

AGE OF FIRST MENSTRUATION ON THE
NORTH AMERICAN CONTINENT.

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I. GENERAL CONSIDERATIONS.

AN investigation as to the age of *First Menstruation* must appear as of purely scientific value; but, like most scientific researches, it carries with it a serious practical significance: it is a time to be noted; the coming of the flow indicates unmistakably the advent of puberty, it is the alarm signal which sounds the warning that the era of susceptibility and danger has come. The pubertal is a period of unusual interest and importance in the life of the girl; it is of extreme physiologic interest and of vital practical importance not only to the girl, but to the educator, the physician, and even to the community, to the State; it is the most impressionable period in woman's life, the period when most havoc is wrought, and the *period when preventive gynecology must make its first and most effective impress*; but if we are to warn and protect the girl we must, first of all, thoroughly understand the process, we must know what the symptoms are and when we are to expect them. The time of appearance I shall here discuss.

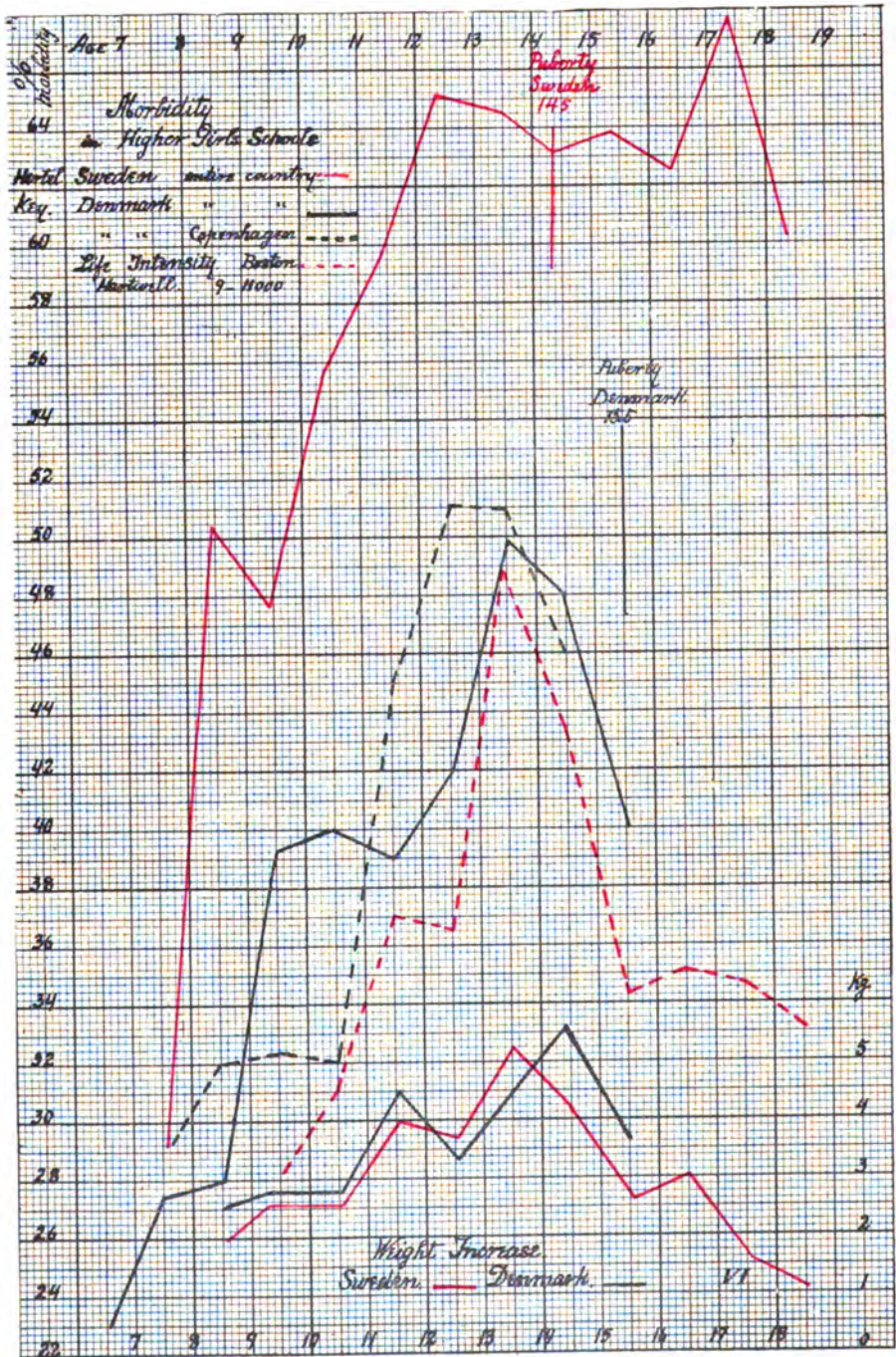
1. THE PUBERTAL PERIOD. We all appreciate in a general way that the advent of puberty marks an epoch in the life of the girl; we look upon it as announcing the coming of womanhood, as the most striking indication of development—an evidence of the first blush of the unfolding bud; but we do *not*

realize the deeply serious significance of the period, its influence upon the organism, upon the future of the girl, the deep and permanent impress of the surroundings at that most susceptible of all periods. This is not realized, though constantly apparent in facts which meet us at every turn, and which we will be forced to recognize and heed. These I have shown in my recent address before this Society, but it may be well to briefly recall the more striking facts—facts established beyond doubt or dispute, by individual observation and by the national census.

Vitality, or life-intensity, is at its highest during the preparatory or *prepubertal* period, just before the advent of menstruation, and sinks with the coming of the flow, as is shown by Dr. Hartwell in his investigation in the schools of Boston, based upon 11,000 observations.

The mortality charts of the eleventh census of the United States show this same period from the tenth to the fifteenth year to be that of lowest death-rate; this is true of hereditary, of infectious, and many other diseases, and while mortality is at its lowest with an intensified resistance to infectious diseases, to fatal disease, and to the development of neoplasms, the sensitiveness of the system to impressions mental and physical—*i. e.*, the *susceptibility* of the system—is *higher* than at any other time of life—colds, headaches, neuroses, and slight disturbances of all kinds attain their greatest frequency in the year preceding puberty, as shown by the statistics of the schools of Sweden and Denmark, facts unfortunately not observed by either the census or the Educational Bureau of this country. The susceptibility of the nervous system, the wax-like, mouldable nature of youth during the pubertal period, is shown by the curve of *greatest susceptibility to teachers' influence*, presented by Sandford Bell. This in *girls* begins to rise rapidly at eleven, and reaches its maximum at fourteen, then going down at the same rate, identical with the age-curve of first menstruation. In *boys* it begins one year later, reaching its maximum at sixteen, and then rapidly descends, like

CHART I.



the pubertal curve of the male, bearing the same relation to the impressionability curve of the girl as the pubertal curve of the male does to that of the female. Another similar curve is that of the greatest desire for reading, which is highest between fourteen and fifteen in the girl, and from one and one-half to two years later in the boy. Nervous disturbances, marked by stuttering (Hartwell School Census of Boston) and hysteria (Cloblatt) attain their greatest frequency at the same time—all reaching their apex somewhat over one year before and dropping to their lowest with the advent of the flow. The same is true of physical development, of growth in height and weight; all these conditions are more marked in the girl than in the boy, but there they likewise exist, though to a minor degree. *All are directly linked with the pubertal period, and in no way dependent upon age or years of life.* In the same country this period of susceptibility, of highest vitality and lowest mortality, is later in the boy than in the girl, precisely as the pubertal period in the boy is more retarded. In the girl I have shown that it varies with country and clime in direct relation to the variation in time of pubertal development (Chart I.), and I am convinced that this is equally true of the boy, though not so accentuated and not so readily demonstrated.

