and other internal organs. These charts are printed on strong, white, enameled manila paper. SIZE, 36 x 50 inches.

PRICE, In Sheets, = = = = \$ 6.00.

Mounted on Roller, with Case and Exhibitor, 10.00.

Method of Using the Dynamometer

IN MAKING EXERCISE PRESCRIPTION.

In the use of Dynamometers in prescribing exercise for many thousands of persons of all classes during the last ten years in connection with the Sanitarium at Battle Creek, Dr. Kellogg has arrived at the conclusion that, as a rule, the patient should be required to do 30 foot-pounds of work for each pound of lifting capacity ; that is, if a patient's total strength capacity is found to be 5000 pounds, his daily dose of exercise should be 30×5000 , or 150,000 foot-pounds. This looks like a large amount, but is less than one tenth of the amount of work done by a laboring man in an ordinary day's work in ten hours. By a simple computation, the amount of work required by different exercises may be obtained with sufficient exactness to answer all practical purposes, and from the data thus obtained, the amount of work required for the execution of any given set of exercises may be easily determined, and each set of muscles, as well as the entire body, may thus be made to do the amount of work properly required of it. Further suggestions respecting the construction of scientific prescriptions for exercise are given in Dr. Kellogg's paper above referred to.

ACCESSORIES.

With each dynamometer the following accessories are supplied without additional charge:—

One set of Dr. Kellogg's Outline Studies in sheets.

One hundred blank Percental Charts of either series desired, or assorted.

Full instructions for applying the dynamometer to different groups of muscles, including photographs showing the different positions of the subject and adjustments of the dynamometer in making the different tests.

This apparatus is a fine piece of mechanism, is accurate and reliable in operation, easily adjusted, not likely to get out of order, and is

Indispensable for Every Gymnasium.

It has been practically tested for ten years, and is in use in several of the largest gymnasiums in the country, among others the following:—

Yale University, New Haven, Conn.

Young Men's Christian Association Gymnasium, Chicago, Ill.

Olivet College, Olivet, Mich.

Battle Creek Sanitarium Gymnasium.

Dr. J. W. Seaver, Professor of Physical Culture in Yale University, and Medical Director of the Gymnasium, in his work on anthropometry, after describing all other dynamometers in use, expresses himself thus with reference to this dynamometer, which was then in a much cruder and less practical form than it is now:—

"A universal dynamometer has been invented by Dr. J. H. Kellogg, which deserves more than a mere mention, for it is destined to be used in modified form by every person practicing anthropometry, and by many physicians in diagnosis and determination of the actual progress of certain cases. Its use will supply the place of all the dynamometers mentioned above."

PRICE OF DYNAMOMETER,

Complete, with Accessories, packed ready for Shipment, \$200.00

**MODERN MEDICINE PUBLISHING CO.,
BATTLE CREEK, MICH.**