

# NOTES ON THE CEPHALIC INDEX OF RUSSIAN JEWS IN BOSTON

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## INTRODUCTION

The material upon which this article is based was collected between May, 1915, and January, 1917, under the direction of Dr. E. A. Hooton, of the Peabody Museum. The duties coincident with studies in the Graduate Department at Harvard made it possible to devote only a few hours at a time to the collection of material.

Since the work was done without any aid, progress was slow. The attempt was made to reach the Jews through their clubs. Several of these, particularly the Civic Service House, the Elizabeth Peabody House, and the West End House, were of great assistance. Through these clubs, however, only the younger people were available. It was hoped that whole families could be studied. The attempt was made to use boys acquainted with the neighborhoods as guides and interpreters, but lack of interest and perception on their part made them more of a hindrance than a help. In going alone from house to house, it was found that the parents were over-suspicious, especially because of the war, and inability to speak their language complicated matters.

Consequently, the goal set when the work began was never reached. At length, because of moving away from Boston, the work was stopped, and it was decided to work up the material already obtained.

## SECURING THE DATA

The subjects were taken only from among the Russian Jews who were born in Russia or who were born in this country of Russian parents. All the work was done in the crowded north and west ends of Boston, which are inhabited almost entirely by Russian Jews.

On each subject, only the head was considered. Special blanks were used, which gave the name and address of the subject, the time and place of birth, and, if born in Russia, the date of immigration. Spaces were provided for the same data concerning the father and mother of the subject, but it was found that in most cases this latter information was not known. Several measurements were taken on the head and face,

and a series of observations was also recorded. This article concerns itself only with two measurements, the length and breadth of the head. These two measurements were taken according to the generally accepted method: the maximum antero-posterior diameter of the head (glabella-occipital), and the horizontal diameter of the head at the greatest width, somewhere just behind the ears, and at right angles to the sagittal plane.

The measurements were taken in contact with the skin, but without exerting undue pressure. The readings were all taken while the calipers were still in position.

The same instruments were used throughout the work, and the readings were all taken to the nearest millimeter. All the measurements were taken by the writer. This does away, to a great extent, with the personal equation, which would arise in case two or more observers had participated in the work. Infrequent repetitions of measurements showed an occasional difference in the readings of 1 millimeter. Unfortunately no careful record was kept of these variations, which would show the error which might be expected in the measurements.

The year of birth and the year of immigration were recorded. The date of birth was not noted, and, as a result, in working out the ages of the subjects, the year of birth was subtracted from the year of the observation, obviously allowing a greater latitude than the usual custom of giving the age to the nearest birthday. In regard to the place of birth, only the country was taken. More detailed information about the birthplace was deemed unnecessary at the time the measurements were made.

The blanks, as they were filled out, were filed away according to name and address. This was done in order to guard against duplication, and also to keep the families together. These blanks were not rearranged according to various headings used in the statistical treatment until the collection of material had been completed. As a result, the trend of the cephalic index was unknown until all the measurements had been made, and therefore the possibility of the wish controlling the reading was minimized.

#### STATISTICAL TREATMENT

The number of subjects, 314 in all, does not allow any very detailed treatment of the various relations which are possible in such a work as this. This treatment is further hampered by lack of data. In many cases the subject could not give the information desired.

The material obtained in regard to the various phases will be given, but in several cases it will be of little real value. Dr. Boas, in his work,<sup>1</sup> dealt with the relation between the indices of the American child and its Russian mother. Unfortunately, in the majority of those families which were measured, all the children were born in Russia. Table 1 contains the cephalic index of five mothers and their children.

By the use of this material and that obtained from those children born in America who knew the year of their mother's immigration, a series (table 2) was obtained giving the relation between the head form of the American-born Jew and the length of time the mother had been in this country before the birth of the child. The means of the seven columns have been given by way of summary. It should be noticed that the means of the two best series, namely, those of the males born

TABLE 1. CEPHALIC INDEX

RUSSIAN MOTHER	AMERICAN CHILD
80	80
82	86
82	86
84	88
88	82
88	88
89	84

under and over seven years after the arrival of the mother, agree, in general, with Dr. Boas' results.<sup>2</sup>

Another classification which utilizes only a part of the subjects measured is that of arranging the cephalic indices of those subjects born in Russia, according to the year of immigration (table 3). The number of cases does not warrant any conclusion in regard to the possible change of the head form during any period. The table brings out quite clearly, however, that the material was obtained principally from Jews who had immigrated from Russia since 1900. The 15 years from 1899 through 1913 contain over 90 per cent of the cases.