In Denmark the period of greatest growth, of highest morbidity, is one year later than it is in Sweden, and in Sweden one year later than it is in the United States, precisely as the time of first menstruation is later by one year in Denmark than it is in Sweden and later in Sweden than in this country.

The all-pervading force of this central function of female life is strikingly apparent in its correlation with growth and development and in the dependence of conditions, physiologic and pathologic, upon the pubertal period. This is the controlling factor in girl life, and must be given greater consideration than it has hitherto received.

It is a period to be recognized by the physician for a proper solution of the minor ailments—*anemia* and *chlorosis*, the *perversions*, *depressions*, and *neuroses* which are so prevalent; by

the educator, that due allowance may be made for listlessness and inattention, a mental and physical let-down, and by the mother, that she may guard the child at this most susceptible period, and accord her the consideration due the changed, fretful, irritable, and indolent condition which accompanies this eventful epoch in her life.

This has been recognized by foreign observers, and attention has again and again been directed to the subject in admirable studies, more especially since the days of Robertson in England, 1836, and of de Boismont in France, 1842. In Germany Krieger, 1869, later Hegar and Reinl have done excellent work; so also Guy and Whiteside, in England; Leopold Meyer and Ravn, in Copenhagen; Gallard, Puech, Marc d'Espine, Courty, de Soyre, Raciborski, and Dusourd, in France; de Ott, Bensenger, and others, in Russia; Heinrichus, in Finland, and Raseri, in Italy.

2. **PRESENT KNOWLEDGE AS TO CONDITIONS IN NORTH AMERICA.** This subject, and more especially the age of first menstruation, the time of puberty, in various countries was one of the leading questions elaborated at the International Medical Congress of Paris in 1867. Such a gathering of men from many climes and many countries was well adapted for the discussion of this subject, and it is upon the facts there presented that our present knowledge is still based. Here we find the work of Leudet of Rouen, Lagneau of Paris, Tilt of London, Carl Mayer of Berlin, Vogt and Faye of Norway, and Lieven of St. Petersburg. The results were eminently satisfactory as to the determination of the time of puberty in European countries. But no investigations were presented from the Western Hemisphere, nor has any investigation as to the time of first menstruation on this Continent appeared since then, save that of Emmet, whose careful study as it appears in his text-book is the only work upon the subject. Dr. Emmet there presents the material from his private practice in one group, regardless of nationality, parentage, or social status. With regard to one of these points we have data from Dr. Chad-

wick, who published some extremely indicative facts in his comparison of the date of first menstruation among Americans of American parentage and Americans of Irish parentage, but unfortunately did not develop the important points revealed, and the figures were presented incidentally only, in connection with another subject. I should perhaps add a small number by Dr. Kennedy, in which the pubertal age was also mentioned incidentally; that of Dr. Emmet is the only American investigation in which the question has been directly discussed.

It seems strange that so little attention has been given the subject in this country, and yet, as so long since recognized by Robertson, it is in the United States that it may be studied to the best advantage, and here the many interesting problems presented, which foreign observers have in vain tried to unravel, can be satisfactorily solved. The influence of race, climate, and surroundings upon the advent of puberty, which has been so much discussed, and with such varying results, is readily demonstrated by the time and the age of first menstruation among the different nationalities and in the different parts of this country, and I include Canada, because the conditions of life are sufficiently like those of the United States to admit of this blending.

3. ETHNOLOGIC PROBLEMS PRESENTED. We have here many nationalities (in my dispensary records twenty-two are represented), from the pure type to various degrees of naturalization—Germans, English, Irish, French, Russians, and Italians—born and reared abroad, preserving all the characteristics of their foreign home; then those transplanted in childhood, who have developed amid the changed surroundings of a new country; next the American bred of foreign parentage; and, finally, when all traces of foreign blood have more or less disappeared, the American born of foreign ancestry more remote, then we have the Negro, the Indian, and the Eskimo—thus affording an ideal field for ethnologic study and for a determination of the influence of race, and of race amid all variations of climate throughout 60° of longitude and 24° of latitude, from Canada with an annual mean temperature of

Russia, 38° F., to New Orleans with an almost tropical temperature of 49° F.

We can observe the French in Canada under the influence of a climate colder by far than that of their native land, and, again, the same people under the changed conditions of the New Orleans climate; so the Irish and other nationalities under the same varying conditions.

Most interesting ethnologic problems are presented by the influence of surroundings upon different peoples, and it is here that the striking contrast between the emigrant in this and other countries most clearly appears.

Migration in *European countries* means more or less a continuance of the same surroundings, the same social status. The Russian in Russia, in Finland, or in Prussia, the Armenian in Armenia, in Transylvania, or in Turkey, retains his identity, his habits, and customs; the Jew in Russia, in Poland, and in Prussia remains the same; he does not amalgamate. *In the United States*, on the contrary, national characteristics rapidly fade away, and a naturalization, amalgamation, and Americanization takes place which must leave its impress upon functional life as well as upon the external more apparent characteristics which are evident to all.

4. IMPORTANCE OF SUCH INVESTIGATIONS IN THIS COUNTRY. The subject is an extremely interesting one from many points of view, and especially so in this country, because it has never been thoroughly studied; the data we have are confined to a very small part of the country and to a very few of the many classes of our population.

Above all, it is here of importance, because this country covers so large an area, with such variations in climate and population, that all phases of the many sociologic, ethnologic, and physiologic questions involved may be solved by the facts within reach.

5. DATA UPON WHICH THIS STUDY IS BASED. *Material here Utilized.* These facts I myself have collected North and South, in Boston and St. Louis, and necessary material inac-

cessible to me has been supplemented by the generous collaboration of valued colleagues in every part of the country. Without their aid a solution of all the problems presented would have been a very questionable undertaking, and gratefully I acknowledge the interest they have shown by word and deed. (See Table I.)

For data from Canada I am indebted to Dr. Coyteaux Prevost, of Ottawa, and Dr. Laphorn Smith, of Montreal; from Baltimore, to Dr. J. Whitridge Williams; from Buffalo, to Dr. Matthew D. Mann, and from Cincinnati, to Dr. E. G. Zinke. My valued assistant, Dr. F. C. Ameiss, has added facts from his private practice in St. Louis, and from New Orleans important material has been supplied by Drs. Rudolph Matas, S. M. D. Clark, and C. J. Miller; Indian records are from Dr. A. D. Lake. The presiding officers, and especially instructors in physical training, have contributed data with regard to the age of first menstruation among school and college girls in connection with my investigation as to the influence of mental and physical strain upon the function; wanting only are the facts with regard to the period of development from the white population in the extreme Southern States and from Mexico, but these are promised for the near future.

