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NO. 87

U. S. DEPARTMENT OF LABOR

JAMES J. DAVIS, Secretary

CHILDREN'S BUREAU

JULIA C. LATHROP, Chief

STATURES AND WEIGHTS OF CHILDREN  
UNDER SIX YEARS OF AGE

By

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COMMUNITY CHILD-WELFARE SERIES No. 3

Bureau Publication No. 87



WASHINGTON  
GOVERNMENT PRINTING OFFICE

1921

362.7

U58C

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## LETTER OF TRANSMITTAL.

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UNITED STATES DEPARTMENT OF LABOR,  
CHILDREN'S BUREAU,  
*Washington, May 11, 1921.*

SIR: I transmit herewith a report on Statures and Weights of Children Under Six Years of Age.

The material for this report was secured in 1918-19 in the course of the weighing and measuring test of "Children's Year." The plan for the test was drawn up by Dr. Grace L. Meigs (Crowder). The work of tabulation was under the direction of Dr. Robert M. Woodbury, who has written the report.

Grateful acknowledgments are due to the members of the two advisory committees who gave generously of their time and whose recommendations as to the use of material guided the preparation of this report. These committees were:

Committee of the Pediatric Section of the American Medical Association: Dr. J. P. Sedgwick, Dr. Richard M. Smith, Dr. William Weston, Dr. Herman Schwartz, Dr. E. C. Fleischmer.

Statistical Advisory Committee: Prof. Walter F. Willcox, Prof. Irving Fisher, Prof. Thomas S. Adams, Prof. Robert E. Chaddock, Prof. J. W. Glover, Miss Edith Abbott.

To other authorities consulted grateful acknowledgments are also made for valuable suggestions and criticisms. These other authorities included: Dr. Aleš Hrdlička, Dr. Bird T. Baldwin, Dr. Clark Wissler, Dr. Charles R. Bardeen, Dr. Charles B. Davenport, Dr. Louis I. Dublin, Dr. Frederick L. Hoffman, Dr. F. S. Crum, and Dr. Fritz B. Talbot.

Respectfully submitted.

JULIA C. LATHROP,  
*Chief.*

Hon. JAMES J. DAVIS,  
*Secretary of Labor.*



# STATURES AND WEIGHTS OF CHILDREN UNDER SIX YEARS OF AGE.

## INTRODUCTION.

During children's year, the second year of this country's participation in the World War, a series of campaigns was undertaken to focus public attention upon infant and child welfare. Experience in other countries had shown the special need of protective measures for children during war time. This need was recognized by President Wilson in his letter to the Secretary of Labor:

Next to the duty of doing everything possible for the soldiers at the front, there could be, it seems to me, no more patriotic duty than that of protecting the children, who constitute one-third of our population \* \* \* I heartily approve the plan of the Children's Bureau and the Woman's Committee of the Council of National Defense for making the second year of the war one of united activity on behalf of children, and in that sense a children's year.

A full description of the children's year campaigns is contained in *Children's Year*,<sup>1</sup> a publication of the Children's Bureau, and in an address by Dr. Anna E. Rude at a meeting of the American Public Health Association in December, 1918.<sup>2</sup>

The present bulletin is concerned solely with the first of these campaigns, that for the weighing and measuring of children. A record blank in two parts was prepared, one for the parents to keep and the other for return to the Children's Bureau. The parents' half of the card contained spaces for the child's stature, weight, and age and for the date of examination, together with spaces for later measurements, to form a continuous record of the child's growth. It contained also a table of average heights and weights with which the child's actual height and weight could be compared.

Though based on the best available data, it was realized that the averages given in the table on the parents' half of the card were far from satisfactory. No complete series covering all ages was available. Three different sources were used—Dr. Holt's averages, based upon about 2,000 measurements made in private practice, for boys and girls at birth and for boys at 3 months;<sup>3</sup> Dr. Crum's figures, based

<sup>1</sup> *Children's Year*, a brief summary of work done and suggestions for follow-up work. Children's Bureau publication No. 67.

<sup>2</sup> Anna E. Rude, M. D.: "The children's year campaign," in *American Journal of Public Health*, Vol. IX, No. 5 (May, 1919), pp. 346-351.

<sup>3</sup> L. Emmett Holt, *Diseases of Infancy and Childhood*, 1916, p. 20. Figures for 3 months given in a personal communication.

upon 10,423 "normal babies in 31 States" for the period from 6 to 48 months, inclusive;<sup>4</sup> and Bowditch's averages, based upon nearly 24,000 Boston school children of native and foreign parentage,<sup>5</sup> for the period from 5 to 16 years of age. The first two sources named gave weights without clothing, while the last gave weights in ordinary clothing but without shoes. The series from 6 to 48 months had been criticised on the ground that the competitive element present in baby shows, at which the bulk of these measurements were secured, was likely to have produced too high averages. On account of lack of material, gaps in the table were left between birth and 6 months for girls and, except for the figure at 3 months, for boys; and also between 48 months and 66 months, the age to which the first of Bowditch's averages (5 years) corresponds. The continuity of the series was broken in passing from weights without clothing at 48 months to weights in ordinary clothing but without shoes at 5 years. It might be mentioned, further, that the averages from 36 to 48 months were based on relatively few cases (from 9 to 90), while the average for 5 years, the lowest of Bowditch's figures, was probably less reliable than his averages for later years. Yet, as explained on the record blank, the averages presented were not far different from averages drawn from other sources.<sup>6</sup>

The bureau's half of the card contained spaces for the child's stature, weight, sex, and date of birth, for the country of birth of father and mother, and for a statement of whether or not the child was in good health or had physical defects. Spaces were also provided for the date and place of examination and for the signature of the examiner.

As the campaign progressed calls for record blanks quickly exceeded the 500,000 originally printed, and before the campaign was finished over 7,000,000 blanks had been distributed. From these the bureau eventually received over 2,000,000 records. In view of the large demand for cards it was found necessary to concentrate upon children under 6 years of age, and accordingly the great majority of records received were for children under 6.

The bureau was thus put in possession of a far larger mass of data upon heights and weights than was ever before available for children of these ages. In view of the gaps in and the unsatisfactory character of the material previously available for these ages, it seemed a duty to utilize and make available the information contained in these

<sup>4</sup> Anthropometric Statistics of Children—Ages 6 to 48 months. Frederick S. Crum, Publications of the American Statistical Association, Vol. XV, 1916-17, pp. 332-336.

<sup>5</sup> Eighth Annual Report of the State Board of Health of Massachusetts, 1877, p. 275.

<sup>6</sup> Bowditch's averages are in substantial agreement with the table of statures based on over 88,000 children in Boston, St. Louis, Milwaukee, Worcester, Toronto, and Oakland, and the table of weights calculated from the data of 68,000 children in Boston, St. Louis, and Milwaukee. See B. T. Baldwin, Physical Growth and School Progress, U. S. Bureau of Education, Bulletin 1914, No. 10, whole No. 581, p. 150. The weights based upon "10,423 normal babies" were, however, somewhat higher than those given by Dr. Holt for children under 2 years.



records. The analysis would serve to establish upon adequate material drawn from all parts of the country a complete series of average statures and weights for young children. It might also serve, if another similar mass of material were to be accumulated after an interval of time, as a basic series from which changes in average statures and weights could be measured.

The total number of records received was so great that it was impossible, in view of the limited resources of the bureau, to tabulate the entire mass of material. A smaller number would afford a basis large enough for accurate results, and would permit of a selection of the most reliable part of the data.

Consultations were held with anthropological, statistical, and medical authorities in regard to the subjects and methods of investigation. These conferences were held before the commencement of tabulation, and during the progress of the work as questions arose. Questions of a statistical nature were referred to the statistical advisory committee of the bureau. A special committee of the pediatric section of the American Medical Association cooperated in connection with the medical questions.

In the final tabulation about one-twelfth of the total number of cards was included.

#### BASIS OF SELECTION.

The basis of selection was fourfold. In the first place only cards signed by physicians were included. If a physician signed the card it might be assumed that he was the examiner or that he exercised supervision over the taking of measurements. Since the main tabulations were to be based on children who were without serious physical defects, it was desirable to select those who had been examined or at least passed under review by physicians. A further discussion of this point is given below.

In the second place, cards were not included in the tables unless a definite statement was received from the examining physician that the children were weighed and measured without clothing. The directions for weighing specified that children under 5 years of age were to be weighed and measured without clothing. A thousand questionnaires sent to physicians selected at random throughout the country showed, however, that many had not followed this direction exactly; some had weighed children in underclothing, others reported weighing with clothing and making deductions before entering weights, still others had measured the children with their shoes on, etc. It was decided, therefore, to send a questionnaire to every physician who had signed a card and to include only cards signed by those who reported weighing and measuring without clothing. The physicians were asked to specify separately the method of weighing children under 1 year of age, from 1 to 5 years, and 5



years of age and over. It frequently happened that physicians reported that children under 1 year of age had been weighed and measured without clothing, while those over 1 year or over 5 years had been weighed differently; in these cases only the cards of children who were weighed without clothing were included. The rule that only children weighed without clothing should be included in the tables was applied to children 5 years of age and over, even though the directions on the record blank had not specified this method of weighing at these ages, since only thus could the series of heights and weights be placed on a uniform basis.<sup>7</sup>

The third basis of selection, as already mentioned, was the absence of physical defects which might affect stature or weight. The defects and diseases which were the basis of exclusion from the tabulation included arthritis, cretinism, curvature of the spine, dwarfism, heart disease, hydrocephalus, idiocy, imbecility, joint disease, marasmus, malnutrition, paralysis, Pott's disease, rachitis, spina bifida, syphilis, and tuberculosis; and any children who were noted as sick at the time of examination were excluded. In general any defect or disease which necessarily interferes with the growth and nutrition of a child excluded the card from tabulation.

In this connection it should be remembered that all children who were included in the tabulation were weighed and measured, examined or reviewed, by physicians. It is probable, therefore, that all cases of the more serious defects included in the list were noted upon the card. The reporting of defects and diseases the diagnosis of which is at all difficult was probably far less uniform. Nevertheless, the group selected for tabulation represents, so far as the physicians' records permitted, children without physical defects which might affect stature or weight.<sup>8</sup>

The fourth basis of selection was the completeness and accuracy of the record. All cards were excluded upon which any one or more

<sup>7</sup> A small number of cards signed by physicians in California was included even though replies had not been received as to methods used in weighing and measuring. In this State a State-wide campaign was carried on by physicians working under detailed instructions. Answers to the questionnaires were received from about three-fifths of the physicians who had signed record cards; their cards were accepted or rejected in accordance with the general rule stated above. The replies showed, however, that practically all the children were weighed and measured without clothing. The cards of physicians from whom no replies were received were therefore included. The possible error arising from including these cards is small, since it is estimated that of all the California children included, 95 per cent of those under 1 year, 87 per cent of those from 1 to 5 years, and 82 per cent of those 5 years of age were weighed without clothing, and in a large number of the remaining cases the weights were entered after making deductions to allow for the weight of clothing. In the averages for the entire country the possible error arising from this source is negligible, since these children form such a small fraction of the general total.

<sup>8</sup> The list of defects causing exclusion did not include carious teeth, diseased or enlarged tonsils, or adenoids. In order to learn whether the inclusion of children with these defects affected the general average stature and weight, a tabulation was made of 10,276 California and New York City children with definite diagnoses of diseased or enlarged tonsils, 3,728 children with definite diagnoses of adenoids, and 2,093 children with carious teeth. The results are presented on pp. 74-76, together with an estimate of the effect on the general average of including such children. The effect under 3 years of age is negligible; over 3, the elimination of children with these defects would have raised the general average stature not more than one-twentieth of an inch and the average weight only from 1 to 3 ounces, pp. 74-75.

of the following was not reported: Sex, age, height, weight, or color. Furthermore, cards were excluded upon which obviously impossible errors due to clerical inaccuracies appeared.<sup>9</sup>

#### ACCURACY OF MEASUREMENT.

The accuracy of the figures depends on three different items. In the first place, as already pointed out, it is obvious that whether the children were weighed and measured with or without clothing is of fundamental importance. Obviously all the children included had to be weighed according to a uniform rule as to clothing, if the results were to be of value. Since weighing without clothing avoids difficulties resulting from variations in the weight of clothing worn in the different seasons, in the North, and in the South, and by the different elements of the population, this method was adopted and specified in the instructions for weighing. If, then, children weighed with clothing were included, the averages would be too high. Error from this source, as already stated, was practically eliminated by the method of selection of the records.

In the second place the technique of weighing and measuring and the type and accuracy of the scales used would affect the result. Whether, for example, the weighing scales were properly balanced, whether in measuring children the best methods were followed to insure that the stature should be accurately secured, all such points are important; but they can not be determined from the records themselves. In connection with the weighing and measuring campaign a leaflet, "Suggestions to Examiners,"<sup>10</sup> was drawn up and distributed. In this leaflet recommendations as to the most satisfactory methods of weighing and measuring were given, and references were made to a previous bulletin of the bureau, *How to Conduct a Children's Health Conference*. While it is impossible to determine to what extent these suggestions were followed, errors in weighing and measuring would tend, in general to overstate and to understate the truth in an approximately equal number of cases and to approximately equal degrees. In other words, in a large number of measurements errors from this source would tend to offset one another. Though such errors would increase slightly the standard deviation and the variability of the measurements, the averages themselves would remain practically unaffected.

In the third place, the accuracy with which results were recorded must be considered. Clerical errors or omissions may, of course, have occurred. In some cases these may have been such as to cause

<sup>9</sup> Such, for example, as a card which gave a stature of 36 inches "at birth." This error was doubtless due to entering the date of examination both for the date of examination and the date of birth. In subtracting the date of birth from the date of examination to find the age, it appears—erroneously—that the child was examined on the same day he was born.

<sup>10</sup> Extracts containing the recommendations for weighing and measuring are given in the appendix.

the rejection of the card; the others would probably tend to offset one another in a large number of measurements. Measurements, furthermore, may not have been recorded with as great accuracy as they were secured; or vice versa, they may have been stated on the card with greater precision than the methods of securing them actually warranted. Stature, for example, may have been accurately secured to the nearest eighth of an inch and have been stated only to the nearest inch; or it may have been secured and stated accurately to the nearest half, quarter, or eighth of an inch; or it may have been stated in eighths without having been so accurately secured. The records themselves, obviously, do not show the accuracy with which the measurements were actually made, but they do show the fineness of the classification used in entering the measurements. Although this information does not furnish any basis for determining the absolute accuracy of the averages, it does throw light upon the relative accuracy and care in measurements made in the different sections of the country and for the white and Negro children included in their respective tables. These comparisons are discussed in the appendix, p. 78.

Except for the possibility of biased errors the precision of an average depends upon the variability, and upon the number of measurements.<sup>11</sup> This subject is discussed later in connection with the tables

#### UNITS OF MEASUREMENT.

In the tabulations height is stated to the nearest inch, weight to the nearest half pound; age is given in completed months, and the upper and lower limits of the ages included are stated in the tables. Cases in which the stated height fell on the even half inch, or on the dividing line between two groups, were divided equally, and half were included in the group below and half in the group above the dividing line. Similarly for weights; cases in which the weight was stated with a fraction of one-fourth or three-fourths of a pound were divided equally, and half were included with the unit next below and half with the unit next above. Thus, half the cases of children whose weights were stated as  $15\frac{1}{4}$  pounds, for example, were arbitrarily classed in the group weighing  $14\frac{3}{4}$  to  $15\frac{1}{4}$  and half in the group weighing  $15\frac{1}{4}$  to  $15\frac{3}{4}$  pounds. The age was in every case computed from the dates of examination and of birth and classified by months. The average age of the children in each group, therefore, is approximately halfway between the upper and lower limits of age given. In comparing these figures with other series of measurements, the definition of the units, as just stated, must always be borne in mind.

<sup>11</sup> The precision of an average in the technical sense varies directly with the square root of the number of measurements and inversely with the square root of the sum of the mean squared deviation from the average.

## STATURES AND WEIGHTS.

### SIZE OF SELECTED GROUP.

Records for 172,000 children met the tests of selection described, and were tabulated for the general tables of stature and weight. These records included all those among the 2,000,000 cards received which fulfilled every requirement. All but a small number, 1,612, of these children were under 6 years of age. The number of records received for children under 6 years of age represented, therefore, about one-seventh, and the number tabulated about 1.2 per cent, of the total number of children of this age in the country.

The records were divided at the outset into two parts, and those for white and for colored children were tabulated separately. Since the group of white children was large, comprising 167,024, while that for colored children was comparatively small, comprising only 4,976 records, the main discussion is of the group of white children.

### WHITE CHILDREN.

#### Average statures and weights.

Table I gives average statures and weights for white boys and girls for each age up to 72 months.<sup>1</sup> The figures shown in this table have been smoothed to eliminate slight irregularities in the progression of statures and weights.<sup>2</sup> Charts I and II show in graphic form the increase in stature and weight during the first six years of life.

Boys under 6 years of age are found to be slightly taller and heavier than girls of the same ages. The averages for boys increase from 21.16 inches and 9.11 pounds at under 1 month to 43.87 inches and 41.40 pounds at 71 months. At the same time those for girls increase from 20.89 inches and 8.65 pounds at under 1 month to 43.52 inches and 40.36 pounds at 71 months. The boys average from one-third to one-half inch taller and weigh about a pound more than the girls of the same ages.

<sup>1</sup> Figures in units of the metric system are given in General Table 1, p. 85.

<sup>2</sup> The method of smoothing is as follows: The differences between the successive averages, indicating monthly growth, are first smoothed by substituting for each figure a new one equal to the average of five values, the figure itself and the two preceding and the two following figures. The process is then repeated a second time upon this first smoothed series. These figures are then adjusted so that the sum of the smoothed is equal to the sum of the original figures indicating growth. These final smoothed growth figures are then used to construct the smoothed series of averages. The first two and the last two averages have been kept unchanged.



Chart I.—Stature and age, by sex.

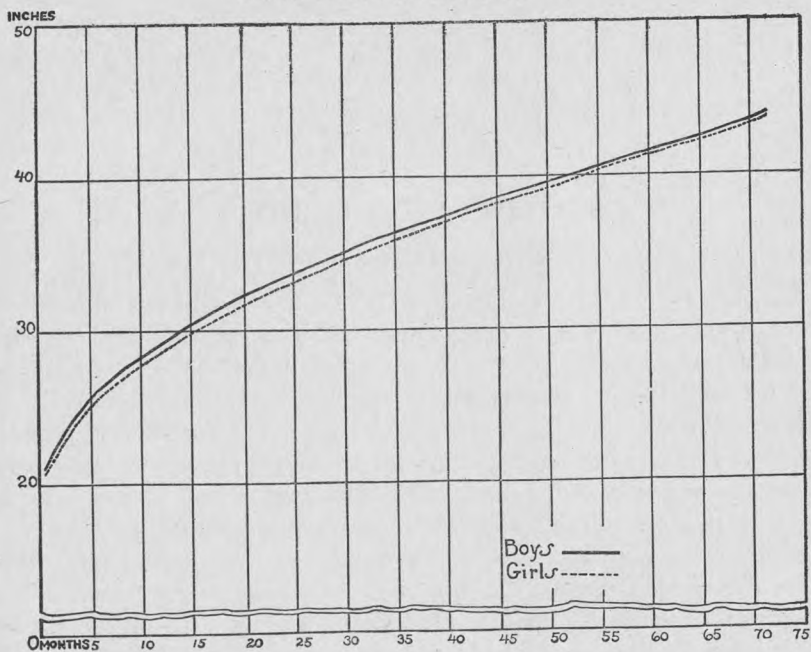


Chart II.—Weight and age, by sex.

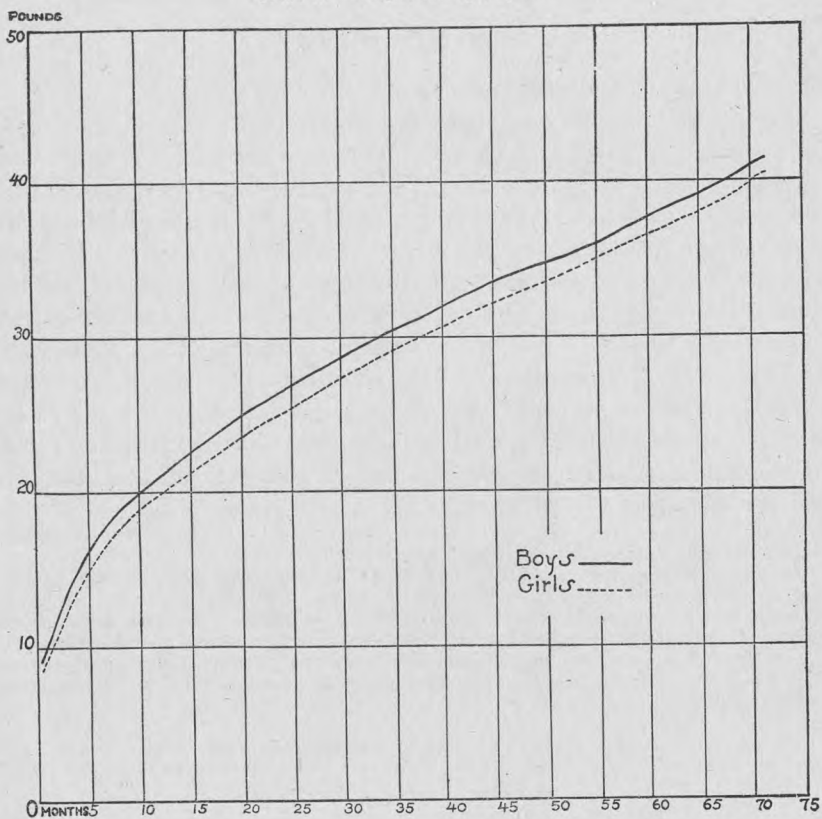


TABLE I.—Average statures and weights, from birth to 6 years, by ages, smoothed figures; white children.<sup>1</sup>

Age.	Boys.		Girls.	
	Average stature (inches).	Average weight (pounds).	Average stature (inches).	Average weight (pounds).
Under 1 month.....	21.16	9.11	20.89	8.65
1 month, under 2.....	22.47	10.88	21.92	10.14
2 months, under 3.....	23.58	12.61	23.09	11.71
3 months, under 4.....	24.55	14.07	24.00	13.03
4 months, under 5.....	25.38	15.37	24.83	14.25
5 months, under 6.....	26.10	16.50	25.53	15.32
6 months, under 7.....	26.72	17.47	26.15	16.26
7 months, under 8.....	27.27	18.31	26.70	17.09
8 months, under 9.....	27.76	19.04	27.20	17.81
9 months, under 10.....	28.21	19.68	27.66	18.45
10 months, under 11.....	28.64	20.27	28.10	19.03
11 months, under 12.....	29.06	20.81	28.51	19.56
12 months, under 13.....	29.47	21.32	28.91	20.04
13 months, under 14.....	29.87	21.82	29.30	20.51
14 months, under 15.....	30.26	22.31	29.69	20.96
15 months, under 16.....	30.64	22.78	30.08	21.42
16 months, under 17.....	31.02	23.25	30.47	21.88
17 months, under 18.....	31.39	23.72	30.86	22.35
18 months, under 19.....	31.76	24.18	31.24	22.81
19 months, under 20.....	32.11	24.62	31.60	23.26
20 months, under 21.....	32.44	25.04	31.93	23.68
21 months, under 22.....	32.76	25.45	32.24	24.07
22 months, under 23.....	33.06	25.84	32.53	24.45
23 months, under 24.....	33.34	26.21	32.81	24.81
24 months, under 25.....	33.62	26.58	33.09	25.17
25 months, under 26.....	33.89	26.95	33.37	25.54
26 months, under 27.....	34.16	27.31	33.66	25.92
27 months, under 28.....	34.43	27.68	33.95	26.31
28 months, under 29.....	34.71	28.06	34.24	26.70
29 months, under 30.....	34.99	28.45	34.53	27.09
30 months, under 31.....	35.27	28.83	34.82	27.48
31 months, under 32.....	35.54	29.20	35.09	27.85
32 months, under 33.....	35.79	29.56	35.34	28.20
33 months, under 34.....	36.02	29.88	35.58	28.54
34 months, under 35.....	36.24	30.18	35.81	28.88
35 months, under 36.....	36.46	30.47	36.03	29.20
36 months, under 37.....	36.67	30.75	36.25	29.51
37 months, under 38.....	36.89	31.04	36.48	29.82
38 months, under 39.....	37.11	31.34	36.72	30.13
39 months, under 40.....	37.34	31.67	36.96	30.46
40 months, under 41.....	37.57	32.01	37.21	30.79
41 months, under 42.....	37.81	32.36	37.46	31.12
42 months, under 43.....	38.05	32.71	37.70	31.44
43 months, under 44.....	38.29	33.05	37.92	31.73
44 months, under 45.....	38.51	33.36	38.13	32.00
45 months, under 46.....	38.72	33.65	38.33	32.27
46 months, under 47.....	38.91	33.91	38.52	32.53
47 months, under 48.....	39.09	34.14	38.70	32.78
48 months, under 49.....	39.25	34.36	38.89	33.05
49 months, under 50.....	39.42	34.59	39.08	33.31
50 months, under 51.....	39.59	34.82	39.27	33.57
51 months, under 52.....	39.77	35.06	39.47	33.85
52 months, under 53.....	39.96	35.33	39.69	34.17
53 months, under 54.....	40.18	35.63	39.91	34.48
54 months, under 55.....	40.40	35.94	40.14	34.81
55 months, under 56.....	40.62	36.27	40.36	35.14
56 months, under 57.....	40.83	36.61	40.58	35.45
57 months, under 58.....	41.03	36.94	40.79	35.75
58 months, under 59.....	41.22	37.28	40.98	36.05
59 months, under 60.....	41.40	37.60	41.16	36.35
60 months, under 61.....	41.57	37.91	41.34	36.65
61 months, under 62.....	41.75	38.20	41.52	36.94
62 months, under 63.....	41.93	38.48	41.69	37.23
63 months, under 64.....	42.11	38.75	41.86	37.52
64 months, under 65.....	42.31	39.05	42.03	37.80
65 months, under 66.....	42.51	39.36	42.20	38.09
66 months, under 67.....	42.71	39.69	42.38	38.42
67 months, under 68.....	42.91	40.03	42.58	38.74
68 months, under 69.....	43.10	40.39	42.81	39.14
69 months, under 70.....	43.32	40.72	43.03	39.53
70 months, under 71.....	43.48	41.17	43.39	40.17
71 months, under 72.....	43.87	41.40	43.52	40.36

<sup>1</sup> The figures have been smoothed by using the smoothed figures of monthly growth. For the method of smoothing see p. 15. For equivalents in centimeters and kilograms see General Table 1, p. 85. For averages at exact ages, 1 month, etc., see General Tables 19 and 20, pp. 105, 106.

Averages from the original data are shown in Tables II and III, together with measures of variability and the numbers of cases upon which the averages are based. The number of cases upon which the various averages are based rises to a maximum at about 6 months when over 1,900 boys and 1,800 girls were examined. For all ages except under 1 month and at 60 months and over for boys, and under 1 month and at 56, 57, and 60 months and over for girls, at least 1,000 records were included, a number sufficiently large to insure that the averages are not seriously affected by chance irregularities in the selection of cases.

TABLE II.—Average statures and weights, by age, from birth to 6 years; white boys.<sup>1</sup>

Age.	White boys.						
	Number.	Stature.			Weight.		
		Average stature (inches). <sup>2</sup>	Standard deviation (inches). <sup>3</sup>	Coefficient of variation (per cent). <sup>4</sup>	Average weight (pounds). <sup>2</sup>	Standard deviation (pounds). <sup>3</sup>	Coefficient of variation (per cent). <sup>4</sup>
Under 1 month.....	595	21.16	1.43	6.7	9.11	1.77	19.4
1 month, under 2.....	1,431	22.47	1.29	5.8	10.88	1.89	17.4
2 months, under 3.....	1,754	23.58	1.25	5.3	12.61	2.04	16.2
3 months, under 4.....	1,826	24.53	1.30	5.1	14.12	2.19	15.4
4 months, under 5.....	1,863	25.35	1.30	5.1	15.32	2.28	14.9
5 months, under 6.....	1,809	26.08	1.45	5.6	16.58	2.53	15.3
6 months, under 7.....	1,912	26.68	1.49	5.6	17.52	2.59	14.8
7 months, under 8.....	1,851	27.21	1.57	5.8	18.31	2.68	14.6
8 months, under 9.....	1,746	27.59	1.50	5.4	18.96	2.57	13.5
9 months, under 10.....	1,860	28.02	1.47	5.2	19.44	2.57	13.2
10 months, under 11.....	1,814	28.47	1.49	5.2	20.13	2.64	13.1
11 months, under 12.....	1,838	28.91	1.42	4.9	20.67	2.44	11.8
12 months, under 13.....	1,575	29.36	1.43	4.9	21.19	2.58	12.2
13 months, under 14.....	1,364	29.73	1.42	4.8	21.67	2.58	11.9
14 months, under 15.....	1,281	30.15	1.39	4.6	22.22	2.53	11.4
15 months, under 16.....	1,328	30.42	1.38	4.5	22.45	2.59	11.5
16 months, under 17.....	1,216	30.89	1.56	5.0	23.05	2.74	11.9
17 months, under 18.....	1,278	31.26	1.59	5.1	23.61	2.75	11.7
18 months, under 19.....	1,289	31.77	1.74	5.5	24.15	2.93	12.1
19 months, under 20.....	1,206	32.12	1.70	5.3	24.67	2.94	11.9
20 months, under 21.....	1,171	32.34	1.68	5.2	24.78	2.91	11.7
21 months, under 22.....	1,242	32.64	1.67	5.1	25.28	2.98	11.5
22 months, under 23.....	1,300	33.05	1.69	5.1	25.85	2.81	10.8
23 months, under 24.....	1,284	33.23	1.62	4.9	26.02	2.98	11.6
24 months, under 25.....	1,354	33.60	1.65	4.9	26.47	3.06	11.3
25 months, under 26.....	1,272	33.90	1.58	4.7	27.02	3.06	11.6
26 months, under 27.....	1,253	34.08	1.66	4.9	27.16	3.30	12.2
27 months, under 28.....	1,269	34.35	1.63	4.8	27.53	3.27	11.9
28 months, under 29.....	1,321	34.55	1.63	4.7	27.84	3.17	11.4
29 months, under 30.....	1,240	34.95	1.75	5.0	28.40	3.29	11.6
30 months, under 31.....	1,205	35.31	1.79	5.1	28.92	3.47	12.0
31 months, under 32.....	1,201	35.60	1.84	5.2	29.17	3.48	11.9
32 months, under 33.....	1,217	35.85	1.80	5.0	29.67	3.50	11.8
33 months, under 34.....	1,241	36.03	1.72	4.8	29.86	3.43	11.5
34 months, under 35.....	1,311	36.16	1.72	4.7	30.14	3.45	11.5
35 months, under 36.....	1,283	36.48	1.73	4.8	30.49	3.50	11.5

<sup>1</sup> Averages are not shown for 729 boys measured at ages of 72 to 83 months, since the numbers at each age were too small to yield satisfactory averages. For equivalents in centimeters and kilograms see General Table 2, p. 86. The distribution of heights is given in General Table 3 and of weights in General Table 5.

<sup>2</sup> The "probable errors" of these averages are small. At under 1 month the probable error of average stature is 0.04 inch; from 1 to 12 months, 0.02; from 13 to 41 months, 0.03, except at 14 months, 0.02; from 42 to 59 months, 0.04; and from 60 to 71 months it ranges from 0.05 to 0.03 inch. At under 1 month the "probable error" of the average weight is 0.05 pound; from 1 month to 59 months it ranges from 0.03 to 0.09; and from 60 months to 71 it ranges from 0.11 to 0.18 pound. For an explanation of the significance of this term, see Appendix C, pp. 81-82.

<sup>3</sup> The standard deviation is equal to the square root of the mean squared deviation from the average.

$$\sigma = \sqrt{\frac{\sum x^2}{n}}$$

<sup>4</sup> The coefficient of variation is found by dividing the standard deviation by the average and expressing the result as a percentage.  $V = \frac{100\sigma}{a}$



TABLE II.—Average statures and weights, by age, from birth to 6 years; white boys—  
Concluded.

Age.	White boys.						
	Number.	Stature.			Weight.		
		Average stature (inches).	Standard deviation (inches).	Coefficient of variation (per cent).	Average weight (pounds).	Standard deviation (pounds).	Coefficient of variation (per cent).
36 months, under 37.....	1,258	36.67	1.74	4.7	30.78	3.49	11.3
37 months, under 38.....	1,176	36.90	1.68	4.6	30.98	3.46	11.2
38 months, under 39.....	1,171	37.09	1.71	4.6	31.21	3.53	11.3
39 months, under 40.....	1,177	37.31	1.74	4.7	31.64	3.57	11.3
40 months, under 41.....	1,167	37.54	1.70	4.5	31.95	3.47	10.9
41 months, under 42.....	1,188	37.83	1.74	4.6	32.45	3.63	11.2
42 months, under 43.....	1,126	38.09	1.88	4.9	32.77	3.79	11.6
43 months, under 44.....	1,198	38.38	1.90	5.0	33.20	3.86	11.6
44 months, under 45.....	1,164	38.61	1.82	4.7	33.34	3.66	11.0
45 months, under 46.....	1,205	38.87	1.92	4.9	33.87	3.83	11.3
46 months, under 47.....	1,203	38.98	1.86	4.8	34.11	3.83	11.2
47 months, under 48.....	1,236	39.19	1.85	4.7	34.22	3.78	11.0
48 months, under 49.....	1,171	39.21	1.85	4.7	34.37	3.87	11.3
49 months, under 50.....	1,104	39.51	1.85	4.7	34.64	3.75	10.8
50 months, under 51.....	1,127	39.69	1.89	4.8	34.98	3.87	11.1
51 months, under 52.....	1,075	39.81	1.89	4.7	35.09	3.83	10.9
52 months, under 53.....	1,171	39.91	1.94	4.9	35.26	3.58	10.1
53 months, under 54.....	1,068	40.25	1.96	4.9	35.78	4.01	11.2
54 months, under 55.....	1,040	40.47	1.99	4.9	36.02	4.16	11.6
55 months, under 56.....	1,025	40.76	1.98	4.9	36.37	4.18	11.5
56 months, under 57.....	1,028	40.97	1.96	4.8	36.87	4.21	11.4
57 months, under 58.....	1,081	41.21	1.97	4.8	37.04	4.08	11.0
58 months, under 59.....	1,052	41.27	1.95	4.7	37.45	4.18	11.2
59 months, under 60.....	1,028	41.49	1.99	4.8	37.77	4.29	11.3
60 months, under 61.....	624	41.60	1.98	4.8	37.98	4.26	11.2
61 months, under 62.....	582	41.96	1.81	4.3	38.51	4.05	10.5
62 months, under 63.....	527	42.10	2.11	5.0	39.07	4.65	11.9
63 months, under 64.....	499	42.05	2.05	4.9	38.62	4.34	11.2
64 months, under 65.....	508	42.34	2.01	4.8	39.12	4.32	11.1
65 months, under 66.....	492	42.59	2.10	4.9	39.32	4.70	12.0
66 months, under 67.....	405	42.93	2.11	4.9	39.90	4.73	11.8
67 months, under 68.....	404	43.22	1.90	4.4	40.68	4.63	11.4
68 months, under 69.....	433	43.20	1.95	4.5	40.71	4.41	10.8
69 months, under 70.....	385	43.32	1.93	4.5	40.72	4.38	10.8
70 months, under 71.....	380	43.48	2.35	5.4	41.17	5.24	12.7
71 months, under 72.....	368	48.87	1.97	4.5	41.40	4.78	11.6

TABLE III.—Average statures and weights, by age, from birth to 6 years; white girls.<sup>1</sup>

Age.	White girls.						
	Number.	Stature.			Weight.		
		Average stature (inches). <sup>2</sup>	Standard deviation (inches). <sup>3</sup>	Coefficient of variation (per cent). <sup>4</sup>	Average weight (pounds). <sup>2</sup>	Standard deviation (pounds). <sup>3</sup>	Coefficient of variation (per cent). <sup>4</sup>
Under 1 month.....	543	20.89	1.39	6.6	8.65	1.72	19.9
1 month, under 2.....	1,360	21.92	1.30	5.9	10.14	1.84	18.2
2 months, under 3.....	1,631	23.09	1.24	5.4	11.71	1.92	16.4
3 months, under 4.....	1,835	23.96	1.27	5.3	13.05	2.05	15.7
4 months, under 5.....	1,791	24.72	1.35	5.5	14.28	2.25	15.8

<sup>1</sup> Averages are not shown for 796 girls measured at ages 72 to 83 months, since the numbers at each age were too small to yield satisfactory averages. For equivalents in centimeters and kilograms see General Table 2, p. 86. The distribution of heights is given in General Table 4 and of weights in General Table 6.

<sup>2</sup> The "probable errors" of these averages are small. At under 1 month the probable error of average stature is 0.04 inch; from 1 to 11 months, 0.02, except at 7 months, 0.03; from 12 to 39 months, 0.03, except at 29, 31, 32 months, 0.04; from 40 to 59 months, 0.04; and from 60 to 71 months it ranges from 0.05 to 0.07 inch. At under 1 month the "probable error" of average weight is 0.05 pound; from 1 to 59 months it ranges from 0.03 to 0.09; and from 60 to 71 months it ranges from 0.11 to 0.17 pound. For an explanation of the significance of this term see Appendix C, pp. 81-82.

<sup>3</sup> See note 3, Table II, p. 18.

<sup>4</sup> See note 4, Table II, p. 18.

TABLE III.—Average statures and weights, by age, from birth to 6 years; white girls—  
Concluded.