It is necessary now to consider the material as a whole. The data collected may be divided into two large groups, namely, the indices of Russian-born Jews, and those of American-born Jews. Each of these

<sup>1</sup> Franz Boas, *Changes in Bodily Form of Descendants of Immigrants*. Columbia University Press, N. Y., 1912.

<sup>2</sup> Boas, op. cit., p. 59.

TABLE 2. CEPHALIC INDEX OF AMERICAN-BORN JEWS IN RELATION TO LENGTH OF MOTHER'S RESIDENCE IN THIS COUNTRY

INDEX	LESS THAN 7 YEARS			MORE THAN 7 YEARS			TOTAL
	Male	Female	Total	Male	Female	Total	
76	—	—	—	1	—	1	1
77	—	—	—	—	—	—	—
78	—	—	—	3	—	3	3
79	2	—	2	3	—	3	5
80	2	—	2	4	—	4	6
81	4	2	6	1	—	1	7
82	3	2	5	—	3	3	8
83	—	2	2	3	—	3	5
84	2	1	3	2	—	2	5
85	2	1	3	—	—	—	3
86	—	2	2	1	1	2	4
87	—	—	—	1	1	2	2
88	1	—	1	1	2	3	4
89	—	—	—	—	—	—	—
90	—	—	—	—	1	1	1
Total.....	16	10	26	20	8	28	54
Mean.....	82.1	83.3	82.4	81.3	85.6	82.5	82.6

TABLE 3. CEPHALIC INDEX OF RUSSIAN-BORN JEWS ARRANGED ACCORDING TO YEAR OF IMMIGRATION

YEAR	NO.	RANGE	MEAN	YEAR	NO.	RANGE	MEAN
1886	1	80	80.0	1904	12	81-89	83.1
1888	1	78	78.0	1905	15	75-88	83.3
1891	1	88	88.0	1906	10	80-88	84.3
1893	1	86	86.0	1907	15	76-87	82.9
1894	1	85	85.0	1908	15	77-90	81.9
1895	1	82	82.0	1909	16	77-89	83.2
1896	2	81-83	82.0	1910	4	82-86	83.5
1897	1	83	83.0	1911	7	78-86	81.6
1898	2	81-88	84.5	1912	20	75-91	82.4
1899	7	84-88	85.7	1913	15	77-88	82.9
1900	10	77-86	82.6	1914	3	82-83	82.3
1901	5	80-86	83.4				
1902	5	75-88	81.2				
1903	15	80-89	83.7	Total.	185	75-91	83.08

TABLE 4. CEPHALIC INDEX OF RUSSIAN-BORN JEWS GROUPED ACCORDING TO AGE AND SEX

MALES BORN IN RUSSIA				FEMALES BORN IN RUSSIA			
Age	No.	Range	Mean	Age	No.	Range	Mean
				7	1	83	83.0
				9	2	88-91	89.5
10	1	85	85.0				
11	5	81-87	84.6	11	1	80	80.0
12	3	83-88	85.7	12	2	89	89.0
13	2	85-86	85.5	13	3	84-86	85.5
14	5	81-88	85.5				
15	11	75-89	82.9	15	1	84	84.0
16	22	77-86	82.2	16	1	77	77.0
17	7	80-85	81.7	17	6	82-90	84.8
18	22	76-89	83.0	18	7	79-89	85.4
19	13	78-86	81.8	19	1	88	88.0
20	8	75-85	81.4	20	4	84-86	85.0
21	9	77-88	82.4	21	2	82-88	85.0
22	7	80-88	83.0	22	2	82-88	85.0
23	4	79-86	81.2	23	1	78	78.0
24	2	77-83	80.0				
25	1	85	85.0				
27	2	80-83	81.5				
28	1	81	81.0	28	1	82	82.0
29	2	75-86	80.5				
31	1	78	78.0				
32	2	83	83.0				
33	2	82-84	83.0	33	1	89	89.0
34	1	82	82.0				
				37	2	80-84	82.0
				38	1	85	85.0
				39	1	88	88.0
				40	1	82	82.0
41	1	81	81.0	42	1	85	85.0
43	1	82	82.0	43	2	80-88	84.0
				44	1	84	84.0
				45	1	83	83.0
46	3	78-86	82.7	46	1	84	84.0
				48	1	86	86.0
50	1	81	81.0				
	139	75-89	82.56		48	77-91	84.77

groups may be divided according to sex, and finally the measurements can be grouped according to age of the subject, and cephalic indices. In tables 4 and 5 this has been done. The material as presented here brings out the fact that the bulk of the data was obtained from individuals between the ages of 12 and 23 years. The arrangement shows, also, the absence of sufficient material in any one group of years to warrant the drawing of conclusions.