Available for the study of this subject are over 12,400 observations of American-born women collected for this purpose (12,402), ample for a final solution of the many questions presented, altogether material more complete than it has been the good fortune of the individual observer to control in any country; to this I add the previously existing records, 5955, mainly those of Drs. Emmet and Chadwick, which cover some of the points in question, making over 18,000 observations among women of the civilized races, whites and Negroes; then there are some data with reference to the semicivilized races on this Continent (Indians and Esquimaux), 1048 in number, so that we have a total of 19,405 American observations.

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TABLE I.—RECORDS UPON WHICH THIS INVESTIGATION IS BASED.

1. *Civilized or Immigrant Races.*

a. *Dr. Engelmann's observation and observations made and contributed for this investigation.*

UNITED STATES, WHITE RACE. SCHOOL AND COLLEGE :	Number observed.	Age of 1st menstr.	
United States, Private Schools	113	13.47	
" " Colleges	1360	13.50	
" " Physical Training Schools	90	13.66	
City, Normal School	452	13.76	
" High School	121	13.82	
East, State Normal	226	13.90	
" Country Seminary	68	14.03	
West, City Normal	304	14.20	
			2734 13.8
UNITED STATES—ALL CLASSES :			
Baltimore, Higher Class. Williams	280	13.9	
Baltimore, Labor Class. Williams	714	14.00	
Cincinnati, Private Practice. Zinke	658	14.01	
Boston, Working Girl	661	14.16	
United States, Hospital Nurses	221	14.20	
St. Louis, Private Practice	697	14.25	
" " " French descent	56	13.40	
" Dispensary	2315	14.32	
			5552 14.2
CANADA—ALL CLASSES :			
Ottawa, all classes. Coytraux-Prévost	612	14.20	
Montreal " Laphorn Smith	1165	14.16	
			1777 14.42
UNITED STATES—NEGRO :			
St. Louis, Negro. Engelmann	700	14.07	
New Orleans, " Miller	384	14.09	
" " Clark	500	14.03	
Baltimore, " Williams	755	14.04	
			2339 14.05
			12,402 14.00

b. *Corroborative Evidence. Previously Published Cases.*

UNITED STATES, ALL CLASSES, PREVIOUSLY PUBLISHED :	Number observed.	Age of 1st menstr.	
New York, Private Practice. Emmet	2330	14.23	
Boston, Dispensary. Chadwick	2503	14.32	
" Private Practice "	164	14.14	
Massachusetts, Sherwood Prison. Chadwick	168	14.18	
United States, College. College Alumnae	665	13.62	
" " High School. Kennedy	125	13.72	
			5955 14.00
TOTAL			18,357 14.00

2. *Semicivilized or Native Races.*

RED AND ARCTIC RACES :	Number observed.	Age of 1st menstr.
Greenland, Esquimaux. von Haven	100	16.0
Hudson Bay Ter., Subarctic Indian. Matthews	500	12.6
United States, American Indian. Robertson	82	12.04
“ “ Seneca “ Lincoln	23	12.1
“ “ “ “ Lake.	266	13.2
Jamaica and Barbadoes Plantation Negroes (Im- migrant, not native)	77	15.6
		1048
		14.0
TOTAL—NORTH AMERICAN CONTINENT		19,405
		14.0

My own 12,400 cases represent all phases of temperature, and the various climates from the subarctic regions of Canada to the almost tropical conditions of New Orleans, from the Atlantic coast to the Mississippi Valley; representing, too, the various nationalities, of which I have utilized for this study only those most frequently represented—the English, Irish, German, and French of American birth; the Negro as a native product is here included. Among the American born of foreign parentage the various social grades are recognized as far as we can distinguish: the well-to-do observed in private practice and the poor, or laboring class, in the dispensary. Mentally or intellectually I have differentiated between the various grades of schools and colleges, endeavoring to classify with reference to differences of all kinds, with a view of determining the influence of such differences on the time of first menstruation, and to indicate, if possible, the causes of these variations.

The material here utilized is an unusual one in many ways; not only are the numbers large and the phases of life presented most varied, but the harmony of results is a factor of perhaps still greater importance—a factor which at once places the figures presented beyond all question. If differences exist they are not of consequence, usually in the second decimal, one or more hundreds of a year, three or six days. I find the age of development in 2315 dispensary cases to be 14.32 years, precisely as does Dr. Chadwick in 2503 of his Boston cases, and my observations in private practice among a higher class—697 cases, 14.25 years—differ by only $\frac{2}{100}$ of a year, six days,

from Dr. Emmet's 2330 cases of the same class; my own observations among Negroes in St. Louis, and those of my colleagues in Baltimore and New Orleans, 2339 cases in all, are almost identical, varying only between 14.03 and 14.07; and so with other groups. I more especially call attention to this fact, because no two European observers in the same country and the same group agree closely; usually the difference is even a very decided one, as it is between the results of the various observers in France: Leudet, in Rouen, gives the age of puberty at 14.9 years; Puech, in Toulon, at 14; Petrequin, in Lyon, at 15.45; Puech, in Nimes, at 14.25; d'Espine, in Marseilles, at 13.58; de Boismont, Raciborski, and others, in Paris, average 14.98. Worse still in St. Petersburg, where we find a variation from Weber, with 14.6, to Horwitz, with 17.53; so also in other countries where different observers have reported.

With a practical object in view I shall, in the main, confine my observations to the race of our civilization, the white, the Indo-Germanic branch of the Caucasian race; for the sake of comparison I have briefly noted conditions existing among the various other races inhabiting this Continent, the Ethiopian, the Indian, and the Esquimaux, and these I have grouped as follows:

Civilized or immigrant races: Caucasian and Ethiopian.

Semicivilized or native races: Indian and Esquimaux.

II. CIVILIZED OR IMMIGRANT RACES.

The Negroes I have classed with the whites as living under precisely the same conditions, in the same localities, both immigrants into this country, and in all comparisons they are placed side by side with the laboring class of the white population.

A. THE PERIOD OF PUBERTAL DEVELOPMENT IN AMERICA AS COMPARED WITH OTHER COUNTRIES.

While I shall confine this study strictly to the age of first menstruation in North America, it will be desirable to con-

sider briefly the status here with reference to that in other countries and climates, as it is unique and deviates from all laws, as far as hitherto established, and which seem to prevail elsewhere. The climate is that of the temperate zone, but the mean age of pubertal development on this Continent differs from that of the same zone in the Eastern Hemisphere, approaching in some measure that of the equatorial belt. Combining all well-authenticated data, the mean age of first menstruation in the southern climates is nearly 13 years, 12.9,¹ only one year later, 13.9 for America; while in the temperate zone of Europe and Asia it is between the fifteenth and sixteenth year (15.5)—so that in this country, mainly under the same climatic conditions as the center of Europe (France and Germany), and among the people composed of inhabitants sprung from these countries, puberty comes more than one and one-half years earlier, at 13.9, in place of 15.5 years abroad. (Table II.)