Age.	White girls.						
	Number.	Stature.			Weight.		
		Average stature (inches).	Standard deviation (inches).	Coefficient of variation (per cent).	Average weight (pounds).	Standard deviation (pounds).	Coefficient of variation (per cent).
5 months, under 6	1,701	25.40	1.48	5.8	15.39	2.36	15.4
6 months, under 7	1,816	26.06	1.54	5.9	16.25	2.40	14.8
7 months, under 8	1,800	26.57	1.60	5.9	17.11	2.59	15.1
8 months, under 9	1,773	27.01	1.53	5.7	17.75	2.47	13.9
9 months, under 10	1,773	27.45	1.43	5.2	18.33	2.42	13.2
10 months, under 11	1,814	27.91	1.50	5.4	18.94	2.51	13.3
11 months, under 12	1,656	28.33	1.48	5.2	19.48	2.55	13.1
12 months, under 13	1,407	28.70	1.42	5.0	19.87	2.47	12.4
13 months, under 14	1,293	29.16	1.43	4.9	20.42	2.41	11.8
14 months, under 15	1,285	29.50	1.43	4.8	20.72	2.51	12.1
15 months, under 16	1,275	29.88	1.42	4.8	21.22	2.47	11.7
16 months, under 17	1,295	30.22	1.49	4.9	21.59	2.64	12.2
17 months, under 18	1,179	30.71	1.58	5.1	22.22	2.71	12.2
18 months, under 19	1,268	31.20	1.71	5.5	22.77	2.74	12.0
19 months, under 20	1,266	31.55	1.74	5.5	23.22	2.94	12.6
20 months, under 21	1,156	31.88	1.72	5.4	23.63	2.90	12.3
21 months, under 22	1,192	32.12	1.65	5.1	23.92	2.83	11.9
22 months, under 23	1,163	32.36	1.63	5.0	24.34	2.84	11.7
23 months, under 24	1,208	32.68	1.61	4.9	24.66	2.88	11.7
24 months, under 25	1,276	32.99	1.57	4.8	25.08	3.03	12.1
25 months, under 26	1,192	33.22	1.55	4.7	25.39	2.90	11.4
26 months, under 27	1,249	33.57	1.51	4.5	25.78	2.95	11.4
27 months, under 28	1,182	33.78	1.61	4.8	26.13	2.98	11.4
28 months, under 29	1,232	34.06	1.68	4.9	26.59	3.27	12.3
29 months, under 30	1,184	34.48	1.80	5.2	26.99	3.27	12.1
30 months, under 31	1,167	34.79	1.74	5.0	27.44	3.39	12.4
31 months, under 32	1,210	35.15	1.83	5.2	27.94	3.31	11.9
32 months, under 33	1,142	35.23	1.81	5.1	28.07	3.49	12.4
33 months, under 34	1,264	35.48	1.75	4.9	28.37	3.35	11.8
34 months, under 35	1,219	35.80	1.72	4.8	28.93	3.42	11.8
35 months, under 36	1,188	35.92	1.74	4.8	29.09	3.37	11.6
36 months, under 37	1,204	36.21	1.72	4.8	29.54	3.49	11.8
37 months, under 38	1,133	36.40	1.74	4.8	29.75	3.62	12.2
38 months, under 39	1,124	36.63	1.71	4.7	29.97	3.50	11.7
39 months, under 40	1,164	36.89	1.75	4.7	30.39	3.69	12.2
40 months, under 41	1,152	37.05	1.81	4.9	30.62	3.67	12.0
41 months, under 42	1,201	37.45	1.95	5.2	31.14	3.66	11.8
42 months, under 43	1,103	37.80	1.85	4.9	31.54	3.80	12.0
43 months, under 44	1,116	37.93	1.90	5.0	31.91	3.90	12.2
44 months, under 45	1,167	38.12	1.85	4.9	31.82	3.62	11.4
45 months, under 46	1,195	38.29	1.98	5.2	32.24	3.94	12.2
46 months, under 47	1,236	38.52	1.86	4.8	32.52	3.76	11.6
47 months, under 48	1,193	38.58	1.81	4.7	32.64	3.78	11.6
48 months, under 49	1,269	38.96	1.89	4.9	33.20	3.97	11.9
49 months, under 50	1,088	39.12	1.84	4.7	33.31	3.82	11.5
50 months, under 51	1,137	39.28	1.83	4.7	33.54	3.84	11.5
51 months, under 52	1,114	39.32	1.96	5.0	33.68	3.88	11.5
52 months, under 53	1,154	39.59	1.88	4.8	34.12	4.16	12.2
53 months, under 54	1,161	39.92	1.99	5.0	34.43	4.09	11.9
54 months, under 55	1,048	40.21	1.95	4.9	34.79	4.12	11.8
55 months, under 56	1,010	40.40	2.01	5.0	35.30	4.22	11.9
56 months, under 57	995	40.66	2.09	5.1	35.65	4.31	12.1
57 months, under 58	984	40.76	1.92	4.7	35.53	4.08	11.5
58 months, under 59	1,016	41.06	1.95	4.8	36.11	4.21	11.6
59 months, under 60	1,045	41.11	1.97	4.8	36.33	4.20	11.5
60 months, under 61	634	41.36	1.97	4.8	36.75	4.21	11.4
61 months, under 62	540	41.71	2.00	4.8	37.32	4.49	12.0
62 months, under 63	572	41.65	2.06	5.0	36.99	4.39	11.9
63 months, under 64	513	41.91	1.82	4.3	37.59	4.25	11.3
64 months, under 65	478	41.97	2.13	5.1	37.84	4.58	12.1
65 months, under 66	480	42.27	2.05	4.8	37.94	4.25	11.2
66 months, under 67	471	42.46	2.16	5.1	38.63	4.81	12.4
67 months, under 68	415	42.61	1.98	4.6	38.32	4.24	11.1
68 months, under 69	402	42.70	1.97	4.6	38.81	4.37	11.3
69 months, under 70	379	43.03	1.94	4.5	39.53	4.67	11.8
70 months, under 71	409	43.39	2.07	4.8	40.17	5.03	12.5
71 months, under 72	366	43.52	2.03	4.7	40.36	4.80	11.9

**Variability.**

Two measures of variability, one an absolute—the standard deviation—and the other a relative—the coefficient of variation—are presented in Tables II and III.

The standard deviation is a measure of how closely the figures for individual cases are grouped about the average. It gives a statement of the number of inches or pounds above and below the average within which roughly two-thirds of the measurements will be found to lie.<sup>3</sup> In general, a single measurement rarely varies from the average by more than three or four times the standard deviation. This deviation affords, then, a criterion for testing an individual case in comparison with the average. Other things being equal, a large standard deviation means that the individuals in the group differ more from one another than if the standard deviation were small. These deviations, calculated separately for the two sexes and for each age, show how the variability of the measurements changes with sex and age.

The standard deviation, in general, increases with age; or, in non-technical language, the number of inches and pounds, as the case may be, within which the bulk of the individual measurements fall increases slightly as the age increases. For stature of boys the standard deviation, after an initial fall from 1.43 inches at under 1 month to 1.25 at 2 months, rises to 1.97 inches at 71 months. A similar trend can be observed for girls; an initial fall from 1.39 inches at under 1 month to 1.24 at 2 months, and then a steady rise to 2.03 inches at 71 months. For weight, the increase is from 1.77 pounds at under 1 month to 4.78 at 71 months for boys, and from 1.72 pounds at under 1 month to 4.80 pounds at 71 months for girls. The difference in the standard deviations for boys and girls is probably not significant. Charts XIV and XV illustrate the variabilities of statures and weights for boys aged 36 months.

The relative measure of variability, the coefficient of variation, is also shown in Tables II and III. The standard deviation of stature or weight is an absolute measure of variability and is expressed in inches or pounds; the coefficient of variation is a relative measure, found by dividing the standard deviation by the average height or weight, and expressing the result as a percentage. For the age group studied, the standard deviations increase with age, but the coefficients of variation found by dividing them by the greater average statures and weights decrease with age.

The coefficient of variation for stature decreases from 6.7 per cent at under 1 month to 4.5 at 71 months for boys, and from 6.6 per cent

<sup>3</sup>The standard deviation is equal to the square root of the mean squared deviation from the average.

at under 1 month to 4.7 at 71 months for girls. The decrease is most marked in the early months after birth.

For weight the coefficient of variation decreases from 19.4 per cent at under 1 month to 11.6 at 71 months for boys, and from 19.9 per cent at under 1 month to 11.9 at 71 months for girls. Again the principal decrease appears in the first 12 months of life.

In part explanation of these changes in variability the following points may be mentioned. The decrease in the coefficient of variation is largely the result merely of the fact that growth proceeds at a faster rate than increase in absolute variability. The decrease in absolute variability in stature which is suggested by the figures during the first two months may be explained, perhaps, by the elimination of children at the lowest extreme of variation; as, for example, by the deaths of infants prematurely born. It is well known that the mortality in the first month of life is exceptionally heavy as compared with that in subsequent months, and the mortality of infants prematurely born is much greater than of infants born at full term. No data are available, unfortunately, to show to what extent these considerations apply to the children selected for tabulation.<sup>4</sup>

After the first two months in case of stature, as already stated, and from the first month in case of weight variability as measured in absolute terms increases. The explanation of this tendency is probably to be found in individual differences in growth, some individuals growing rapidly and others being retarded in growth. One important factor in causing retardation in growth is sickness. Charts of the growth of individuals show clearly the marked influence of serious illness upon weight, and to a less extent upon stature. It is impossible to determine to what extent sickness as a factor applies to the groups selected for tabulation. No children who were noted as sick at the time of measurement were included in the tabulation; but, on the other hand, no specific questions as to recent illnesses were asked. In this connection the presence of defects or abnormal conditions as a factor influencing growth should be mentioned, and for further discussion of this point the reader is referred to page 67. Other factors, however, are doubtless of very great importance in influencing growth, such as favorable or unfavorable environment, fresh air, wholesome food, rest, and play—to mention only a few—and obviously differences in these conditions may produce differences in rates of growth. Finally, heredity or racial influences play an important part.

<sup>4</sup> If mortality exercises a definite selective influence upon the group from which children of the older ages are drawn, obviously differences in the averages at different ages represent the combined result of growth plus selection. This is a defect in the method of comparing averages based upon single measurements of children at different ages, which has been pointed out by Boas, Westergaard, and others.



### Growth.

In Tables IV and V the average growth in a month and the average growth in a year are shown. These figures were found by subtracting the statures and weights of the given month, in the one case, from the statures and weights of the succeeding month, and in the other from those of 12 months later. The figures showing the monthly growth have been smoothed to eliminate fluctuations due to chance variations.<sup>5</sup> Charts III and IV show the information graphically.

The average monthly growth in stature decreases rapidly. For boys it drops from 1.31 inches of growth between the first and second months to 0.40 inch between the twelfth and thirteenth months and 0.18 inch between the sixtieth and sixty-first months, and for girls from 1.03 inches of growth between the first and second months to 0.39 inch between the twelfth and thirteenth months and to 0.18 inch between the sixtieth and sixty-first months. Very little difference appears between the sexes.

The average monthly growth in weight also decreases rapidly, especially during the first year of life. For boys it falls from 1.77 pounds growth between the first and second months to 0.50 pound between the twelfth and thirteenth months and to 0.29 pound between the sixtieth and sixty-first months, and for girls from 1.49 pounds growth between the first and second months to 0.47 pound between the twelfth and thirteenth months and to 0.29 pound between the sixtieth and sixty-first months. Throughout the period there appears to be a gradual slowing down in the rate of growth both in stature and in weight.

When the averages for each month are compared with those 12 months later, the difference measures the yearly growth. This method has the advantage that in taking the growth over a longer period the irregularities that appear in comparing the averages with those of next succeeding months are automatically smoothed. The figures show the same general trend as those based on monthly changes—a decrease in the growth most marked during the months immediately following birth.

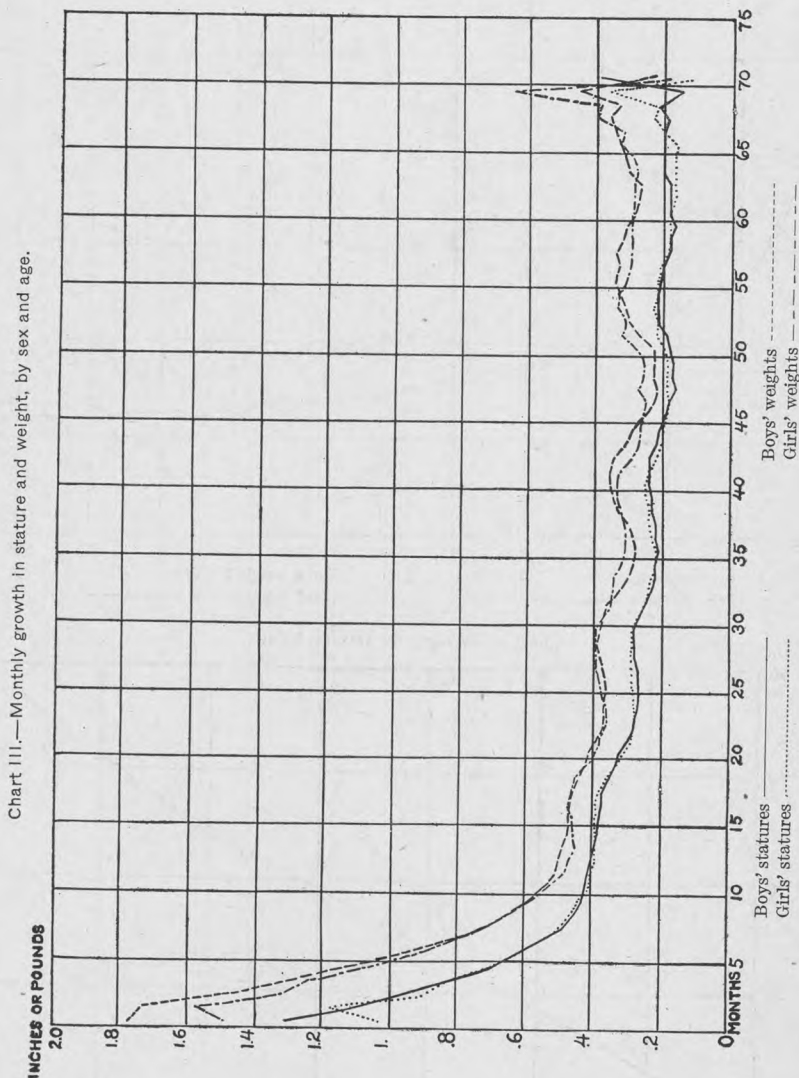
The average annual growth in stature decreases for boys from 8.2 inches during the first year of life to 4.2 inches during the second and to 2.4 inches during the sixth. The figures for girls are substantially the same except for the early months. Thus the yearly growth of girls falls from 7.9 inches during the first to 4.3 inches during the second and 2.4 inches during the sixth year of life.

<sup>5</sup> As explained previously, the method of smoothing was to replace each figure by a new one derived by taking one-fifth the sum of the figure itself, the two preceding, and the two following. This process was repeated upon the figures secured from the first smoothing; then the final smoothed figures were reduced proportionally so that the sum of the smoothed figures should equal the sum of the original figures. The first two and the last two figures were kept unchanged.

TABLE IV.—*Monthly growth in stature and weight, by sex and age; white children.*

Age.	Difference in average at specified and at succeeding month.							
	Boys.				Girls.			
	Stature (inches).		Weight (pounds).		Stature (inches).		Weight (pounds).	
	Smoothed.	Unadjusted.	Smoothed.	Unadjusted.	Smoothed.	Unadjusted.	Smoothed.	Unadjusted.
Under 1 month	(1.31)	1.31	(1.77)	1.77	(1.03)	1.03	(1.49)	1.49
1 month, under 2	(1.11)	1.11	(1.73)	1.73	(1.17)	1.17	(1.57)	1.57
2 months, under 3	.97	.95	1.46	1.51	.91	.87	1.32	1.34
3 months, under 4	.83	.82	1.30	1.20	.83	.76	1.22	1.23
4 months, under 5	.72	.73	1.13	1.26	.70	.68	1.07	1.11
5 months, under 6	.62	.60	.97	.94	.62	.66	.94	.86
6 months, under 7	.55	.53	.84	.79	.55	.51	.83	.86
7 months, under 8	.49	.38	.73	.65	.50	.44	.72	.64
8 months, under 9	.45	.43	.64	.48	.46	.44	.64	.58
9 months, under 10	.43	.45	.59	.69	.44	.46	.58	.61
10 months, under 11	.42	.44	.54	.54	.41	.42	.53	.54
11 months, under 12	.41	.45	.51	.52	.40	.37	.48	.39
12 months, under 13	.40	.37	.50	.48	.39	.46	.47	.55
13 months, under 14	.39	.42	.49	.55	.39	.34	.45	.30
14 months, under 15	.38	.27	.47	.23	.39	.38	.46	.50
15 months, under 16	.38	.47	.47	.60	.39	.34	.46	.37
16 months, under 17	.37	.37	.47	.56	.39	.49	.47	.63
17 months, under 18	.37	.51	.46	.54	.38	.49	.46	.55
18 months, under 19	.35	.35	.44	.53	.36	.35	.45	.45
19 months, under 20	.33	.22	.42	.11	.33	.33	.42	.41
20 months, under 21	.32	.30	.41	.50	.31	.24	.39	.29
21 months, under 22	.30	.41	.39	.17	.28	.24	.38	.42
22 months, under 23	.28	.18	.37	.37	.28	.32	.36	.32
23 months, under 24	.28	.37	.37	.45	.28	.31	.36	.42
24 months, under 25	.27	.30	.37	.55	.28	.23	.37	.31
25 months, under 26	.27	.18	.36	.14	.29	.35	.38	.39
26 months, under 27	.27	.27	.37	.37	.29	.21	.39	.35
27 months, under 28	.28	.20	.38	.31	.29	.28	.39	.46
28 months, under 29	.28	.40	.39	.56	.29	.42	.39	.40
29 months, under 30	.28	.36	.38	.52	.29	.31	.39	.45
30 months, under 31	.27	.29	.37	.25	.27	.36	.37	.50
31 months, under 32	.25	.25	.36	.50	.25	.08	.35	.13
32 months, under 33	.23	.18	.32	.19	.24	.25	.34	.30
33 months, under 34	.22	.13	.30	.28	.23	.32	.34	.56
34 months, under 35	.22	.32	.29	.35	.23	.12	.32	.16
35 months, under 36	.21	.19	.28	.29	.22	.29	.31	.45
36 months, under 37	.22	.23	.29	.20	.23	.19	.31	.21
37 months, under 38	.22	.19	.30	.23	.24	.23	.31	.22
38 months, under 39	.23	.22	.33	.43	.24	.26	.33	.42
39 months, under 40	.23	.23	.34	.31	.25	.16	.33	.23
40 months, under 41	.24	.29	.35	.50	.25	.40	.33	.52
41 months, under 42	.24	.26	.35	.32	.24	.35	.32	.40
42 months, under 43	.24	.29	.34	.43	.22	.13	.29	.37
43 months, under 44	.22	.23	.31	.14	.20	.17	.27	.42
44 months, under 45	.21	.26	.29	.53	.21	.19	.27	-.09
45 months, under 46	.19	.11	.26	.24	.19	.23	.26	.28
46 months, under 47	.18	.21	.23	.11	.18	.06	.25	.12
47 months, under 48	.16	.02	.22	.15	.19	.38	.27	.56
48 months, under 49	.17	.30	.23	.27	.19	.16	.26	.11
49 months, under 50	.17	.18	.23	.34	.19	.16	.26	.23
50 months, under 51	.18	.12	.24	.11	.20	.04	.28	.14
51 months, under 52	.19	.10	.27	.17	.22	.27	.32	.44
52 months, under 53	.22	.34	.30	.52	.22	.33	.31	.31
53 months, under 54	.22	.22	.31	.24	.23	.29	.33	.36
54 months, under 55	.22	.29	.33	.35	.22	.19	.33	.60
55 months, under 56	.21	.21	.34	.50	.21	.26	.31	.26
56 months, under 57	.20	.24	.33	.17	.21	.10	.30	-.12
57 months, under 58	.19	.06	.34	.41	.19	.30	.30	.58
58 months, under 59	.18	.22	.32	.32	.18	.05	.30	.22
59 months, under 60	.17	.11	.31	.21	.18	.25	.30	.42
60 months, under 61	.18	.36	.29	.53	.18	.35	.29	.57
61 months, under 62	.18	.14	.28	.56	.17	.06	.29	-.33
62 months, under 63	.18	-.05	.27	.45	.17	.26	.29	.60
63 months, under 64	.20	.29	.30	.50	.17	.06	.28	.25
64 months, under 65	.20	.25	.31	.20	.17	.30	.29	.10
65 months, under 66	.20	.34	.33	.57	.18	.19	.33	.74
66 months, under 67	.20	.29	.34	.78	.20	.15	.32	-.36
67 months, under 68	.19	-.02	.36	.08	.23	.09	.40	.49
68 months, under 69	.22	.12	.33	.01	.22	.33	.39	.72
69 months, under 70	(.16)	.16	.45	.45	(.36)	.36	(.64)	.64
70 months, under 71	(.39)	.39	.23	.23	(.13)	.13	(.19)	.19

The average annual growth in weight decreases for boys from 12.1 pounds during the first year of life to 5.3 pounds during the second and to a minimum of about 3.2 pounds during the year following the forty-third month of life. For girls the growth falls from 11.3 pounds during the first year to 5.2 pounds during the second and to a low



point of about 3.3 pounds during the year following the forty-third month. After this point the average yearly growth for both sexes appears to rise slightly, reaching nearly 4 pounds at 5 years of age, though the figures for the last year shown are more subject to fluctuations on account of the relatively smaller numbers upon which the averages are based. The tendency for the rate of growth in weight



Chart IV.—Yearly growth in stature and weight, by sex and age.

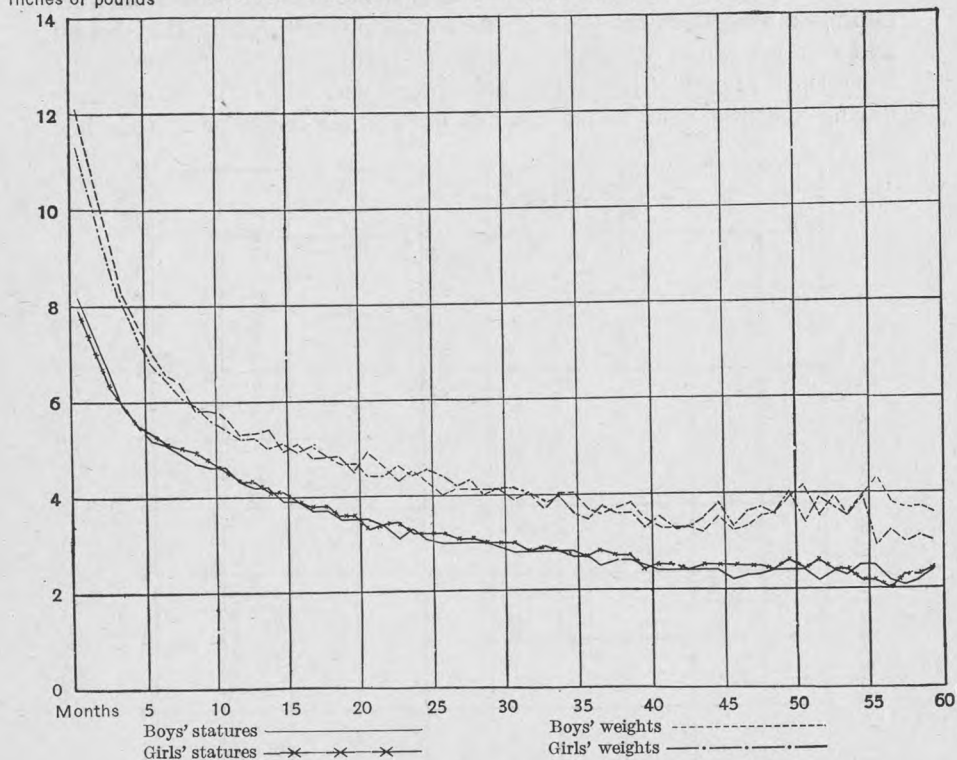
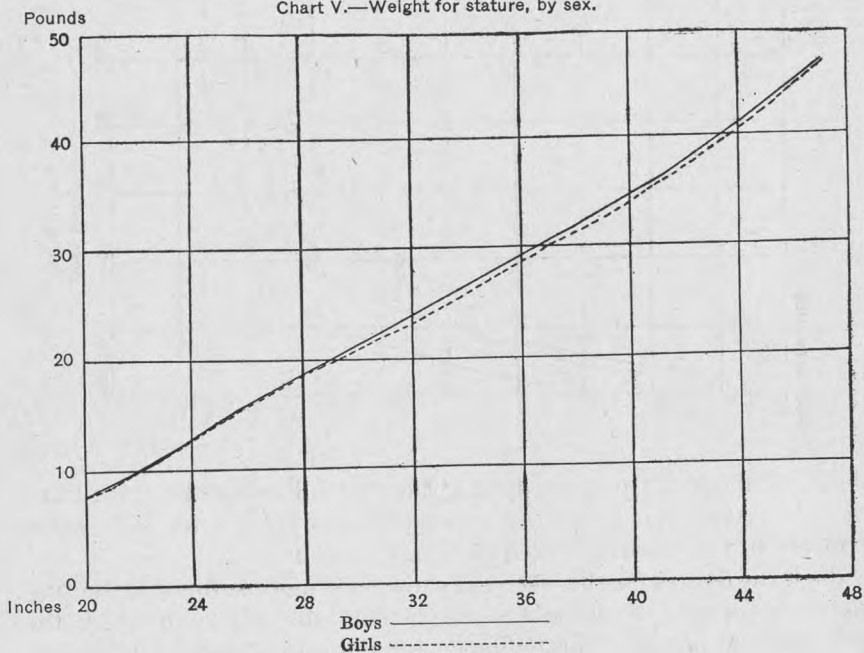


Chart V.—Weight for stature, by sex.



to increase toward the close of the age period studied is shown more clearly in the graphs.

TABLE V.—*Twelve months' growth in stature and weight, by sex and age, white children.*

Age.	Difference in average at specified age and 12 months older.			
	Boys.		Girls.	
	Stature (inches).	Weight (pounds).	Stature (inches).	Weight (pounds).
Under 1 month.				
1 month, under 2.	8.2	12.1	7.9	11.3
2 months, under 3.	7.3	10.8	7.2	10.3
3 months, under 4.	6.6	9.6	6.4	9.0
4 months, under 5.	5.9	8.3	5.9	8.2
5 months, under 6.	5.5	7.7	5.5	7.3
6 months, under 7.	5.2	7.0	5.3	6.8
7 months, under 8.	5.1	6.6	5.1	6.5
8 months, under 9.	4.9	6.4	5.0	6.1
9 months, under 10.	4.7	5.8	4.9	5.9
10 months, under 11.	4.6	5.8	4.7	5.6
11 months, under 12.	4.6	5.7	4.5	5.4
12 months, under 13.	4.3	5.3	4.3	5.2
13 months, under 14.	4.2	5.3	4.3	5.2
14 months, under 15.	4.2	5.4	4.1	5.0
15 months, under 16.	3.9	4.9	4.1	5.1
16 months, under 17.	3.9	5.1	3.9	4.9
17 months, under 18.	3.7	4.8	3.8	5.0
18 months, under 19.	3.7	4.8	3.8	4.8
19 months, under 20.	3.5	4.8	3.6	4.7
20 months, under 21.	3.5	4.5	3.6	4.7
21 months, under 22.	3.5	4.9	3.3	4.4
22 months, under 23.	3.4	4.6	3.4	4.4
23 months, under 24.	3.1	4.3	3.4	4.6
24 months, under 25.	3.3	4.5	3.2	4.4
25 months, under 26.	3.1	4.3	3.2	4.5
26 months, under 27.	3.0	4.0	3.2	4.4
27 months, under 28.	3.0	4.1	3.1	4.2
28 months, under 29.	3.0	4.1	3.1	4.3
29 months, under 30.	3.0	4.1	3.0	4.0
30 months, under 31.	2.9	4.1	3.0	4.1
31 months, under 32.	2.8	3.9	3.0	4.1
32 months, under 33.	2.8	4.0	2.8	4.0
33 months, under 34.	2.8	3.7	2.9	3.8
34 months, under 35.	2.8	4.0	2.8	3.9
35 months, under 36.	2.8	4.0	2.7	3.6
36 months, under 37.	2.7	3.7	2.7	3.5
37 months, under 38.	2.5	3.6	2.8	3.7
38 months, under 39.	2.6	3.7	2.7	3.6
39 months, under 40.	2.6	3.8	2.7	3.6
40 months, under 41.	2.5	3.5	2.4	3.3
41 months, under 42.	2.4	3.3	2.5	3.5
42 months, under 43.	2.4	3.3	2.5	3.3
43 months, under 44.	2.4	3.3	2.4	3.3
44 months, under 45.	2.4	3.2	2.5	3.5
45 months, under 46.	2.4	3.5	2.5	3.8
46 months, under 47.	2.2	3.2	2.5	3.3
47 months, under 48.	2.3	3.3	2.5	3.6
48 months, under 49.	2.3	3.5	2.5	3.7
49 months, under 50.	2.4	3.6	2.4	3.6
50 months, under 51.	2.4	3.9	2.6	4.0
51 months, under 52.	2.4	4.1	2.4	3.4
52 months, under 53.	2.2	3.5	2.6	3.9
53 months, under 54.	2.4	3.9	2.4	3.7
54 months, under 55.	2.3	3.5	2.4	3.5
55 months, under 56.	2.5	3.9	2.2	3.9
56 months, under 57.	2.5	4.3	2.2	2.9
57 months, under 58.	2.2	3.8	2.0	3.2
58 months, under 59.	2.1	3.7	2.3	4.0
59 months, under 60.	2.2	3.7	2.3	4.1
	2.4	3.6	2.4	4.0

**Weight for stature.**

In Table VI average weights are shown for boys and girls of different statures. The previous tables have shown that boys were not only taller on the average, but that they weighed more than girls of

the same ages. In this table it appears that boys are not only heavier than girls of the same ages, but are also heavier than girls of the same statures. These facts are shown graphically in Chart V.

Of special interest is the fact that the standard deviations of weight are much smaller when the weights are classified by inches of stature than when they are classified by ages. The coefficients of variation are also markedly less. Thus, from 29 to 47 inches, including roughly children aged from 12 to 71 months, the variability of the weights for boys decreases from about 10 per cent to 7 per cent, while that for girls decreases from about 10 per cent to between 8 and 9 per cent. When classified by age, on the other hand, the variabilities of the weights of these children were around 10 and 12 per cent. It follows that for the range of ages and statures included in the group studied, the weights of children, or the average weight of a group can be more accurately predicted if their statures are known than if only their ages are known. The relative variabilities of weights when classified by age and by stature are shown in Charts XV and XVI for boys 36 months of age and for boys 37 inches in stature.

The coefficients of variation given in Table VI can be used to illumine the meaning of such a statement as that an individual child is, for example, 10 per cent below average weight for height. At 28 inches the standard deviation—or the number of pounds above or below the average within which roughly two-thirds of the measurements fall—is 10 per cent for girls and approximately the same for boys. At this stature about one-sixth, then, of all the cases will fall 10 per cent or more below average weight for height. It is clear, however, from the way in which the coefficient of variation increases below this stature and decreases above it, that at other heights the proportion falling below a dividing line so defined will vary considerably from this percentage. A much larger proportion of children whose statures are under 28 inches, and a much smaller proportion of those whose statures are over 28 inches, will be more than 10 per cent below average weight for height. In other words, the statistical significance of being 10 per cent below average weight for height differs considerably with the stature, depending at each inch of stature upon the distribution of cases about the average.

The standard deviation offers, in a sense, a convenient standard by which to define a zone of ordinary variation. Such zones might be variously defined; the distance of the boundary lines from the average might, for example, be equal to, or it might be some multiple or some fractional part of the standard deviation. The lines in Charts XII and XIII show zones whose boundaries are distant from the average by an amount equal to the standard deviation. The material available on the records throws no light on the question

whether a zone so defined, as applied to children of different ages, has a uniform significance in terms of nutrition or physical condition.

TABLE VI.—Average weights, by stature and sex; white children under 7 years of age.<sup>1</sup>

Stature (inches). <sup>2</sup>	White boys.						White girls.					
	Number.	Average weight (pounds). <sup>3</sup>	Difference between successive averages (pounds).	Standard deviation (pounds). <sup>4</sup>	Coefficient of variation (per cent). <sup>5</sup>	Weight per inch (pounds).	Number.	Average weight (pounds). <sup>3</sup>	Difference between successive averages (pounds).	Standard deviation (pounds). <sup>4</sup>	Coefficient of variation (per cent). <sup>5</sup>	Weight per inch (pounds).
20.....	206	8.19	1.28	1.36	16.7	0.41	310	8.13	1.15	1.33	16.4	0.41
21.....	486	9.47	1.08	1.61	17.0	.45	654	9.28	1.25	1.49	16.0	.44
22.....	905	10.55	1.39	1.58	14.9	.48	1,121	10.53	1.35	1.82	17.2	.48
23.....	1,352	11.94	1.53	1.73	14.5	.52	1,635	11.88	1.45	1.65	13.9	.52
24.....	1,994	13.47	1.54	1.81	13.5	.56	2,318	13.33	1.49	1.74	13.1	.56
25.....	2,496	15.01	1.59	1.93	12.9	.60	2,866	14.82	1.53	1.82	12.3	.59
26.....	3,068	16.60	1.43	1.93	11.6	.64	3,179	16.35	1.31	1.88	11.5	.63
27.....	3,525	18.03	1.36	1.94	10.7	.67	3,561	17.66	1.35	1.92	10.9	.65
28.....	3,775	19.39	1.29	1.99	10.3	.69	3,471	19.01	1.19	1.92	10.1	.68
29.....	3,605	20.68	1.30	2.00	9.7	.71	3,425	20.20	1.10	2.01	9.9	.70
30.....	3,671	21.98	1.26	2.03	9.2	.73	3,563	21.30	1.30	2.03	9.5	.71
31.....	3,834	23.24	1.32	2.11	9.1	.75	3,750	22.60	1.21	2.11	9.4	.73
32.....	3,803	24.56	1.24	2.22	9.0	.77	3,805	23.81	1.25	2.23	9.4	.74
33.....	4,075	25.80	1.32	2.29	8.9	.78	3,951	25.06	1.35	2.28	9.1	.76
34.....	4,533	27.12	1.29	2.46	9.1	.80	4,405	26.41	1.34	2.45	9.3	.78
35.....	4,698	28.41	1.31	2.55	9.0	.81	4,596	27.75	1.38	2.54	9.1	.79
36.....	5,159	29.72	1.37	2.69	9.1	.83	4,919	29.13	1.24	2.67	9.2	.81
37.....	5,074	31.09	1.35	2.65	8.5	.84	4,974	30.37	1.34	2.67	8.8	.83
38.....	5,265	32.44	1.40	2.66	8.2	.85	4,973	31.71	1.28	2.75	8.7	.83
39.....	5,133	33.84	1.44	2.73	8.1	.87	4,823	32.99	1.50	2.81	8.5	.85
40.....	4,769	35.28	1.55	2.83	8.0	.88	4,505	34.49	1.53	2.87	8.3	.86
41.....	4,181	36.83	1.55	2.88	7.8	.90	3,894	36.02	1.47	3.04	8.4	.88
42.....	3,393	38.38	1.75	2.94	7.7	.91	3,002	37.49	1.74	3.06	8.2	.89
43.....	2,312	40.13	1.60	3.05	7.6	.93	2,020	39.23	1.71	3.29	8.4	.91
44.....	1,598	41.73	1.77	3.16	7.6	.95	1,341	40.94	1.85	3.24	7.9	.93
45.....	857	43.50	1.91	3.22	7.4	.97	703	42.79	2.21	3.40	8.0	.95
46.....	423	45.41	1.88	3.32	7.3	.99	349	45.00	1.85	3.70	8.2	.98
47.....	193	47.29	.....	3.35	7.1	1.01	143	46.85	.....	4.16	8.9	1.00

<sup>1</sup> Averages are not shown for 83 boys and 121 girls who were under 20 inches high, or for 109 boys and 72 girls who were 48 inches and over, since the numbers at each stature are too small to give satisfactory averages. For equivalents in centimeters and kilograms see General Table 21, p. 107. The distribution of weights for each inch in stature is shown in General Table 7 for boys and in General Table 8 for girls.

<sup>2</sup> The statures are classified to the nearest inch; cases falling on the dividing line between classes were divided equally and half were classed with the unit above and half with the unit below—"20 inches" means 19.5 to 20.5; "21 inches," 20.5 to 21.5, etc.

<sup>3</sup> The "probable errors" of these average weights are small. For boys at 20 inches the probable error was 0.06 pound; at 21 inches, 0.05; at 22 inches, 0.04; from 23 to 25 inches, 0.03; from 26 to 34 inches, 0.02; from 35 to 42 inches, 0.03, except at 38 inches, 0.02; at 43 inches, 0.04; at 44, 0.05; at 45, 0.07; at 46, 0.11; and at 47 inches, 0.16 pound. For girls, at 20 inches the probable error was 0.05 pound; at 21 and 22 inches, 0.04; at 23 inches, 0.03; from 24 to 33 inches, 0.02; from 34 to 41 inches, 0.03; at 42 inches, 0.04; at 43, 0.05; at 44, 0.06; at 45, 0.09; at 46, 0.13; and at 47 inches, 0.23 pound. For the explanation of this term see appendix, pp. 81-82.

<sup>4</sup> The standard deviation is equal to the square root of the mean squared deviation from the average.

$$\sigma = \sqrt{\frac{\sum x^2}{n}}$$

<sup>5</sup> The coefficient of variation is found by dividing the standard deviation by the average and expressing the result as a percentage.  $V = 100 \frac{\sigma}{a}$

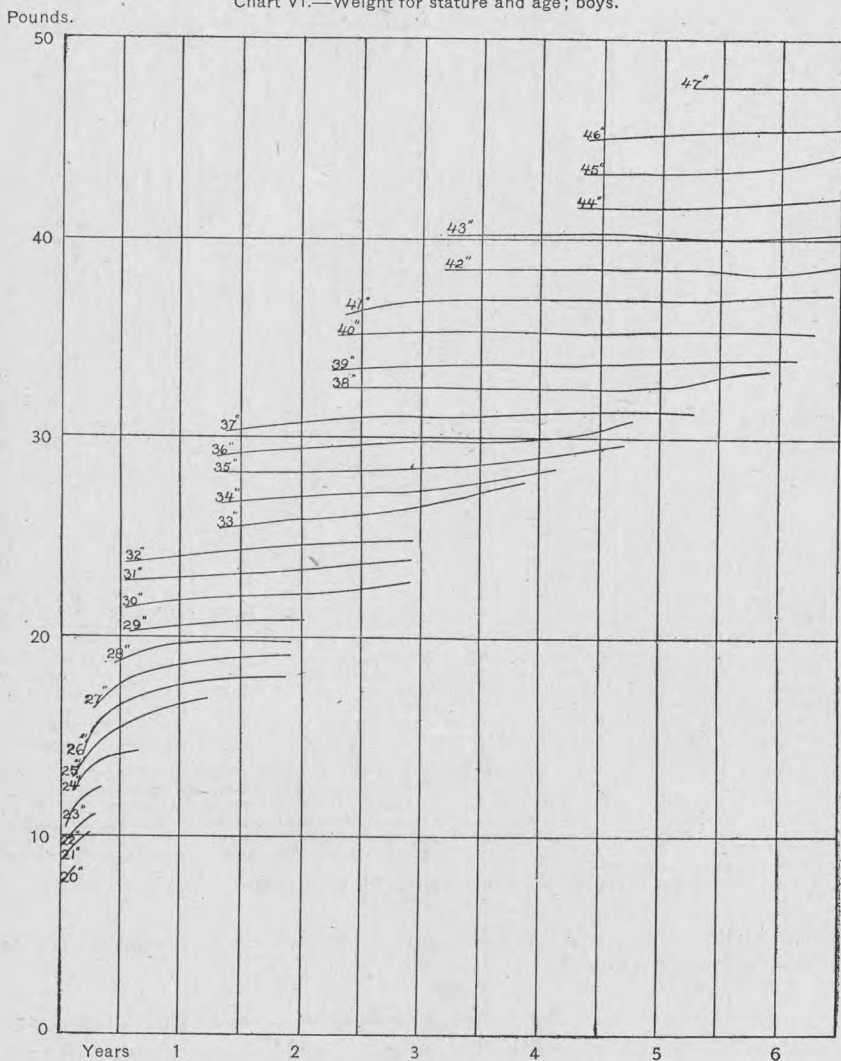
Table VI shows also the increase in weight for each inch of stature. Between 20 and 21 inches the increase in weight for an inch of stature is 1.28 pounds for boys and 1.15 pounds for girls; it rises to 1.88 pounds for boys and 1.85 pounds for girls between 46 and 47 inches. The weight per inch columns state this tendency in another way. The gain in pounds is proportionately greater than the gain in inches, and the weight per inch rises from 0.41 pound per inch for both boys and girls at 20 inches to 1.01 pounds per inch for boys

and 1 pound per inch for girls at 47 inches. The gain is proportionately greater below 26 inches than at higher statures.