TABLE 5. CEPHALIC INDEX OF AMERICAN-BORN JEWS GROUPED ACCORDING TO AGE AND SEX

MALES BORN IN AMERICA				FEMALES BORN IN AMERICA			
Age	No.	Range	Mean	Age	No.	Range	Mean
2	1	86	86.0	3	1	86	86.0
7	2	80-88	84.0	8	4	82-85	83.5
8	3	81-85	83.0	10	1	85	85.0
10	5	77-84	80.4	11	2	80-86	83.0
11	6	79-92	84.3	12	3	81-90	84.3
12	4	74-89	81.8	13	8	77-88	81.5
13	6	82-87	84.3	14	1	83	83.0
14	9	79-85	81.8	15	2	82-85	83.5
15	6	77-88	81.2	17	2	81-82	81.5
16	10	75-84	80.3	18	1	81	81.0
17	9	74-87	80.8	19	1	83	83.0
18	8	78-85	81.8	20	2	82-88	85.0
19	7	79-87	83.4	22	2	82-87	84.5
20	7	73-85	80.3	23	2	86	86.0
21	5	80-88	82.2				
22	4	78-83	80.8				
24	1	79	79.0				
26	1	76	76.0				
30	1	83	83.0				
	95	73-92	81.79		32	77-90	83.25

If the age grouping is omitted, and the material is classified only according to place of birth and sex, four principal groups result which can be studied. This classification combined with one according to the indices is shown in table 6. In addition to these four groups are three more resulting from their combinations, namely, those containing all measurements of subjects born in Russia, all those of American birth, and finally, one group containing all the data obtained. These seven

groups are given graphically in three frequency polygons (figs. 1, 2, 3). The cephalic indices range from 73 to 92, a range 2 points smaller than that given by Dr. Boas.<sup>3</sup> The range of the females of both classes is smaller, which is true also of the number of cases.

TABLE 6. CEPHALIC INDEX OF JEWS CLASSIFIED ACCORDING TO PLACE OF BIRTH AND SEX

INDEX	RUSSIAN			AMERICAN			TOTALS
	Male	Female	Both	Male	Female	Both	
73				1		1	1
74				2		2	2
75	3		3	1		1	4
76	2		2	1		1	3
77	6	1	7	2	1	3	10
78	7	1	8	6	2	8	16
79	3	1	4	11	1	12	16
80	12	3	15	10	1	11	26
81	15		15	14	3	17	32
82	18	5	23	8	6	14	37
83	20	4	24	12	4	16	40
84	13	7	20	8	2	10	30
85	12	7	19	6	4	10	29
86	15	5	20	3	4	7	27
87	5	1	6	4	1	5	11
88	6	7	13	4	2	6	19
89	2	4	6	1		1	7
90		1	1		1	1	2
91		1	1				1
92				1		1	1
	139	48	187	95	32	127	314

The arithmetic mean and the standard deviation for all seven groups are given in table 7, together with the standard error of each. The standard error of the arithmetic mean was obtained by using the formula

$$Em = \pm \frac{\sigma}{\sqrt{n}}$$

The standard error of the standard deviation was obtained by substituting in

$$Ed = \pm \frac{\sigma}{\sqrt{2n}}$$

<sup>3</sup> Boas, Changes in the Bodily Form of Descendants of Immigrants. *American Anthropologist*, n. s. 14, p. 560.

In both the American-born Jews and the Russian-born Jews, the mean for the females exceeds that for the males. This agrees, in general, with Dr. Boas' results.<sup>4</sup>

The fact that the standard error is larger in the case of the females is obviously due to the fewer number of cases in those columns. The