TABLE II.—AGE OF FIRST MENSTRUATION IN THE GREAT CLIMATIC ZONES.

	Precise age.	Average in round numbers.	Age at which largest number noted.	Per ct. at that age.
Tropics	12.9	13	12	25 per ct.
United States	13.9	14	14	27 "
Temperate Zone	15.5	15.5	15	17 "
Cold Climates	16.5	16.5	16	22 "

A decided change has taken place in the same people, under the same and even supposedly adverse climatic conditions, in a new home—that is, they have developed a more precocious puberty in a colder climate; and this is not a recent development, but has long since been recognized. Even in the earlier colonial days, as at present, the periodicity of functional development seems to have changed rapidly with migration to

¹ This is another of the generally accepted facts, *popular fallacies*, accepted and reproduced by all writers, though based upon very limited observation, and I refer to it, as my own investigations are not as yet completed, though I do so under protest, and do not vouch for the correctness of this statement. The numbers are too small to cover an entire zone.

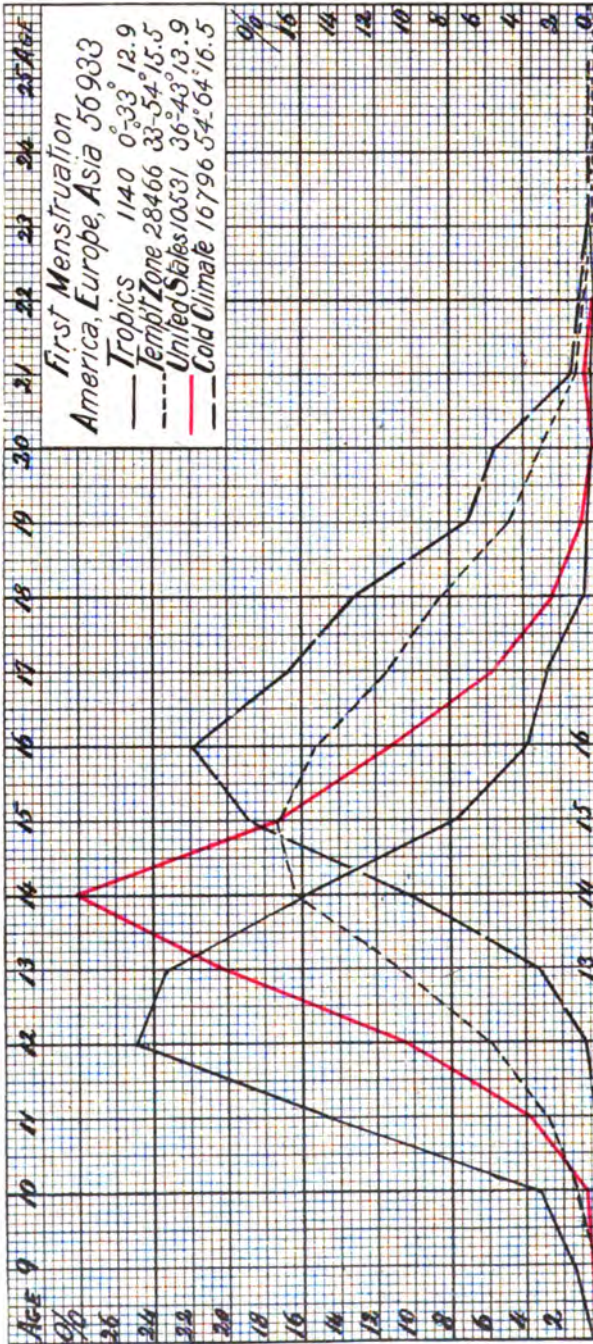
the American Continent, unlike the stability of pubescence among races and groups of people with migration in the Eastern Hemisphere. Strange to say, the period of pubescence attained by these immigrants is very much the same and closely approximates that of the native inhabitants—the American Indians in the southern and central belt of this Continent, from 12 to 14.

Dr. Douglas, an accurate observer, in 1730, notices the precocity of the inhabitants as compared with the parent stock in the mother country. This precocity of the early inhabitants of this country we may accept, not only because we see it verified in our day, but because the observation is quoted in various works, among others in that reliable and valuable study of Sadler's (*The Law of Population*, vol. ii. pp. 347 and 348); and the same fact has been observed in Canada by Raneau, a French scientist—*i. e.*, that in Europe puberty is later as we go north, and that this does *not* seem to be so in America. Absurd as some of his deductions are, this is strictly correct. He adds "that in Canada, with a winter like that of St. Petersburg, among the French marriage takes place at 14 or 15—sometimes even at 13 or 12." This means early puberty.

Here we have observations of physiologic and ethnologic interest: a much more precocious puberty among immigrants to the United States, with the added fact that this pubescence of the civilized Caucasian immigrant approximates that of the savage native Indian.

The difference in the characteristics of pubescence is marked, too, in other respects. Development in this country is nearer the same age in all classes and individuals, a much larger number attaining puberty at the year common to most (27 per cent. in the fourteenth year) (see Table III. and Chart II.); again, nearer the condition of the tropics, where we find 25 per cent. in the twelfth year, and in the temperate zone only 17 per cent. in the year at which the largest number develop, at 15. In the cold climates 22 per cent. come in the sixteenth year; in other words, there is much less variation in the age of first menstrea-

CHART II.



tion in this country, and if this is charted the figure presented is a narrow, steep triangle (Chart II.); while in the temperate zone of Europe it is rather a flat curve with a much broader base—that is, the variations are much greater. We see that in the United States the period of pubescence varies from the eleventh to the seventeenth year, while in the Eastern Hemisphere it is protracted from the eleventh to the nineteenth year.

B. VARIOUS FACTORS WHICH INFLUENCE PUBERTAL DEVELOPMENT.

The various causes which may hasten or retard pubertal development have been much discussed abroad, and various authors have reached widely differing conclusions; but in this country no such investigations have been made, and, as conditions differ greatly from those found in European countries, it seemed essential to me to study my own material with a view of presenting the results here found, to determine how far the period of pubescence is influenced by the different *social, climatic, racial*, and *educational* conditions existing in the United States, *race, climate*, and *social* status being the causes which have been supposed by European investigators to influence the time of first menstruation.

Mentality, or the educational status, at once impressed me as the most important factor, and this is the only one which has *not* been studied in its bearing on pubescence.