### Weight for stature and age.

In Tables VII and VIII the relation between weight, stature, and age is shown for boys and girls separately. Under 1 year of age the older

Chart VI.—Weight for stature and age; boys.

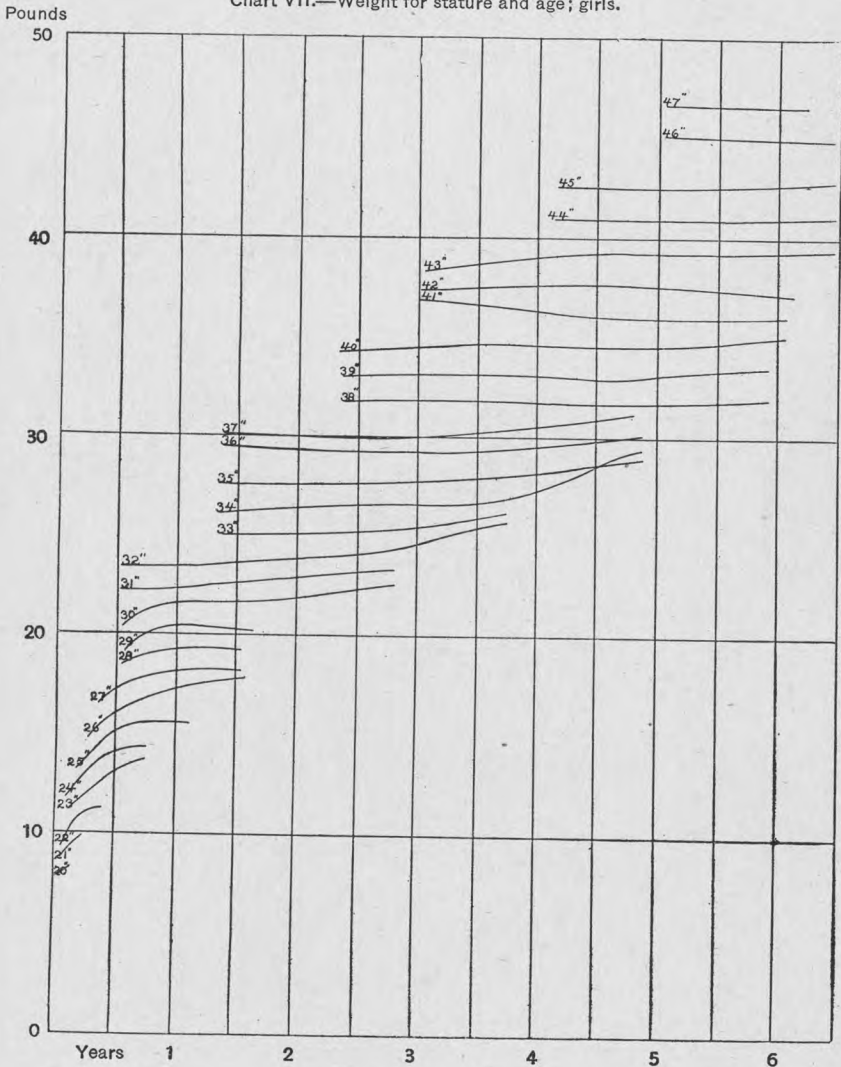


children appear to weigh slightly more than the younger children of the same stature. After the first year of life is passed, however, and within the limits of the ages included in the study, practically no difference in weight for height appears between the older and the younger children of the same statures. Only at the extremes is a slight variation noticeable; the children who are exceptionally tall



for their ages appear to weigh very slightly less, and the children who are exceptionally short for their ages appear to weigh somewhat more, than average children of the same heights. It should be noted, however, that the groups which show this tendency are usually much smaller than the others, and it may well be that with a larger number

Chart VII.—Weight for stature and age; girls.



of cases the differences between the average weights of the children who are exceptionally advanced or exceptionally retarded in growth and those of average children would be lessened or even disappear. Charts VI and VII show in graphic form the relation of average weights to height and age.

TABLE VII.—Average weights, by stature and age; white boys included in stature and weight tables.<sup>1</sup>

Stature (inches). <sup>2</sup>	Average weight of white boys of specified ages.													
	Under 1 month.	1 month, under 2.	2 months, under 3.	3 months, under 4.	4 months, under 5.	5 months, under 6.	6 months, under 9.	9 months, under 12.	1 year, under 2.	2 years, under 3.	3 years, under 4.	4 years, under 5.	5 years, under 6.	6 years, under 7.
20.....	(7.94) (89)	(8.50) (72)												
21.....	9.08 (189)	9.52 (193)	(10.01) (61)											
22.....	9.73 (133)	10.48 (432)	10.88 (230)	(11.12) (68)										
23.....	(10.50) (54)	11.38 (425)	12.05 (475)	12.41 (235)	(12.54) (95)									
24.....		12.25 (226)	13.21 (592)	13.72 (543)	13.92 (313)	13.97 (163)	14.19 (111)							
25.....		(13.05) (52)	13.94 (305)	14.64 (588)	15.03 (573)	15.23 (394)	15.84 (488)	(16.44) (81)						
26.....			(14.29) (56)	15.59 (258)	16.01 (562)	16.66 (581)	16.86 (1,233)	17.42 (297)	(17.79) (70)					
27.....				(16.41) (82)	17.00 (225)	17.65 (422)	18.09 (1,660)	18.34 (922)	18.81 (199)					
28.....						18.69 (137)	19.20 (1,212)	19.54 (1,598)	19.63 (752)					
29.....							20.34 (455)	20.67 (1,455)	20.80 (1,623)					
30.....							21.71 (137)	21.83 (731)	22.01 (2,679)	(22.45) (89)				
31.....							(22.98) (68)	23.03 (246)	23.17 (3,180)	23.77 (296)				
32.....							(24.15) (68)	(23.92) (86)	24.46 (2,774)	24.89 (825)				

STATURES AND WEIGHTS OF CHILDREN.



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## STATURES AND WEIGHTS.

33

33.								25.69 (2,057)	26.36 (1,811)	(27.25) (98)			
34.								26.84 (1,245)	27.14 (2,881)	27.62 (349)			
35.								28.24 (524)	28.38 (3,239)	28.52 (841)	(29.65) (81)		
36.								29.29 (258)	29.65 (2,756)	29.77 (1,884)	30.51 (247)		
37.								(30.52) (86)	31.15 (1,715)	31.03 (2,633)	31.22 (592)		
38.									32.43 (908)	32.44 (1,256)	32.38 (98)	(33.33) (98)	
39.									33.51 (375)	33.99 (2,494)	33.70 (2,044)	33.90 (200)	
40.									35.23 (136)	35.44 (1,606)	35.19 (2,519)	35.29 (477)	
41.									(36.33) (55)	36.98 (787)	36.74 (2,478)	36.96 (809)	
42.										38.54 (372)	38.37 (1,902)	38.34 (998)	(38.51) (89)
43.										40.36 (125)	40.06 (1,008)	40.18 (1,073)	40.05 (97)
44.											41.59 (507)	41.67 (911)	42.07 (137)
45.												43.28 (191)	43.43 (518)
46.												(45.09) (53)	45.48 (287)
47.													47.27 (114)
													(47.25) (59)

<sup>1</sup> The number of cases upon which each average is based is shown in parentheses immediately below the average. Averages based on less than 100 cases are placed in parentheses; averages are not shown if the number of cases is less than 50. Children 7 years of age and over and those less than 20 inches or over 47 inches do not appear in this table.

<sup>2</sup> Statures are classified to the nearest inch. Cases falling on the dividing line between classes were divided equally, and half were classed with the unit above and half with the unit below. "20 inches" means 19.5 to 20.5; "21 inches," 20.5 to 21.5; etc.

TABLE VIII.—Average weights, by stature and age; white girls included in stature and weight tables.<sup>1</sup>

Stature (inches). <sup>2</sup>	Average weight of white girls of specified ages.													
	Under 1 month.	1 month, under 2.	2 months, under 3.	3 months, under 4.	4 months, under 5.	5 months, under 6.	6 months, under 9.	9 months, under 12.	1 year, under 2.	2 years, under 3.	3 years, under 4.	4 years, under 5.	5 years, under 6.	6 years, under 7.
20.....	7.90 (135)	8.28 (122)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
21.....	8.70 (152)	9.30 (320)	9.67 (119)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
22.....	(9.23) (94)	10.22 (440)	10.78 (323)	11.13 (158)	(11.08) (55)	.....	.....	.....	.....	.....	.....	.....	.....	.....
23.....	.....	11.18 (305)	11.63 (540)	12.08 (409)	12.51 (199)	(12.95) (75)	(13.41) (64)	.....	.....	.....	.....	.....	.....	.....
24.....	.....	11.87 (108)	12.54 (438)	13.22 (648)	13.62 (510)	13.92 (293)	14.16 (269)	.....	.....	.....	.....	.....	.....	.....
25.....	.....	.....	13.37 (147)	13.98 (424)	14.58 (605)	14.97 (575)	15.40 (918)	15.37 (149)	.....	.....	.....	.....	.....	.....
26.....	.....	.....	.....	14.97 (108)	15.50 (293)	15.97 (443)	16.42 (1,573)	16.86 (607)	17.78 (127)	.....	.....	.....	.....	.....
27.....	.....	.....	.....	.....	(16.57) (68)	(17.10) (84)	17.49 (1,477)	17.87 (1,360)	18.15 (440)	.....	.....	.....	.....	.....
28.....	.....	.....	.....	.....	.....	.....	18.66 (626)	19.04 (1,551)	19.19 (1,208)	.....	.....	.....	.....	.....
29.....	.....	.....	.....	.....	.....	.....	19.45 (187)	20.22 (955)	20.22 (2,185)	.....	.....	.....	.....	.....
30.....	.....	.....	.....	.....	.....	.....	20.67 (109)	21.34 (342)	21.25 (2,906)	22.24 (160)	.....	.....	.....	.....
31.....	.....	.....	.....	.....	.....	.....	(22.21) (74)	21.99 (116)	22.52 (2,983)	23.09 (516)	.....	.....	.....	.....
32.....	.....	.....	.....	.....	.....	.....	(23.41) (50)	(23.07) (67)	23.71 (2,349)	23.96 (1,261)	(25.25) (63)	.....	.....	.....

33.								24.95 (1,415)	25.04 (2,260)	25.98 (183)			
34.								26.07 (758)	26.39 (3,059)	26.47 (507)	(28.59) (52)		
35.								27.45 (332)	27.62 (2,907)	27.93 (1,214)	28.42 (132)		
36.								29.24 (150)	29.08 (2,181)	29.09 (2,191)	29.60 (364)		
37.								(29.83) (57)	29.49 (1,211)	30.34 (2,893)	30.52 (783)		
38.									31.63 (522)	31.76 (2,758)	31.65 (1,555)	31.76 (111)	
39.									32.86 (226)	33.14 (2,053)	32.82 (2,230)	33.32 (291)	
40.								(34.19) (80)	34.61 (1,190)	34.42 (2,615)	34.61 (576)		
41.										36.46 (2,393)	35.96 (907)	35.91	
42.										37.43 (254)	37.62 (1,519)	37.34 (1,111)	37.53 (102)
43.										(38.48) (72)	39.22 (769)	39.17 (1,034)	39.37 (137)
44.											40.94 (376)	40.92 (769)	41.01 (162)
45.											42.60 (134)	42.53 (436)	42.94 (126)
46.												45.08 (224)	(44.90) (74)
47.												(46.67) (87)	

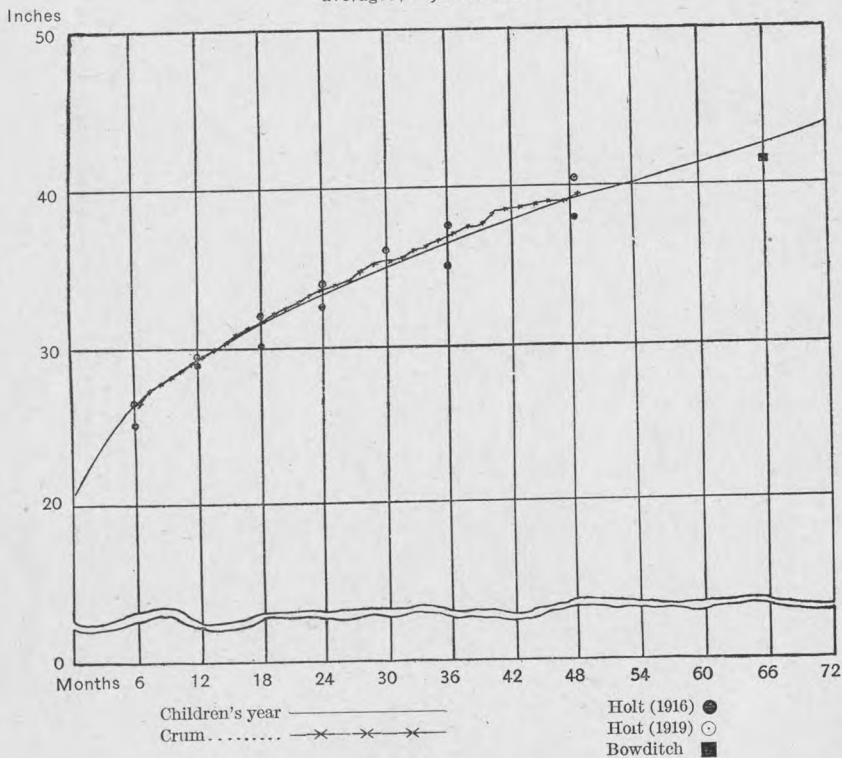
<sup>1</sup> The number of cases upon which each average is based is shown in parentheses immediately below the average. Averages based on less than 100 cases are placed in parentheses; averages are not shown if the number of cases is less than 50. Children 7 years of age and over and those less than 20 inches or over 47 inches do not appear in this table.

<sup>2</sup> Statures are classified to the nearest inch; cases falling on the dividing line between classes were divided equally and half were classed with the unit above and half with the unit below—"20 inches" means 19.5 to 20.5; "21 inches," 20.5 to 21.5; etc.

### Comparison with other series.

For the ages included in this study the series of average statures and weights which, excepting the present, is based upon the largest numbers is that prepared by Dr. F. S. Crum for the American Medical Association.<sup>6</sup> As already stated, these measurements were printed on the children's year card to furnish a standard for the ages from 6 to 48 months, with which parents could compare the actual statures and weights of their children. The series was based on a much smaller number of children, 10,423, than are included in the children's

Chart VIII.—Comparison of children's year averages with Dr. Crum's, Dr. Holt's, and Bowditch's averages; boys' statures.



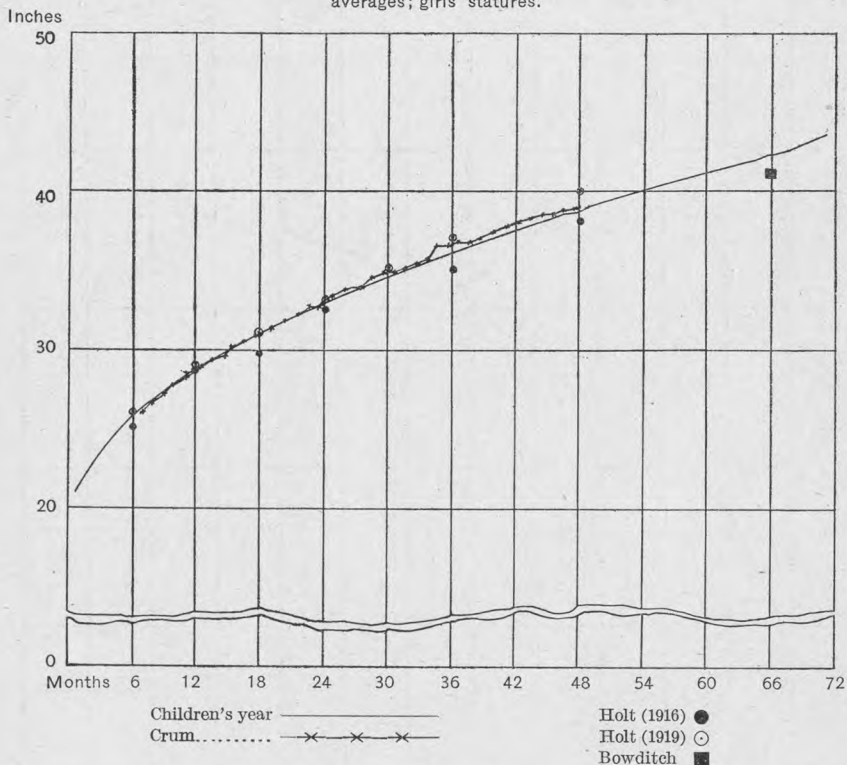
year tables. When Dr. Crum's figures are subdivided by sex and by age in months, therefore, they give relatively small numbers in each group. This is especially true of ages over 3 years; at these ages the numbers for each sex and age group range from 9 to 90, averaging about 28. The children were selected from 31 different States.

A summary statement of the differences between Dr. Crum's figures and those compiled from the children's year material is given in Table IX, and the differences are shown graphically in Charts

<sup>6</sup> Anthropometric Statistics of Children—Ages 6 to 48 months. Frederick S. Crum, Publications of the American Statistical Association, Vol. XV, 1916-1917, pp. 332-336.

VIII to XIII. In Dr. Crum's table the statures are slightly above those in the children's year tables, the excess averaging nearly a quarter of an inch for boys and a fifth of an inch for girls. The difference is greatest at from 3 to 4 years of age, but even here it is only two-fifths of an inch for boys and three-tenths of an inch for girls. Dr. Crum's averages at these ages, it may be pointed out, are based on relatively few cases. The percentage excess is only 0.7 for boys and 0.6 for girls.

Chart IX.—Comparison of children's year averages with Dr. Crum's, Dr. Holt's, and Bowditch's averages; girls' statures.



The excess in weight is somewhat greater, averaging about 15 ounces for boys and 12 ounces for girls. These average excesses amount to about 3.5 per cent of the weights. The average excess in weight is much smaller for the age groups from 6 to 12 months, only 6 and 4 ounces for boys and girls, respectively, and increases with age to slightly over a pound. The percentage excess, however, is fairly constant, ranging from 3 to 4 per cent.

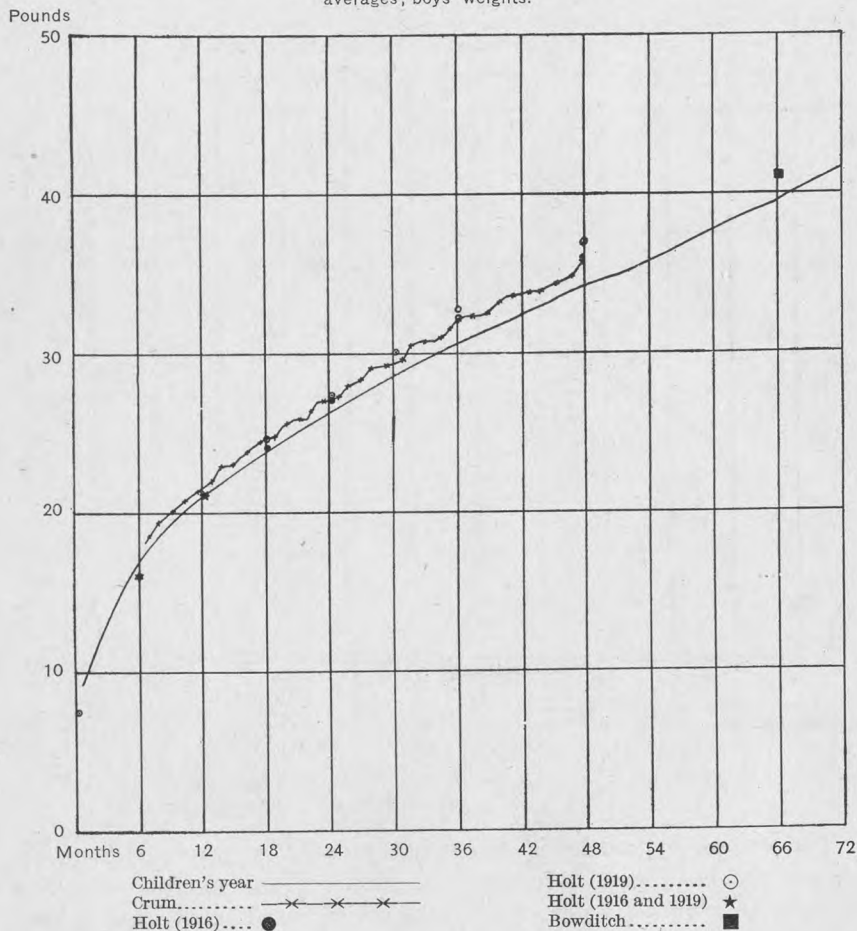
The explanation of these differences probably lies in differences in the method of selection of the cases which formed the basis of the two series. The smaller series is based upon infants who were brought for baby health conferences, or "baby shows," in many of



which prizes were given the most perfectly developed children, and there may well have been a tendency to bring only the more well-developed babies. The children's year campaign was conducted without any such element of competition, and mothers of all classes in all States brought their children to be weighed and measured.

Another series of statures and weights of American children up to 4 years of age is that given by Dr. L. Emmett Holt in *Diseases of*

Chart X.—Comparison of children's year averages with Dr. Crum's, Dr. Holt's, and Bowditch's averages; boys' weights.



Infancy and Childhood. Two series of averages between 6 months and 4 years of age have been published; the earlier one is contained in the editions of 1916 and preceding years and the later one in the edition of 1919. Both series are based upon children weighed and measured in private practice. The number of children upon which the later series was based was about 2,000. A comparison between the children's year figures and these two series is shown in Charts VIII to XIII.

Chart XI.—Comparison of children's year averages with Dr. Crum's, Dr. Holt's, and Bowditch's averages; girls' weights.

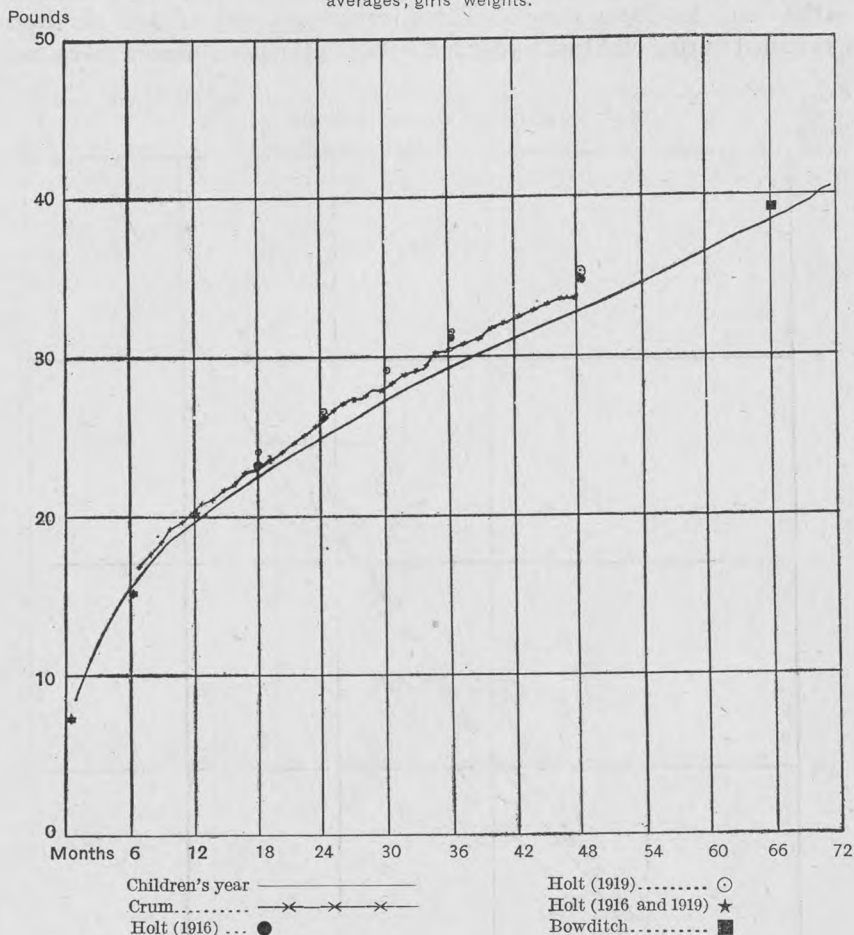


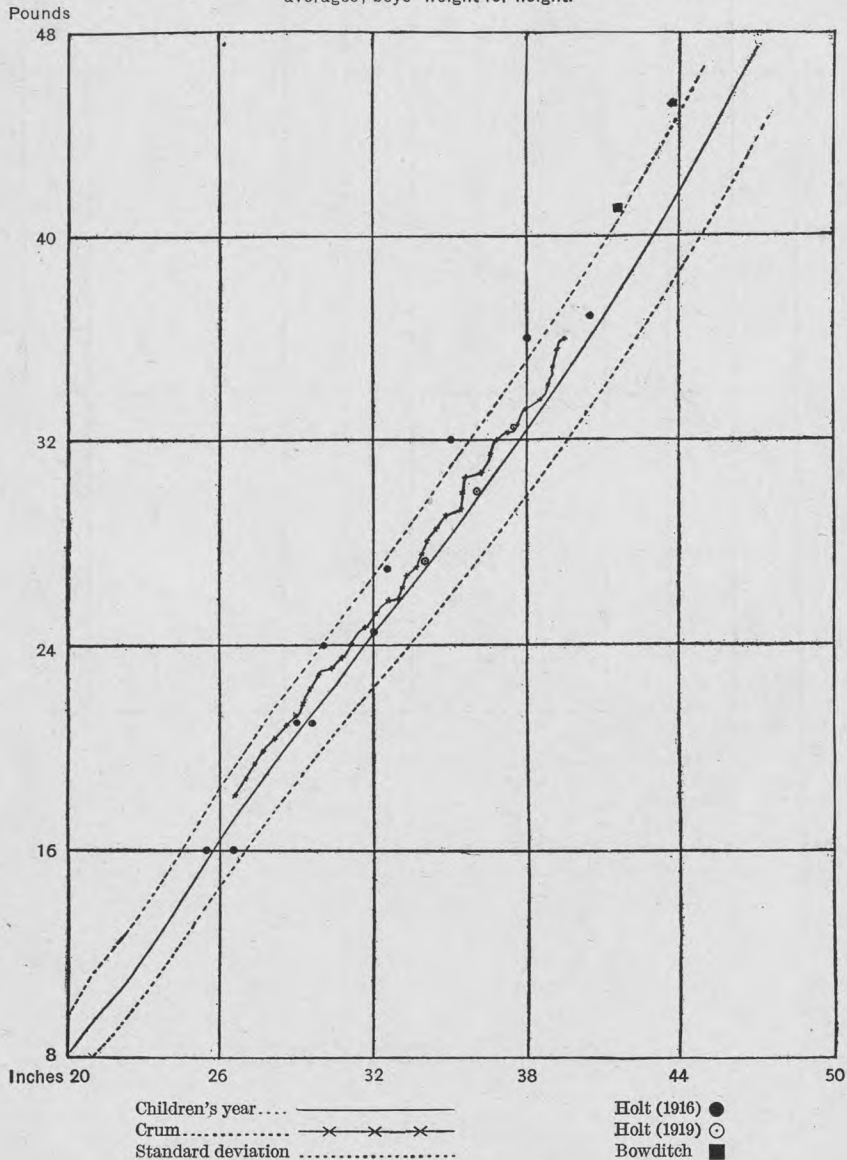
TABLE IX.—Comparison of average stature and weight of "10,423 normal babies in 31 States" with averages for all white children included in stature and weight tabulation.

Age.	White boys.				White girls.			
	Stature.		Weight.		Stature.		Weight.	
	Average excess (inches). <sup>1</sup>	Per cent excess.	Average excess (pounds). <sup>1</sup>	Per cent excess.	Average excess (inches). <sup>1</sup>	Per cent excess.	Average excess (pounds). <sup>1</sup>	Per cent excess.
All ages.....	+0.23	+0.7	+0.94	+3.6	+0.19	+0.6	+0.78	+3.5
6 months, under 12.....	+ .01	+ .1	+ .37	+3.9	- .01	- .0	+ .27	+3.0
12 months, under 24.....	+ .18	+ .6	+ .88	+3.7	+ .04	+ .1	+ .75	+3.4
24 months, under 36.....	+ .21	+ .6	+1.02	+3.6	+ .31	+ .9	+1.08	+4.0
36 months, under 49.....	+ .39	+1.1	+1.03	+3.4	+ .31	+ .9	+ .96	+3.4

<sup>1</sup> Excess of averages based on "10,423 normal babies in 31 States" over averages based on children weighed and measured during children's year. Excess stated as positive; deficiency, negative. Average excess is the unweighted average difference between the two series of averages.

Considerable difference in stature appears between Dr. Holt's earlier and his later series. The average statures of the children examined during children's year fall between the two series of measure-

Chart XII.—Comparison of children's year averages with Dr. Crum's, Dr. Holt's, and Bowditch's averages; boys' weight for height.

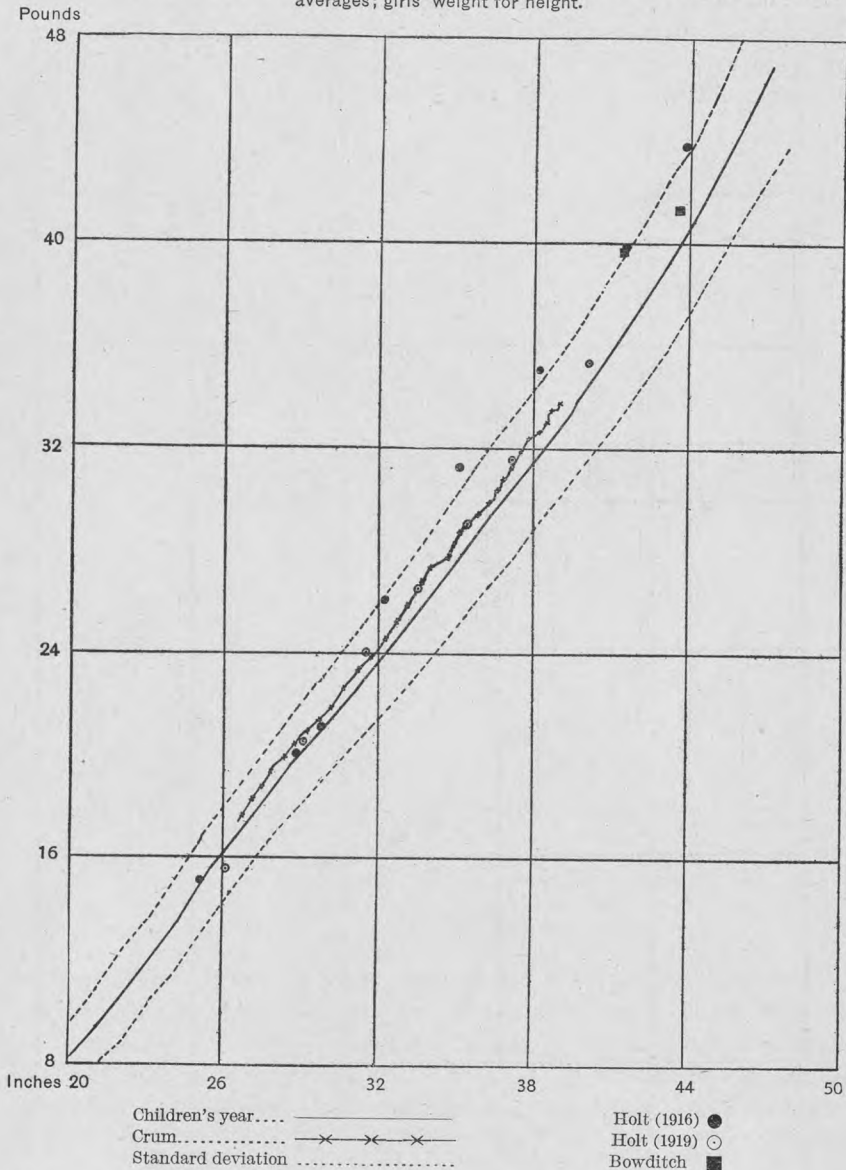


ments given by Dr. Holt, being relatively closer to the later than to the earlier figures.

In weight comparatively little difference appears between Dr. Holt's earlier and his later series. At 6 months and at 1 year the

two series are identical, but at 2 years, 3 years, and 4 years the children in the later series averaged about half a pound heavier. A comparison of the average weights of the children examined during

Chart XIII.—Comparison of children's year averages with Dr. Crum's, Dr. Holt's, and Bowditch's averages; girls' weight for height.

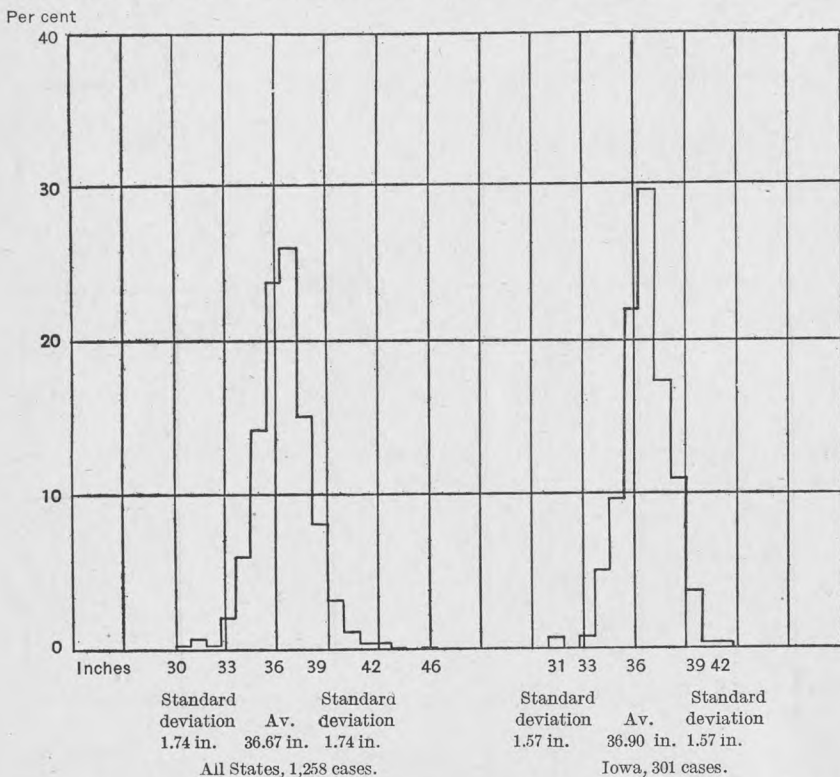


children's year with those examined by Dr. Holt shows that Dr. Holt's figures at 6 months for both boys and girls are somewhat lower, at 12 months practically identical for boys but somewhat higher for girls, and at older ages for both boys and girls somewhat

higher than the children's year figures. In regard to weight for age, the children's year figures are somewhat closer to Dr. Holt's earlier than to his later averages.

A third point of comparison is in regard to weight for height. The relationship of the children's year averages to Dr. Crum's and Dr. Holt's figures is indicated in Charts XII and XIII. In weight for height, the children's year figures are somewhat below Dr. Crum's, but are practically identical with those of Dr. Holt's later series.

Chart XIV.—Distribution of statures of white boys aged 36 Months in all States and in Iowa.



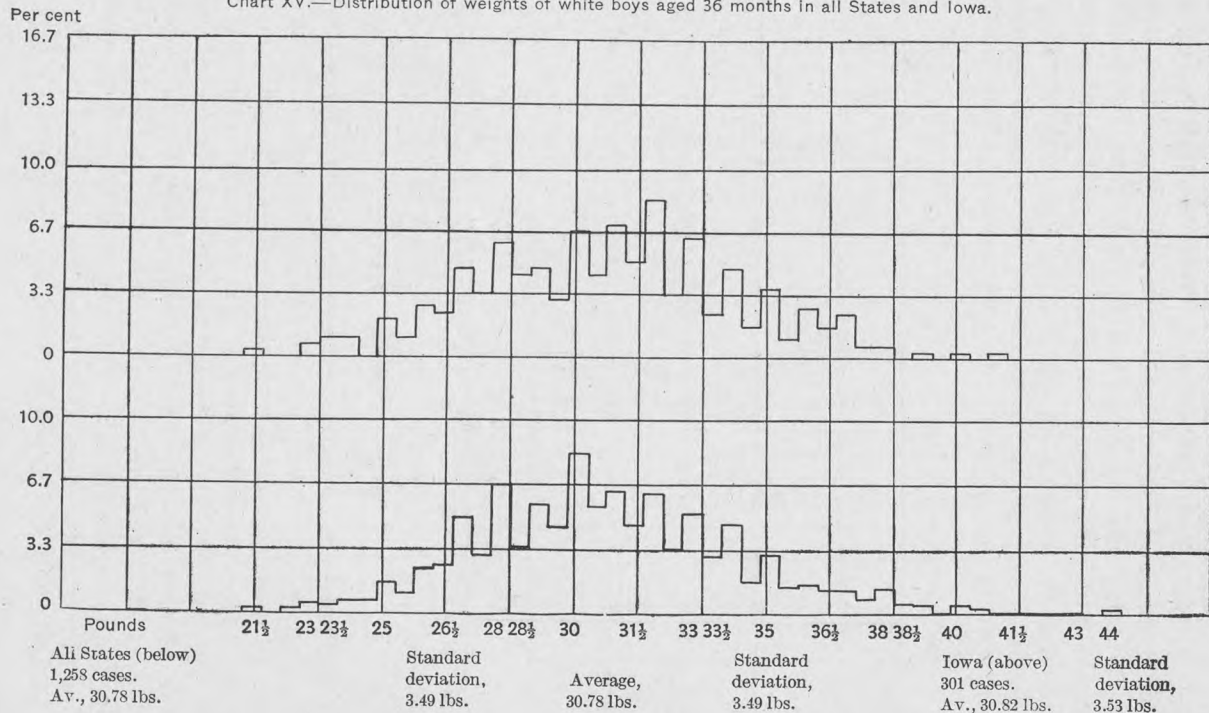
The charts give also a comparison with Bowditch's averages for children at 5½ years, weighed in ordinary clothing. In stature the children's year series is slightly above Bowditch's averages; in weight, when allowance is made for the weight of clothing, the children's year series appears to agree fairly well with Bowditch at the point of juncture.