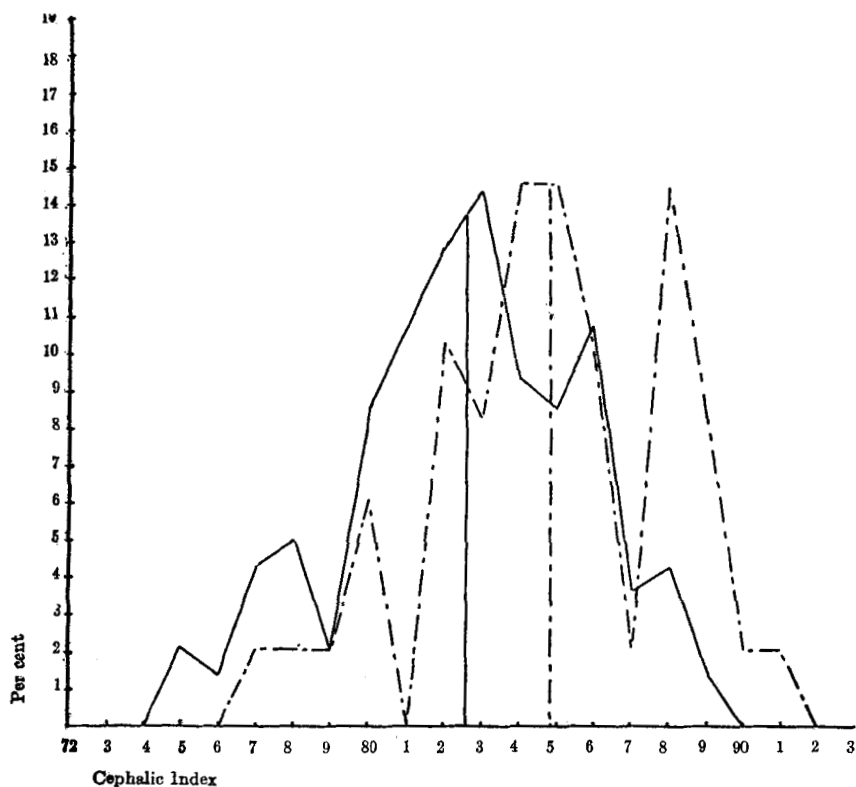


FIG. 1. JEWS BORN IN RUSSIA.

Male —————

Female - - - - -

standard deviations for all the American-born Jews and all the Russian-born Jews are larger, in both cases, than those of the columns of males and females, due to the combination of these two factors. The standard deviation for the complete series is still larger, for the same reason.



In table 8 the arithmetic means and the standard deviations of the four principal groups and their two combinations are compared, giving the differences between them. It is noteworthy that the differences between the means of the groups compared in all three cases exceed the sum of the standard errors of the means of these groups, in spite of

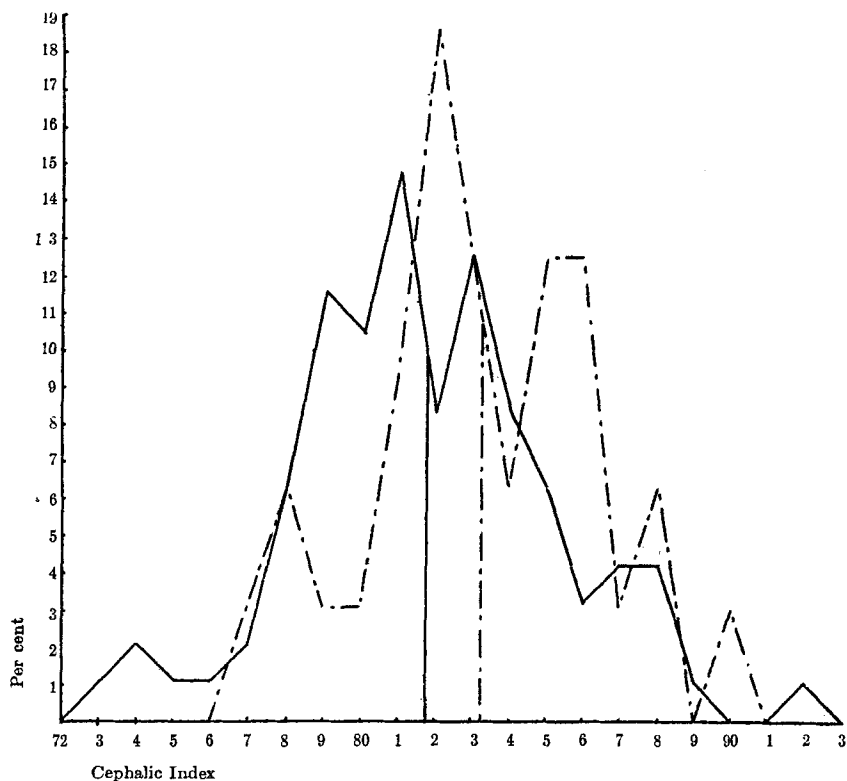


FIG. 2. JEWS BORN IN AMERICA.