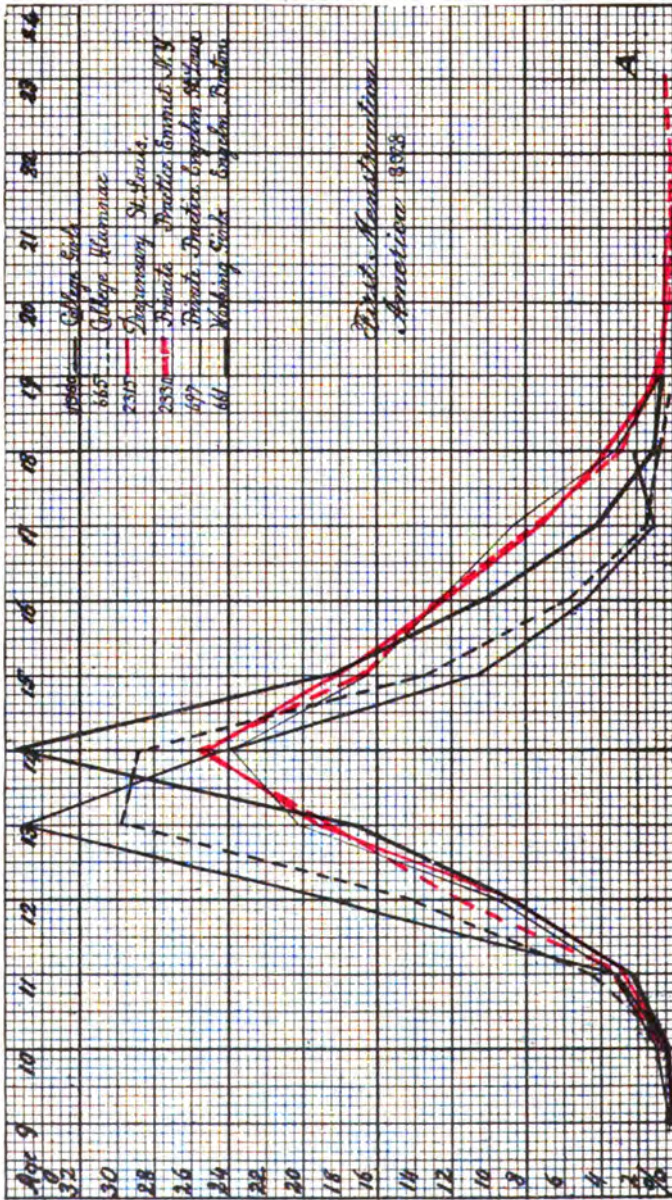
So much stress has been laid on these varied conditions that I have carefully assorted the material available in order to determine in how far in this country these various causes influence the time of pubertal development.

1. SOCIAL STATUS. All European observers concur in the great variations in age of pubertal development of the different social grades, which is well marked in every country and usually between two and three years. This class distinction it is difficult to establish in the United States; I have attempted some classification by utilizing my observations in private practice and in dispensary work, considering private practice as the

TABLE III.—ANNUAL PER CENT. OF DEVELOPMENT IN DIFFERENT GROUPS.

Years of age.	United States.				Canada.				Negroes, Baltimore, New Orleans, St. Louis, Clark, Miller, Engelm., Williams.		Indian, Hudson Bay Indian, Matthews, Chadwick.		
	Dispen- sary, St. Louis.	College, United States.	Labor class, Ameri- cans of Amer. parents.	Labor class, Americans of Irish parents.	Total Americans.	English descent.	French descent.	Irish descent.	Total, Canada.	Per cent.	Per cent.	Per cent.	Per cent.
8	2315	1360	2574	887	10,531	452	870	430	1752	23.9	500	1494	99.6
9	14.3	13.5	14.2	14.5	13.98	14.3	13.65	14.58	14.2	14.95	12.6	15.15	99.5
10	100.08	100.0	99.41	99.6	99.95	99.7	100.5	98.6	99.7	99.83	100.0	99.6	100.0
11	0.2	0.2	0.07	0.2	0.2	0.2	0.5	0.3	0.3	0.8	0.2	0.2	0.2
12	3.5	0.8	0.8	0.5	0.2	0.8	3.3	0.6	1.8	1.4	2.2	0.4	0.4
13	11.8	4.1	4.4	1.8	3.6	2.7	7.8	0.7	4.5	3.4	17.0	1.3	1.3
14	18.8	14.2	9.8	6.7	10.3	8.6	12.8	10.0	10.6	10.6	39.4	5.1	5.1
15	25.4	30.5	19.6	18.1	20.4	19.6	20.3	17.3	19.5	22.0	26.4	11.5	11.5
16	16.6	28.6	25.5	25.9	27.7	25.7	23.2	26.9	24.6	29.5	11.8	18.7	18.7
17	12.4	18.4	17.4	14.5	17.2	22.3	14.8	15.2	17.3	20.6	5.8	27.6	27.6
18	7.2	2.0	12.3	7.1	11.2	8.8	9.7	13.2	10.2	11.6	2.0	12.5	12.5
19	0.8	1.0	5.5	2.5	5.8	6.8	4.5	9.2	6.3	4.1	0.4	5.6	5.6
20	0.1	0.3	3.2	0.7	2.4	3.2	2.6	6.0	3.5	1.9	0.4	3.2	3.2
21	0.04	0.1	0.3	0.1	0.2	0.4	0.4	0.7	0.4	0.4	0.2	1.0	1.0
22	0.04	0.1	0.04	0.1	0.01	0.4	0.1	0.2	0.3	0.3	0.2	0.2	0.2

CHART III.



well-to-do, or higher class, and dispensary patients as the laboring class, and poor or the lower class; these are the extremes, yet between these two there is very little difference. (See Table III.) The mean age of first menstruation in my private practice in St. Louis is 14.25 years and in the dispensary 14.32 years, almost identical with the results of Dr. Emmet in New York (14.23 years in private practice) and those of Dr. Chadwick in Boston (14.32 in his dispensary practice). (Chart III.)

The 4818 observations among the laboring class of Boston and St. Louis give precisely the same result (14.32 years), and between my figures and those of Dr. Emmet in private practice there is a difference of only $\frac{2}{100}$ of a year, a variation of six days, so that practically these are likewise identical. These 3027 observations among the higher class show 14.24 to be the age of puberty, a difference of less than one-tenth of a year, $\frac{8}{100}$, one month between the well-to-do and the laboring class, which in Europe is between two and three years.

Precisely the same conditions exist in Canada; the age of first menstruation in private practice in Montreal is 14.09 or 14.1, in dispensary practice 14.2, the same as in Ottawa, a difference of a little over one-tenth of a year between the two classes, and in the United States a little less.

That the mean age of first menstruation in the more northern latitude of Canada should be somewhat less than it is in the United States, contrary to former ideas of climatic influences, is due in that particular region to the prevalence of the French element with an early puberty; the mean age of development of the same nationality and class, however, corresponds perfectly with that of the United States, and emphasizes the fact already shown, that in *this* country social status influences pubescence to an inappreciable degree only.

2. EDUCATIONAL INFLUENCES. Much more decided in its effect on development is what I may call the educational influence, as will be seen from the different conditions existing in the various educational institutions, the pubertal age being in direct relation to the status of the school.

In the highest class private schools in Boston and Buffalo the mean age of first menstruation is 13.47, in colleges from the Atlantic to the Pacific 13.5, in the normal school of Boston 13.76, in high schools of Boston and Cleveland 13.8, and in the Nurses' Training Schools in Boston, New York, and Philadelphia 14.2. (Table IV.)

TABLE IV.—SOCIAL INFLUENCE.
Age of Development in Different Social Groups.