#### Composition of selected group.

An important question in regard to any table of average statures and weights based upon a sample is whether the sample is typical of the whole. Are these figures typical of American children?



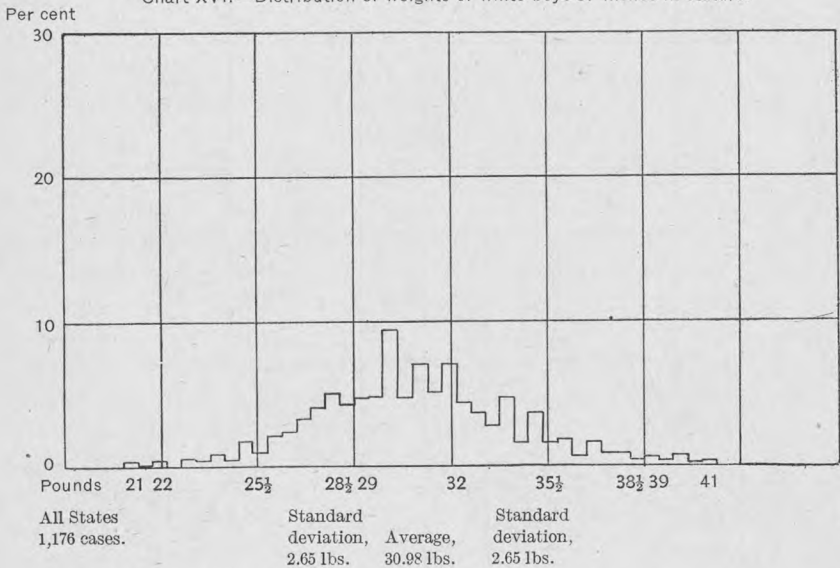
Chart XV.—Distribution of weights of white boys aged 36 months in all States and Iowa.



Would averages based upon all the white children under 6 years of age in the United States be substantially different from these, which are based upon 1.2 per cent of them?

So far as distribution by States is concerned, the selection of children, as shown in Table X, is very unequal. Iowa, the East-North-Central group of States, and California are more fully represented than any others. Whether these irregularities affect the averages depends upon the amount of the differences between the average statures and weights of children in the States fully represented and in those not so well represented. Averages for three areas where large numbers of children were examined were calculated, and are discussed below,

Chart XVI.—Distribution of weights of white boys 37 inches in stature.



but it was not found possible to make similar calculations for each State. One possible cause of differences in average statures and weights is the nationality composition of the population of the different States; differences due to this cause are discussed in the succeeding paragraphs. In California some other factor—perhaps selection of taller and heavier population, perhaps climate—appears to play a part, since children in that State were found to be taller and heavier than in other States—a difference which the nationality composition of the population alone does not explain. So far, therefore, as these tall and heavy children are represented in an undue proportion in the sample selected for tabulation, the averages may be slightly higher than averages for typical American children.

Table XI shows whether or not the parents of the children tabulated were born in the United States. Of the white children tabu-

lated, 69.3 per cent had both parents born in the United States, 10.4 per cent had one parent who was born in the United States and one parent who was born in some foreign country, and 19.5 per cent had parents who were foreign born. The nativity of the parents of 0.8 per cent was not reported.

TABLE X.—*Section of country; white children included in stature and weight tables.*<sup>1</sup>

Section of country.	White children.
All sections.....	167,024
New England and Middle Atlantic.....	23,729
Southern.....	9,044
East North-Central.....	54,779
Iowa.....	37,033
Western.....	23,170
California.....	19,269

<sup>1</sup> The grouping of States into sections follows the grouping of States into divisions in the census of 1910, except that the southern section includes the South Atlantic, East South Central and West South Central, and the western section includes the West North-Central, Mountain, and Pacific divisions, except Iowa and California, which are shown separately.

Comparing the proportion of children with both parents born in the United States in the group tabulated with the proportion in the United States as a whole, it appears that the percentages are almost identical, 69.3 per cent of the children tabulated as compared with 70.2 per cent of white children under 5 years of age in the whole country in 1910.<sup>7</sup> In this respect, therefore, the children tabulated are very closely typical of all white children in the United States.

The native white children of native parentage, however, include children of different racial stocks. But, on the one hand, it is impossible to ascertain what stocks are represented among the children tabulated since information on this point was not obtained, and, on the other hand, it is difficult to determine the racial stocks represented among the children of corresponding ages in the United States, since precise information is available only in regard to parental nativity and not to racial stock. The principal racial stock in America, however, is the British, and of the different British stocks the English is probably most largely represented. Next in importance to the British is probably the German stock, as there was a considerable immigration of Germans into Pennsylvania and elsewhere during the Revolutionary War, and a second wave of immigration of Germans commencing about 1848. Irish immigration was very large in the two or three decades following 1840. Scandinavian immigration has formed somewhat more recently a considerable, though minor, element of population. All these stocks, which make up the great majority of the population classified as "native American," are racially

<sup>7</sup> If the not-reported cases among the children tabulated are included with the native born of native parentage, as is the case with the census figure, the percentages are 70.1 and 70.2, respectively. See Thirteenth Census, Vol. I, pp. 322-326, also p. 125.

closely related, though the Scandinavians in particular are considerably taller and heavier than the English.

TABLE XI.—*Parental nativity, by sections; white children included in stature and weight tables.*

Nativity of parents.	White children.							
	All sections.		New England and Middle Atlantic.		Southern.		East North-Central.	
	Number.	Per cent distribution. <sup>1</sup>	Number.	Per cent distribution. <sup>1</sup>	Number.	Per cent distribution. <sup>1</sup>	Number.	Per cent distribution. <sup>1</sup>
Total.....	167,024	100.0	23,729	100.0	9,044	100.0	54,779	100.0
Both parents native.....	115,818	69.3	9,560	40.3	8,264	91.4	38,992	71.2
Both parents foreign born.....	32,511	19.5	10,322	43.5	408	4.5	10,977	20.0
In same country.....	29,577	17.7	9,534	40.2	360	4.0	10,181	18.6
In different countries.....	2,907	1.7	783	3.3	47	.5	788	1.4
Not reported.....	27	.....	5	.....	1	.....	8	.....
One native, one foreign born.....	17,441	10.4	3,538	14.9	325	3.6	4,446	8.1
One or both not reported.....	1,254	.8	309	1.3	47	.5	364	.7

Nativity of parents.	White children.					
	Iowa.		Western.		California.	
	Number.	Per cent distribution. <sup>1</sup>	Number.	Per cent distribution. <sup>1</sup>	Number.	Per cent distribution. <sup>1</sup>
Total.....	37,033	100.0	23,170	100.0	19,269	100.0
Both parents native.....	30,458	82.2	16,512	71.3	12,032	62.4
Both parents foreign born.....	2,922	7.9	3,276	14.1	4,606	23.9
In same country.....	2,653	7.2	2,855	12.3	3,994	20.7
In different countries.....	258	.7	419	1.8	612	3.2
Not reported.....	11	.....	2	.....	.....	.....
One native, one foreign born.....	3,539	9.6	3,206	13.8	2,387	12.4
One or both not reported.....	114	.3	176	.8	244	1.3

<sup>1</sup> Per cent not shown if less than one-tenth of 1 per cent.

Since the native-born parents of children under 6 years of age in 1918 were for the most part born in this country before 1895, some light can be thrown upon the racial stocks represented among the grandparents of the children by a study of the nationality composition of the population at the census of 1890. Since such a study, however, shows only the more recent additions to the population, and since no account is taken of differing birth rates, the conclusions that can be drawn as to the racial stocks of the children of the 1890 population are necessarily somewhat uncertain. In 1890 the foreign-born white population represented 16.6 per cent of the total white population. The principal elements were the British and Irish, including British Canadian, with 6.9 per cent; the German, with 5.1 per cent; and the Scandinavian with 1.7 per cent of the total white population. The remainder included French Canadians, Austro-Hungarians, Russians, Italian, French, Swiss, etc. It is worthy of

especial note that all foreign-born Italians, Russians, and Austro-Hungarians together constituted only 1.2 per cent of the total white population.

The nationality or racial composition of the children of native parentage included in the group selected for tabulation may have been somewhat affected by the unequal weighting of the different sections of the country. An examination of the proportions of foreign-born white in the different sections in 1890 indicates, however, the extent of bias from this cause. Thus Iowa, the State with the largest proportion of children included in the tabulation, had in 1890 a somewhat larger proportion of foreign-born Germans and Scandinavians than the country as a whole, respectively 6.7 per cent and 3.8 per cent of the total white population. Likewise in the East North-Central States, also somewhat overweighted in the tabulation, the foreign-born Germans constituted 8 per cent, and the foreign-born Scandinavians 2.1 per cent of the total white population. In California the foreign-born Germans constituted only 5.5 per cent and the foreign-born Scandinavians 2 per cent, while the group of foreign-born Italian, Russian, Spanish, and Portuguese together constituted 2.6 per cent of the total white population. In the New England and Middle Atlantic States, which in proportion to population were somewhat underweighted in the tabulation, the proportion of foreign-born Germans was not far from that in the country as a whole, 5.2 per cent, while the proportion of Scandinavian was considerably less, only 0.7 per cent. In the Western group of States the percentage of foreign-born Germans was 5.3 per cent, while that of foreign-born Scandinavians was 5. In the Southern States the foreign-born Germans constituted only 1.5 per cent, and the foreign-born Scandinavians a negligible proportion of the total white population.

Though these figures are only the percentages of the foreign born and do not, therefore, show the true proportions of the different racial stocks, yet they do give a clear indication of the bias caused by the unequal weighing of States in the group of children selected for tabulation. Thus, if a sample of the population of 1890 were drawn from the several States and sections in the same proportions as the children selected for tabulation, the foreign-born Germans would represent 6.3 per cent and the foreign-born Scandinavians 2.4 per cent of such a sample, instead of 5.1 and 1.7 per cent, respectively, as in the entire country. It is clear, therefore, that in the group of children of native parentage the German and the Scandinavian racial stocks were probably somewhat more liberally represented than in the whole population.

Table XII, which shows the countries of birth of the mothers of the children included in the tabulation, throws light upon the racial stocks represented among the children of foreign parentage. As



already stated, practically seven-tenths of the children had both parents born in the United States; 6.2 per cent more had mothers who were native, but fathers foreign born. This table shows further that, of those whose mothers were foreign born, a considerable proportion were of racial stocks similar to the native American. Thus, 4.2 per cent had mothers born in the United Kingdom and British possessions, that is, who were English, Scotch, Irish, or Welsh.

On the other hand, 2.3 per cent had mothers born in Denmark, Sweden, or Norway, 2 in Germany, 4.1 in Italy, 2.9 per cent in Russia, 1.3 per cent in Poland, and 4 per cent in Austria-Hungary.

TABLE XII.—Country of birth of parents; white children included in stature and weight tables.

Country of birth of mother.	White children included in stature and weight tables.			
	Total.		Parents born in same country.	Parents born in different countries.
	Number.	Per cent distribution.		
All countries.....	1 167,024	100.0	145,395	20,348
United States.....	127,212	76.2	115,839	11,373
United Kingdom and British possessions.....	7,030	4.2	3,675	3,355
England.....	1,755	1.1	913	842
Scotland.....	714	.4	389	325
Wales.....	44	.....	16	28
Ireland.....	1,702	1.0	1,030	672
British possessions.....	2,815	1.7	1,327	1,488
Italy.....	6,817	4.1	6,618	199
Austria-Hungary <sup>2</sup> .....	6,743	4.0	5,975	768
Austria.....	4,211	2.5	3,701	510
Bohemia.....	487	.3	382	105
Hungary.....	1,012	.6	942	70
Croatia.....	48	.....	48	.....
Transylvania.....	5	.....	5	.....
Not specified.....	980	.6	897	83
Russia.....	4,886	2.9	4,501	385
Scandinavia.....	3,764	2.3	2,354	1,410
Denmark.....	697	.4	471	226
Sweden.....	1,644	1.0	1,095	549
Norway.....	1,423	.9	788	635
Germany.....	3,370	2.0	1,625	1,745
Poland <sup>3</sup> .....	2,231	1.3	1,990	241
All other <sup>4</sup> .....	3,690	2.2	2,818	872

<sup>1</sup> Includes 1,271 children the nativity of one or both of whose parents was not reported.

<sup>2</sup> As constituted before the war, except Austrian Poland, which is included with Poland.

<sup>3</sup> Includes Russian, German, and Austrian Poland as constituted before the war.

<sup>4</sup> Including West Indies, Cuba, Central and South America, Luxemburg, Holland, Belgium, Switzerland, France, Spain, Portugal, Serbia, Armenia, Syria, Bulgaria, Montenegro, Turkey, Mexico, Atlantic and Pacific islands, Africa, Japan, China, India, Asia n. o. s., Europe n. o. s.

Of these races the German is slightly and the Scandinavian considerably taller and heavier, while the Italian and the Jewish are considerably shorter and lighter than the native American stock. A considerable proportion of the mothers who reported their country of birth as Russia or Poland was probably of Jewish race. The mothers who reported Austria-Hungary as their country of birth probably include a number of races, some Germans; some Czechs, some Magyars, and others.

Of the white children, then, who formed the basis of the stature and weight tables, 76 per cent had mothers born in the United States, 4 per cent had mothers born in Great Britain or Ireland; and the remainder—about one-fifth—were of stocks of taller or of shorter stature.

Comparison of the figures showing countries of birth of the foreign-born mothers of the children included in the tabulation with similar data for the United States as a whole is rendered difficult because no census figures are available showing country of birth of parents of young children. An approximation can be reached by comparing the countries of birth of the mothers of children included in the tables with the countries of birth of the foreign-born population of both sexes in 1910, as in Table XIII. It may be pointed out that, while the foreign-born mothers of the children weighed and measured were for the most part in the United States in 1910, the representation of the different nationalities among children under 6 years of age in 1918 depends upon the proportion of women in the 1910 population and also upon the relative birth rates.

TABLE XIII.—Comparison of the distribution by mothers' country of birth of children of foreign-born mothers included in main tabulation with the distribution by country of birth of the foreign-born population in the United States in 1910.

Country of birth. <sup>1</sup>	Per cent distribution.	
	Children of foreign-born mothers included in tabulation. <sup>1</sup>	Foreign-born population 1910. <sup>1 2</sup>
All foreign countries.....	100.0	100.0
United Kingdom and British possessions.....	17.7	28.1
England.....	4.4	6.5
Scotland.....	1.8	1.9
Wales.....	.1	.6
Ireland.....	4.3	10.0
British possessions.....	7.1	<sup>3</sup> 9.1
Italy.....	17.1	9.9
Austria-Hungary.....	<sup>4</sup> 16.9	12.4
Russia.....	<sup>4</sup> 12.3	12.8
Scandinavia.....	9.5	9.3
Denmark.....	1.8	1.3
Sweden.....	4.1	4.9
Norway.....	3.6	3.0
Germany.....	<sup>4</sup> 8.5	18.5
Poland.....	5.6	( <sup>5</sup> )
All others.....	9.3	18.1

<sup>1</sup> Children included in the tabulation are classified by country of birth of mother.

<sup>2</sup> Thirteenth Census, Vol. I, Population from p. 791. The foreign born used as the basis of these percentages include about 1.3 per cent colored.

<sup>3</sup> Includes Canada and Newfoundland, and Australia.

<sup>4</sup> As constituted before the war, except that if the mother's country of birth is stated as Poland it is classed as Poland.

<sup>5</sup> Not shown separately.

This comparison indicates that among the children selected for tabulation Italy and Austria-Hungary and perhaps Poland were represented in somewhat larger, and Germany, Great Britain, and Ireland in somewhat smaller, proportions than among the foreign-born population of 1910. These differences, however, may merely reflect the effect of differences in birth rates. The greatest differences, it may be pointed out, are in the large proportion of Italian, on the one hand, and in the small proportion of German, on the other—differences which suggest that even allowing for differences in birth rates perhaps an undue proportion of children of Italian mothers and too small a proportion of children of German mothers were included in the tabulation.

The effect of bias in selection of racial stocks may now be summed up. The average statures and weights of children of German parentage are very slightly above, those of Scandinavian parentage considerably above, and those for children of Italian parentage considerably below, the averages for all white children.<sup>8</sup> The analysis has indicated that probably the German, and especially the Scandinavian, stocks are somewhat overweighted in the group of children of native parentage, while the German may be slightly underweighted and the Italian overweighted in the group of children of foreign-born parentage. The amount of error in the general averages from each of these elements is small, since even with overstatement the various groups form comparatively small proportions of the total numbers. Furthermore, the errors tend to offset one another, since the bias toward overstatement of the averages due to overweighting the Scandinavian stock among the children of native parentage tends to be offset by the bias toward understatement of the averages due to overweighting the Italian stock among the children of foreign parentage, and the overweighting of German stock among the children of native parentage tends to be offset by the underweighting of German stock among the children of foreign parentage. Though the analysis is suggestive only rather than conclusive, it does indicate that so far as racial stocks are concerned the averages may be considered fairly typical of all white children under 6 years of age in the United States.

The averages might have been affected, however, not only by a bias in racial stocks represented among the children selected but by a method of selection tending to secure an unduly large proportion of measurements for children who were taller and heavier than the average. So far as the general conditions connected with the conduct of the weighing and measuring test are concerned, it was sought to reach children of all classes equally. Though the methods of organization were different in different States, and perhaps achieved

<sup>8</sup> See pp. 56-61.

different degrees of success in reaching all classes, probably on the whole the use of local organizations already established and the wide publicity given to the weighing and measuring test served to secure a representative group of children. The fact already discussed that a fairly representative sample of the children of the different nationality groups was secured would tend to indicate that the sample was also typical in other respects.

Furthermore, if there had been a tendency for the tallest and heaviest children to be brought to the weighing and measuring centers, then, other things being equal, the larger the proportion of children included in the tabulation the more children of only average and of less than average stature and weight would have been included; and hence the larger the proportion of children included in any given area the lower would be the averages for that area. The proportion of children included in the tabulation varied considerably in the different States. Thus, in Iowa approximately 13 per cent of the children under 6 years of age were included, and in California about 6.6 per cent; in other areas the proportions were much smaller. If, then, there was a definite tendency to bring the tallest and heaviest children to be weighed and measured, it would be expected that the averages in California, and especially in Iowa, would be lower than the averages in all States. As will be shown, however, the averages in Iowa are substantially the same as the general averages, while those in California are markedly higher than in the country as a whole. Though this evidence is far from conclusive, it tends to suggest that the averages may be considered as free from any bias toward selecting only the tallest and heaviest children.

#### **Comparative stature and weight in different sections.**

To determine whether in different sections of the country there are significant differences in stature and weight, analysis has been made of three groups of children. The children of Iowa formed one group with a high percentage of children of native parentage; the children of California showing a smaller proportion with native parentage than those of Iowa, but living under exceptionally favorable climatic conditions, formed a second group; and the children of New York City, who were largely of foreign parentage and who included a considerable proportion of children of short-statured races, formed a third group. The New York City children, though not included in the general averages on account of having been weighed with underclothing, are presented in this connection to indicate the effect of the nationality composition of the group upon average stature. In all three areas the size of the sample was fairly large. These comparisons show roughly the range of sectional variations in average stature and weight.



Table XIV, which gives the information in summary form, shows that measurements of the Iowa children approximate those of children in the country as a whole, with a slight excess—a fifth of an inch—in stature. The children under 1 year of age are nearly 3 ounces heavier, but those from 1 to 6 years are from 1 to 3 ounces lighter than the average in the country as a whole. The California children, on the other hand, average two-fifths of an inch taller than all children included in the general table, and exceed the general average weight by approximately three-fourths of a pound. The New York City children, on the other hand, show a marked deficiency in stature amounting to as much as half an inch.

TABLE XIV.—Comparative stature and weight, by age; comparison of white children under 6 years of age, Iowa, California, and New York City, with averages for all white children.

Age and section.	White children.			
	Boys.		Girls.	
	Average excess. <sup>1</sup>		Average excess. <sup>1</sup>	
	Stature (inches).	Weight (pounds).	Stature (inches).	Weight (pounds).
California.....	+0.40	<sup>2</sup> +0.75	+0.36	<sup>2</sup> +0.75
Under 1 year.....	+ .23	+ .22	+ .26	+ .17
1 year, under 2.....	+ .33	+ .75	+ .26	+ .74
2 years, under 3.....	+ .39	+ .87	+ .34	+ .82
3 years, under 4.....	+ .36	+1.01	+ .48	+1.01
4 years, under 5.....	+ .44	+ .92	+ .38	+1.00
5 years, under 6.....	+ .64	+1.11	+ .43	+1.09
Iowa.....	+0.20	-0.04	+0.14	-0.05
Under 1 year.....	+0.20	+0.18	+0.19	+0.17
1 year, under 2.....	+ .14	- .21	+ .15	- .13
2 years, under 3.....	+ .13	- .17	+ .15	- .12
3 years, under 4.....	+ .21	- .06	+ .17	- .23
4 years, under 5.....	+ .23	- .04	+ .23	- .19
5 years, under 6.....	+ .31	- .16	+ .03	- .16
New York City.....	-0.52	( <sup>3</sup> )	-0.49	( <sup>3</sup> )
Under 1 year.....	-0.45	( <sup>3</sup> )	-0.35	( <sup>3</sup> )
1 year, under 2.....	- .56	( <sup>3</sup> )	- .45	( <sup>3</sup> )
2 years, under 3.....	- .52	( <sup>3</sup> )	- .45	( <sup>3</sup> )
3 years, under 4.....	- .55	( <sup>3</sup> )	- .54	( <sup>3</sup> )
4 years, under 5.....	- .45	( <sup>3</sup> )	- .52	( <sup>3</sup> )
5 years, under 6.....	- .56	( <sup>3</sup> )	- .62	( <sup>3</sup> )

<sup>1</sup> A average excess is the unweighted average difference between the averages for the section specified at the different months in the years specified, with the corresponding averages for all white children.

<sup>2</sup> Figures for California based only upon children reported weighed and measured without clothing.

<sup>3</sup> Weights not comparable since children in New York City were weighed in underclothing.

The proportion of children whose parents were born in the United States was highest in Iowa, 82.2 per cent; next in California, 62.4 per cent; and very low in New York City, only 22.7 per cent. So far as the racial stocks represented in the children of native parentage can be inferred from the nativity of their parents, Iowa and California are not far different; Iowa has slightly larger proportions of the German and the Scandinavian and California of the southern European races—but in both States the main racial



stock is the British. The nationalities represented among the children of foreign-born mothers included in Iowa the Scandinavian with 2.8 per cent of the total, the German with 2.6 per cent, and the British and Irish with 1.1 per cent; the Italian was represented by only 0.8 per cent. In California, however, the Italian had the largest proportion of any of the foreign nationalities with 8 per cent, the British and Irish came second with 5.2 per cent, while the Scandinavian nationalities had 2 per cent, the Russian 1.7 per cent, and the German only 1.6 per cent of the total number. In New York City Italy was most largely represented with 20.7 per cent, followed by Russia, with 17.7 per cent, Austria-Hungary with 13.2 per cent, Great Britain, Ireland and British possessions with 9.5 per cent (Ireland alone, 7.5 per cent), Germany with 1.9 per cent, and Poland with 1.7 per cent.

It is clear from these figures that the excess stature and weight in California, as compared with Iowa and other States, is not due to the racial stocks represented in her population. It must be due, therefore, to some other factor—selection of the tallest and heaviest in the process of migration, or favorable environmental conditions such as climate. The deficiency in stature in New York City, on the other hand, is probably to be accounted for by the large proportion of children of short-statured races, such as the Italian and the Jewish.

#### **Comparative stature and weight of city and country children.**

In order to determine whether there is any significant difference in stature and weight between city and country children, the children of native parentage in Iowa and in the East North-Central section were tabulated by the size of the communities in which they were examined, whether "rural," which was defined as places under 10,000 population, or "urban," which was divided into places of from 10,000 to 25,000 population and places of 25,000 and over. The results are shown in Table XV.

In this table the statures and weights of the children in each group are compared with those of children in all States. The difference between urban and rural children is therefore shown in the relative difference. The probable errors of the figures are also shown in the table.

Both in stature and weight the averages for children in rural areas are above those for children in urban areas. This difference appears for both boys and girls. So far as stature is concerned, no significant difference appears between the smaller and the larger urban communities, and the slight difference which occurs between the averages for children in the smaller and in the larger urban communities of both sections is seen on analysis to be due solely to a difference in the East North-Central section.

TABLE XV.—Comparative stature and weight of city and country children; white children under 6 years of age of native parentage in Iowa and East North-Central sections compared with general averages for all white children.

Size of community and section of country.	White children of native parentage.														
	Children.					Boys.					Girls.				
	Number.	Stature (inches).		Weight (pounds).		Number.	Stature (inches).		Weight (pounds).		Number.	Stature (inches).		Weight (pounds).	
		Average excess. <sup>1</sup>	Probable error.	Average excess. <sup>1</sup>	Probable error.		Average excess. <sup>1</sup>	Probable error.	Average excess. <sup>1</sup>	Probable error.		Average excess. <sup>1</sup>	Probable error.	Average excess. <sup>1</sup>	Probable error.
BOTH SECTIONS.															
Rural (under 10,000) ..	45,225	+0.13	±0.01	+0.04	±0.01	22,890	+0.13	±0.01	+0.07	±0.02	22,335	+0.12	±0.01	-0.01	±0.02
Urban:															
10,000 to 25,000....	9,680	- .12	± .01	- .18	± .02	4,917	- .11	± .02	- .18	± .03	4,763	- .14	± .02	- .17	± .03
25,000 and over....	14,041	- .08	± .01	- .29	± .02	7,071	- .11	± .01	- .35	± .03	6,970	- .04	± .01	- .24	± .03
IOWA.															
Rural (under 10,000) ..	22,270	+ .23	± .01	+ .02	± .02	11,307	+ .24	± .01	+ .06	± .02	10,963	+ .21	± .01	- .02	± .02
Urban:															
10,000 to 25,000....	2,093	+ .05	± .02	- .39	± .05	1,072	+ .06	± .03	- .34	± .07	1,021	+ .03	± .04	- .44	± .07
25,000 and over....	5,991	+ .04	± .01	- .33	± .03	3,019	- .00	± .02	- .36	± .04	2,972	+ .08	± .02	- .30	± .04
EAST NORTH-CENTRAL.															
Rural (under 10,000) ..	22,955	+ .31	± .01	+ .04	± .02	11,583	+ .03	± .01	+ .08	± .02	11,372	+ .03	± .01	+ .00	± .02
Urban:															
10,000 to 25,000....	7,587	- .17	± .01	- .12	± .03	3,845	- .15	± .02	- .14	± .04	3,742	- .19	± .02	- .09	± .04
25,000 and over....	8,050	- .17	± .01	- .27	± .03	4,052	- .20	± .02	- .35	± .04	3,998	- .14	± .02	- .19	± .04

<sup>1</sup> Excess shown as positive, deficiency as negative. The average excess or deficiency is the average difference between what the children actually weighed and measured and the average weights and statures of white children of the same sexes and ages (in months) in all States.

Only children whose parents were native born were included in this table, and the effect of differences in racial composition between rural and urban areas is therefore eliminated so far as the material at hand permits. The children are the offspring of parents born in this country for the most part before 1895, and include no appreciable proportion of the short-statured races, such as the Italian and the Jewish. The States chosen contain, it is true, many persons of Scandinavian descent, but so far as the evidence indicates this element is found more largely in cities than in country districts, and therefore would not explain the difference in average stature and weight in favor of the country.<sup>9</sup>

**Comparative stature and weight of children of native parentage.**

The inclusion in the group selected for study of a considerable number of children whose parents were not born in the United States raises the question whether the averages secured are fairly typical of children of native parentage. To throw light upon this question a special tabulation was made of children of native parentage in Iowa and in the East North-Central section. The tabulation included 68,946 boys and girls under 6 years of age, both of whose parents were reported born in the United States, Table XVI.

TABLE XVI.—Comparison of stature and weight of children of native parentage with general averages; white children under 6 years of age; Iowa and East North-Central sections.

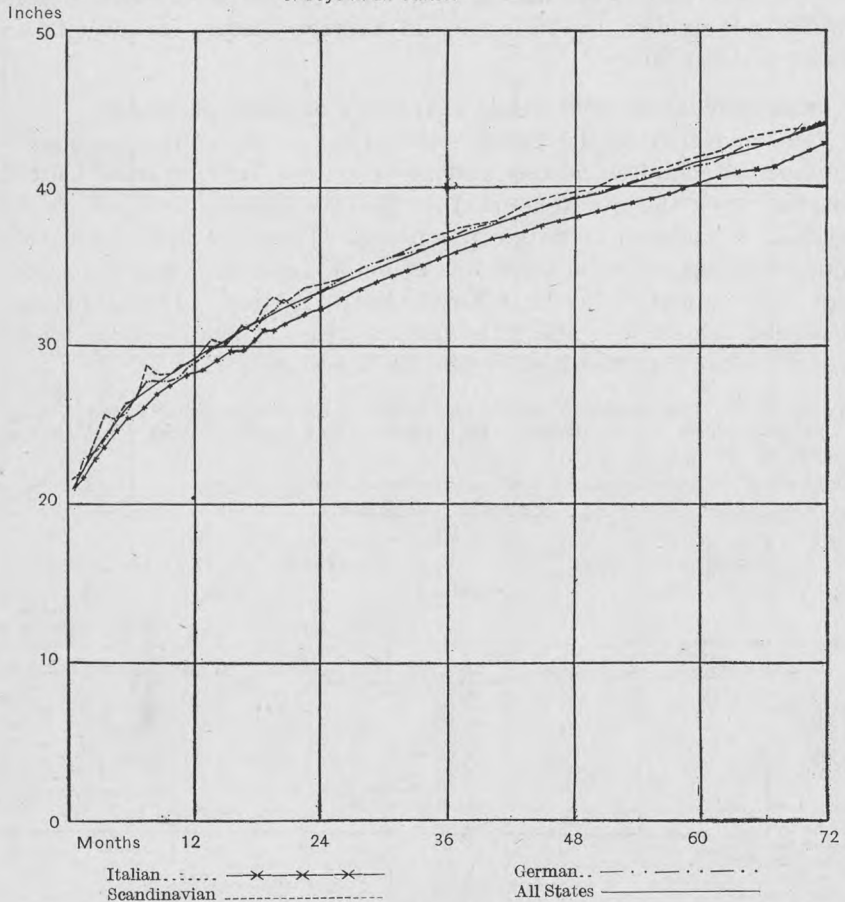
Age and section.	White boys.			White girls.		
	Number.	Average excess. <sup>a</sup>		Number.	Average excess. <sup>a</sup>	
		Stature (inches).	Weight (pounds).		Stature (inches).	Weight (pounds).
Both sections.....	34,878	+0.05	-0.05	34,068	+0.05	-0.08
Under 1 year.....	8,358	+ .06	+ .03	8,054	+ .07	+ .04
1 year, under 2.....	6,456	+ .02	- .17	6,189	+ .02	- .14
2 years, under 3.....	6,413	+ .02	- .10	6,292	+ .03	- .09
3 years, under 4.....	6,012	+ .04	- .05	5,894	+ .02	- .16
4 years, under 5.....	5,374	+ .13	+ .06	5,407	+ .11	- .05
5 years, under 6.....	2,265	- .00	- .15	2,232	+ .05	- .12
Iowa.....	15,398	+ .18	- .05	14,956	+ .17	- .11
Under 1 year.....	3,567	+ .17	+ .16	3,413	+ .22	+ .16
1 year, under 2.....	3,010	+ .13	- .17	2,920	+ .12	- .20
2 years, under 3.....	3,002	+ .13	- .19	2,944	+ .15	- .12
3 years, under 4.....	2,883	+ .21	- .03	2,773	+ .15	- .26
4 years, under 5.....	2,395	+ .26	- .08	2,359	+ .26	- .16
5 years, under 6.....	541	+ .25	- .06	547	+ .03	- .24
East North-Central.....	19,480	- .05	- .05	19,112	- .05	- .05
Under 1 year.....	4,791	- .03	- .07	4,641	- .03	- .05
1 year, under 2.....	3,446	- .07	- .17	3,269	- .08	- .09
2 years, under 3.....	3,411	- .07	- .03	3,348	- .07	- .07
3 years, under 4.....	3,129	- .12	- .08	3,121	- .10	- .08
4 years, under 5.....	2,979	+ .03	+ .17	3,048	- .01	+ .04
5 years, under 6.....	1,724	- .09	- .18	1,685	- .06	- .09

<sup>a</sup> Excess is stated as positive, deficiency as negative. The average excess or deficiency is the average difference between what the children actually weighed and measured and the average weights and statures of white children of the same sexes and ages (in months) in all States.

<sup>9</sup> Figures for 1890 show that in the East North-Central States 1.9 per cent of the population of rural districts and cities under 25,000 population, while 2.9 per cent of the population of cities of 25,000 and over, were born in one of the Scandinavian countries. Thirteenth Census, Vol. I, Population. Compiled from p. 847.

The results in general show a close agreement with the averages already presented. The children of native parentage in the selected States were very slightly lighter in weight, but the amount is so slight as to be negligible for comparative purposes. Thus the weight of these children averaged only about an ounce less than that of all those included in this study. Figures for Iowa are in substantial agreement with those for the East North-Central

Chart XVII.—Comparative statures of boys of Italian, Scandinavian, and German parentage, and of boys in all States.



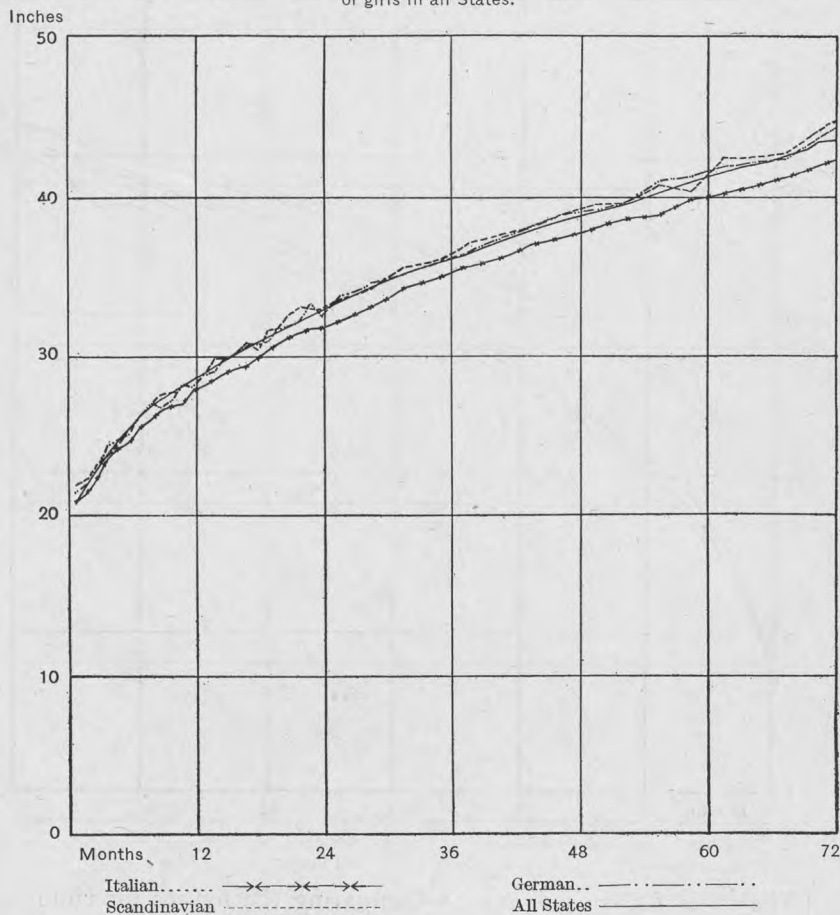
group, except that at under 1 year the Iowa figures show a slight excess in weight. The amount of variation from the average is so slight that in many cases the differences are negligible.

#### Comparative stature and weight of children of Italian, Scandinavian, and German parentage.

Three nationality groups were tabulated separately to show differences in average statures and weights from the averages for all white children included in the general tables. Since the informa-

tion on the record blank gave only the country of birth of father and mother, but not the racial stock, the choice of nationalities in which racial stock could reasonably be inferred from the country of birth was limited. The nationalities selected for tabulation were the Italian, the Scandinavian, and the German, and the children from all parts of the country whose mothers were reported born in Italy, in Scandinavia (Denmark, Sweden, or Nor-

Chart XVIII.—Comparative statures of girls of Italian, Scandinavian, and German parentage, and of girls in all States.



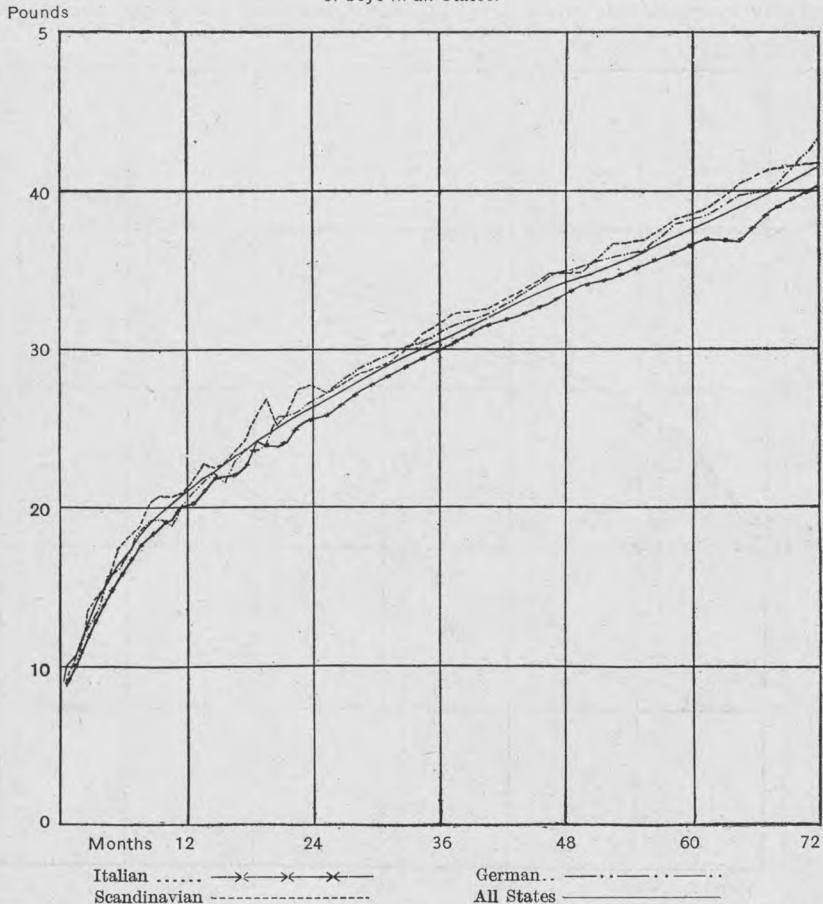
way), and in Germany were included in the respective nationality tables.