Male —————

Female - - - - -

the small number of cases in each group, a condition which increases the errors. This excess is for the males 0.16, for the females 0.52, and for the combined groups 0.43 of a point. This fact leads to the conclusion that there is probably some factor other than accident influencing the cephalic indices of the groups, although the comparatively small

number of cases tends to weaken this conclusion rather than strengthen it. This condition does, however, agree with that found by Dr. Boas in New York. His results show that the cephalic indices of American-born Jews, both male and female, average 2 points less than those of foreign-born Jews.<sup>5</sup>

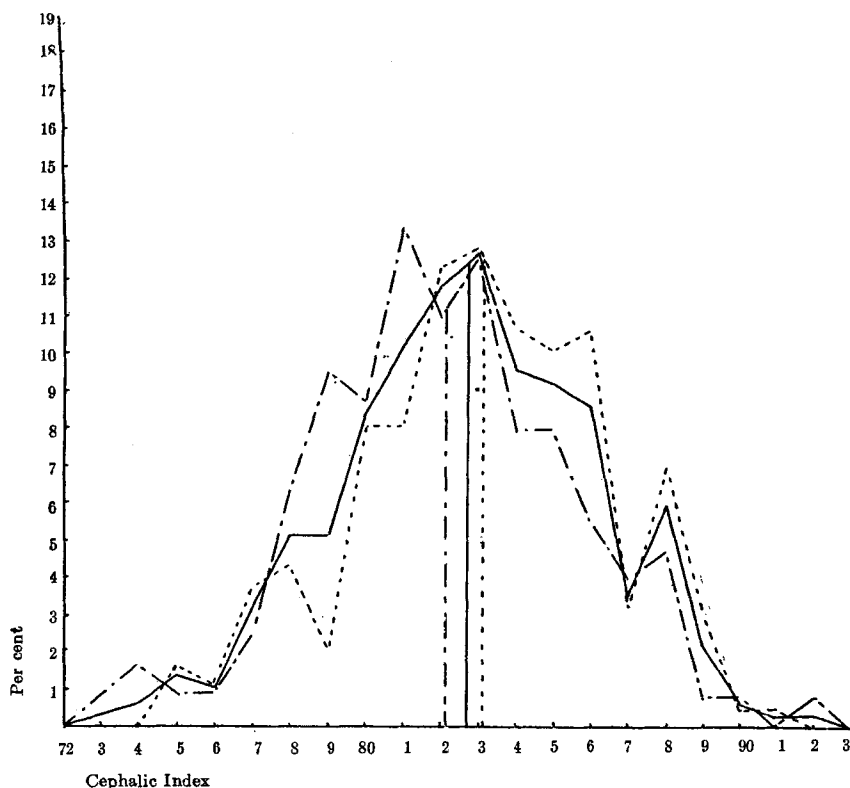


FIG. 3.

Total observations —————  
 Jews born in America - - - - -  
 Jews born in Russia . . . . .

In conclusion, then, it may be said that, in spite of the lack of material, which makes it impossible to compare these results with many of the conclusions reached by Dr. Boas, one point can be compared,

<sup>5</sup> Boas, *op. cit.*, p. 56.

TABLE 7. ARITHMETIC MEAN, STANDARD ERROR, STANDARD DEVIATION, AND STANDARD ERROR OF STANDARD DEVIATION BY GROUPS

	MEAN	ERROR	DEVIATION	ERROR
Male Russian.....	82.56	± .27	±3.16	± .19
Female Russian.....	84.77	± .46	±3.18	± .32
Russian.....	83.13	± .24	±3.31	± .20
Male American.....	81.79	± .34	±3.29	± .24
Female American.....	83.25	± .54	±3.04	± .38
American.....	82.16	± .30	±3.41	± .21
Totals.....	82.74	± .19	±3.38	± .13

TABLE 8. ARITHMETIC MEANS AND STANDARD DEVIATIONS OF GROUPS ACCORDING TO SEX AND COMBINED, WITH DIFFERENCES

	RUSSIAN	AMERICAN	DIFFERENCE
Males:			
Mean.....	82.56	81.79	.77
Deviation.....	±3.16	±3.29	.13
Females:			
Mean.....	84.77	83.25	1.52
Deviation.....	±3.18	±3.04	.14
Combined:			
Mean.....	83.13	82.16	.97
Deviation.....	±3.31	±3.41	.10

namely, the relation of the head form of the Russian-born Jews to that of the American Jews born of Russian parents. This comparison shows that the condition found by Dr. Boas to exist among the Jewish immigrants living in New York holds true also, as far as the material in hand is concerned, with those Jewish immigrants living in Boston.

As to the causes of this condition, namely, a slight decrease in the cephalic index of the American Jews as compared with the Russian Jews, it would be presumptuous to offer an opinion. It is possible only to agree with Dr. Boas' words: "I have no solution to offer. I have only stated the results of my observations and considered the plausibilities of various explanations that suggest themselves, none of which were found satisfactory."<sup>6</sup>

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<sup>6</sup> Boas, *American Anthropologist*, n. s. 14, p. 562.