Locality.	Higher class.		Locality.	Laboring class.	
	Number.	Age.		Number.	Age.
St. Louis . . .	697	14.25	St. Louis	2315	14.32
New York . . .	2330	14.23	Boston	2508	14.32
Cincinnati . .	325	14.09	Boston (with schooling)	661	14.16
Baltimore ¹ . .	230	13.9	Baltimore ¹	714	14.0
Montreal . . .	658	14.01	Montreal	840	14.2
			Ottawa	612	14.21
	4240	14.2		7645	14.3

At first sight it appears absurd to connect the age of pubertal development with the grade of an educational institution entered by the pupil *after menstruation has appeared*; but a careful study of the subject has convinced me that this is unquestionably the case, and it is explained by the fact that the surroundings—physical and psychological, home and social influences—differ accordingly, and are accountable for this strange result. In the select private school we find the girl developing amid more or less luxury under the highest mental and social stimulus; her surroundings are such as awaken the nervous system to an early activity. Under much the same conditions is the girl destined for college: it is the surroundings, the "milieu" (of the French) which is supreme and a predominating influence, not only in functional development, but in all phases of existence, and accepted by biologists as a controlling power in development throughout animal and vegetable life.

¹ Mainly of American parentage.

It is a fact that the surroundings of the girls attending these various institutions differ, and it is mainly the mental, but also the social status of the parents, the comfort and luxury of the home, rich food, the early excitement of the nervous system, of the senses and the imagination which influence the child and bring about a more or less precocious mental awakening with stimulation of nerve activity, and this it is that determines the precocity of functional development—the psychic phenomena reverberating clearly in the genital plexus. This awakening of functional life in direct proportion to mental stimulus of the surroundings is to me a striking proof of the correctness of the position of that school of biologists who accept the predominating influence of the milieu as contrasted with those who believe in the prevailing influence of inherent qualities. This is fully corroborated by my observations among the native American and the American of Irish parents.

While the mean age of first menstruation in the normal school girl is 13.76 years, for the pupil who comes of American parentage it is 13.7, for the normal school girl of Irish parentage it is 14.08. If we now compare the woman of the laboring class, who attains puberty at 14.32, and if of American parentage, 14.1, we see that development is likewise earlier for the normal school girl of that class, 13.7; for the American of Irish parentage of the laboring class, 14.5, and for the normal school girl of Irish parentage, 14.08. So it is true of the Negro. In one group from New Orleans the mean age of first menstruation is 14.09 years; for another, of which perhaps one-fourth are school girls, it is 14.03; only a very small difference, because I was not able to separate the school girls (Boston schools, 13.2), but was obliged to consider them, together with the very lowest class; however, they render the age of puberty in the total mean somewhat more precocious.

If I have spoken of an educational influence I have done so because the results have been secured in different grades of educational institutions; but it is more correctly the influence of mentality, of general nervous and mental development, of stimu-

lating surroundings. This is clearly defined and a most potent factor in the precocious development of the American girl.

3. RACIAL INFLUENCES. My dispensary records are indicative of the many nationalities to be found in this country; of the 4385 of whom I have record, 2315 are natives (53 per cent.), 695 (16 per cent.) Negroes, and 1375 (31 per cent.) foreign born. We are here to study the American, so that I shall consider only those born in this country, whether of native or foreign parents, and represented in numbers sufficient to admit of valid deductions; these are the Irish, German, and French, and in Canada the English; hence we have the native American, or the American of American parents, and English Canadian, Canadian born of English parents (or ancestry), the American born of Irish parentage, and also the American of German parentage; but as there are comparatively few American born of French parentage in this country, I am obliged, in order to present this nationality, to consider the American or Canadian not directly of French *parentage*, but of French *ancestry*, and it is remarkable how long the racial influence prevails among this people, as my figures will show. In the consideration of this question I shall confine myself altogether to my own observations, which, of course, include all collected at my solicitation especially for this investigation.

Some figures with regard to the Americans of Irish parentage among the laboring class of Boston, by Dr. Chadwick, are the only facts of this kind ever before culled.

The native American is somewhat more precocious than the average of the special class to which she may belong. With 14.3 years as the mean age of first menstruation for the laboring class, for *all native Americans* it is 14.1 years and 14.2 for the native American of the laboring class; later, 14.5 for the American of Irish parentage of that class, somewhat less, 14.43, if we include school girls, a trace of hereditary influence being apparent (Chart IV.), as it is clearly evident in all other nationalities. All observations concerning this group so markedly concur that I shall cite them to show the perfect

CHART IV.