Table XVII shows the distribution of the children of these different nationalities by sections. In the tables for these selected nationalities a certain number of children in New York City were included who had been excluded from the main tables on account of having been weighed in underclothing. This fact would not affect materially the conclusions as to relative weight and stature of children of



these nationalities, since few children of the taller and heavier groups were from New York City, while nearly half the group of Italian children, who were shorter and lighter than average, were from New York. The inclusion of the New York City children would tend, therefore, to understate the difference between the Italian children and the general average.

Chart XIX.—Comparative weights of boys of Italian, Scandinavian, and German parentage, and of boys in all States.

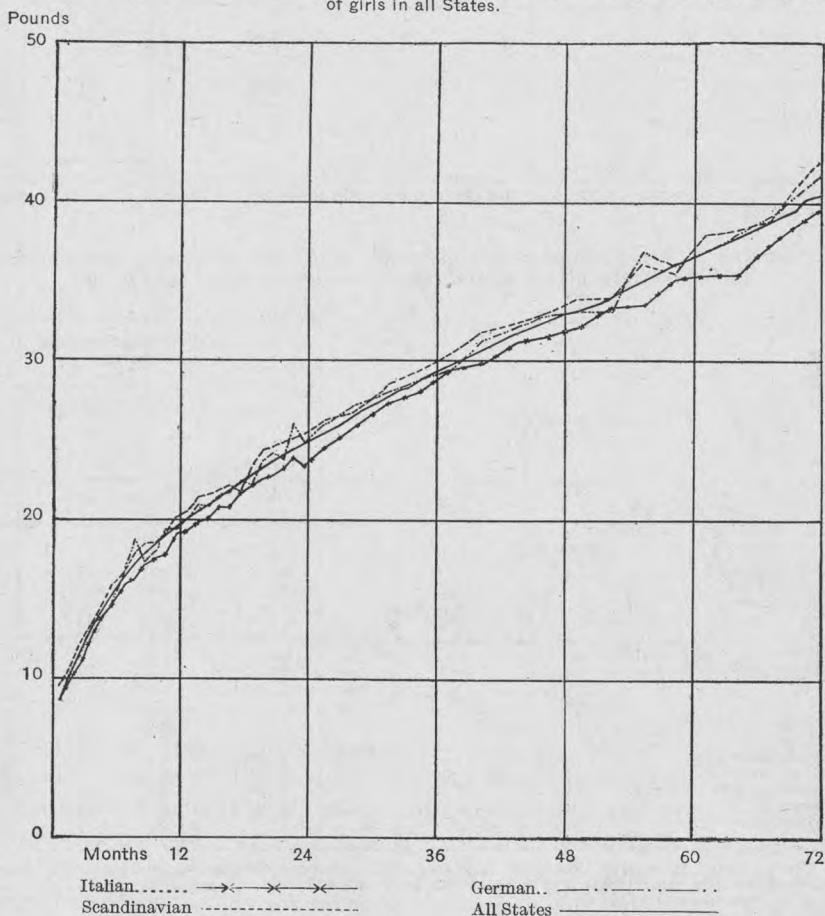


*Children of Italian parentage.*—Comparing the figures for children of mothers born in Italy with those for all children, it appears (Table XVIII) that Italian children are shorter and lighter than the average. The average deficiency in stature is slightly over an inch for both boys and girls, and that in weight is 15 ounces for boys and 14 for girls. The absolute deficiencies are smaller for the younger children and increase with age. The percentage of deficiency, however, is more nearly uniform. The averages themselves and the number of cases upon which they are based are shown in general Table 15.

TABLE XVII.—*Parental nativity and section, white children included in special nativity tables.*

Section.	White children.		
	Italian parentage.	Scandinavian parentage.	German parentage.
Total.....	14,246	4,164	4,066
New England and Middle Atlantic.....	3,501	313	255
New York City.....	7,429	400	696
Southern.....	74	22	57
East North-Central.....	1,265	684	1,186
Iowa.....	296	1,047	975
Western.....	131	1,319	596
California.....	1,550	379	301

Chart XX.—Comparative weights of girls of Italian, Scandinavian, and German parentage, and of girls in all States.



The curve of average growth of children of Italian parentage is shown in Charts XVII to XX in comparison with that of all children and of children of Scandinavian and children of German parentage.

TABLE XVIII.—*Comparison of stature and weight of children of Italian parentage with averages for all white children; white children under 6 years of age.*

Age and sex.	White children of mothers born in Italy.			
	Stature.		Weight.	
	Average excess (inches). <sup>1</sup>	Per cent excess.	Average excess (pounds). <sup>1</sup>	Per cent excess.
BOYS.				
All ages under 6.....	-1.05	-2.9	-0.94	-3.3
Under 1 year.....	-.73	-2.8	-.76	-4.7
1 year, under 2.....	-.91	-2.9	-.67	-2.8
2 years, under 3.....	-1.01	-2.9	-.83	-2.9
3 years, under 4.....	-1.05	-2.8	-.82	-2.5
4 years, under 5.....	-1.30	-3.2	-.97	-2.7
5 years, under 6.....	-1.29	-3.0	-1.61	-4.0
GIRLS.				
All ages under 6.....	-1.03	-2.9	-0.88	-3.1
Under 1 year.....	-.58	-2.3	-.58	-3.8
1 year, under 2.....	-.83	-2.7	-.70	-3.1
2 years, under 3.....	-1.06	-3.1	-.71	-2.6
3 years, under 4.....	-1.05	-2.8	-.67	-2.1
4 years, under 5.....	-1.32	-3.3	-1.15	-3.3
5 years, under 6.....	-1.48	-3.5	-1.49	-3.9

<sup>1</sup> Excess stated as positive; deficiency, negative. Average excess is the unweighted average difference between the averages for children of mothers born in Italy and the general averages for all white children. See general Table 15.

TABLE XIX.—*Comparison of stature and weight of children of Scandinavian parentage with averages for all white children; white children under 6 years of age.*

Age and sex.	White children of mothers born in Scandinavia.			
	Stature.		Weight.	
	Average excess (inches). <sup>1</sup>	Per cent excess.	Average excess (pounds). <sup>1</sup>	Per cent excess.
BOYS.				
All ages under 6.....	+0.42	+1.2	+0.71	+2.7
Under 1 year.....	+.40	+1.5	+.66	+4.1
1 year, under 2.....	+.46	+1.5	+.92	+3.9
2 years, under 3.....	+.31	+.9	+.43	+1.5
3 years, under 4.....	+.46	+1.2	+.67	+2.1
4 years, under 5.....	+.40	+1.0	+.71	+2.0
5 years, under 6.....	+.51	+1.2	+.90	+2.3
GIRLS.				
All ages under 6.....	+.31	+.9	+.56	+2.1
Under 1 year.....	+.16	+.6	+.42	+2.8
1 year, under 2.....	+.40	+1.3	+.68	+3.1
2 years, under 3.....	+.20	+.6	+.55	+2.0
3 years, under 4.....	+.39	+1.0	+.73	+2.3
4 years, under 5.....	+.13	+.3	+.23	+.7
5 years, under 6.....	+.56	+1.3	+.74	+1.9

<sup>1</sup> Excess stated as positive; deficiency, negative. Average excess is the unweighted average difference between the average for children of mothers born in Scandinavia and the general averages for all white children. See general Table 17.

*Children of Scandinavian parentage.*—In Table XIX a similar comparison is made for children of mothers born in Denmark, Sweden, or Norway. These children are taller and heavier than the average; the average excess in stature is four-tenths of an inch for boys and three-tenths for girls, while that in weight is 11 ounces for boys and 9 ounces for girls. The percentage excess is about 1 per cent of the stature and 2.4 per cent of the weight. The averages themselves and the number of cases upon which they are based are shown in General Table 17.

*Children of German parentage.*—Table XX shows the average statures and weights of children of mothers born in Germany in comparison with the general averages. These children are slightly taller and heavier than the average but not so much so as the children of some Scandinavian parentage. The average excess in stature is only an eighth of an inch for boys and a sixth of an inch for girls; the average excess in weight is about 5 ounces for boys and 4 ounces for girls. The percentage of excess is less than one-half of 1 per cent in stature and about 1 per cent in weight. The averages and the number of cases upon which they are based are given in general Table 16.

TABLE XX.—Comparison of stature and weight of children of German parentage with averages for all white children; white children under 6 years of age.

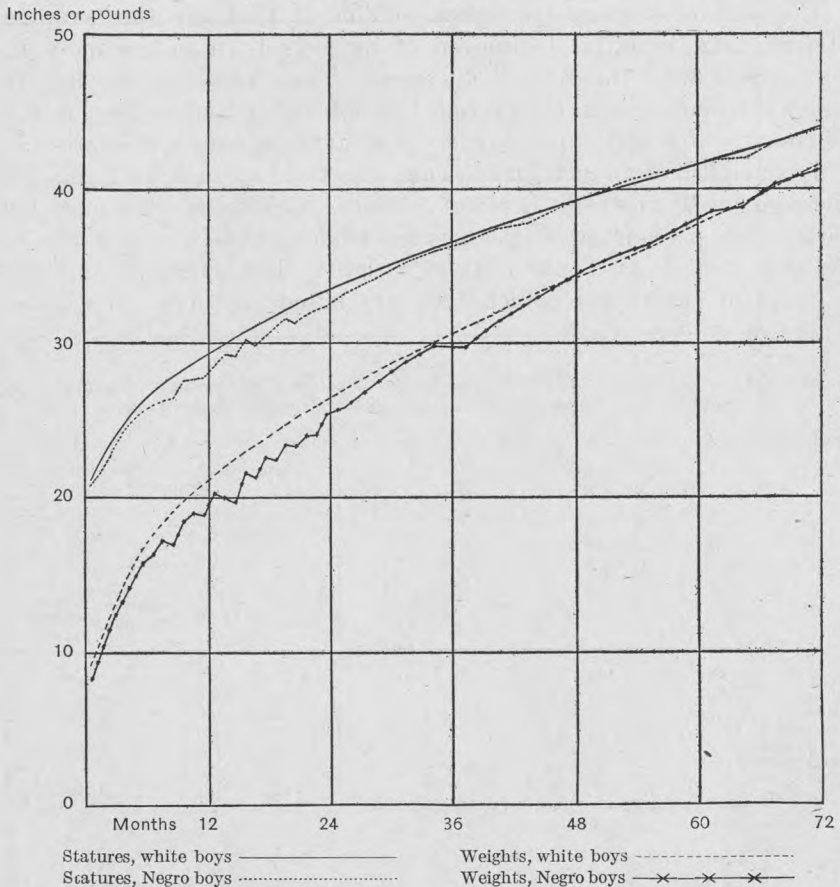
Age and sex.	White children of mothers born in Germany.			
	Stature.		Weight.	
	Average excess (inches). <sup>1</sup>	Per cent excess.	Average excess (pounds). <sup>1</sup>	Per cent excess.
BOYS.				
All ages under 6.....	+0.12	+0.3	+0.32	+1.0
Under 1 year.....	+ .03	+ .1	— .03	— .2
1 year, under 2.....	+ .10	+ .3	+ .33	+1.4
2 years, under 3.....	+ .20	+ .6	+ .47	+1.7
3 years, under 4.....	+ .14	+ .4	+ .34	+1.1
4 years, under 5.....	+ .09	+ .2	+ .37	+1.0
5 years, under 6.....	+ .13	+ .3	+ .45	+1.1
GIRLS.				
All ages under 6.....	+ .17	+ .5	+ .25	+ .9
Under 1 year.....	+ .09	+ .4	+ .05	+ .3
1 year, under 2.....	+ .16	+ .5	+ .30	+1.3
2 years, under 3.....	+ .21	+ .6	+ .38	+1.4
3 years, under 4.....	+ .19	+ .5	+ .27	+ .9
4 years, under 5.....	+ .25	+ .6	+ .14	+ .4
5 years, under 6.....	+ .11	+ .3	+ .37	+1.0

<sup>1</sup>Excess stated as positive; deficiency, negative. Average excess is the unweighted average difference between the averages for children of mothers born in Germany and the general averages for all white children. See general Table 16.

## NEGRO CHILDREN.

In addition to the records of white children, a comparatively small number of records, 4,976, of Negro children were tabulated. Of these, 224 were weighed and measured in the New England and Middle Atlantic States, 2,567 in the Southern States, 564 in the East North-Central group of States, 217 in Iowa, 106 in the Western group, and 126 in California; besides those who were reported weighed

Chart XXI.—Comparative statures and weights of white and Negro boys.

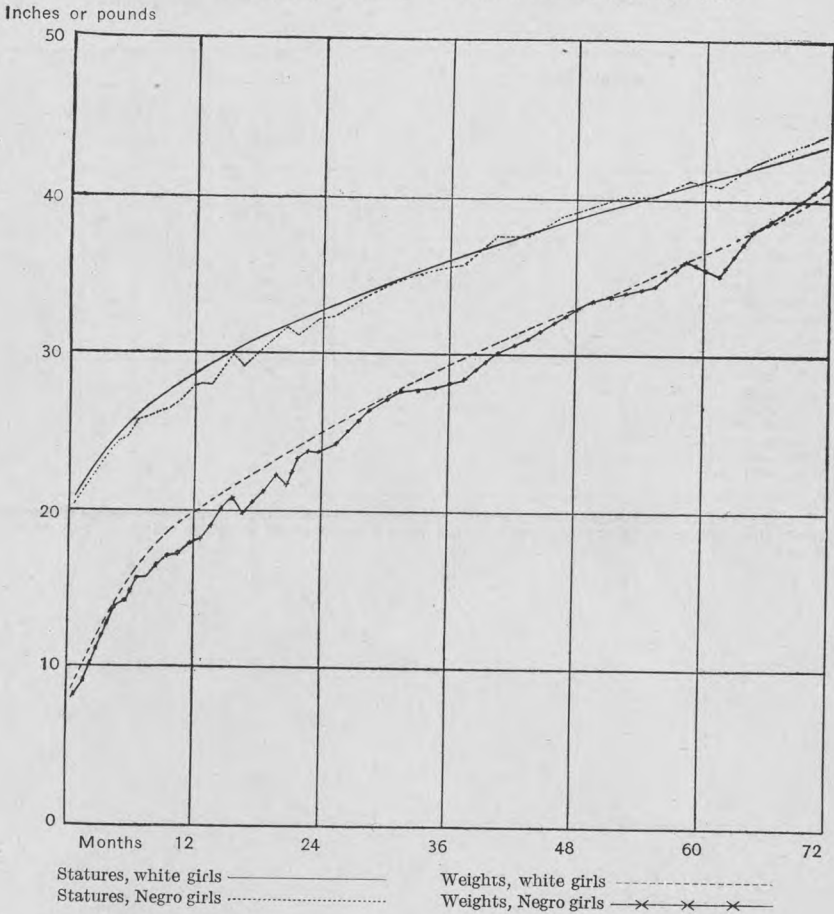


and measured without clothing 1,172 who were weighed and measured in New York City (in underclothing) were included to make a group large enough to be tabulated. As previously explained in connection with the Italian group, the inclusion of these children weighed in underclothing tends to understate the differences between the averages of the white and the Negro children. The average statures and weights of these Negro children are given in general Table 18.



For convenience in comparison, the average and percentage excesses or deficiencies, as compared with the averages of white children, are shown in Table XXI. The average deficiency in stature is about two-fifths of an inch, or 1.3 per cent, for boys, and one-fifth of an inch, or 0.8 per cent, for girls. In weight the average deficiency is nearly 11 ounces for boys and 9 ounces for girls, 3 per cent and 2.5 per cent, respectively. The deficiency in both stature and weight

Chart XXII.—Comparative statures and weights of white and Negro girls.



is much greater at under 1 year and at 1 year of age than at other ages; in fact after 4 years this deficiency is either converted into an excess or is very small.

To explain this change is difficult. The great deficiency at the younger ages may be connected in some way with poor nutrition and with bad social and economic conditions, which result in the well-known high mortality among colored infants; and this high mortality

may itself result in a surviving group with less variation from the normal. It may, on the other hand, be connected with some racial difference in the rate of growth, with relative retardation in the early years followed by an acceleration. In Charts XXI and XXII the growth of Negro children is compared with that of white children.

TABLE XXI.—*Comparison of stature and weight of Negro children with averages for white children; children under 6 years of age.*

Age and sex.	Negro children.			
	Stature.		Weight.	
	Average excess (inches). <sup>1</sup>	Per cent excess.	Average excess (pounds). <sup>1</sup>	Per cent excess.
BOYS.				
All ages under 6.....	-0.40	-1.3	-0.69	-3.0
Under 1 year.....	-.76	-2.9	-1.14	-7.0
1 year, under 2.....	-.81	-2.6	-1.46	-6.1
2 years, under 3.....	-.43	-1.4	-.71	-2.5
3 years, under 4.....	-.38	-1.0	-.83	-2.6
4 years, under 5.....	+.09	+.2	+.16	+.4
5 years, under 6.....	-.06	-.1	-.13	-.3
GIRLS.				
All ages under 6.....	-.22	-.8	-.55	-2.5
Under 1 year.....	-.55	-2.2	-.88	-5.8
1 year, under 2.....	-.64	-2.1	-1.03	-4.6
2 years, under 3.....	-.36	-1.0	-.52	-1.9
3 years, under 4.....	-.15	-.4	-.66	-2.1
4 years, under 5.....	+.23	+.6	-.07	-.2
5 years, under 6.....	+.14	+.3	-.12	-.3

<sup>1</sup> Excess stated as positive; deficiency, negative. Average excess is the unweighted average difference between the averages for Negro children and the general averages for all white children. See general Table 18.

## COMPARATIVE STATURE AND WEIGHT OF CHILDREN WITH CERTAIN DEFECTS.

In addition to data on stature and weight, the record blanks contained spaces for notes of defects and diseases. In California and New York City, on account of the detailed instructions given physicians in charge of examinations, such defects were doubtless much more completely recorded than elsewhere. These two areas, containing a comparatively large number of cases, were therefore selected as the basis for a special study of the influence of defects on height and weight. For this part of the study all the cards which had been rejected for the main stature and weight tables because the children had serious defects—rachitis, malnutrition, heart disease, etc.—as given on page 12, were included along with the cards for normal children and those with minor defects only.

### PROPORTION OF CHILDREN WITH EACH DEFECT.

The proportion of children with each main kind of defect—defects which did not as well as those which did cause exclusion from the general stature and weight tables—are shown in Tables XXII and XXIII. It should be emphasized that these figures have a considerable margin of error, which varies with the different defects according both to difficulties in diagnosis and to differences in the degrees of defect used as standards by the various physicians reporting.

The defect most often reported was diseased or enlarged tonsils, 17.7 per cent of the children under 7 years of age who were examined being reported as having abnormal tonsils. It is obvious that in case of a defect like diseased or enlarged tonsils the degree of abnormality is of considerable importance. In the tabulation no distinction could be made, however, between serious and slight degrees of defect, nor was it possible even to show the proportion of serious or slight defects in the group. Probably most of the cases of serious abnormality among the children brought for examination were reported.

The proportion of children with diseased or enlarged tonsils increased rapidly during the first three years; only 3.7 per cent of those under 1 year, as compared with 27 per cent of those from 3 to 7 years of age, were reported as having diseased or enlarged tonsils.

Adenoids were less frequently reported. Six and four-tenths per cent of the children examined were reported as having adenoids. The percentages increase from 1.7 for children under 1 year to 11.6 for children 6 years of age. In regard to uniform diagnosis the comment made on the figures for abnormal tonsils applies with equal force to adenoids.

TABLE XXII.—Number and per cent of children with each specified defect; white children under 7 years of age examined by physicians, California and New York City.

Defect.	Children with specified defect.		Defect.	Children with specified defect.	
	Number.	Per cent of total children examined. <sup>1</sup>		Number.	Per cent of total children examined. <sup>1</sup>
Tonsils enlarged or diseased	10,276	17.7	Crippled	62	0.1
Tonsils removed	133	.2	Infantile paralysis	50	.1
Adenoids present	3,728	6.4	Injury at birth	9	.....
Adenoids removed	86	.1	Accident	2	.....
Carious teeth	2,093	3.6	Resulting from tuberculosis	1	.....
Enlarged neck glands	1,230	2.1	Mental deficiency	57	.1
Rupture	793	1.4	Discharging ears	46	.1
Rachitis	683	1.2	Deaf	20	.....
Malnutrition	591	1.0	Enlarged thyroid	10	.....
Heart abnormality	444	.8	Blind, one or both eyes	6	.....
Bowlegs, knockknees, or both	375	.6	Spina bifida	2	.....
Strabismus	272	.5	Pott's disease	.....	.....

<sup>1</sup> Not shown if less than one-tenth of 1 per cent.

NOTE.—The total number of children examined in California and New York City—the base upon which the percentages are calculated—was 57,977.

TABLE XXIII.—Per cent of children with each specified defect, by age; white children under 7 years of age; California and New York City.

Age.	White children examined by physicians.												
	Total.	With rachitis.		With mal-nutrition.		Heart abnormality.		Carious teeth.		Diseased or enlarged tonsils.		Adenoids.	
		Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.
All ages under 7	57,977	683	1.2	591	1.0	444	0.8	2,093	3.6	10,276	17.7	3,728	6.4
Under 1 year	17,897	139	.8	311	1.7	34	.2	5	( <sup>1</sup> )	662	3.7	304	1.7
1 year, under 2	10,605	205	1.9	96	.9	39	.4	43	.4	1,648	15.5	617	5.8
2 years, under 3	8,379	129	1.5	41	.5	39	.5	176	2.1	2,153	25.7	744	8.9
3 years, under 4	8,087	92	1.1	51	.6	90	1.1	450	5.6	2,203	27.3	765	9.5
4 years, under 5	7,556	75	1.0	46	.6	113	1.5	714	9.4	2,002	26.5	695	9.2
5 years, under 6	4,813	36	.7	38	.8	108	2.2	611	12.7	1,430	29.7	529	11.0
6 years, under 7	640	7	1.1	8	1.2	21	3.3	94	14.7	178	27.8	74	11.6

<sup>1</sup> Less than one-tenth of 1 per cent.

The figures for carious teeth are particularly unsatisfactory. No account could be taken of the number of teeth that were decayed, nor of the seriousness of the defect, whether the teeth were in advanced stages of decay or whether decay had just commenced. Though doubtless most of the worst cases were reported, great differences probably existed also in the care with which physicians examined the teeth. The true proportions of children with this defect are probably, therefore, greatly understated.

The percentages of children with carious teeth show an increase with age, similar to that in the percentages with adenoids and abnormal tonsils. While the percentage at 2 years of age is only 2.1, at 6 years of age it is 14.7.

A small proportion, 1.2 per cent, of the children brought for examination were diagnosed as having rachitis, and their records were therefore excluded from the main stature and weight tables. The proportion appears largest at 1 year of age, when 1.9 per cent were found with rachitis. It should perhaps be emphasized that these percentages are based on the children brought for examination, who may have included a smaller proportion with this defect than would be found among the entire number of children in the areas studied. Even of the children brought for examination, the proportion reported as having rachitis is doubtless less than the true proportion.

A somewhat smaller percentage, 1, were reported as malnourished—another cause of exclusion from the main tables. The largest percentage of malnourished children, 1.7, was found among those under 1 year of age. Probably only the more obvious cases of malnutrition were noted. The proportion of malnourished children is probably therefore much less than the true proportion among all children in the areas studied.

A few of the children, 0.8 per cent, had heart abnormalities. The percentages increase from 0.2 at under 1 year to 3.3 at 6 years of age.

For the other defects listed, as well as for those already mentioned, the percentages of children with each stated defect doubtless understates the true proportion among all the children of these ages, either because the children with the defect—especially the more serious ones—were not brought for examination, or because the diagnosis was not made and noted uniformly, or for both reasons.

#### RELATION OF DEFECT TO STATURE AND WEIGHT.

The data secured were analyzed to determine the correlation, if any, between certain of the defects and deficiency in stature and weight. In considering this comparison the points already noted in regard to the definition and diagnosis of the different defects must be borne in mind. In determining, for example, the relation between defective tonsils and deficiency in weight, it must be remembered that the differences in degrees of defect are not known. If in a large proportion of cases the defect was present only in a slight degree, this fact would obviously reduce the amount of the deficiency in weight associated with the presence of abnormal tonsils. At the same time it should be borne in mind that, to show whether or not a given defect influences stature and weight, it is not essential that the group of children with the particular defect should include all those examined who had the defect. Nor would even the inclusion in the group with the defect of a considerable number of normal children make a material difference. Such errors in general would merely lessen the amount of the differences between the average statures or weights



of the two groups compared; in other words, it would reduce the size of the deficiency associated with the defect studied.

In interpreting the amount of deficiency found, it should be remembered that the average heights and weights, to which those of the children with defects are compared, are for a group which includes some children with adenoids, diseased or enlarged tonsils, and carious teeth, and probably other children whose defects were not noted. The amount of error due to this inclusion of children with adenoids, diseased or enlarged tonsils, and carious teeth is estimated below as about 0.02 inch and 0.07 pound at 3 years, and 0.05 inch and 0.20 pound at 4 and 5 years of age.<sup>10</sup> To correct the figures for this source of error, therefore, these amounts should be added to the deficiencies shown in Tables XXIV to XXIX.

TABLE XXIV.—Comparative stature and weight of children with rachitis; white children under 7 years of age; California and New York City.

Age.	White children with rachitis.						
	Number.	Stature (inches).			Weight (pounds).		
		Average excess. <sup>1</sup>	Probable error of average excess.	Per cent of excess.	Average excess. <sup>1</sup>	Probable error of average excess.	Per cent of excess.
All ages under 7.....	683	-1.12	±0.04	-3.4	-1.90	±0.08	-7.2
Under 1 year.....	139	-.64	.08	-2.4	-1.80	.13	-10.4
1 year, under 2.....	205	-1.07	.07	-3.6	-1.79	.13	-7.8
2 years, under 3.....	129	-1.42	.10	-4.1	-2.18	.20	-7.8
3 years, under 4.....	92	-1.27	.13	-3.4	-1.90	.26	-5.9
4 years, under 5.....	75	-1.29	.15	-3.2	-1.69	.32	-4.7
5 years, under 6.....	36	-1.41	.23	-3.4	-2.24	.51	-5.7
6 years, under 7.....	7	-.64	.53	-1.5	-2.14	1.26	-5.2

<sup>1</sup> Excess shown as positive, deficiency as negative. The average excess or deficiency is the average difference between what the children actually weighed and measured and the average weights and statures of children of the same sexes and ages (in months) in California and New York City.

TABLE XXV.—Comparative stature and weight of children with malnutrition; white children under 7 years of age; California and New York City.

Age.	White children with malnutrition.						
	Number.	Stature (inches).			Weight (pounds).		
		Average excess. <sup>a</sup>	Probable error of average excess.	Per cent of excess.	Average excess. <sup>a</sup>	Probable error of average excess.	Per cent of excess.
All ages under 7.....	591	-1.32	±0.04	-4.4	-3.41	±0.08	-15.7
Under 1 year.....	311	-1.63	.05	-6.6	-3.57	.09	-24.8
1 year, under 2.....	96	-.78	.11	-2.6	-3.02	.19	-13.5
2 years, under 3.....	41	-1.17	.18	-3.4	-4.37	.35	-15.5
3 years, under 4.....	51	-.90	.17	-3.4	-3.52	.35	-10.9
4 years, under 5.....	46	-1.13	.19	-2.9	-3.23	.40	-9.2
5 years, under 6.....	38	-1.12	.22	-3.7	-1.93	.50	-5.0
6 years, under 7.....	8	-1.45	.50	-3.3	-5.75	1.18	-13.7

<sup>a</sup> Excess shown as positive, deficiency as negative. The average excess or deficiency is the average difference between what the children actually weighed and measured and the average weights and statures of children of the same sexes and ages (in months) in California and New York City.

<sup>10</sup> See Table XXX, p. 74.

The figures showing deficiencies are valuable so far as they show existence of a definite correlation between a defect and deficiency in stature or weight, even though they are not conclusive as to the amount of such correlation.

### **Rachitis.**

In California and New York City 683 children under 7 years of age were diagnosed as having rachitis. Table XXIV shows that these children, in comparison with average children of the same sexes and ages, showed a deficiency in stature of  $1\frac{1}{8}$  inches, or 3.4 per cent. A tendency appears for this deficiency in stature to increase with age. Thus among children 2 years of age the deficiency is over twice as great as among those less than 1 year of age. The percentage of deficiency in stature increases at the same time from 2.4 under 1 year to 4.1 at 2 years of age.

The deficiency in weight is even more marked. Thus the average deficiency for all children under 7 was nearly 2 pounds, or 7.2 per cent. The deficiency in weight appears to increase somewhat with age in absolute amount, though the percentage diminishes from slightly over 10 at less than 1 year of age to about 5 at from 4 to 6 years of age.

The average deficiencies are in most cases well over five times the probable error, and are, therefore, well outside the range of probable chance variation.

### **Malnutrition.**

In all 591 children were diagnosed as being malnourished. Table XXV shows that the average deficiency of these children in stature was nearly  $1\frac{3}{8}$  inches, and in weight nearly  $3\frac{1}{2}$  pounds. The percentage deficiency in stature was 4.4, while the percentage deficiency in weight was 15.7. The largest proportion of cases found was under 1 year of age, and this age group shows the largest percentage of deficiency both in height and weight. These children were almost 25 per cent deficient in weight. This result is to be expected, since most of the physicians probably used marked deficiency of weight for height as a chief criterion for malnutrition.

In these comparisons deficiency in weight is measured in respect to average weight for age. Since the deficiency in height is much less than that in weight, the malnourished and the rachitic children are also markedly deficient in weight for height. In general, however, the percentage of deficiency in weight for height is less than in weight for age.

A rough approximation to the deficiency in weight for height of the malnourished children under 1 year of age can be found by the following computation: For ages under 1 year the average deficiency in stature is 1.63 inches. Tables II and III, pages 18-20, show that the range of height for ages under 1 year is, roughly, from 20 to 29

inches. Table VI, page 29, shows that at these statures a difference of approximately 1.3 pounds of weight corresponds to each inch gain in stature, and hence the average deficiency of 1.63 inches in stature would correspond to approximately 2.1 pounds in weight. The actual deficiency in weight of 25 per cent, or 3.57 pounds, is nearly  $1\frac{1}{2}$  pounds more than would correspond to the deficiency in stature. Reference to Table VI, page 29, shows that the average weight for the different statures up to 28 inches is, roughly, about 15 pounds. Hence with a deficiency of 1.5 pounds, corresponding to an average weight of about 15 pounds, there would be an average deficiency in weight for height of 10 per cent. The deficiency in weight for height is evidently less than the deficiency in weight for age.

### Heart abnormality.

The number of children diagnosed as having heart abnormality was comparatively small, only 444. Table XXVI shows that the average deficiency of these children in stature is only one-seventh of an inch, while the deficiency in weight is slightly over half a pound. The deficiencies are much greater under 1 year of age than at older ages. Thus the deficiency in stature under 1 year was about three-fourths inch and that in weight over  $1\frac{1}{2}$  pounds. The number of cases, however, is small and except for the group as a whole and for the first year the deficiencies are small in comparison with the probable errors, and a considerable play is therefore given to variations due to chance.

TABLE XXVI.—Comparative stature and weight of children with heart abnormality; white children under 7 years of age; California and New York City.

Age.	White children with heart abnormality.						
	Number.	Stature (inches).			Weight (pounds).		
		Average excess. <sup>1</sup>	Probable error of average excess.	Per cent of excess.	Average excess. <sup>1</sup>	Probable error of average excess.	Per cent of excess.
All ages under 7.....	444	-0.15	±0.05	-0.4	-0.57	±0.11	- 1.7
Under 1 year.....	34	-.73	.16	-2.9	-1.63	.26	-10.4
1 year, under 2.....	39	-.35	.17	-1.1	-.75	.29	- 2.9
2 years, under 3.....	39	+ .30	.18	+ .9	+ .45	.35	+ 1.6
3 years, under 4.....	90	-.05	.13	- .1	-.65	.27	- 2.0
4 years, under 5.....	113	+ .04	.12	+ .1	-.07	.26	- .2
5 years, under 6.....	108	-.31	.13	-.7	-1.05	.30	- 2.7
6 years, under 7.....	21	-.04	.31	-.9	-.33	.73	- .7

<sup>1</sup> Excess shown as positive, deficiency as negative. The average excess or deficiency is the average difference between what the children actually weighed and measured and the average weights and statures of children of the same sexes and ages (in months) in California and New York City.

**Carious teeth.**

The children reported as having carious teeth numbered 2,093, Table XXVII, and the comparison of the stature and weight of these children with those of average children of the same sexes and ages shows comparatively little difference when all ages are taken into consideration. For the entire group of children the average deficiency in stature is negligible, while the deficiency in weight averages only 2 ounces, but slightly over twice the probable error.

TABLE XXVII.—*Comparative stature and weight of children with carious teeth; white children under 7 years of age; California and New York City.*

Age.	White children with carious teeth.						
	Number.	Stature (inches).			Weight (pounds).		
		Average excess. <sup>1</sup>	Probable error of average excess.	Per cent of excess.	Average excess. <sup>1</sup>	Probable error of average excess.	Per cent of excess.
All ages under 7. . . . .	2,093	-0.01	±0.03	-0.0	-0.14	±0.06	-0.4
Under 3 years. . . . .	224	+ .30	.07	+ .9	+ .19	.15	+ .7
3 years, under 4. . . . .	450	+ .11	.06	+ .3	+ .09	.12	+ .3
4 years, under 5. . . . .	714	- .13	.05	- .3	- .28	.11	- .8
5 years, under 6. . . . .	611	- .08	.06	-1.9	- .20	.13	- .5
6 years, under 7. . . . .	94	- .06	.16	- .1	- .46	.37	-1.1

<sup>1</sup> Excess shown as positive, deficiency as negative. The average excess or deficiency is the average difference between what the children actually weighed and measured and the average weights and statures of children of the same sexes and ages (in months) in California and New York City.

**Diseased or enlarged tonsils.**

A comparatively large number of children, 10,276, were diagnosed as having either diseased or enlarged tonsils. An examination of Table XXVIII shows that for all ages together these children show no special deficiency in height, but that a deficiency in weight of one-eighth of a pound appears to be definitely established. The classification by age groups reveals a tendency among children over 2 years of age with these defects to be shorter and lighter than the averages for their ages, and for the deficiency to increase in amount as they grow older. Thus the children at 4 years of age diagnosed as having diseased or enlarged tonsils were slightly over a sixth of an inch shorter than average children of the same age. They were also almost half a pound below average weight for their ages, and were somewhat below average weight for their heights. The figures for 6 years of age are not significant on account of the small numbers and the large probable error.

Chart XXIII.—Distribution of weights of boys with diseased or enlarged tonsils, 3 but under 4 years of age.

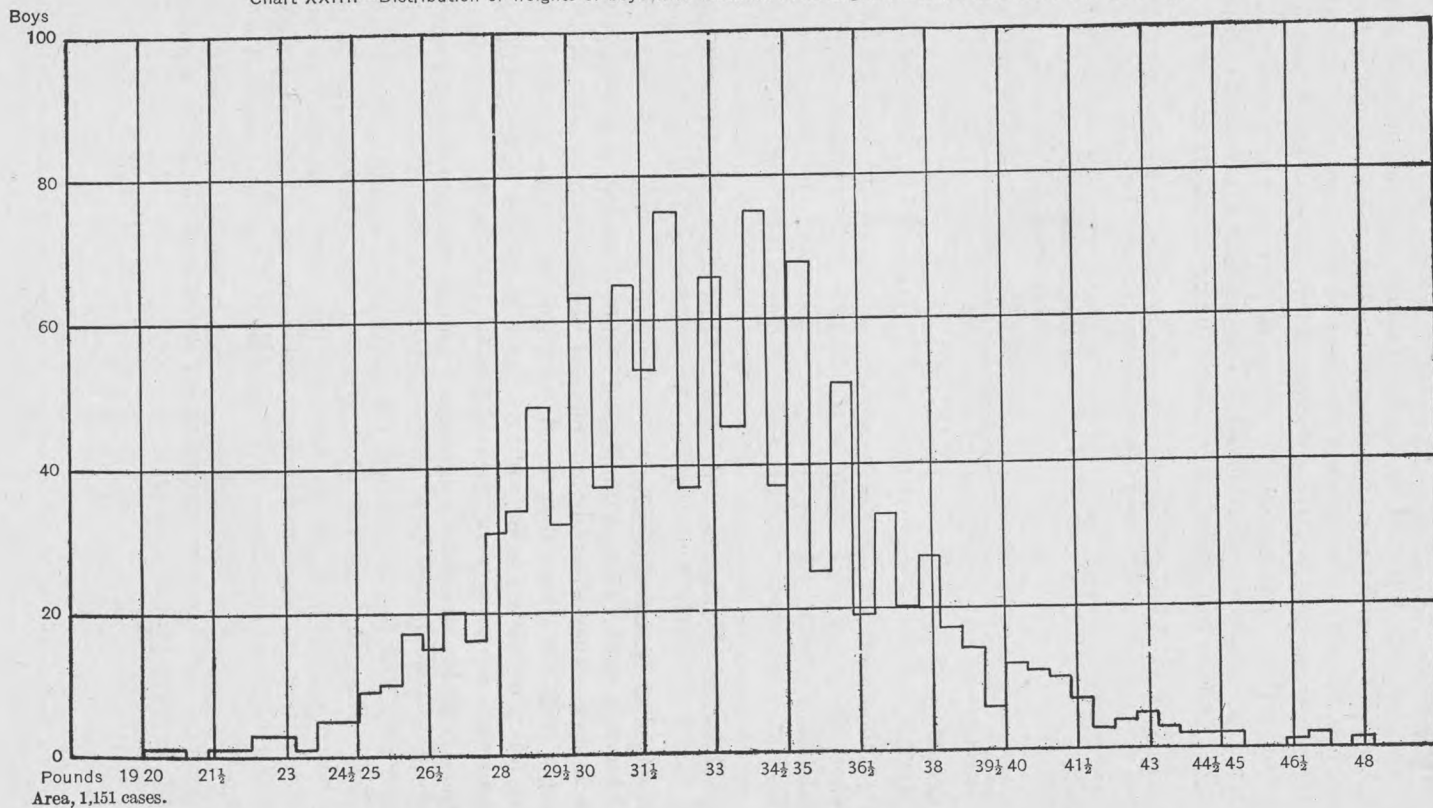




TABLE XXVIII.—Comparative stature and weight of children with enlarged or diseased tonsils; white children under 7 years of age; California and New York City.