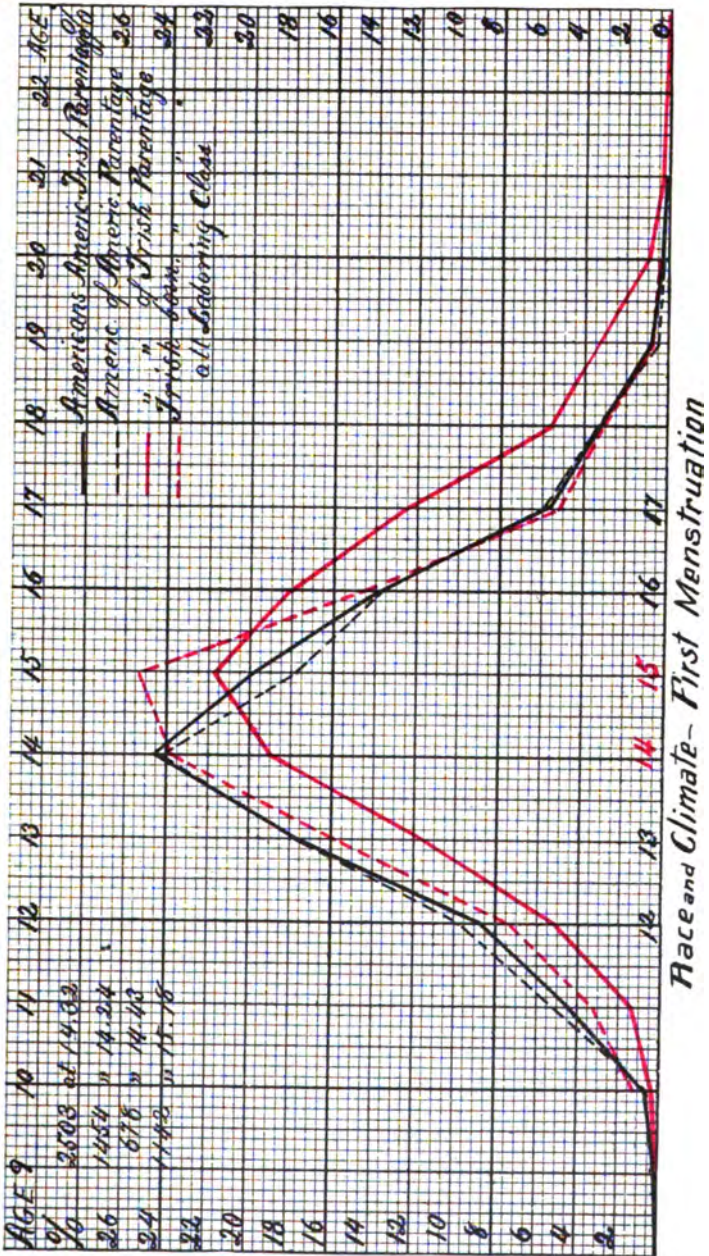
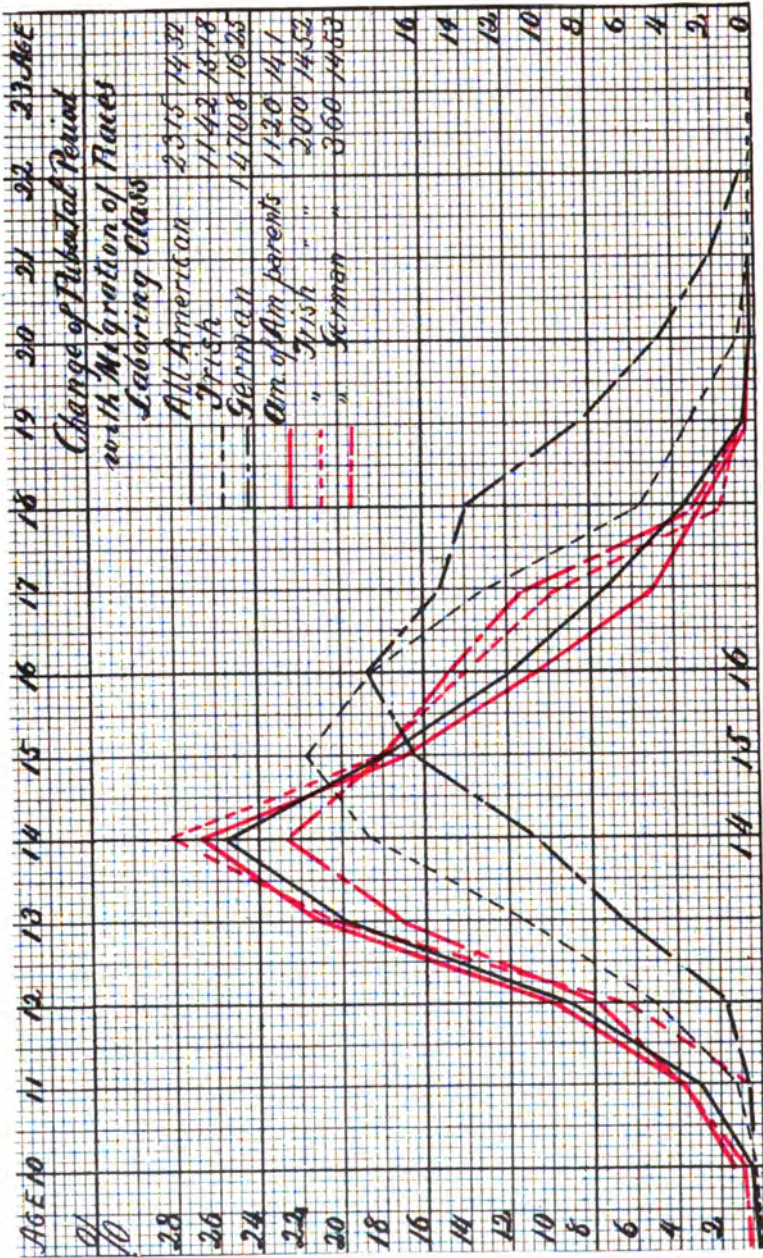


CHART V.



correspondence between my results from all parts of the country. In St. Louis I find 14.53 years to be the mean for the Irish-American; in Ottawa it is 14.57 (Table V.), and in Montreal, 14.5; in Boston it varies a trifle, with 14.4 years as the mean; from Montreal, Boston, and St. Louis, I have practically the same result—the American born of Irish parentage 14.5, the native American 14.1, with an average for the laboring class in the United States of 14.3 and for the Irish, Irish born, 15.2. The Canadian of *English descent* attains puberty at the same age as the American, at 14.3 years, as shown by the larger numbers from Montreal, while those from Ottawa differ but little, with 14.2. This seems but natural, as the predominating race in the American is the English, hence we may well expect the Canadian of English descent to present the same functional conditions as the American of practically the same blood.

TABLE V.—EDUCATIONAL INFLUENCES.

	All American born.			Differentiation of parentage.		
	Num-ber.	Age of first menstr.		Amer. born.	Amer. parents	Irish parents
Private School,	113	13.47	Normal School,	13.76		
College,	1360	13.50	Laboring class,	14.32	13.7	14.08
Normal School,	452	13.76	Negro, lowest "	14.09	14.1	14.50
High School,	121	13.82	Same with some	14.03		
Nurses' Training School	221	14.20	school girls.			
			Negro sch'l girl	13.2		
			Reservat. Indian	13.2		
			Indian sch'l girl	12.1		

The American of *German descent* attains puberty at a somewhat later age than the native, like the Irish, at 14.5 (Chart V.), which shows a close approximation to the status of the American woman, since the average age of first menstruation for the German is 15.5, and for a large part of the fatherland the sixteenth year.

Most interesting is the precocity of the American of *French descent*. As before stated, I have no observations in sufficient numbers of those born directly of *French parents*, as these here

considered are of *French descent*, consequently farther removed from the racial influence, and yet they *differ more* from the American of the same class than any other nationality. The conditions are the same in the southern climate of St. Louis as in the colder regions of Canada.

The numbers observed by myself in St. Louis are too small to carry any weight—only 56, with a mean age of 13.4 years. The Canadian French of Ottawa attain puberty at 13.6 years, and in Montreal at 13.7; practically there is no variation in the results obtained. Scant data from New Orleans would indicate an earlier puberty in these regions, but the numbers are as yet insufficient to warrant conclusions. The mean age for 926 women of French descent in this country and Canada is 13.6 years. I may add that the somewhat earlier age shown by my St. Louis observations is due to the fact that these were made among the well-to-do class in private practice, and some of them were born in the extreme Southern States. The result is one of very great interest, indicative of increased functional activity or vigor with migration, which I must consider more fully in connection with the great fecundity of the Canadian French, who in this respect differ strikingly in functional characteristics from the French in their native land.

The average age of first menstruation in France, more especially in the smaller cities, is 14.6, with 15 throughout a great part of the country, and in the extreme south, in Marseilles, 13.8. Coming from France, with an average annual temperature of perhaps 53° F., to a colder country, to Canada, with a climate like that of St. Petersburg, an average annual temperature of 40°, pubertal development is more precocious, instead of being retarded. When we come to St. Louis and New Orleans the climate is more like that of France, but the period of pubescence like that of the French Canadian, and even more precocious. Canada is so much colder than France, and yet development is much earlier, a striking change, like that in the fecundity of those same people, lower in France than it is in any other country with the exception of the United States, it

is at its highest in the same people transplanted to their new surroundings and their cold Canadian home.

The fecundity of the French Canadian is greater than that of any other people, fully 5 children to the family throughout all the French counties, and among the better situated as high as 9.2 children to each married woman, as I have found from a study of 1000 families in the records sent me by Dr. Pelletier, Secretary of the Board of Health of the Province of Quebec.