Age.	White children with enlarged or diseased tonsils.						
	Number.	Stature (inches).			Weight (pounds).		
		Average excess. <sup>1</sup>	Probable error of average excess.	Per cent of excess.	Average excess. <sup>1</sup>	Probable error of average excess.	Per cent of excess.
All ages under 7.....	10,276	-0.02	±0.01	-0.0	-0.12	±0.02	-0.4
Under 1 year.....	662	+ .54	.04	+2.0	+ .93	.06	+5.3
1 year, under 2.....	1,648	+ .10	.03	+ .3	+ .06	.05	+ .1
2 years, under 3.....	2,153	- .02	.03	- .1	- .02	.05	- .1
3 years, under 4.....	2,208	- .06	.03	- .2	- .17	.06	- .5
4 years, under 5.....	2,002	- .15	.03	- .4	- .46	.07	-1.3
5 years, under 6.....	1,430	- .13	.04	- .3	- .37	.09	- .9
6 years, under 7.....	178	- .13	.11	- .3	- .01	.28	- .0

<sup>1</sup> Excess shown as positive, deficiency as negative. The average excess or deficiency is the average difference between what the children actually weighed and measured and the weights and statures of average children of the same sexes and ages (in months) in California and New York City.

**Adenoids.**

In the two areas studied there was a total of 3,728 children who were diagnosed as having adenoids, as shown in Table XXIX. When the group as a whole is considered, these children show no significant difference from the average in stature; but a deficiency of one-fifth of a pound in weight, which, in comparison with the probable error, appears to be significant. When the figures are analyzed by age the same tendency appears as in the case of children with enlarged or diseased tonsils. Children over 1 year of age with adenoids appear to be deficient in weight as compared with average children. The children 4 years of age were slightly more than half a pound below the average weight for all children, and the deficiency at this age was larger than for younger ages. The figures for 5 and 6 years of age are not particularly significant on account of the small number of cases and the wide play given to chance variations.

TABLE XXIX.—Comparative stature and weight of children with adenoids; white children under 7 years of age; California and New York City.

Age.	White children with adenoids.						
	Number.	Stature (inches).			Weight (pounds).		
		Average excess. <sup>1</sup>	Probable error of average excess.	Per cent of excess.	Average excess. <sup>1</sup>	Probable error of average excess.	Per cent of excess.
All ages under 7.....	3,728	+0.025	±0.02	+0.1	-0.21	±0.04	-0.7
Under 1 year.....	304	+ .48	.05	+1.8	+ .53	.09	+3.2
1 year, under 2.....	617	+ .12	.04	+ .4	- .09	.08	- .4
2 years, under 3.....	744	- .00	.04	.....	- .03	.08	- .1
3 years, under 4.....	765	- .01	.05	- .2	- .47	.10	-1.5
4 years, under 5.....	695	- .01	.05	- .2	- .62	.10	-1.7
5 years, under 6.....	529	- .00	.06	- .1	- .27	.14	- .7
6 years, under 7.....	74	+ .29	.17	+ .7	+ .77	.41	+1.9

<sup>1</sup> Excess shown as positive, deficiency as negative. The average excess or deficiency is the average difference between what the children actually weighed and measured and the average weights and statures of children of the same sexes and ages (in months) in California and New York City.

## EFFECT OF INCLUSION OF CHILDREN WITH CERTAIN DEFECTS UPON GENERAL AVERAGES.

Of the defects and diseases the influence of which upon stature and weight are here specially analyzed, carious teeth, enlarged or diseased tonsils, and adenoids were not given in the list on page 12 of defects and diseases which caused exclusion from the main tables of stature and weight. It would not have been possible to exclude uniformly in all States children with these defects, since there was no uniformity in reporting them. In many cases, children with adenoids or with diseased tonsils may not have had the fact noted on their record cards. The effect of including children with these three defects in the general tables is shown by the analyses given above, however, to be relatively slight, since for the ages considered the correlation between such defects and deficiency in stature and weight is slight.

Nevertheless, if children with carious teeth, adenoids, and diseased or enlarged tonsils had been excluded—and if it had been possible to exclude them all uniformly—the average heights and weights found for all children would have been very slightly increased. And the amount of such increase can be estimated from the figures for average deficiencies in stature and weight and from the percentages of children with the different defects.<sup>11</sup>

TABLE XXX.—Approximate correction of general averages if children with specified defects had been uniformly excluded.

Age.	Approximate correction of general averages.							
	Children with enlarged or diseased tonsils, adenoids, and carious teeth excluded.		Children with diseased or enlarged tonsils excluded.		Children with adenoids excluded.		Children with carious teeth excluded.	
	Stature (inches).	Weight (pounds).	Stature (inches).	Weight (pounds).	Stature (inches).	Weight (pounds).	Stature (inches).	Weight (pounds).
3 years, under 4.....	+0.02	+0.07	+0.02	+0.06	.....	+0.05	-0.01	-0.01
4 years, under 5.....	+ .05	+ .20	+ .05	+ .17	.....	+ .06	+ .01	+ .03
5 years, under 6.....	+ .05	+ .18	+ .05	+ .16	.....	+ .03	+ .01	+ .03

<sup>11</sup> The method of making such an estimate is easily stated in algebraic terms. If  $m$  is the average stature or weight,  $m_d$  the average for children with a given defect, and  $m_o$  the average for children without the defects, and if  $n$  is the total number,  $p$  the proportion with the defect, and  $q$  the proportion without it, then

$$mn = m_d n_p + m_o n_q$$

$$\text{or, } m = m_d p + m_o q$$

If  $e$  is the average excess (or deficiency) of the defective children over the average for all children, or, in symbols,

$$m_d = m + e$$

$$\text{Then, } m = m p + p e + m_o q$$

$$m q - m_o q = p e$$

$$m - m_o = \frac{p e}{q}$$

Such estimates, of course, have to be made on the assumption that the average deficiencies indicated in the tables are correct, even though the size of the probable errors shows that their amounts are subject to considerable doubt. They have also to be based on the assumption that the proportions of children with the given defects of the same degrees of seriousness are the same in the country as a whole as in the two areas specially studied.

This process of correction makes no significant change in the averages for children under 3 years of age, since in these early years either the deficiency (or excess) in stature and weight is negligible or the proportion of cases is small. If, however, children with diseased or enlarged tonsils had been excluded in making up the general averages of stature and weight, the average statures at 3, 4, and 5 years would have been increased 0.02, 0.05, and 0.05 inch, respectively; and the average weights would have been increased 0.06, 0.17, and 0.16 pound. Similar figures for adenoids and carious teeth are also given in Table XXX.

The total correction for all three defects results in raising the average statures 0.02, 0.05, and 0.05 inch and the average weights 0.07, 0.20, and 0.18 pound at 3, 4, and 5 years, respectively. In other words, the correction in stature is not over one-twentieth of an inch, while the correction in weight varies up to one-fifth of a pound for the ages included in the tabulations.

In combining the figures for the three defects account is taken of the proportion of cases in which children with adenoids were reported as having also diseased or enlarged tonsils and the proportion in which children with carious teeth had one or both of the other defects. Only one-fifth of the children with adenoids were reported as not having diseased or enlarged tonsils, while one-half of those with carious teeth were reported as having neither adenoids nor diseased or enlarged tonsils. The children who had adenoids or carious teeth in addition to enlarged or diseased tonsils are already included in the group with diseased or enlarged tonsils, and the correction made for defective tonsils necessarily includes the correction for cases of combination with the other defects mentioned. The correction for adenoids only and that for carious teeth only need, therefore, to be added.

#### **CORRECTED AND SMOOTHED AVERAGES OF STATURE AND WEIGHT.**

In Table XXXI corrected and smoothed averages for stature and weight are given. To the smoothed averages already presented a correction is added to eliminate the effect of the inclusion in the basic tables of children with the three defects mentioned. This table, then, represents average statures and weights of boys and girls under 6 years of age based, as nearly as possible, upon children with no defects or diseases.

TABLE XXXI.—Average statures and weights, by age, from birth to 6 years, smoothed and corrected figures; white children.<sup>1</sup>

Age.	White boys.		White girls.	
	Stature (inches).	Weight (pounds).	Stature (inches).	Weight (pounds).
Under 1 month.....	21.16	9.11	20.89	8.65
1 month, under 2.....	22.47	10.88	21.92	10.14
2 months, under 3.....	23.58	12.61	23.09	11.71
3 months, under 4.....	24.55	14.07	24.00	13.03
4 months, under 5.....	25.38	15.37	24.83	14.25
5 months, under 6.....	26.10	16.50	25.52	15.32
6 months, under 7.....	26.72	17.47	26.15	16.26
7 months, under 8.....	27.27	18.31	26.70	17.09
8 months, under 9.....	27.76	19.04	27.20	17.81
9 months, under 10.....	28.21	19.68	27.66	18.45
10 months, under 11.....	28.64	20.27	28.10	19.03
11 months, under 12.....	29.06	20.81	28.51	19.56
12 months, under 13.....	29.47	21.32	28.91	20.04
13 months, under 14.....	29.87	21.82	29.30	20.51
14 months, under 15.....	30.26	22.31	29.69	20.96
15 months, under 16.....	30.64	22.78	30.08	21.42
16 months, under 17.....	31.02	23.25	30.47	21.88
17 months, under 18.....	31.39	23.72	30.86	22.35
18 months, under 19.....	31.76	24.18	31.24	22.81
19 months, under 20.....	32.11	24.62	31.60	23.26
20 months, under 21.....	32.44	25.04	31.93	23.68
21 months, under 22.....	32.76	25.45	32.24	24.07
22 months, under 23.....	33.06	25.84	32.53	24.45
23 months, under 24.....	33.34	26.21	32.81	24.81
24 months, under 25.....	33.62	26.58	33.09	25.17
25 months, under 26.....	33.89	26.95	33.37	25.54
26 months, under 27.....	34.16	27.31	33.66	25.92
27 months, under 28.....	34.43	27.68	33.95	26.31
28 months, under 29.....	34.71	28.06	34.24	26.70
29 months, under 30.....	34.99	28.45	34.53	27.09
30 months, under 31.....	35.27	28.83	34.82	27.48
31 months, under 32.....	35.54	29.20	35.09	27.85
32 months, under 33.....	35.79	29.56	35.34	28.20
33 months, under 34.....	36.02	29.88	35.58	28.54
34 months, under 35.....	36.24	30.18	35.81	28.88
35 months, under 36.....	36.46	30.47	36.03	29.20
36 months, under 37.....	36.67	30.75	36.25	29.51
37 months, under 38.....	36.89	31.05	36.48	29.82
38 months, under 39.....	37.11	31.36	36.72	30.15
39 months, under 40.....	37.35	31.70	36.97	30.49
40 months, under 41.....	37.58	32.05	37.22	30.83
41 months, under 42.....	37.82	32.41	37.47	31.17
42 months, under 43.....	38.07	32.79	37.72	31.50
43 months, under 44.....	38.31	33.13	37.94	31.81
44 months, under 45.....	38.53	33.45	38.15	32.09
45 months, under 46.....	38.75	33.75	38.36	32.37
46 months, under 47.....	38.94	34.02	38.55	32.64
47 months, under 48.....	39.12	34.26	38.73	32.90
48 months, under 49.....	39.29	34.49	38.93	33.18
49 months, under 50.....	39.46	34.74	39.12	33.46
50 months, under 51.....	39.63	34.98	39.31	33.73
51 months, under 52.....	39.82	35.23	39.52	34.02
52 months, under 53.....	40.01	35.52	39.74	34.36
53 months, under 54.....	40.23	35.83	39.96	34.68
54 months, under 55.....	40.45	36.14	40.19	35.01
55 months, under 56.....	40.67	36.47	40.41	35.34
56 months, under 57.....	40.88	36.81	40.63	35.65
57 months, under 58.....	41.08	37.14	40.84	35.95
58 months, under 59.....	41.27	37.48	41.03	36.25
59 months, under 60.....	41.45	37.80	41.21	36.55
60 months, under 61.....	41.62	38.11	41.39	36.85
61 months, under 62.....	41.80	38.40	41.57	37.14
62 months, under 63.....	41.98	38.68	41.74	37.43
63 months, under 64.....	42.16	38.95	41.91	37.72
64 months, under 65.....	42.36	39.25	42.08	38.00
65 months, under 66.....	42.56	39.56	42.25	38.29
66 months, under 67.....	42.76	39.89	42.43	38.62
67 months, under 68.....	42.96	40.23	42.63	38.94
68 months, under 69.....	43.15	40.59	42.86	39.34
69 months, under 70.....	43.37	40.87	43.08	39.73
70 months, under 71.....	43.53	40.87	43.44	40.37
71 months, under 72.....	43.92	41.60	43.57	40.56

<sup>1</sup> Figures for the first 36 months are the same as in Table I. The figures for ages over 36 months are corrected to show statures and weights of healthy children without defects by using the corrections given in preceding section. The corrections, beginning with 36 months under 37, are for statures +0.00, 0.00, 0.00, 0.01, 0.01, 0.01, 0.02, 0.02, 0.02, 0.03, 0.03, 0.03, 0.04, 0.04, 0.04, and then 0.05 uniformly to 71 months; for weight, +0.00, 0.01, 0.02, 0.03, 0.04, 0.05, 0.06, 0.08, 0.09, 0.10, 0.11, 0.12, 0.13, 0.15, 0.16, 0.17, 0.19, and then 0.20 uniformly to 71 months. For equivalents in centimeters and kilograms see General Table 23, p. 114.



## APPENDIX A.

### EXTRACT FROM "SUGGESTIONS TO EXAMINERS."<sup>1</sup>

#### **Weighing.**

Children under 5 years should be undressed and weighed without clothing, or wrapped in a thin sheet or towel, the weight of which is deducted. Children over 5 years should be weighed in their ordinary indoor clothing. Young babies, unable to stand, should be weighed, if possible, on scales equipped with a scale pan. A fresh paper towel should be laid in the pan and changed after each child is weighed. Where only large platform scales are available, a baby old enough to sit or stand may be set on the platform of the scale, on which is spread a fresh paper towel. If the baby is not old enough to sit alone, an adult holding the baby may be weighed and the weight of the adult deducted.

#### **Measuring.**

All children should be measured without shoes.

To measure children able to stand: If the scales used are equipped with a measuring apparatus it should be used. Where this is not available, the child should be asked to stand against the wall with the heels and the back of the head touching the wall. His height is obtained by holding a book or small box horizontally on top of his head against the wall and measuring the space between the bottom of the book or the box and the floor. A convenient method is to tack a tape measure perpendicularly on the wall, beginning at the floor, and to measure by this.

To measure babies unable to stand: An apparatus for measuring babies and young children may be made by nailing a headboard firmly across one end of the examination table. To this board attach one end of a linen tape measure and secure the other end firmly across the sheet which covers the table. Provide also a book end—one of the cheap, enameled kind sold for office use. The length of the baby may be quickly and accurately found by laying him upon the examination table, directly over the tape measure, with his head resting firmly against the headboard. Be sure that the baby is lying flat on the table, completely relaxed. The legs must not be bent at the hips or knees. Press the enameled book end squarely against the feet and read his length as indicated upon the tape measure. More elaborate types of apparatus on the same principle have been devised and are used in the same way. A baby may also be measured by laying him on a table and measuring between two books held one at the head and the other at the feet.

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<sup>1</sup>April and May Weighing and Measuring Test. Part 2, Suggestions to Examiners, Children's Bureau Leaflet No. 2, Part 2. Bureau Publication No. 38.



## APPENDIX B.

### ACCURACY OF MATERIAL.

The subject of the accuracy of the material is important. With material collected from many physicians all over the country, and with probably considerable variation in the methods of weighing and measuring employed, it is necessary to know within what limits the material may be considered as accurate.

Some light can be thrown upon the accuracy of the material by an analysis of the units in which heights and weights were reported. In Appendix Tables 1 and 2 the different sections of the country and the white and Negro races are compared, in regard to the units of heights and weights used, on the basis of samples of at least 4,000 measurements for each section or race group considered. It appears that height was reported for about one-twelfth of the total white children in eighths of inches; for about two-fifths either in quarters or in eighths of inches, for two-fifths more in half inches only, and for about one-sixth to the nearest inch.

The white children were measured with a considerably greater degree of accuracy than the Negro children. The heights of only one-twentieth of the Negro children were reported in eighths of inches, and those of only about one-third in either quarters or eighths of inches. Between one-fourth and one-fifth of the records of heights of Negro children were made to the nearest inch.

The different sections show approximately the same degree of accuracy in reports of the heights of white children. California has the largest proportion of cases reported in eighths of inches, followed by the East North-Central division. The Western section has the smallest proportion reported in even inches, again followed by the East North-Central division.

In regard to weights, approximately one-fifth of the white children had their weights reported in ounces, nearly one-half either in ounces or quarter pounds, somewhat less than one-third in half pounds, and nearly one-fourth in even pounds. The reporting of weights for Negro children appears to have been somewhat more carefully done than for white children.

As in the case of height, there is comparatively little difference in the accuracy with which the weights of white children were reported in the different sections. The New England and Middle Atlantic States show the highest proportion reported in ounces, followed closely by the Western section. The Southern section had the highest proportion reported in even pounds, followed closely by California.

It should be borne in mind, however, in interpreting these figures, that the use of a comparatively coarse instead of a fine unit in entering the measurements may not affect the accuracy of the final results. Thus, if the heights of 1,000 children were reported in eighths of inches, and tabulated first in eighths of inches, as reported, and then tabulated a second time, grouping heights to the nearest inch, the resulting averages would be substantially the same. The only difference in the results would be due to an unequal distribution of the occurrence of fractional eighths of inches. If the fractional eighths of inches were distributed uniformly above and below the even inches, the resulting averages would be identical. The figures, however, do give an indication of the general care with which heights and weights were secured; and, other things being equal, a measurement that permits of a statement in eighths of inches is more likely to be accurate and carefully made than a measurement which is roughly entered in inches or pounds.

Besides the fineness of the unit used in reporting heights and weights another factor which affects the accuracy of the material is the reporting of age. Obviously errors in age would affect the accuracy of both heights and weights in relation to age. The age was secured in all cases by subtracting the date of birth, as entered on the children's year cards, from the date of examination, as reported by the examining physician. There were, therefore, no chances of error through reporting age in even years, except that in cases where a rough statement of age was given by the mother the date of birth might have been estimated from the date of examination. Such statements of age, if inexact, would ordinarily be concentrated on even years. In these cases where the date of birth was estimated by subtracting even years from the date of examination, the month and day of the birth date would be identical with the month and day of the examination date. A study was therefore made of a sample of 608 records selected at random in which the age was 12, 24, 36, 48, or 60 months to determine the proportion of cases where the day of the month was identical in the two dates. It was found that instead of the 20 expected on the basis of chance, there were actually 43 cases where the month and the day of the month were identical. There appears, therefore, to be a tendency toward concentration, but the tendency is slight, the excess concentration constituting perhaps 4 per cent of the total number reported at these ages.

A result of a tendency toward concentration would be that the groups of children whose ages were classified under the months corresponding to even years would contain some who were actually a few months older and others who were a few months younger than stated. As a result the heights and weights of these children would vary more than the heights and weights of children whose ages were exactly

stated. Such a tendency, therefore, in reporting of age would appear in the measures of variability of children at exactly even years of age. The tables, however, show that the standard deviation does not exhibit any marked tendency for the variability to increase at 12 months, 24 months, 36 months, 48 months, or 60 months. It may fairly be inferred, therefore, that the reporting of age was on the whole accurate. It may be pointed out, moreover, that even if a concentration at the even years appeared, if it was due to overstatement and to understatement of age in equal proportions, it would probably not affect materially the average heights and weights.

TABLE I.—Accuracy of reporting of heights, by sections, and by race.

Section.	Total.	Children whose heights were reported in <sup>1</sup> —							
		Eighth inches.		Quarter inches.		Half inches.		Inches.	
		Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.
White.....	26, 273	2, 198	8. 4	9, 035	34. 4	10, 599	40. 3	4, 441	16. 9
New England and Mid- dle Atlantic.....	4, 505	238	5. 3	1, 657	36. 8	1, 720	38. 2	890	19. 8
Southern section.....	4, 568	312	6. 8	1, 486	32. 5	1, 955	42. 8	815	17. 8
East North-Central.....	4, 302	440	10. 2	1, 404	32. 6	1, 804	41. 9	654	15. 2
Iowa.....	4, 335	360	8. 3	1, 610	37. 1	1, 691	39. 0	674	15. 5
Western section.....	4, 252	370	8. 7	1, 497	35. 2	1, 749	41. 1	636	15. 0
California.....	4, 311	478	11. 1	1, 381	32. 0	1, 680	39. 0	772	17. 9
Negro, all sections.....	4, 976	270	5. 4	1, 273	25. 6	2, 286	45. 9	1, 147	23. 1

<sup>1</sup> Estimated from distribution measurements according to fractional parts of inches.

TABLE 2.—Accuracy of reporting of weights, by sections, and by race.

Section.	Total.	Children whose weights were reported in <sup>1</sup> —							
		Ounces.		Quarter pounds.		Half pounds.		Pounds.	
		Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.	Num-ber.	Per-cent.
White.....	26, 273	5, 016	19. 1	7, 473	28. 4	7, 692	29. 3	6, 092	23. 2
New England and Mid- dle Atlantic.....	4, 505	937	20. 8	1, 326	29. 4	1, 320	29. 3	922	20. 5
Southern section.....	4, 568	716	15. 7	1, 175	25. 7	1, 493	32. 7	1, 184	25. 9
East North-Central.....	4, 302	852	19. 8	1, 185	27. 5	1, 297	30. 1	968	22. 5
Iowa.....	4, 335	818	18. 9	1, 433	33. 1	1, 213	28. 0	871	20. 1
Western section.....	4, 252	880	20. 7	1, 314	30. 9	1, 007	23. 7	1, 051	24. 7
California.....	4, 311	813	18. 9	1, 040	24. 1	1, 362	31. 6	1, 096	25. 4
Negro, all sections.....	4, 976	1, 547	31. 1	1, 073	21. 6	1, 146	23. 0	1, 210	24. 3

<sup>1</sup> Estimated from distribution of weights according to ounces.

## APPENDIX C.

### PROBABLE ERRORS OF AVERAGES.

It is a well-known fact that averages for different groups of children aged 6 months, for example, are not always exactly the same, but vary slightly because of the inclusion of particular individuals in the different groups. This variation between averages occurs without any conscious or biased selection, and even where there is only a chance selection of cases. Obviously, other things being equal, the larger the number of children in a group the less influence upon the average will be exerted by the chance inclusion of a child of extreme stature or weight.

The meaning of the term "probable error of an average" may best be explained in terms of the standard deviation. As explained in the text, the standard deviation shows the variability of the measurements about an average. Similarly, the standard deviation of an average shows the variability of a number of averages about a central average. The standard deviation of an average can be calculated directly from the standard deviation of the individual measurements by dividing it by the square root of the number of measurements upon which the average is based.

The interpretation of the standard deviation of the average follows the same terms as the interpretation of the standard deviation of the individual measurements. As the standard deviation of statures or weights gives a statement of the number of inches or pounds above or below the average within which roughly two-thirds of the measurements will be found to lie, so the standard deviation of an average of stature or weight gives a statement of the number of inches or pounds above or below a central average within which roughly two-thirds of a series of averages, each based upon the same number of cases, would be found to lie.

The "probable error," or, perhaps better, the probable deviation, is a technical term with a special meaning. The probable error is equal to the standard deviation times 0.6745. The word "probable" is used to mean that it is equally probable that a measurement will fall inside or outside the limits of the probable error from the average. "Error" is a term borrowed from the early application of the normal or Gaussian curve to a study of the distribution of errors of measurement.

The probable error, then, affords a measure of the influence of chance errors, or of a chance selection of cases upon the average. Since



variations due to chance errors or to a chance selection of cases rarely exceed five or six times the probable error, it affords a measure also of the extreme range of error in an average due to chance. Five or six times the probable error may, therefore, be taken as the extreme range of error in an average which may be due to chance or random sampling from a large group.

The larger the group in the sample the smaller the probable error. At 6 months of age, for example, the probable error of the average weight for the group of 1912 boys included in the table is found to be plus or minus 0.04 pounds. The maximum error in this average due to chance would, therefore, probably not exceed six times this figure, or a quarter of a pound. If the group had included only one-fourth this number of cases, the probable error of the average would have been twice as large or, in other words, the maximum error in the average due to chance would probably not have exceeded half a pound.

It should be specially emphasized that, as the standard deviation of the individual measurements does not reflect errors of measurement but merely variations in individuals, so the "probable error of an average"—0.6745 times the standard deviation of the average—does not afford any indication of errors in an average due to a definite bias. It merely measures variability in an average due to chance selection of cases. Errors due to the inclusion of weights of clothing to a biased selection of nationalities characterized by short or tall stature, or to fundamental biased errors in measurement are not indicated in the "probable error."



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## GENERAL TABLES.

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## GENERAL TABLES.

TABLE 1.—Average statures and weights in centimeters and kilograms by sex, from birth to 6 years; smoothed figures; white children.

Age.	White boys.		White girls.	
	Average stature (centimeters).	Average weight (kilograms).	Average stature (centimeters).	Average weight (kilograms).
Under 1 month.....	53.7	4.13	53.1	3.92
1 month, under 2.....	57.1	4.94	55.7	4.60
2 months, under 3.....	59.9	5.72	58.6	5.31
3 months, under 4.....	62.4	6.38	61.0	5.91
4 months, under 5.....	64.5	6.97	63.1	6.46
5 months, under 6.....	66.3	7.39	64.8	6.95
6 months, under 7.....	67.9	7.92	66.4	7.38
7 months, under 8.....	69.3	8.31	67.8	7.75
8 months, under 9.....	70.5	8.64	69.1	8.08
9 months, under 10.....	71.7	8.93	70.3	8.37
10 months, under 11.....	72.8	9.19	71.4	8.63
11 months, under 12.....	73.8	9.44	72.4	8.87
12 months, under 13.....	74.9	9.67	73.4	9.09
13 months, under 14.....	75.9	9.90	74.4	9.30
14 months, under 15.....	76.9	10.12	75.4	9.51
15 months, under 16.....	77.8	10.33	76.4	9.72
16 months, under 17.....	78.8	10.55	77.4	9.92
17 months, under 18.....	79.7	10.76	78.4	10.14
18 months, under 19.....	80.7	10.97	79.3	10.35
19 months, under 20.....	81.6	11.17	80.3	10.55
20 months, under 21.....	82.4	11.36	81.1	10.74
21 months, under 22.....	83.2	11.54	81.9	10.92
22 months, under 23.....	84.0	11.72	82.6	11.09
23 months, under 24.....	84.7	11.89	83.3	11.25
24 months, under 25.....	85.4	12.06	84.0	11.42
25 months, under 26.....	86.1	12.22	84.8	11.58
26 months, under 27.....	86.8	12.39	85.5	11.76
27 months, under 28.....	87.5	12.56	86.2	11.93
28 months, under 29.....	88.2	12.73	87.0	12.11
29 months, under 30.....	88.9	12.90	87.7	12.29
30 months, under 31.....	89.6	13.08	88.4	12.46
31 months, under 32.....	90.3	13.24	89.1	12.63
32 months, under 33.....	90.9	13.41	89.8	12.79
33 months, under 34.....	91.5	13.55	90.4	12.95
34 months, under 35.....	92.0	13.69	91.0	13.10
35 months, under 36.....	92.6	13.82	91.5	13.24
36 months, under 37.....	93.2	13.95	92.1	13.39
37 months, under 38.....	93.7	14.08	92.7	13.53
38 months, under 39.....	94.3	14.22	93.3	13.67
39 months, under 40.....	94.8	14.37	93.9	13.82
40 months, under 41.....	95.4	14.52	94.5	13.97
41 months, under 42.....	96.0	14.68	95.1	14.12
42 months, under 43.....	96.6	14.84	95.8	14.26
43 months, under 44.....	97.3	14.99	96.3	14.39
44 months, under 45.....	97.8	15.13	96.9	14.51
45 months, under 46.....	98.3	15.26	97.4	14.64
46 months, under 47.....	98.8	15.38	97.8	14.76
47 months, under 48.....	99.3	15.49	98.3	14.87
48 months, under 49.....	99.7	15.59	98.8	14.99
49 months, under 50.....	100.1	15.69	99.3	15.11
50 months, under 51.....	100.6	15.79	99.7	15.23
51 months, under 52.....	101.0	15.90	100.3	15.35
52 months, under 53.....	101.5	16.03	100.8	15.50
53 months, under 54.....	102.1	16.16	101.4	15.64
54 months, under 55.....	102.6	16.30	102.0	15.79
55 months, under 56.....	103.2	16.45	102.5	15.94
56 months, under 57.....	103.7	16.61	103.1	16.08
57 months, under 58.....	104.2	16.76	103.6	16.22
58 months, under 59.....	104.7	16.91	104.1	16.35
59 months, under 60.....	105.2	17.05	104.5	16.49
60 months, under 61.....	105.6	17.20	105.0	16.62
61 months, under 62.....	106.0	17.33	105.5	16.76
62 months, under 63.....	106.5	17.45	105.9	16.89
63 months, under 64.....	107.0	17.58	106.3	17.02
64 months, under 65.....	107.5	17.71	106.8	17.15
65 months, under 66.....	108.0	17.85	107.2	17.28
66 months, under 67.....	108.5	18.00	107.6	17.43
67 months, under 68.....	109.0	18.16	108.2	17.57
68 months, under 69.....	109.5	18.32	108.7	17.75
69 months, under 70.....	110.0	18.47	109.3	17.93
70 months, under 71.....	110.4	18.67	110.2	18.22
71 months, under 72.....	111.4	18.78	110.5	18.31

TABLE 2.—Average statures and weights, in centimeters and kilograms, by sex, from birth to 6 years; after original data; white children.

Age.	White boys.			White girls.		
	Number.	Average stature (centimeters).	Average weight (kilograms).	Number.	Average stature (centimeters).	Average weight (kilograms).
Under 1 month.....	595	53.7	4.13	543	53.1	3.92
1 month, under 2.....	1,431	57.1	4.93	1,360	55.7	4.60
2 months, under 3.....	1,754	59.9	5.72	1,631	58.6	5.31
3 months, under 4.....	1,826	62.3	6.40	1,835	60.9	5.92
4 months, under 5.....	1,863	64.4	6.95	1,791	62.8	6.48
5 months, under 6.....	1,809	66.2	7.52	1,701	64.5	6.98
6 months, under 7.....	1,912	67.8	7.95	1,816	66.2	7.37
7 months, under 8.....	1,851	69.1	8.30	1,800	67.5	7.76
8 months, under 9.....	1,746	70.1	8.60	1,773	68.6	8.05
9 months, under 10.....	1,860	71.2	8.82	1,773	69.7	8.31
10 months, under 11.....	1,814	72.3	9.13	1,814	70.9	8.59
11 months, under 12.....	1,838	73.4	9.38	1,656	72.0	8.84
12 months, under 13.....	1,575	74.6	9.61	1,407	72.9	9.01
13 months, under 14.....	1,364	75.5	9.83	1,293	74.1	9.26
14 months, under 15.....	1,281	76.6	10.08	1,285	74.9	9.40
15 months, under 16.....	1,328	77.3	10.18	1,275	75.9	9.62
16 months, under 17.....	1,216	78.5	10.45	1,295	76.8	9.79
17 months, under 18.....	1,278	79.4	10.71	1,179	78.0	10.08
18 months, under 19.....	1,289	80.7	10.95	1,268	79.3	10.33
19 months, under 20.....	1,206	81.6	11.19	1,266	80.1	10.53
20 months, under 21.....	1,171	82.1	11.24	1,156	81.0	10.72
21 months, under 22.....	1,242	82.9	11.47	1,192	81.6	10.85
22 months, under 23.....	1,300	83.9	11.73	1,163	82.2	11.04
23 months, under 24.....	1,284	84.4	11.80	1,208	83.0	11.19
24 months, under 25.....	1,354	85.4	12.01	1,276	83.8	11.38
25 months, under 26.....	1,272	86.1	12.26	1,192	84.4	11.52
26 months, under 27.....	1,253	86.6	12.32	1,249	85.3	11.69
27 months, under 28.....	1,269	87.2	12.49	1,182	85.8	11.85
28 months, under 29.....	1,321	87.7	12.63	1,232	86.5	12.06
29 months, under 30.....	1,240	88.8	12.88	1,184	87.6	12.24
30 months, under 31.....	1,205	89.7	13.12	1,167	88.4	12.45
31 months, under 32.....	1,201	90.4	13.23	1,210	89.3	12.67
32 months, under 33.....	1,217	91.1	13.46	1,142	89.5	12.73
33 months, under 34.....	1,241	91.5	13.55	1,264	90.1	12.87
34 months, under 35.....	1,311	91.8	13.67	1,219	90.9	13.10
35 months, under 36.....	1,283	92.7	13.83	1,188	91.2	13.22
36 months, under 37.....	1,258	93.1	13.96	1,204	92.0	13.40
37 months, under 38.....	1,176	93.7	14.05	1,133	92.4	13.50
38 months, under 39.....	1,171	94.2	14.16	1,124	93.0	13.59
39 months, under 40.....	1,177	94.8	14.35	1,164	93.7	13.79
40 months, under 41.....	1,167	95.4	14.49	1,152	94.1	13.89
41 months, under 42.....	1,188	96.1	14.72	1,201	95.1	14.12
42 months, under 43.....	1,126	96.7	14.86	1,103	96.0	14.31
43 months, under 44.....	1,198	97.5	15.06	1,116	96.3	14.47
44 months, under 45.....	1,164	98.1	15.12	1,167	96.8	14.43
45 months, under 46.....	1,205	98.7	15.36	1,195	97.3	14.62
46 months, under 47.....	1,203	99.0	15.47	1,236	97.8	14.75
47 months, under 48.....	1,236	99.6	15.52	1,193	98.0	14.81
48 months, under 49.....	1,171	99.6	15.59	1,269	99.0	15.06
49 months, under 50.....	1,104	100.4	15.71	1,088	99.4	15.11
50 months, under 51.....	1,127	100.8	15.86	1,137	99.8	15.21
51 months, under 52.....	1,075	101.1	15.92	1,114	99.9	15.28
52 months, under 53.....	1,171	101.4	16.00	1,154	100.6	15.48
53 months, under 54.....	1,068	102.2	16.23	1,161	101.4	15.62
54 months, under 55.....	1,040	102.8	16.34	1,048	102.1	15.78
55 months, under 56.....	1,025	103.5	16.50	1,010	102.6	16.05
56 months, under 57.....	1,028	104.1	16.72	995	103.3	16.17
57 months, under 58.....	1,081	104.7	16.80	984	103.5	16.11
58 months, under 59.....	1,052	104.8	16.99	1,016	104.3	16.38
59 months, under 60.....	1,028	105.4	17.13	1,045	104.4	16.48
60 months, under 61.....	624	105.7	17.23	634	105.1	16.67
61 months, under 62.....	582	106.6	17.47	540	105.9	16.93
62 months, under 63.....	527	106.9	17.72	572	105.8	16.78
63 months, under 64.....	499	106.8	17.52	513	106.5	17.05
64 months, under 65.....	508	107.5	17.74	478	106.6	17.16
65 months, under 66.....	492	108.2	17.84	480	107.4	17.21
66 months, under 67.....	405	109.0	18.10	471	107.8	17.54
67 months, under 68.....	404	109.8	18.45	415	108.2	17.38
68 months, under 69.....	433	109.7	18.47	402	108.5	17.60
69 months, under 70.....	385	110.0	18.47	379	109.3	17.93
70 months, under 71.....	380	110.4	18.67	409	110.2	18.22
71 months, under 72.....	368	111.4	18.78	366	110.5	18.31

TABLE 3.—Stature and age; white boys.

Age.	White boys.																			
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																	
			16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
At birth.....	62	20.952			2	6	23	11	9	5	5	1								
Under 1 month.....	533	21.180																		
1 month, under 2.....	1,431	22.469	1	6	15	26	89	189	133	54	16	1	1	1						
2 months, under 3.....	1,754	23.575			6	15	72	193	432	425	226	52	7	2	1					
3 months, under 4.....	1,826	24.531			2	4	15	61	230	475	592	305	56	9	4	1				
4 months, under 5.....	1,865	25.354					7	24	68	235	543	588	258	82	16	3	2			
5 months, under 6.....	1,809	26.077						5	23	95	313	573	562	225	45	12	3	7		
6 months, under 7.....	1,912	26.677						2	6	33	163	394	581	422	137	30	17	10	10	
									4	15	69	245	565	595	273	72	29	18	14	4
																				13

Age.	White boys.																			
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																	
			21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
7 months, under 8.....	1,851	27.205			2	29	164	403	567	430	138	44	27	26	17	4				
8 months, under 9.....	1,746	27.592			5	13	79	267	498	509	245	64	23	28	10	5				
9 months, under 10.....	1,860	28.022			1	12	44	156	447	600	370	157	27	19	21	4	2			
10 months, under 11.....	1,814	28.467			2	2	27	96	297	529	520	210	74	33	12	4				
11 months, under 12.....	1,838	28.910	1		2	2	10	45	178	469	565	364	145	34	14	5	1	3		
12 months, under 13.....	1,575	29.359			1	1	5	26	86	281	473	420	186	68	16	7	3	1	3	
13 months, under 14.....	1,364	29.732			2	1	1	11	47	185	320	430	252	82	21	8	3	1	1	
14 months, under 15.....	1,281	30.151					2		7	25	103	236	399	337	124	31	16			
																				1

<sup>1</sup> Statures are classified to the nearest inch; cases falling on the dividing line between classes were divided equally and half classed with the unit above and half with the unit below.



TABLE 3.—*Stature and age; white boys—Continued.*

Age.	White boys.																				
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																		
			23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
15 months, under 16 .....	1,328	30.425	.....	2	.....	9	10	74	206	385	392	170	60	17	2	1	.....	.....	.....	.....	
16 months, under 17 .....	1,216	30.886	.....	2	4	2	4	43	145	273	366	223	100	33	12	8	.....	1	.....	.....	
17 months, under 18 .....	1,278	31.261	.....	1	1	3	13	27	85	250	360	302	149	53	18	12	4	.....	.....	.....	
18 months, under 19 .....	1,289	31.766	.....	.....	1	8	5	18	56	166	330	338	188	97	46	23	11	1	1	.....	
19 months, under 20 .....	1,206	32.124	.....	.....	1	1	2	8	37	116	269	333	232	115	44	30	11	3	3	1	
20 months, under 21 .....	1,171	32.339	.....	.....	.....	3	1	6	26	89	225	327	241	155	53	22	13	8	2	.....	
21 months, under 22 .....	1,242	32.645	.....	.....	.....	.....	1	3	18	75	203	292	321	191	78	35	12	7	3	2	
22 months, under 23 .....	1,300	33.049	.....	.....	.....	.....	4	3	8	49	144	273	340	267	115	68	16	6	2	4	
																					1

Age.	White boys.																				
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																		
			26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
23 months, under 24 .....	1,284	33.231	.....	1	1	13	27	116	242	358	286	152	56	17	7	4	2	2	.....	.....	
24 months, under 25 .....	1,354	33.604	.....	.....	2	7	22	79	209	334	345	216	95	21	12	7	2	.....	3	.....	
25 months, under 26 .....	1,272	33.897	.....	1	1	1	13	53	145	280	377	235	106	34	18	5	.....	2	1	.....	
26 months, under 27 .....	1,253	34.077	.....	1	.....	1	5	10	39	135	257	337	244	146	46	22	5	2	3	.....	
27 months, under 28 .....	1,269	34.350	.....	1	.....	4	12	37	93	213	298	334	180	67	21	7	.....	1	1	.....	
28 months, under 29 .....	1,321	34.546	.....	1	1	3	10	29	67	199	341	323	220	83	28	13	2	.....	1	.....	
29 months, under 30 .....	1,240	34.947	.....	.....	1	1	6	22	52	150	250	324	234	117	46	26	7	2	2	.....	
30 months, under 31 .....	1,205	35.308	.....	.....	.....	1	6	9	44	108	200	317	258	140	67	37	10	4	3	.....	
																					1

Age.	White boys.																				
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																		
			28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
31 months, under 32.....	1,201	35.601	2	.....	3	12	26	75	192	285	270	180	82	49	10	9	5	1	.....	.....	.....
32 months, under 33.....	1,217	35.849	.....	1	.....	8	22	65	174	238	304	217	107	45	23	8	1	4	.....	.....	.....
33 months, under 34.....	1,241	36.032	.....	.....	2	2	18	47	146	263	298	234	146	56	16	7	5	1	.....	.....	.....
34 months, under 35.....	1,311	36.156	1	1	3	4	7	45	133	244	358	265	150	57	27	11	4	1	.....	.....	.....
35 months, under 36.....	1,283	36.482	.....	1	2	2	7	38	88	216	287	311	209	68	37	8	6	2	.....	.....	1
36 months, under 37.....	1,258	36.672	.....	.....	2	6	2	24	73	178	297	325	189	101	39	12	4	4	1	.....	1
37 months, under 38.....	1,176	36.901	.....	.....	1	1	4	19	57	133	265	269	250	120	36	13	6	1	.....	.....	1
38 months, under 39.....	1,171	37.095	.....	.....	1	1	8	15	43	102	247	283	268	117	55	24	4	1	1	.....	.....

Age.	White boys.																							
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																					
			29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	
39 months, under 40...	1,177	37.310	1	2	1	1	10	54	90	201	267	259	188	76	21	3	2	1	.....	.....	.....	.....	.....	.....
40 months, under 41...	1,167	37.542	.....	1	.....	3	7	33	70	195	258	274	194	92	24	15	.....	1	.....	.....	.....	.....	.....	.....
41 months, under 42...	1,188	37.833	.....	.....	2	3	4	23	56	168	243	290	203	126	50	15	3	1	.....	.....	.....	.....	.....	.....
42 months, under 43...	1,126	38.089	.....	.....	.....	3	6	17	64	128	196	251	225	135	61	23	13	3	1	.....	.....	.....	.....	.....
43 months, under 44...	1,198	38.376	.....	1	1	.....	6	15	42	104	217	262	235	172	77	43	15	7	1	.....	.....	.....	.....	.....
44 months, under 45...	1,164	38.606	.....	1	1	1	2	5	34	88	176	247	275	166	88	64	13	3	.....	.....	.....	.....	.....	.....
45 months, under 46...	1,205	38.871	.....	.....	.....	2	.....	13	26	76	157	230	281	200	120	58	31	9	1	.....	.....	.....	1	.....
46 months, under 47...	1,203	38.977	.....	1	1	1	3	9	27	59	125	228	276	258	129	55	19	8	3	1	.....	.....	.....	.....

<sup>1</sup> Statures are classified to the nearest inch; cases falling on the dividing line between classes were divided equally and half classed with the unit above and half with the unit below.

TABLE 3.—Stature and age; white boys—Concluded.

Age.	White boys.																			
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																	
			30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
47 months, under 48.....	1, 236	39. 194	.....	1	1	2	7	19	56	117	217	279	251	168	82	23	7	5	1	.....
48 months, under 49.....	1, 171	39. 210	1	4	1	3	4	15	44	101	199	292	241	167	67	19	7	5	.....	1
49 months, under 50.....	1, 104	39. 511	1	1	1	1	6	11	33	79	172	239	232	175	110	33	8	1	1	.....
50 months, under 51.....	1, 127	39. 689	.....	1	.....	3	3	10	35	74	158	224	240	202	112	44	15	5	.....	1
51 months, under 52.....	1, 075	39. 807	.....	2	2	2	2	9	21	58	149	204	256	186	112	46	20	6	.....	.....
52 months, under 53.....	1, 171	39. 907	.....	1	.....	2	6	8	35	67	144	205	239	235	133	67	24	4	1	.....
53 months, under 54.....	1, 068	40. 252	.....	.....	1	2	.....	10	22	50	90	182	229	206	162	68	30	11	3	2
54 months, under 55.....	1, 040	40. 471	1	.....	2	.....	3	5	9	39	89	155	231	200	165	86	30	16	7	1

Age.	White boys.																			
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																	
			31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
55 months, under 56.....	1, 025	40. 763	1	2	2	1	7	7	28	65	121	207	233	178	99	48	14	8	3	1
56 months, under 57.....	1, 028	40. 972	.....	.....	.....	1	2	10	30	63	121	175	216	192	124	56	34	2	2	.....
57 months, under 58.....	1, 081	41. 207	.....	1	.....	.....	1	10	18	50	123	172	237	211	134	70	36	13	4	1
58 months, under 59.....	1, 052	41. 271	.....	.....	.....	2	2	12	21	44	99	149	227	238	131	89	28	6	3	1
59 months, under 60.....	1, 028	41. 490	.....	.....	1	.....	1	9	27	33	79	148	194	222	157	110	31	12	3	1
60 months, under 61.....	624	41. 604	.....	1	.....	.....	3	1	12	16	45	86	137	117	110	57	26	10	2	1
61 months, under 62.....	582	41. 959	.....	.....	.....	.....	.....	1	4	15	22	69	130	123	109	61	30	15	3	.....
62 months, under 63.....	527	42. 102	.....	.....	1	1	.....	.....	2	18	28	65	91	97	97	67	30	17	9	4

Age.	White boys.																				
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																		
			31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
63 months, under 64.....	499	42. 046	1	.....	.....	.....	.....	6	15	28	51	85	107	96	64	27	11	3	4	1	.....
64 months, under 65.....	508	42. 339	.....	.....	.....	1	1	6	7	21	46	75	108	104	73	38	21	3	3	.....	1
65 months, under 66.....	492	42. 593	.....	.....	2	1	1	1	6	15	46	73	83	103	86	35	28	8	1	2	.....
66 months, under 67.....	405	42. 928	1	.....	.....	.....	.....	1	2	5	9	30	49	64	72	85	47	26	12	2	.....
67 months, under 68.....	404	43. 223	.....	.....	.....	.....	.....	.....	1	6	24	47	62	76	98	46	29	10	2	1	.....
68 months, under 69.....	433	43. 196	.....	.....	.....	.....	1	2	5	7	19	39	82	80	87	65	29	15	2	.....	
69 months, under 70.....	385	43. 317	.....	.....	.....	.....	.....	2	1	8	18	32	59	86	80	54	30	8	4	3	.....
70 months, under 71.....	380	43. 484	.....	.....	1	1	1	3	6	7	16	33	44	72	68	57	40	19	8	4	.....

Age.	White boys.																		
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																
			33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
71 months, under 72.....	368	43.870					1	3	4	7	18	52	68	85	63	31	22	10	4
72 months, under 73.....	151	43.121					2			7	14	19	27	27	26	11	14	3	1
73 months, under 74.....	98	43.388	1			1	3	3		6	6	13	12	17	14	10	5	6	1
74 months, under 75.....	85	43.812		1			1			2	7	9	15	14	16	10	5	3	1
75 months, under 76.....	79	43.911						1	1	3	7	10	10	14	14	10	4	4	1
76 months, under 77.....	68	43.721					1		1	2	6	9	11	18	6	6	4	2	2
77 months, under 78.....	55	44.491								1	1	6	5	15	15	5	4	1	2
78 months, under 79.....	37	43.865								1	2	9	4	8	5	4	2	2	.....

Age.	White boys.																		
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																
			35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
79 months, under 80.....	44	44.227	1				1			3	4	10	9	3	7	1	1		
80 months, under 81.....	24	44.792									3	5	3	6	1	4		2	
81 months, under 82.....	32	45.375									3	2	3	9	8	2	4	1	
82 months, under 83.....	25	45.000					1				2	2	4	5	5	1	2		1
83 months, under 84.....	31	45.355								1	2		4	10	5	7	2		1

<sup>1</sup> Statures are classified to the nearest inch; cases falling on the dividing line between classes were divided equally and half classed with the unit above and half with the unit below.





Age.	White girls.																			
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																	
			23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
15 months, under 16.....	1,275	29.880	.....	1	2	2	35	156	290	406	258	88	20	11	2	.....	2	2	.....	.....
16 months, under 17.....	1,295	30.217	.....	2	2	12	23	92	227	401	346	136	30	13	3	2	4	2	.....	.....
17 months, under 18.....	1,179	30.712	.....	1	3	6	12	45	162	293	354	175	75	34	10	6	3	.....	.....	.....
18 months, under 19.....	1,268	31.202	.....	2	3	3	2	29	124	256	370	258	110	54	31	18	8	.....	.....	.....
19 months, under 20.....	1,266	31.547	.....	.....	.....	4	9	24	85	190	352	296	147	85	49	17	1	7	.....	.....
20 months, under 21.....	1,156	31.879	.....	.....	2	2	2	4	50	162	273	311	187	82	39	29	7	3	2	1
21 months, under 22.....	1,192	32.119	.....	.....	.....	.....	7	6	42	107	252	334	231	129	52	19	8	3	1	1
22 months, under 23.....	1,163	32.362	.....	.....	.....	.....	.....	7	26	89	215	322	263	133	67	24	11	4	1	1

Age.	White girls.																						
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																				
			23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
23 months, under 24..	1,208	32.682	.....	.....	.....	.....	3	4	15	59	168	310	323	203	75	26	13	3	4	1	1	.....	.....
24 months, under 25..	1,276	32.994	.....	.....	.....	.....	.....	3	7	50	135	289	341	272	107	43	19	8	1	1	.....	.....	.....
25 months, under 26..	1,192	33.222	.....	.....	1	.....	.....	2	8	24	103	245	312	268	150	57	15	5	1	1	.....	.....	.....
26 months, under 27..	1,249	33.570	.....	.....	.....	.....	.....	1	6	15	72	187	318	337	204	82	18	3	5	.....	.....	1	.....
27 months, under 28..	1,182	33.783	.....	.....	.....	.....	1	1	7	13	63	150	259	321	212	103	39	11	1	.....	.....	1	.....
28 months, under 29..	1,232	34.058	.....	.....	.....	.....	2	1	6	16	54	109	235	331	267	134	54	14	7	1	1	.....	.....
29 months, under 30..	1,184	34.481	.....	.....	2	.....	.....	4	2	12	27	75	196	280	273	188	74	28	15	6	.....	1	.....
30 months, under 31..	1,167	34.789	.....	.....	.....	.....	.....	1	3	7	23	59	141	274	282	219	98	31	21	4	2	1	1

<sup>1</sup> Statures are classified to the nearest inch; cases falling on the dividing line between classes were divided equally and half classed with the unit above and half with the unit below.

TABLE 4.—*Stature and age, white girls—Continued.*

Age.	White girls.																				
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																		
			28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
31 months, under 32.....	1,210	35.150	2	1	6	13	46	126	240	297	228	145	63	28	5	3	5	1	1	.....	.....
32 months, under 33.....	1,142	35.228	.....	.....	4	10	43	122	220	275	215	147	53	32	12	7	1	1	.....	.....	.....
33 months, under 34.....	1,264	35.478	2	1	4	7	29	97	195	321	300	166	88	32	12	7	2	1	.....	.....	.....
34 months, under 35.....	1,219	35.801	1	.....	3	3	14	61	173	284	295	224	92	40	17	7	2	2	.....	.....	1
35 months, under 36.....	1,188	35.920	.....	.....	6	6	15	52	148	235	317	212	126	43	21	3	2	2	.....	.....	.....
36 months, under 37.....	1,204	36.208	.....	.....	1	5	13	41	125	221	274	270	151	70	25	4	3	1	.....	.....	.....
37 months, under 38.....	1,133	36.397	.....	.....	2	6	10	34	88	192	245	276	167	76	27	4	6	.....	.....	.....	.....
38 months, under 39.....	1,124	36.626	.....	.....	1	3	7	27	65	167	262	261	191	95	33	6	3	1	2	.....	.....

Age.	White girls.																			
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																	
			29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
39 months, under 40.....	1,164	36.891	.....	2	4	6	14	58	136	251	292	220	111	46	11	10	2	.....	1	.....
40 months, under 41.....	1,152	37.053	1	3	2	7	16	51	97	261	266	228	128	58	21	12	.....	1	.....	.....
41 months, under 42.....	1,201	37.453	1	3	4	8	14	36	94	185	264	255	191	84	40	12	6	3	1	.....
42 months, under 43.....	1,103	37.802	.....	.....	1	2	9	26	70	144	229	244	193	117	38	18	10	1	.....	1
43 months, under 44.....	1,116	37.932	1	.....	2	1	7	22	59	143	223	246	193	121	60	29	7	1	.....	.....
44 months, under 45.....	1,167	38.118	.....	.....	1	.....	4	2	13	63	117	240	258	216	144	66	27	12	3	1
45 months, under 46.....	1,195	38.294	1	1	5	3	8	10	53	113	187	265	247	168	70	48	8	8	.....	.....
46 months, under 47.....	1,236	38.516	.....	.....	1	1	6	10	29	107	194	282	273	169	93	43	15	12	1	.....

Age.	White girls.																			
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																	
			30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
47 months, under 48.....	1,193	38.584	.....	2	1	5	3	33	89	191	251	260	198	101	43	10	2	3	1	.....
48 months, under 49.....	1,269	38.961	2	1	1	2	5	30	72	143	239	280	256	140	69	14	9	5	.....	1
49 months, under 50.....	1,088	39.119	.....	.....	1	4	6	18	53	102	211	234	219	147	58	28	5	2	.....	.....
50 months, under 51.....	1,137	39.277	1	1	.....	4	11	9	49	88	184	247	277	168	66	20	9	3	.....	.....
51 months, under 52.....	1,114	39.319	1	.....	1	7	22	46	107	188	229	211	154	97	37	10	3	.....	1	.....
52 months, under 53.....	1,154	39.588	.....	2	1	1	5	13	29	83	175	238	248	206	88	42	19	2	2	.....
53 months, under 54.....	1,161	39.916	.....	1	2	1	4	8	36	74	139	192	246	223	145	50	30	8	2	.....
54 months, under 55.....	1,048	40.207	.....	.....	1	2	2	10	27	42	98	161	221	238	145	57	31	9	4	.....

Age.	White girls.																			
	Total number.	Average stature.	Statures (inches). <sup>1</sup>																	
			31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
55 months, under 56 .....	1,010	40.401	1	1	2	3	5	13	41	98	137	216	218	138	81	37	14	3	2	
56 months, under 57 .....	995	40.661	1	1	2	4	3	15	37	62	147	174	219	156	96	51	17	9		
57 months, under 58 .....	984	40.762				3	5	13	20	66	121	195	235	155	106	38	19	8		1
58 months, under 59 .....	1,016	41.057		1				6	4	19	44	138	171	214	205	114	59	29	8	2
59 months, under 60 .....	1,045	41.110			1	2	3	7	27	51	106	181	231	197	124	78	23	11	3	
60 months, under 61 .....	634	41.364			1	2		9	9	17	54	100	146	122	96	44	25	8		1
61 months, under 62 .....	540	41.707				2		2	3	15	43	80	108	106	85	56	25	9	3	2
62 months, under 63 .....	572	41.652				2	3	4	3	21	40	83	109	113	98	55	20	17	4	1

Age.	White girls.																			
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																	
			32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
63 months, under 64 .....	513	41.912					2	1	11	28	64	106	112	102	52	20	10	2	3	
64 months, under 65 .....	478	41.971		2			5	3	14	32	50	84	85	88	73	23	15	3		1
65 months, under 66 .....	480	42.273	1		2		1	3	8	19	40	83	114	82	67	39	13	5		2
66 months, under 67 .....	471	42.456	1		1		2	1	8	21	45	71	95	83	59	45	26	12	1	
67 months, under 68 .....	415	42.610				1		4	7	13	29	50	94	82	70	37	20	6	2	
68 months, under 69 .....	402	42.697			1		2	1	2	11	30	57	78	88	64	36	22	9	1	
69 months, under 70 .....	379	43.026					1		4	11	22	37	68	79	74	47	25	9	2	
70 months, under 71 .....	409	43.394					1		3	11	18	31	69	81	79	56	33	16	8	3

<sup>1</sup> Statures are classified to the nearest inch; cases falling on the dividing line between classes were divided equally and half classed with the unit above and half with the unit below.

TABLE 4.—Stature and age; white girls—Concluded.

Age.	White girls.																		
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																
			34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
71 months, under 72.....	366	43.519			2		1	8	15	25	55	70	76	63	26	18	4	2	1
72 months, under 73.....	139	43.230	1					3	9	11	20	34	24	21	10	4	2		3
73 months, under 74.....	93	43.484		1			2	4	7	8	13	18	22	10	5	6	1		
74 months, under 75.....	103	43.184						4	7	8	18	21	21	10	8	5	1		
75 months, under 76.....	92	43.467						3	6	6	16	14	17	15	9	4	1	1	
76 months, under 77.....	67	43.537						1	6	2	13	11	12	10	7	3	2		
77 months, under 78.....	60	43.667				1	1	2	4	1	6	7	15	13	4	4	2		
78 months, under 79.....	61	44.836				1				5		7	15	10	11	5	3	3	1

Age.	White girls.																		
	Total number.	Average stature.	Stature (inches). <sup>1</sup>																
			36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	
79 months, under 80.....	44	43.864					1	8	4	4	10	9	3	2	2	1	1		
80 months, under 81.....	34	44.500					1		3	6	9	6	5	1	1	2			
81 months, under 82.....	29	44.724					1	1	2	3	6	9	1	2	3		1		
82 months, under 83.....	44	44.523	1				1	1	5	6	5	9	8	6	1				
83 months, under 84.....	30	45.000							2	6	6	4	3	7	1	1			

<sup>1</sup> Statures are classified to the nearest inch; cases falling on the dividing line between classes were divided equally and half classed with the unit above and half with the unit below.













TABLE 9.—Average statures and weights, by sex, from birth to 6 years; white children, Iowa.

Age.	White boys.			White girls.		
	Number. <sup>1</sup>	Average stature (inches).	Average weight (pounds).	Number. <sup>2</sup>	Average stature (inches).	Average weight (pounds).
Under 1 month.....	153	21.08	9.09	119	21.04	8.89
1 month, under 2.....	307	22.80	11.35	278	22.13	10.20
2 months, under 3.....	341	23.82	13.06	345	23.18	11.88
3 months, under 4.....	408	24.73	14.31	392	24.11	13.32
4 months, under 5.....	364	25.50	15.64	380	24.94	14.50
5 months, under 6.....	393	26.21	16.54	355	25.35	15.42
6 months, under 7.....	399	26.92	17.69	363	26.42	16.63
7 months, under 8.....	413	27.26	18.44	351	27.00	17.57
8 months, under 9.....	368	27.80	19.13	378	27.30	18.06
9 months, under 10.....	370	28.32	19.73	321	27.65	18.38
10 months, under 11.....	394	28.58	20.09	393	28.11	18.97
11 months, under 12.....	376	29.06	20.72	369	28.36	19.33
12 months, under 13.....	396	29.41	21.03	348	28.80	20.21
13 months, under 14.....	285	29.91	21.60	300	29.20	20.19
14 months, under 15.....	306	30.14	22.06	281	29.61	20.55
15 months, under 16.....	301	30.59	22.24	308	30.01	21.04
16 months, under 17.....	310	31.14	22.98	286	30.40	21.34
17 months, under 18.....	307	31.26	23.39	302	30.74	21.89
18 months, under 19.....	307	31.64	23.71	297	31.21	22.48
19 months, under 20.....	292	32.30	24.51	298	31.81	23.27
20 months, under 21.....	284	32.63	24.81	280	32.00	23.38
21 months, under 22.....	278	32.96	25.40	261	32.45	23.81
22 months, under 23.....	293	33.28	25.84	279	32.63	24.37
23 months, under 24.....	327	33.41	25.83	264	32.86	24.55
24 months, under 25.....	316	33.80	26.27	306	33.05	25.16
25 months, under 26.....	302	34.12	26.97	281	33.34	25.21
26 months, under 27.....	305	34.25	27.06	315	33.82	25.83
27 months, under 28.....	287	34.55	27.21	310	34.04	26.22
28 months, under 29.....	312	34.74	27.69	295	34.19	26.39
29 months, under 30.....	339	34.88	28.12	310	34.59	26.92
30 months, under 31.....	305	35.18	28.38	315	34.89	27.35
31 months, under 32.....	273	35.90	29.24	291	35.32	27.76
32 months, under 33.....	270	35.96	29.72	267	35.48	27.92
33 months, under 34.....	321	36.16	29.64	321	35.63	28.14
34 months, under 35.....	300	36.40	30.13	276	35.93	28.65
35 months, under 36.....	307	36.52	30.22	293	36.02	28.80
36 months, under 37.....	301	36.90	30.82	305	36.36	29.40
37 months, under 38.....	293	37.05	30.78	274	36.58	29.66
38 months, under 39.....	283	37.34	31.29	264	36.99	30.18
39 months, under 40.....	296	37.59	31.58	280	37.10	29.92
40 months, under 41.....	292	37.71	31.79	308	37.23	30.31
41 months, under 42.....	304	37.92	32.22	297	37.53	31.00
42 months, under 43.....	285	38.43	32.94	300	37.86	31.20
43 months, under 44.....	284	38.57	33.09	262	37.96	31.40
44 months, under 45.....	285	38.91	33.15	282	38.30	31.53
45 months, under 46.....	295	39.09	34.04	277	38.49	32.02
46 months, under 47.....	285	39.09	33.84	292	38.71	32.48
47 months, under 48.....	324	39.43	34.21	307	38.75	32.24
48 months, under 49.....	266	39.34	34.96	265	39.33	33.07
49 months, under 50.....	248	39.67	34.38	273	39.32	33.27
50 months, under 51.....	229	40.02	34.87	262	39.55	33.62
51 months, under 52.....	238	40.04	35.14	258	39.74	33.71
52 months, under 53.....	267	40.19	35.49	263	39.79	33.92
53 months, under 54.....	252	40.45	35.87	277	40.04	34.01
54 months, under 55.....	248	40.61	35.75	244	40.20	34.34
55 months, under 56.....	247	40.95	36.03	196	40.53	34.76
56 months, under 57.....	232	41.34	36.88	229	40.86	35.33
57 months, under 58.....	246	41.45	37.14	202	41.04	35.30
58 months, under 59.....	253	41.54	37.36	232	41.39	36.32
59 months, under 60.....	248	41.65	37.34	248	41.39	36.08
60 months, under 61.....	100	41.87	37.90	98	41.45	36.47
61 months, under 62.....	79	41.99	38.07	56	41.71	37.35
62 months, under 63.....	61	42.41	38.60	64	41.53	36.70
63 months, under 64.....	57	42.11	38.06	70	41.89	36.61
64 months, under 65.....	60	42.22	38.59	64	42.19	37.65
65 months, under 66.....	76	42.84	39.11	62	42.27	37.63
66 months, under 67.....	46	43.13	40.17	50	42.12	38.54
67 months, under 68.....	46	43.24	40.41	47	42.64	38.67
68 months, under 69.....	40	43.45	40.94	42	42.81	40.04
69 months, under 70.....	37	43.89	41.55	36	43.64	40.28
70 months, under 71.....	29	44.14	41.07	33	43.42	39.48
71 months, under 72.....	29	44.10	40.95	41	43.20	40.00

<sup>1</sup> 40 boys (6 years, under 7) omitted.

<sup>2</sup> 35 girls (6 years, under 7) omitted.



TABLE 10.—Average statures and weights, by sex, from birth to 6 years; white children; California.

Age.	White boys.			White girls.		
	Number. <sup>1</sup>	Average stature (inches).	Average weight (pounds).	Number. <sup>2</sup>	Average stature (inches).	Average weight (pounds).
Under 1 month.....	52	21.50	9.76	44	21.09	8.95
1 month, under 2.....	120	22.50	11.01	118	21.86	10.01
2 months, under 3.....	182	23.57	12.66	154	23.03	11.64
3 months, under 4.....	169	24.81	14.53	169	24.15	13.11
4 months, under 5.....	187	25.58	15.52	166	24.84	14.38
5 months, under 6.....	200	26.39	17.27	174	25.52	15.50
6 months, under 7.....	206	26.80	17.67	202	26.30	16.38
7 months, under 8.....	201	27.63	18.88	193	26.67	17.32
8 months, under 9.....	199	27.83	19.64	180	27.18	16.92
9 months, under 10.....	196	28.37	19.89	180	28.16	18.90
10 months, under 11.....	179	28.71	20.73	173	28.27	19.65
11 months, under 12.....	203	29.18	21.15	162	28.78	19.95
12 months, under 13.....	198	29.48	21.66	177	28.96	20.60
13 months, under 14.....	159	30.09	22.42	143	29.29	20.83
14 months, under 15.....	136	30.26	23.11	173	29.84	21.70
15 months, under 16.....	129	30.69	23.66	142	30.19	22.14
16 months, under 17.....	122	31.06	23.41	140	30.30	22.14
17 months, under 18.....	150	31.73	24.73	119	30.92	22.94
18 months, under 19.....	147	31.93	24.86	132	31.39	23.41
19 months, under 20.....	139	32.20	25.75	151	31.96	24.26
20 months, under 21.....	120	32.73	25.68	116	32.25	24.51
21 months, under 22.....	125	32.97	26.27	126	32.20	24.61
22 months, under 23.....	182	33.42	26.79	136	32.83	25.48
23 months, under 24.....	118	33.48	27.08	127	32.97	25.48
24 months, under 25.....	142	34.04	27.90	151	32.28	25.84
25 months, under 26.....	136	34.28	28.09	147	33.52	25.32
26 months, under 27.....	134	34.41	28.40	128	33.68	26.42
27 months, under 28.....	138	34.70	28.86	126	34.13	27.24
28 months, under 29.....	161	34.91	28.52	136	34.09	27.26
29 months, under 30.....	135	35.27	29.24	134	34.62	27.66
30 months, under 31.....	133	36.02	30.35	119	35.30	28.42
31 months, under 32.....	125	36.14	30.40	136	35.57	29.01
32 months, under 33.....	145	36.01	29.99	125	35.57	28.80
33 months, under 34.....	145	36.30	30.68	115	36.17	29.74
34 months, under 35.....	138	36.57	30.95	137	36.31	29.53
35 months, under 36.....	142	36.88	31.43	143	36.36	30.13
36 months, under 37.....	120	37.08	31.58	131	36.79	30.78
37 months, under 38.....	139	37.25	32.07	109	36.72	30.57
38 months, under 39.....	124	37.50	32.56	134	37.18	31.41
39 months, under 40.....	137	37.72	33.00	125	37.41	31.94
40 months, under 41.....	132	37.84	32.69	115	37.63	32.15
41 months, under 42.....	138	38.14	33.81	137	37.76	31.83
42 months, under 43.....	106	38.40	33.75	118	38.26	32.92
43 months, under 44.....	139	38.83	34.50	147	38.54	33.13
44 months, under 45.....	126	38.87	34.54	139	38.77	33.21
45 months, under 46.....	137	39.18	34.54	146	38.70	33.54
46 months, under 47.....	139	39.42	35.31	132	39.16	34.27
47 months, under 48.....	133	39.57	34.95	120	38.73	33.57
48 months, under 49.....	133	39.55	35.58	157	39.34	33.89
49 months, under 50.....	108	40.07	36.28	126	39.70	34.31
50 months, under 51.....	133	40.02	35.70	120	39.67	35.08
51 months, under 52.....	117	40.09	35.61	120	39.58	34.85
52 months, under 53.....	129	40.50	36.75	117	40.12	35.58
53 months, under 54.....	146	40.61	36.52	118	40.36	35.71
54 months, under 55.....	101	40.83	36.58	124	40.56	36.12
55 months, under 56.....	127	41.31	37.94	131	40.90	37.22
56 months, under 57.....	103	41.24	37.27	112	41.05	37.06
57 months, under 58.....	122	41.82	38.00	115	40.83	35.90
58 months, under 59.....	127	41.69	38.94	112	41.38	37.14
59 months, under 60.....	126	42.04	38.92	107	41.42	37.73
60 months, under 61.....	99	42.18	39.49	134	41.86	38.42
61 months, under 62.....	123	42.46	39.70	112	42.40	38.97
62 months, under 63.....	97	42.77	40.22	109	42.40	38.36
63 months, under 64.....	85	42.80	39.92	97	42.39	38.79
64 months, under 65.....	96	42.86	40.43	104	42.59	39.40
65 months, under 66.....	102	43.24	41.02	86	42.58	38.77
66 months, under 67.....	75	43.63	41.34	100	42.72	39.68
67 months, under 68.....	75	43.85	42.22	80	42.75	39.38
68 months, under 69.....	86	43.58	41.90	100	42.71	39.64
69 months, under 70.....	78	43.60	41.65	91	43.36	40.71
70 months, under 71.....	88	44.09	42.66	99	44.04	42.30
71 months, under 72.....	86	44.22	42.19	82	43.88	42.01

<sup>1</sup> 118 boys (6 years, under 7), omitted.<sup>2</sup> 126 girls (6 years, under 7), omitted.



TABLE 11.—Average statures and weights, by sex, from birth to 6 years; white children; New York City.

Age.	White boys.			White girls.		
	Number. <sup>1</sup>	Average stature (inches).	Average weight (pounds).	Number. <sup>2</sup>	Average stature (inches).	Average weight (pounds).
Under 1 month.....	318	21.14	8.76	313	20.91	8.49
1 month, under 2.....	780	21.97	10.08	763	21.56	9.44
2 months, under 3.....	728	23.09	11.86	647	22.60	10.99
3 months, under 4.....	715	24.03	13.26	619	23.63	12.41
4 months, under 5.....	655	24.10	14.63	674	24.46	13.81
5 months, under 6.....	657	25.68	15.92	644	24.93	14.59
6 months, under 7.....	604	26.23	16.78	549	25.55	15.67
7 months, under 8.....	508	26.84	17.81	485	26.35	16.84
8 months, under 9.....	488	27.45	18.73	461	26.78	17.40
9 months, under 10.....	442	27.78	19.10	439	27.06	17.93
10 months, under 11.....	430	28.13	19.62	431	27.39	18.46
11 months, under 12.....	401	28.35	20.26	381	27.93	19.14
12 months, under 13.....	396	28.74	20.59	381	28.25	19.56
13 months, under 14.....	352	29.28	21.35	375	28.73	20.02
14 months, under 15.....	315	29.59	21.87	319	29.18	20.76
15 months, under 16.....	278	30.10	22.65	292	29.49	21.24
16 months, under 17.....	297	30.40	22.89	283	29.73	21.45
17 months, under 18.....	281	30.51	23.17	230	30.33	22.13
18 months, under 19.....	267	31.09	23.91	266	30.64	22.73
19 months, under 20.....	224	31.63	24.34	247	30.99	23.22
20 months, under 21.....	238	31.84	24.51	206	31.32	23.50
21 months, under 22.....	211	31.94	25.19	220	31.84	24.13
22 months, under 23.....	216	32.62	25.91	223	31.95	24.36
23 months, under 24.....	237	32.60	26.01	251	32.17	24.66
24 months, under 25.....	243	33.10	26.70	263	32.62	25.28
25 months, under 26.....	170	33.22	26.97	165	32.85	25.30
26 months, under 27.....	177	33.70	27.05	189	33.11	25.75
27 months, under 28.....	190	34.14	28.09	205	33.37	26.43
28 months, under 29.....	205	34.19	28.56	210	33.59	26.48
29 months, under 30.....	176	34.34	28.14	209	33.70	26.65
30 months, under 31.....	203	34.53	28.63	212	34.03	26.84
31 months, under 32.....	174	34.78	28.82	212	34.66	28.13
32 months, under 33.....	178	35.41	29.76	176	34.93	28.75
33 months, under 34.....	181	35.68	30.19	176	35.18	28.63
34 months, under 35.....	185	35.79	30.04	227	35.40	28.96
35 months, under 36.....	199	35.91	30.62	214	35.63	29.49
36 months, under 37.....	212	36.09	30.60	207	35.69	29.31
37 months, under 38.....	170	36.45	30.92	179	36.25	30.23
38 months, under 39.....	183	36.74	31.28	184	36.16	30.10
39 months, under 40.....	197	37.01	32.25	234	36.40	30.44
40 months, under 41.....	177	37.16	31.89	182	35.56	30.77
41 months, under 42.....	177	36.90	31.89	183	36.66	30.81
42 months, under 43.....	210	37.68	32.75	191	37.08	31.48
43 months, under 44.....	184	38.08	35.36	186	37.50	32.16
44 months, under 45.....	178	37.82	35.60	186	37.77	32.04
45 months, under 46.....	176	38.30	34.01	199	38.03	33.07
46 months, under 47.....	191	38.09	33.63	169	38.04	32.50
47 months, under 48.....	190	38.54	33.94	205	38.21	33.29
48 months, under 49.....	232	38.88	34.45	224	38.25	32.88
49 months, under 50.....	169	39.02	35.25	185	38.58	33.08
50 months, under 51.....	180	39.24	35.19	170	39.08	34.04
51 months, under 52.....	158	39.56	35.81	171	39.06	34.17
52 months, under 53.....	197	39.64	35.79	172	39.28	34.26
53 months, under 54.....	169	39.77	35.66	185	39.52	34.64
54 months, under 55.....	183	39.72	35.89	194	39.40	34.54
55 months, under 56.....	154	40.29	36.87	187	39.46	34.69
56 months, under 57.....	151	40.59	37.50	169	39.84	35.12
57 months, under 58.....	137	40.69	37.19	179	40.33	36.44
58 months, under 59.....	171	40.95	38.08	176	40.60	36.65
59 months, under 60.....	135	40.79	37.69	186	40.75	36.22
60 months, under 61.....	132	41.20	38.39	168	40.86	36.36
61 months, under 62.....	112	41.00	37.82	108	40.55	36.24
62 months, under 63.....	106	41.67	38.46	112	41.06	37.18
63 months, under 64.....	102	41.70	38.63	116	41.13	36.85
64 months, under 65.....	87	41.40	38.73	103	41.43	36.56
65 months, under 66.....	81	42.21	39.46	112	41.55	37.51
66 months, under 67.....	92	41.62	38.82	103	42.00	38.24
67 months, under 68.....	84	42.20	39.68	78	42.09	39.69
68 months, under 69.....	76	42.72	40.93	70	42.37	39.06
69 months, under 70.....	72	42.54	39.99	75	42.55	39.26
70 months, under 71.....	68	43.28	41.60	71	42.44	40.28
71 months, under 72.....	49	43.45	41.15	64	43.14	40.61

<sup>1</sup> 170 boys (6 years, under 7) omitted.<sup>2</sup> 174 girls (6 years, under 7) omitted.

TABLE 12.—Country of birth of parents, by section; white children included in height and weight tabulation.

Country of birth of mother.	Southern.				New England and Middle Atlantic.				East North-Central.			
	Total.		Parents born in same country.	Parents born in different countries.	Total.		Parents born in same country.	Parents born in different countries.	Total.		Parents born in same country.	Parents born in different countries.
	Number.	Per cent dis-tribution.			Number.	Per cent dis-tribution.			Number.	Per cent dis-tribution.		
All countries	19,044	100.0	8,624	372	23,729	100.0	19,094	4,321	54,779	100.0	49,173	5,234
United States	8,477	93.7	8,264	213	11,536	48.6	9,560	1,976	42,001	76.7	38,992	3,009
Italy	74	.8	72	2	3,501	14.8	3,435	66	1,265	2.3	1,232	33
Scandinavia	22	.2	8	14	313	1.3	194	119	684	1.2	427	257
Denmark	4	.....	1	3	36	.2	22	14	74	.1	36	38
Sweden	11	.1	5	6	240	1.0	160	80	414	.8	298	116
Norway	7	.....	2	5	37	.2	12	25	196	.4	93	103
Germany	57	.6	35	22	255	1.1	123	132	1,186	2.2	563	623
Holland	3	.....	1	2	9	.....	4	5	89	.2	55	34
Russia	93	1.0	84	9	1,349	5.7	1,254	95	1,852	3.4	1,731	121
Austria-Hungary	34	.4	23	11	1,153	4.9	955	198	4,384	8.0	4,071	313
Austria	19	.2	10	9	991	4.2	809	182	2,427	4.4	2,239	188
Bohemia	1	.....	1	.....	7	.....	4	3	227	.4	194	33
Hungary	9	.....	9	.....	94	.4	87	7	820	1.5	787	33
Croatia	.....	.....	.....	.....	.....	.....	.....	.....	36	.....	36	.....
Transylvania	.....	.....	.....	.....	.....	.....	.....	.....	5	.....	5	.....
Not specified	5	.....	3	2	61	.2	55	6	869	1.6	810	59
England	51	.6	23	28	687	2.9	382	305	328	.6	180	148
Scotland	8	.....	.....	8	305	1.3	170	135	150	.3	89	61
Wales	1	.....	.....	.....	3	.....	.....	3	12	.....	.....	12
Ireland	30	.3	15	15	995	4.2	633	362	238	.4	147	91
British possessions	23	.3	3	20	1,844	7.8	1,068	776	317	.6	93	224
Poland	9	.....	7	2	1,041	4.4	704	37	1,361	2.5	1,188	173
All other <sup>1</sup>	114	1.3	88	26	724	3.1	612	112	540	1.0	405	135

Country of birth of mother.	Iowa.				Western.				California.			
	Total.		Parents born in same country.	Parents born in different countries.	Total.		Parents born in same country.	Parents born in different countries.	Total.		Parents born in same country.	Parents born in different countries.
	Number.	Per cent dis-tribution.			Number.	Per cent dis-tribution.			Number.	Per cent dis-tribution.		
All countries	437,033	100.0	33,111	3,797	523,170	100.0	19,367	3,625	619,269	100.0	16,026	2,999
United States	32,828	88.6	30,458	2,370	18,653	80.5	16,512	2,141	13,717	71.2	12,053	1,664
Italy	296	2.8	288	8	131	.9	126	5	1,550	8.0	1,465	85
Scandinavia	1,047	2.8	699	348	1,319	5.7	783	536	379	2.0	243	136
Denmark	321	.9	244	77	138	.6	84	54	124	.6	84	40
Sweden	363	1.0	238	125	441	1.9	268	173	188	1.0	126	62
Norway	363	1.0	217	146	740	3.2	431	309	67	.3	33	34
Germany	975	2.6	454	521	596	2.6	305	291	301	1.6	145	156
Holland	394	1.1	274	120	29	.1	16	13	26	.1	16	10
Russia	302	.8	281	21	961	4.1	867	94	331	1.7	284	47
Austria-Hungary	401	1.0	314	87	436	1.9	348	88	335	1.7	264	71
Austria	194	.5	157	37	308	1.3	262	46	272	1.4	224	48
Bohemia	158	.4	120	38	76	.3	52	24	18	.....	11	7
Hungary	16	.....	10	6	35	.2	26	9	38	.2	23	15
Croatia	10	.....	10	.....	2	.....	2	.....	.....	.....	.....	.....
Transylvania	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Not specified	23	.1	17	6	15	.....	6	9	7	.....	6	1
England	190	.5	92	98	174	.8	65	109	325	1.7	171	154
Scotland	68	.2	44	24	72	.3	28	44	111	.6	58	53
Wales	11	.....	5	6	7	.....	4	3	10	.....	6	4
Ireland	76	.2	32	44	65	.3	30	35	298	1.5	173	125
British possessions	77	.2	10	67	278	1.2	85	193	274	1.4	68	206
Poland	28	.1	21	7	61	.3	47	14	31	.2	23	8
All other <sup>7</sup>	215	.6	139	76	210	.9	151	59	1,337	6.9	1,057	280

<sup>1</sup> Includes 48 children the nativity of one or both of whose parents was not reported.<sup>2</sup> Includes 314 children the nativity of one or both of whose parents was not reported.<sup>3</sup> Includes 372 children the nativity of one or both of whose parents was not reported.<sup>4</sup> Includes 125 children the nativity of one or both of whose parents was not reported.<sup>5</sup> Includes 178 children the nativity of one or both of whose parents was not reported.<sup>6</sup> Includes 244 children the nativity of one or both of whose parents was not reported.<sup>7</sup> Includes West Indies, Cuba, Central and South America, Luxemburg, Belgium, France, Spain, Portugal, Rumania, Greece, Serbia, Armenia, Syria, Bulgaria, Montenegro, Turkey, Mexico, Atlantic and Pacific islands, Africa, Asia not specified, China, Japan, and India.

TABLE 13.—Country of birth of parents; white children included in height and weight table, New York City.

Country of birth of mother.	Total.		Parents born in same country.	Parents born in different countries.
	Number.	Per cent distribution.		
All countries.....	1 35, 819	100.0	29, 112	6, 443
United States.....	10, 676	29.8	8, 137	2, 539
Italy.....	7, 429	20.7	7, 228	201
Scandinavia.....	400	1.1	268	132
Denmark.....	31	.....	16	15
Sweden.....	167	.5	104	63
Norway.....	202	.6	148	54
Germany.....	696	1.9	424	272
Holland.....	20	.....	16	4
Russia.....	6, 342	17.7	5, 728	614
Austria-Hungary.....	4, 731	13.2	3, 538	1, 193
Austria.....	3, 041	8.5	2, 131	910
Bohemia.....	517	1.4	444	73
Hungary.....	999	2.8	832	167
Not specified.....	174	.5	131	43
England.....	478	1.3	179	299
Scotland.....	161	.4	76	85
Wales.....	3	.....	.....	3
Ireland.....	2, 693	7.5	2, 068	625
British possessions.....	98	.3	25	73
Poland.....	618	1.7	565	63
All other <sup>2</sup> .....	<sup>2</sup> 1, 200	3.4	860	340

<sup>1</sup> Includes 264 children the nativity of one or both of whose parents was not reported.

<sup>2</sup> Includes Central America, Belgium, Switzerland, France, Spain, Rumania, Greece, Portugal, Serbia, Armenia, Syria, Bulgaria, Montenegro, Turkey, Mexico, Atlantic islands, Pacific islands, Africa, Japan, Asia, and China.

TABLE 14.—Comparative standard deviations in stature; white boys 3 years but less than 4 years of age, in Iowa and in all States.

Age.	Standard deviation, boys' stature (inches).	
	All States.	Iowa.
36 months, under 37.....	1.74	1.57
37 months, under 38.....	1.68	1.58
38 months, under 39.....	1.71	1.57
39 months, under 40.....	1.74	1.60
40 months, under 41.....	1.70	1.59
41 months, under 42.....	1.74	1.61
42 months, under 43.....	1.88	1.69
43 months, under 44.....	1.90	1.88
44 months, under 45.....	1.82	1.81
45 months, under 46.....	1.92	1.83
46 months, under 47.....	1.86	1.74
47 months, under 48.....	1.85	1.74

TABLE 15.—Average statures and weights, by sex, from birth to 6 years; white children of mothers born in Italy.

Age.	White boys.			White girls.		
	Number (1).	Average stature (inches).	Average weight (pounds).	Number (2).	Average stature (inches).	Average weight (pounds).
Under 1 month . . . . .	113	21.00	8.92	98	20.82	8.77
1 month, under 2 . . . . .	238	21.76	10.10	214	21.51	9.74
2 months, under 3 . . . . .	247	22.99	11.77	208	22.39	10.99
3 months, under 4 . . . . .	222	23.76	13.27	198	23.50	12.42
4 months, under 5 . . . . .	212	24.61	14.49	226	24.21	13.78
5 months, under 6 . . . . .	189	25.55	15.76	245	24.64	14.63
6 months, under 7 . . . . .	205	25.71	16.48	181	25.45	15.83
7 months, under 8 . . . . .	170	26.31	17.49	167	25.87	16.31
8 months, under 9 . . . . .	171	27.04	18.17	151	26.45	17.12
9 months, under 10 . . . . .	174	27.51	18.84	172	26.80	17.57
10 months, under 11 . . . . .	171	27.83	19.26	173	26.85	17.84
11 months, under 12 . . . . .	145	28.25	20.14	151	27.78	19.10
12 months, under 13 . . . . .	131	28.42	20.15	132	28.02	19.20
13 months, under 14 . . . . .	125	28.94	21.14	143	28.55	19.80
14 months, under 15 . . . . .	107	29.36	21.84	113	28.73	20.03
15 months, under 16 . . . . .	114	29.74	21.93	112	29.18	20.78
16 months, under 17 . . . . .	102	29.66	22.04	101	29.31	20.75
17 months, under 18 . . . . .	98	30.40	22.66	85	29.84	21.66
18 months, under 19 . . . . .	119	31.12	24.16	106	30.29	22.06
19 months, under 20 . . . . .	87	31.00	23.98	94	30.65	22.53
20 months, under 21 . . . . .	112	31.51	23.88	87	30.99	22.71
21 months, under 22 . . . . .	106	31.68	24.42	87	31.18	23.18
22 months, under 23 . . . . .	94	32.05	25.14	89	31.65	23.95
23 months, under 24 . . . . .	114	32.17	25.55	98	31.65	23.47
24 months, under 27 . . . . .	268	32.73	25.75	273	32.14	24.46
27 months, under 30 . . . . .	281	33.71	27.36	255	32.93	25.84
30 months, under 33 . . . . .	251	34.54	28.34	267	34.16	27.37
33 months, under 36 . . . . .	314	35.25	29.46	281	34.68	28.07
36 months, under 39 . . . . .	275	35.94	30.36	255	35.54	29.38
39 months, under 42 . . . . .	254	36.70	31.52	278	35.93	29.81
42 months, under 45 . . . . .	259	37.18	32.07	246	35.95	31.22
45 months, under 48 . . . . .	286	37.80	32.96	275	37.32	31.60
48 months, under 51 . . . . .	253	38.24	34.05	272	37.90	32.08
51 months, under 54 . . . . .	231	38.83	34.48	276	38.47	33.33
54 months, under 57 . . . . .	197	39.28	35.37	235	38.71	33.47
57 months, under 60 . . . . .	208	39.95	36.12	216	39.77	35.22
60 months, under 63 . . . . .	147	40.66	37.05	153	40.03	35.61
63 months, under 66 . . . . .	107	40.96	36.93	143	40.61	35.57
66 months, under 69 . . . . .	87	41.37	38.77	108	41.11	37.56
69 months, under 72 . . . . .	69	42.42	39.90	85	41.87	38.75

<sup>1</sup> 52 boys, 6 years, under 7, omitted.<sup>2</sup> 77 girls, 6 years, under 7, omitted.

TABLE 16.—Average statures and weights, by sex, from birth to 6 years; white children of mothers born in Germany.

Age.	White boys.			White girls.		
	Number (1).	Average stature (inches).	Average weight (pounds).	Number (2).	Average stature (inches).	Average weight (pounds).
Under 1 month . . . . .	20	20.85	8.80	7	21.50	8.64
1 month, under 2 . . . . .	36	23.00	10.83	32	22.03	10.20
2 months, under 3 . . . . .	36	23.39	12.35	31	23.06	11.55
3 months, under 4 . . . . .	45	24.40	13.42	46	24.37	13.33
4 months, under 5 . . . . .	24	25.46	15.63	32	24.69	13.75
5 months, under 6 . . . . .	35	25.86	16.11	26	25.19	14.51
6 months, under 7 . . . . .	39	27.00	18.04	34	26.24	16.51
7 months, under 8 . . . . .	35	27.74	19.20	29	27.00	18.69
8 months, under 9 . . . . .	32	27.97	19.33	30	26.77	17.40
9 months, under 10 . . . . .	36	27.78	19.00	31	27.23	17.93
10 months, under 11 . . . . .	34	28.03	20.13	49	28.14	19.43
11 months, under 12 . . . . .	37	28.81	20.32	32	28.09	19.36
12 months, under 13 . . . . .	47	29.26	21.67	31	28.77	19.98
13 months, under 14 . . . . .	39	29.87	22.15	22	29.09	20.95
14 months, under 15 . . . . .	27	30.11	21.63	27	29.85	20.80
15 months, under 16 . . . . .	31	30.68	22.97	32	30.22	21.48
16 months, under 17 . . . . .	31	31.32	23.63	29	30.66	21.69
17 months, under 18 . . . . .	28	31.00	23.63	20	30.70	22.45
18 months, under 19 . . . . .	32	31.94	24.05	31	30.97	22.23
19 months, under 20 . . . . .	36	32.33	25.67	31	31.71	23.68

<sup>1</sup> 25 boys, 6 years, under 7, omitted.<sup>2</sup> 29 girls, 6 years, under 7, omitted.



TABLE 16.—Average statures and weights, by sex, from birth to 6 years; white children of mothers born in Germany—Concluded.

Age.	White boys.			White girls.		
	Number (1).	Average stature (inches).	Average weight (pounds).	Number (2).	Average stature (inches).	Average weight (pounds).
20 months, under 21.....	15	33.00	25.77	31	31.97	24.21
21 months, under 22.....	29	32.48	25.10	34	32.15	23.81
22 months, under 23.....	21	32.86	26.05	34	33.24	26.06
23 months, under 24.....	30	33.30	26.60	20	32.60	24.80
24 months, under 27.....	90	34.07	27.24	87	33.62	26.01
27 months, under 30.....	80	35.03	28.70	85	34.54	27.20
30 months, under 33.....	85	35.76	29.38	87	35.11	28.09
33 months, under 36.....	87	36.24	30.48	93	35.73	28.83
36 months, under 39.....	107	37.26	31.45	81	36.47	29.37
39 months, under 42.....	87	37.71	32.11	87	37.33	31.32
42 months, under 45.....	100	38.26	33.31	89	38.09	32.11
45 months, under 48.....	97	39.16	34.68	88	38.82	32.99
48 months, under 51.....	95	39.61	35.22	80	39.19	33.19
51 months, under 54.....	114	40.19	35.89	91	39.67	33.15
54 months, under 57.....	90	40.81	35.25	67	40.99	36.89
57 months, under 60.....	84	41.26	38.00	84	41.30	36.01
60 months, under 63.....	45	41.62	38.57	56	41.73	36.85
63 months, under 66.....	47	42.70	39.79	67	42.16	38.07
66 months, under 69.....	41	43.85	40.16	39	42.88	39.15
69 months, under 72.....	42	43.90	42.35	34	43.68	40.85

<sup>1</sup> 25 boys, 6 years, under 7, omitted.

<sup>2</sup> 29 girls, 6 years, under 7, omitted.

TABLE 17.—Average statures and weights, by sex, from birth to 6 years; white children of mothers born in Denmark, Sweden, or Norway.

Age.	White boys.			White girls.		
	Number (1).	Average stature (inches).	Average weight (pounds).	Number (2).	Average stature (inches).	Average weight (pounds).
Under 1 month.....	7	21.71	10.00	11	22.00	9.64
1 month, under 2.....	26	22.35	10.10	31	22.32	10.56
2 months, under 3.....	39	24.10	13.50	36	23.22	12.25
3 months, under 4.....	43	25.70	14.33	36	23.75	13.32
4 months, under 5.....	38	25.47	15.53	41	24.41	14.45
5 months, under 6.....	54	26.52	17.53	31	25.61	15.89
6 months, under 7.....	46	26.80	18.29	42	26.07	16.62
7 months, under 8.....	42	28.87	18.88	46	26.87	17.84
8 months, under 9.....	39	28.23	20.36	36	27.56	18.47
9 months, under 10.....	37	28.16	20.73	43	27.67	18.59
10 months, under 11.....	49	28.80	20.69	36	27.92	19.28
11 months, under 12.....	34	29.00	20.91	39	28.51	20.14
12 months, under 13.....	46	29.46	21.72	36	28.83	20.54
13 months, under 14.....	53	30.47	22.78	29	29.79	21.41
14 months, under 15.....	29	30.34	22.55	28	29.86	21.61
15 months, under 16.....	26	30.62	22.77	26	30.23	21.88
16 months, under 17.....	32	31.13	23.67	33	30.88	22.12
17 months, under 18.....	23	31.35	24.35	28	30.36	21.71
18 months, under 19.....	38	32.47	25.97	31	31.61	23.27
19 months, under 20.....	27	33.15	26.93	35	31.77	24.37
20 months, under 21.....	36	32.72	25.14	24	32.63	24.58
21 months, under 22.....	32	33.22	26.00	31	33.00	24.79
22 months, under 23.....	35	33.71	27.40	19	32.95	25.13
23 months, under 24.....	31	33.81	27.71	32	32.91	25.36
24 months, under 27.....	91	34.24	27.21	89	33.48	26.23
27 months, under 30.....	104	34.86	28.56	82	34.13	26.82
30 months, under 33.....	89	35.70	29.22	90	35.50	28.47
33 months, under 36.....	91	36.73	30.95	102	35.82	29.28
36 months, under 39.....	100	37.48	32.27	98	36.97	30.61
39 months, under 42.....	93	37.82	32.23	102	37.49	31.83
42 months, under 45.....	92	38.89	33.54	97	38.20	32.29
45 months, under 48.....	90	39.48	34.83	85	38.86	32.88
48 months, under 51.....	83	39.72	34.89	82	39.43	33.98
51 months, under 54.....	104	40.67	36.67	85	39.59	34.00
54 months, under 57.....	82	41.04	36.99	78	40.69	36.06
57 months, under 60.....	81	41.67	38.20	87	40.92	35.59
60 months, under 63.....	47	42.11	38.98	44	42.45	37.98
63 months, under 66.....	45	43.11	40.49	41	42.39	38.26
66 months, under 69.....	34	43.56	41.44	32	42.75	38.78
69 months, under 72.....	33	43.82	41.74	32	44.16	41.38

<sup>1</sup> 13 boys, 6 years, under 7, omitted.

<sup>2</sup> 24 girls, 6 years, under 7, omitted.



TABLE 18.—Average statures and weights, by sex, from birth to 6 years; Negro children.

Age.	Negro boys.			Negro girls.		
	Number (1).	Average stature (inches).	Average weight (pounds).	Number (2).	Average stature (inches).	Average weight (pounds).
Under 1 month.....	40	20.73	8.14	48	20.42	8.02
1 month, under 2.....	92	21.71	9.99	82	21.38	9.14
2 months, under 3.....	71	22.87	11.99	71	22.56	11.04
3 months, under 4.....	81	24.07	13.33	78	23.47	12.48
4 months, under 5.....	76	24.75	14.60	92	24.40	13.97
5 months, under 6.....	74	25.42	15.81	84	24.67	14.33
6 months, under 7.....	56	25.91	16.26	65	25.77	15.90
7 months, under 8.....	54	26.28	17.18	49	26.00	15.94
8 months, under 9.....	63	26.35	16.86	65	26.32	16.67
9 months, under 10.....	47	27.51	18.38	70	26.57	17.18
10 months, under 11.....	56	27.66	18.90	44	27.11	17.39
11 months, under 12.....	43	27.77	18.74	53	27.96	18.34
12 months, under 13.....	42	28.48	20.21	44	28.18	18.60
13 months, under 14.....	38	29.21	19.91	38	28.16	19.01
14 months, under 15.....	21	29.05	19.60	40	29.00	20.25
15 months, under 16.....	32	30.16	21.59	38	29.97	20.99
16 months, under 17.....	26	29.77	21.29	44	29.30	19.84
17 months, under 18.....	35	30.51	22.57	41	29.88	20.77
18 months, under 19.....	36	31.00	22.38	34	30.53	21.35
19 months, under 20.....	44	31.59	23.36	33	31.21	22.38
20 months, under 21.....	28	31.18	23.30	41	30.71	21.71
21 months, under 22.....	32	31.84	23.98	31	31.32	23.55
22 months, under 23.....	32	32.16	24.06	31	31.68	23.94
23 months, under 24.....	38	32.34	25.20	30	32.30	23.87
24 months, under 27.....	82	33.18	25.55	97	32.62	24.38
27 months, under 30.....	91	34.03	27.30	72	33.88	26.44
30 months, under 33.....	76	35.24	28.72	89	34.82	27.73
33 months, under 36.....	68	35.91	29.82	103	35.41	27.97
36 months, under 39.....	90	36.58	29.50	106	35.91	28.48
39 months, under 42.....	87	37.40	31.30	80	36.95	30.08
42 months, under 45.....	89	37.70	32.43	85	37.65	31.08
45 months, under 48.....	104	38.62	33.61	108	38.84	32.43
48 months, under 51.....	100	39.52	34.90	73	39.47	33.63
51 months, under 54.....	79	40.33	35.77	95	40.03	34.03
54 months, under 57.....	54	40.78	36.37	90	40.31	34.52
57 months, under 60.....	82	41.27	37.46	79	41.24	36.24
60 months, under 63.....	73	41.88	38.47	46	40.96	35.21
63 months, under 66.....	57	41.95	38.97	58	42.17	37.86
66 months, under 69.....	41	42.98	40.28	39	43.08	39.23
69 months, under 72.....	48	43.31	40.82	44	43.89	40.66

<sup>1</sup> 47 boys, 6 years, under 7, omitted.<sup>2</sup> 40 girls, 6 years, under 7, omitted.

TABLE 19.—Average statures and weights, by sex, from 1 to 71 months; smoothed figures, exact ages; white children.<sup>1</sup>

Exact age (months).	White boys.		White girls.	
	Average stature (inches).	Average weight (pounds).	Average stature (inches).	Average weight (pounds).
1	21.85	9.98	21.43	9.42
2	23.04	11.79	22.56	10.98
3	24.08	13.36	23.55	12.38
4	24.98	14.74	24.43	13.66
5	25.75	15.96	25.19	14.80
6	26.42	17.00	25.85	15.80
7	27.00	17.91	26.43	16.69
8	27.52	18.69	26.95	17.46
9	27.99	19.37	27.43	18.14
10	28.43	19.98	27.88	18.74
11	28.85	20.54	28.31	19.30
12	29.27	21.07	28.71	19.80
13	29.67	21.57	29.11	20.28
14	30.07	22.07	29.50	20.73
15	30.45	22.55	29.88	21.19
16	30.83	23.02	30.27	21.65
17	31.20	23.49	30.67	22.12
18	31.58	23.95	31.05	22.58
19	31.94	24.40	31.42	23.04
20	32.28	24.83	31.77	23.47
21	32.60	25.25	32.09	23.88
22	32.91	25.65	32.39	24.26
23	33.20	26.03	32.67	24.63
24	33.48	26.38	32.95	24.99
25	33.76	26.77	33.23	25.35
26	34.02	27.13	33.51	25.73
27	34.29	27.49	33.80	26.11
28	34.57	27.87	34.09	26.51
29	34.85	28.26	34.39	26.89
30	35.13	28.64	34.68	27.29
31	35.41	29.02	34.96	27.67
32	35.67	29.38	35.22	28.03
33	35.91	29.72	35.46	28.37
34	36.13	30.03	35.70	28.71
35	36.35	30.33	35.92	29.04
36	36.56	30.61	36.14	29.36
37	36.78	30.89	36.37	29.67
38	37.00	31.19	36.60	29.97
39	37.22	31.50	36.84	30.30
40	37.45	31.84	37.08	30.62
41	37.69	32.18	37.33	30.95
42	37.93	32.54	37.58	31.28
43	38.17	32.88	37.81	31.59
44	38.40	33.21	38.03	31.86
45	38.62	33.51	38.23	32.14
46	38.82	33.78	38.43	32.40
47	39.00	34.03	38.61	32.65
48	39.17	34.25	38.80	32.92
49	39.34	34.48	38.98	33.18
50	39.50	34.78	39.18	33.44
51	39.68	34.94	39.37	33.71
52	39.86	35.19	39.58	33.01
53	40.07	35.48	39.80	34.32
54	40.29	35.78	40.02	34.64
55	40.51	36.10	40.25	34.98
56	40.73	36.44	40.47	35.30
57	40.93	36.77	40.68	35.60
58	41.13	37.11	40.88	35.90
59	41.31	37.44	41.07	36.20
60	41.48	37.76	41.25	36.50
61	41.66	38.06	41.43	36.78
62	41.84	38.34	41.60	37.08
63	42.02	38.61	41.78	37.38
64	42.21	38.90	41.94	37.66
65	42.41	39.20	42.11	37.94
66	42.61	39.53	42.29	38.26
67	42.81	39.86	42.48	38.57
68	43.00	40.21	42.70	38.94
69	43.21	40.56	42.92	39.33
70	43.45	40.89	43.16	39.74
71	43.73	41.23	43.40	40.16

<sup>1</sup> Calculated from averages of Table I, p. 17, with the use of third differences.

TABLE 20.—Average statures and weights, by sex, from 1 to 71 months; smoothed figures, exact ages; white children.

Exact age (months).	White boys.		White girls.	
	Average stature (centimeters).	Average weight (kilograms).	Average stature (centimeters).	Average weight (kilograms).
1	55.5	4.53	54.4	4.27
2	58.5	5.35	57.3	4.98
3	61.2	6.06	59.8	5.62
4	63.4	6.69	62.1	6.20
5	65.4	7.24	64.0	6.71
6	67.1	7.71	65.7	7.17
7	68.6	8.12	67.1	7.57
8	69.9	8.48	68.5	7.92
9	71.1	8.79	69.7	8.23
10	72.2	9.06	70.8	8.50
11	73.3	9.32	71.9	8.75
12	74.3	9.56	72.9	8.98
13	75.4	9.78	73.9	9.20
14	76.4	10.01	74.9	9.40
15	77.3	10.23	75.9	9.61
16	78.3	10.44	76.9	9.82
17	79.2	10.65	77.9	10.03
18	80.2	10.86	78.9	10.24
19	81.1	11.07	79.8	10.45
20	82.0	11.26	80.7	10.65
21	82.8	11.45	81.5	10.83
22	83.6	11.63	82.3	11.00
23	84.3	11.81	83.0	11.17
24	85.0	11.97	83.7	11.34
25	85.8	12.14	84.4	11.50
26	86.4	12.31	85.1	11.67
27	87.1	12.47	85.9	11.84
28	87.8	12.64	86.6	12.02
29	88.5	12.82	87.4	12.20
30	89.2	12.99	88.1	12.38
31	89.9	13.16	88.8	12.55
32	90.6	13.33	89.5	12.71
33	91.2	13.48	90.1	12.87
34	91.8	13.62	90.7	13.02
35	92.3	13.76	91.2	13.17
36	92.9	13.88	91.8	13.32
37	93.4	14.01	92.4	13.46
38	94.0	14.15	93.0	13.59
39	94.5	14.29	93.6	13.74
40	95.1	14.44	94.2	13.89
41	95.7	14.60	94.8	14.04
42	96.3	14.76	95.5	14.19
43	97.0	14.91	96.0	14.33
44	97.5	15.06	96.6	14.45
45	98.1	15.20	97.1	14.58
46	98.6	15.32	97.6	14.70
47	99.1	15.44	98.1	14.81
48	99.5	15.54	98.6	14.93
49	99.9	15.64	99.0	15.05
50	100.3	15.78	99.5	15.17
51	100.8	15.85	100.0	15.29
52	101.2	15.96	100.5	14.97
53	101.8	16.09	101.1	15.57
54	102.3	16.23	101.7	15.71
55	102.9	16.37	102.2	15.87
56	103.5	16.53	102.8	16.01
57	104.0	16.68	103.3	16.15
58	104.5	16.83	103.8	16.28
59	104.9	16.98	104.3	16.42
60	105.4	17.13	104.8	16.56
61	105.8	17.26	105.2	16.68
62	106.3	17.39	105.7	16.82
63	106.7	17.51	106.1	16.96
64	107.2	17.64	106.5	17.08
65	107.7	17.78	107.0	17.21
66	108.2	17.93	107.4	17.35
67	108.7	18.08	107.9	17.49
68	109.2	18.24	108.5	17.66
69	109.8	18.40	109.0	17.84
70	110.4	18.55	109.6	18.03
71	111.1	18.70	110.2	18.22

TABLE 21.—Average weight for height, by sex; white children.<sup>1</sup>

Stature.		Boys.		Girls.	
Centimeters.	Inches.	Number.	Average weight (kilograms).	Number.	Average weight (kilograms).
50.8	20	206	3.71	310	3.69
53.3	21	486	4.30	654	4.21
55.9	22	905	4.79	1,121	4.78
58.4	23	1,352	5.42	1,635	5.39
61.0	24	1,994	6.11	2,318	6.05
63.5	25	2,496	6.81	2,866	6.72
66.0	26	3,068	7.53	3,179	7.42
68.6	27	3,525	8.18	3,561	8.01
71.1	28	3,775	8.80	3,471	8.62
73.7	29	3,605	9.38	3,425	9.16
76.2	30	3,671	9.97	3,563	9.66
78.7	31	3,834	10.54	3,750	10.25
81.3	32	3,803	11.14	3,805	10.80
83.8	33	4,075	11.70	3,951	11.37
86.4	34	4,533	12.30	4,405	11.98
88.9	35	4,698	12.89	4,596	12.59
91.4	36	5,159	13.48	4,919	13.21
94.0	37	5,074	14.10	4,974	13.78
96.5	38	5,265	14.71	4,973	14.38
99.1	39	5,133	15.35	4,823	14.96
101.6	40	4,769	16.00	4,505	15.64
104.1	41	4,181	16.71	3,894	16.34
106.7	42	3,393	17.41	3,002	17.01
109.2	43	2,312	18.20	2,020	17.79
111.8	44	1,598	18.93	1,341	18.57
114.3	45	857	19.73	703	19.41
116.8	46	423	20.60	349	20.41
119.4	47	193	21.45	143	21.25

<sup>1</sup>The unit of grouping was the inch; the centimeters and inches show the midpoints of the groups. Averages are not shown for statures under 20 inches nor for statures 48 inches or over, since the numbers of children of these statures were too small to afford satisfactory averages.

TABLE 22.—*Weight and age; white boys of specified statures.*

Weight (pounds).	White boys (stature 25 inches).							
	Total.	Age (months).						
		Under 3.	3 to 6.	6 to 9.	9 to 12.	12 to 15.	15 to 18.	18 to 21.
Total.....	2,496	359	1,555	488	81	6	5	2
10.....	7	3	2	2				
10½.....	13	8	4	1				
11.....	30	10	19	1				
11½.....	39	14	21	2				
12.....	78	25	44	8			1	
12½.....	111	25	71	14	1			
13.....	176	43	117	14	2			
13½.....	185	50	111	24				
14.....	269	43	181	38	7			
14½.....	229	36	146	41	6			
15.....	311	40	216	47	7	1		
15½.....	206	21	128	50	4	1		2
16.....	239	21	159	47	11		1	
16½.....	150	5	97	40	8			
17.....	146	10	80	47	8		1	
17½.....	86	2	52	26	6			
18.....	92	3	48	38	2	1		
18½.....	34		21	11	2			
19.....	38		17	14	5	1	1	
19½.....	21		14	5	2			
20.....	22		6	9	2	2		
20½.....	6		1	4	1			
21.....	7			5	2			
21½.....	1						1	



Weight (pounds).		White boys (stature 30 inches).																
		Total.	Age (months).															
			3 to 6.	6 to 9.	9 to 12.	12 to 15.	15 to 18.	18 to 21.	21 to 24.	24 to 27.	27 to 30.	30 to 33.	33 to 36.	36 to 39.	39 to 42.	42 to 45.	45 to 48.	48 to 51.
Total.....	3,671	22	137	731	1,249	908	371	151	45	28	9	7	4	3	2	1	2	1
16½	1								1									
17	9	2	1	2	4													
17½	19		2	6	8													
18	44	2	2	12	13	11	1	2		1								
18½	60	1	6	13	22	11	2	3	1			1						
19	155	2	3	39	51	32	19	6	2	1								
19½	154	3	6	29	50	42	12	8	3	1								
20	348		17	76	120	81	39	8	3	2	2							
20½	227	1	8	52	70	63	19	9	5									
21	415	1	12	72	130	130	36	23	4	5								
21½	308	1	15	66	107	75	32	7	2	1	2							
22	432	2	17	84	152	100	48	20	5	3		1						
22½	279		7	52	106	67	34	8	4	1								
23	320	1	16	68	111	76	32	11	3	1		1						
23½	148			26	56	37	17	10		2								
24	250	3	7	40	88	61	24	16	6	3	1						1	
24½	122	2	6	26	40	26	16	2	1	3								
25	166	1	5	34	47	47	16	10	2	4								
25½	60		2	9	27	15	5	2										
26	61		2	9	22	16	6	1	2		1		1					1
26½	31		2	7	6	8	4	1	1				1	1				
27	35			4	13	6	5	2	1		1	2	1		1			
27½	13		1	4	3	1	2	1				1						
28	7			1	3	1	1	1										
28½	1											1						
29	2																	
30	1													1			1	
30½	1												1					
31	1											1						
33	1															1		

TABLE 22.—*Weight and age; white boys of specified statures—Continued.*

Weight (pounds).	White boys (stature 35 inches).																						
	Total.	Age (months).																					
		9 to 12.	12 to 15.	15 to 18.	18 to 21.	21 to 24.	24 to 27.	27 to 30.	30 to 33.	33 to 36.	36 to 39.	39 to 42.	42 to 45.	45 to 48.	48 to 51.	51 to 54.	54 to 57.	57 to 60.	60 to 63.	63 to 66.	69 to 72.	78 to 81.	
Total.....	4,698	6	4	32	143	345	695	981	840	723	413	216	140	72	36	27	14	4	3	2	1	1	
19.....	3							2		1													
20.....	2						1			1													
20½.....	1									1													
21.....	4							2	1		1												
21½.....	4								2	1													
22.....	3							2	1														
22½.....	15						4	2	2	2			3										
23.....	29				1	1	7	3	9	1	6			1									
23½.....	24				1		6	6	2	5	3												
24.....	81				3	6	8	13	12	16	9	9	3									1	
24½.....	78			2	2	8	14	13	15	11	3	5	3										
25.....	212			2	10	23	30	49	39	31	12	5	8			2							
25½.....	143			1	7	13	21	23	26	22	13	6	5	1	3						1		
26.....	324	2		3	6	20	57	67	68	42	24	17	11	3	3							1	
26½.....	216			1	8	15	28	50	33	36	22	10	3	4	4						1		
27.....	450		1	4	11	33	70	99	76	68	36	26	8	13	1	4					4		
27½.....	323	1		3	10	23	57	54	59	57	26	14	12	1	2	3					3		
28.....	486		1	6	13	35	67	117	77	81	46	18	14	7	1	2					2		1
28½.....	313	1		2	6	26	46	60	59	46	32	16	8	3	1	3					1		
29.....	426			3	14	33	61	89	86	61	33	18	16	6	3								
29½.....	246			2	10	14	25	68	42	39	21	8	9	3	2	3					3		
30.....	386			1	10	32	63	83	74	52	35	16	8	2	4						1		1
30½.....	171	1			8	12	19	31	31	25	22	8	8	2	2						1		
31.....	213				12	18	39	42	38	27	17	8	7	4	1								
31½.....	114			1	3	6	17	30	21	17	10	5	2	2									
32.....	127	1			4	11	16	21	24	22	11	7	4	4		1					1		
32½.....	53				6	9	11	6	10	3	2	4	4									1	
33.....	74				2	5	12	13	9	14	6	5	1	3							1	1	
33½.....	34			1	1	3	2	9	6	4	3	3	1								1		
34.....	40				1	1	4	11	2	5	5	4		3		1					2		
34½.....	16				1	4	4	5	2	2	1	1	1		1								
35.....	23					5		4	4	4	5	2		1		1					1		
35½.....	7							2	1	4													
36.....	19						2	5	4	2		1	1			1							1
36½.....	9							4	4	1						2							



TABLE 22.—*Weight and age; white boys of specified statures—Concluded.*

Weight (pounds).		White boys (stature 40 inches).																				
		Total.	Age (months).																			
			18 to 21.	21 to 24.	24 to 27.	27 to 30.	30 to 33.	33 to 36.	36 to 39.	39 to 42.	42 to 45.	45 to 48.	48 to 51.	51 to 54.	54 to 57.	57 to 60.	60 to 63.	63 to 66.	66 to 69.	69 to 72.	72 to 75.	75 to 78.
43.....	16				1		2	1		5	2	2	1	1			1					
43½.....	3									1	1			1								
44.....	8									2	1			3			1	1				
44½.....	1																					
45.....	12				2			1		1	1	3					2	2				
45½.....	3							1	1				1									
46.....	4										1						1	1	1			
46½.....	1																1					
47.....	1													1								
47½.....	1													1								
48.....	2									1		1										
48½.....	2									1								1				

Weight (pounds).		White boys (stature 45 inches).															
		Total.	Age (months).														
			36 to 39.	39 to 42.	42 to 45.	45 to 48.	48 to 51.	51 to 54.	54 to 57.	57 to 60.	60 to 63.	63 to 66.	66 to 69.	69 to 72.	72 to 75.	75 to 78.	78 to 81.
Total.....	857	1	1	2	9	11	21	64	95	86	100	158	174	56	35	20	24
37.....	8				1				3		2	1	1				
37½.....	7								2		1	3					
38.....	17								5	1	5	2	4				
38½.....	10								2		1	3	3	1			
39.....	31				1	1	2		2	2	3	8	7	3		1	1
39½.....	20				1			2	2	4	2	6	1		2		
40.....	62				1		2	7	9	8	5	12	14	2	1	1	
40½.....	21							5	1	2	2	2	5	3			
41.....	42				1		4	2	4	5	6	7	7	2	2	1	1
41½.....	38				1			5	8	3	2	6	10		2		1

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42	70					2	2	3	6	5	14	18	11	4	1	2	2
42 <sub>2</sub>	41						2	2	3	3	1	7	12	3	4	2	2
43	60	1						5	7	6	5	12	16	3	3		
43 <sub>2</sub>	40		1					6	5	3	5	4	9	3	2	1	2
44	70		1			1	2	5	5	7	13	9	17	5	3	2	
44 <sub>2</sub>	31						1	1	4	3	3	6	4	5	1	2	3
45	64					1	1	4	6	7	7	9	4	5	3	2	3
45 <sub>2</sub>	27							2	3	2	3	4	4	4	4	4	1
46	40					1	3	2	1	7	4	7	7	4	2	4	4
46 <sub>2</sub>	18						1	2	2	2	2	4	4	2	1	1	1
47	40		1				1	3	9	4	6	6	4	2	1		3
47 <sub>2</sub>	15							2	1	3	3	3	3	2	1	1	1
48	26							1	3	2	3	5	5	4	2	1	1
48 <sub>2</sub>	10									1	1	5	1		1	1	
49	14							1	1	1	3	5	2	1			
49 <sub>2</sub>	1											5	1				
50	12								2	2		3	1	2			1
50 <sub>2</sub>	2											2	1		1		
51	3							1		1			1				
51 <sub>2</sub>	5							1					3	1			
52	3							1		2							
52 <sub>2</sub>	2					1						1					
53	2										1				1		
53 <sub>2</sub>																	
54	2											1	1				
54 <sub>2</sub>																	
55	1							1									
55 <sub>2</sub>																	
56	2						1					1					

GENERAL TABLES.



TABLE 23.—Average statures and weights, by sex, from 3 to 6 years of age; smoothed and corrected figures,<sup>1</sup> in centimeters and kilograms; white children.

Age.	White boys.		White girls.	
	Average stature (centimeters).	Average weight (kilograms).	Average stature (centimeters).	Average weight (kilograms).
36 months, under 37.....	93.1	13.95	92.1	13.38
37 months, under 38.....	93.7	14.08	92.7	13.53
38 months, under 39.....	94.3	14.22	93.3	13.67
39 months, under 40.....	94.9	14.38	96.4	13.83
40 months, under 41.....	95.5	14.53	94.5	13.98
41 months, under 42.....	96.1	14.70	95.2	14.14
42 months, under 43.....	96.7	14.87	95.8	14.29
43 months, under 44.....	97.3	15.02	96.4	14.43
44 months, under 45.....	97.9	15.17	96.9	14.55
45 months, under 46.....	98.4	15.31	97.4	14.68
46 months, under 47.....	98.9	15.43	97.9	14.80
47 months, under 48.....	99.4	15.54	98.4	14.92
48 months, under 49.....	99.8	15.64	98.9	15.05
49 months, under 50.....	100.2	15.75	99.4	15.17
50 months, under 51.....	100.7	15.86	99.8	15.30
51 months, under 52.....	101.1	15.98	100.4	15.43
52 months, under 53.....	101.6	16.11	100.9	15.58
53 months, under 54.....	102.2	16.25	101.5	15.73
54 months, under 55.....	102.7	16.39	102.1	15.88
55 months, under 56.....	103.3	16.54	102.6	16.03
56 months, under 57.....	103.8	16.69	103.2	16.17
57 months, under 58.....	104.3	16.84	103.7	16.30
58 months, under 59.....	104.8	17.00	104.2	16.44
59 months, under 60.....	105.3	17.14	102.1	16.58
60 months, under 61.....	105.7	17.28	105.1	16.71
61 months, under 62.....	106.2	17.41	105.6	16.84
62 months, under 63.....	106.6	17.54	106.0	16.97
63 months, under 64.....	107.1	17.66	106.5	17.11
64 months, under 65.....	107.6	17.80	106.9	17.23
65 months, under 66.....	108.1	17.94	107.3	17.36
66 months, under 67.....	108.6	18.09	107.8	17.51
67 months, under 68.....	109.1	18.24	108.3	17.66
68 months, under 69.....	109.6	18.41	108.9	17.84
69 months, under 70.....	110.2	18.56	109.4	18.02
70 months, under 71.....	110.6	18.81	110.3	18.31
71 months, under 72.....	111.6	18.87	110.7	18.39

<sup>1</sup> For the first 36 months, see Table 1, p. 85. For equivalents in inches and pounds, see Table XXXI, p. 76.

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