Traces of race remain, but to a very slight extent among all but the French, as the preceding data have shown, and the American born of foreign parents attains puberty at very near the same age as the native American girl, delayed only a trifle in those in whom puberty is later in their native country, the French being the only exception, as they not only approximate the American standard, but become even more precocious than the native American, and retain the newly acquired habit throughout generations. The French here considered are more or less remote, while the Irish and German are all born in this country of parents who are themselves of foreign birth, so that among the Germans and Irish the national traits are still vigorous, but will undoubtedly be obliterated in a few generations; the French have not been so much assimilated, as shown by the decided difference in the age of pubertal development which has persisted throughout many generations. This strikingly exemplifies the well-known fact that the French are poor colonists; that they retain their characteristics, and do not amalgamate with the people to whom they have migrated and among whom they live.

Racial characteristics, though slight, are distinctly noticeable, even in the United States, in the first generation among all nationalities here noted, but are seen least in the process of Americanization and amalgamation which takes place so strikingly in this country, marking a characteristic difference between the immigrant in the United States and in the older European countries, where all national traits persist in the

new-comer and no approximation to the people of the country in which they have settled takes place.

4. CLIMATIC INFLUENCES. These observations extend from Louisiana (though there for the blacks only) to Canada, over 16° of latitude, from the 29th° to the 45th°; from New Orleans, with a mean annual temperature of 70°, to Ottawa, with 40°—almost colder than St. Petersburg; yet I can observe absolutely no effect upon the time of pubertal development which might be ascribed to climatic influence; but I must again recall the fact that I have as yet no data from the Southern States and Mexico—nothing south of Baltimore, St. Louis, and Cincinnati, 38° north latitude—and I am free to say that the scant numbers received from New Orleans (55 cases at 12.4) lead me to infer that in these regions puberty is actually more precocious. The French element, which leads to development at 13.6 years in Canada, is well marked, and may influence still earlier pubescence in the far South; hence my results, as far as the whites are concerned, are valid only for the Middle and Northern States and Canada.

In making this comparison it is necessary to consider the same social class under the same surroundings, and it may be well first to take the largest, the *laboring class*, as observed in dispensary practice, not distinguishing the nationalities, and considering all American born. The age of first menstruation in this class in Ottawa is 14.2, in Montreal 14.16, in Boston and St. Louis 14.3, in Baltimore 14; we may say in Canada 14.2, in the northern and central portions of the United States 14.3—a slightly earlier coming of functional life in Canada, notwithstanding the colder climate, to which attention has already been directed, as due to the precocity of the French element.

If we consider precisely the same elements under the same conditions, thoroughly homogeneous groups, the pubertal period is the same—for the American of French descent in Canada 13.6, in St. Louis 13.4. The American and Canadian of the laboring class of Irish parentage reaches puberty at 14.45 years in Montreal and Ottawa, with its mean annual temperature of

14.09, and 500 partially among the higher (a number of school girls) at 14.03. I believe that any difference which may exist is due to the admixture of school girls, to the somewhat greater mental stimulus. The only available statistical study of functional development in the Negro is that of Robertson—77 cases from Jamaica and Barbadoes of the very lowest class, semi-civilized, and 15.6 years is the mean age of pubescence. These islands are within thirteen degrees of the equator, and the climate is tropical, with an annual mean of 80°. The Negroes in that region have usually been brought from a similar latitude and climate on the west coast of Africa, where development takes place at about the same age. It is for this reason only that I mention the small number, as the observation is thus partially corroborated and deserving of notice, especially so in comparison with the earlier development of the more civilized American Negro in a colder climate.

TABLE VII.—CLIMATIC INFLUENCE.
Age of Development in Different Climates.

	Latitude.	Mean annual temp.	Age at first menstruation. (American born.)					Negroes
			Laboring class.	Higher class.	Born of Amer. parents	Born of Irish parents	Born of French parents	
Ottawa,	45° 20'	40° F.	14.2	.....	.....	14.5	13.6	
Montreal,	45 30	41 "	14.2	14.1	.....	14.5	13.7	
Boston,	42 40	48 "	14.3	.....	13.7 ¹	14.4	.....	13.2 ⁴
New York,	89 40	51 "	.....	14.2	.....	.....	.....
Baltimore,	89 20	55.2 "	14.0	13.9	.....	.....	.....	14.04
Cincinnati,	89 00	55.1 "	.....	14.0	13.9 ²	.....	.....
St. Louis,	38 38	55 "	14.8	14.2	14.2 ²	14.5	13.4	14.07
New Orleans,	29 00	69 "	.....	.....	.....	.....	.....	14.06
Jamaica and Barbadoes,	13 and 18	80 "	.....	.....	.....	.....	.....	15.60

Climatic influences seem to have no marked effect whatsoever, and this is certainly the conclusion to which we must come after a review of the large material here collected. We find precisely the same conditions if we consider the same group mentally, socially, and racially, whether it be in Mon-

¹ Normal school.

² Higher class.

³ Labor class.

⁴ School girls.

treal, in Boston, in New York, in Cleveland, or in St. Louis; the climatic differences between these points in no way affect the age of pubertal development, as it is unquestionably shown by the absolute coincidence of the age of first menstruation in the same group in these climatically widely differing localities.¹

C. SEMICIVILIZED OR NATIVE RACES.

We have noted the peculiar precocity of pubertal development acquired by the women of the races immigrant into this country, black as well as white, and I shall now endeavor to establish, as far as this is possible, the period of pubescence among the native, semicivilized races indigenous to the country, the Indian and the Esquimaux, of whom the Indian is to us by far the most interesting, not only as the most numerous, but as being the only assuredly native race and the original habitant of the very regions now occupied by the white race here studied.

We have known but very little of the functional characteristics of Indian women, and it is high time that such information be secured if serviceable results are to be deduced from a comparison of developmental precocity among immigrant and

¹ Since writing this I have received the records of Dr. J. Whitridge Williams, from Baltimore, which show 14 to be the age of puberty in that city among the hospital and dispensary patients, and 13.9 in private practice. This fact, together with the slightly earlier age of 14.01 among the better class in Cincinnati, and an indication of a much earlier age in New Orleans, lead me to suspend judgment somewhat, as an absolutely positive statement cannot be made until I have full records from the extreme Southern States.

It is possible that decided climatic differences may to a slight extent influence pubescence, comparing the same race and the same class. I can positively state, however, that climate is a most unimportant and secondary factor, as is readily seen by a comparison of the early puberty of the subarctic Indian (12.6) and the Esquimaux (12.14) with that of the Negro of Jamaica or Barbadoes, and also of the same Negro in his African home (15.6)—an early puberty in the far north and late near the equator. In consideration of these extremes the differences between the age of development of American girls in Baltimore and St. Louis or Boston are trifling, and may well be explained by other than climatic influences. In Maryland the foreign population is less predominant, hence puberty may be earlier. Then, again, the patients in the Johns Hopkins Hospital may be of a somewhat better class than those in many other institutions—all factors which may well account for the slightly earlier development. If climate has any effect whatsoever, it is in this country certainly but slight and hardly worth considering.

native races, as the Indian is now undergoing a change more potent by far in its influence upon the economy than the change of country or climate experienced by the immigrant; it is the change of conditions and habits of life which is the most important factor in determining pubertal development.

1. THE AMERICAN INDIAN.

A study of the age of first menstruation in the United States would indeed be incomplete ethnologically without a consideration of the Indian, the original inhabitant of this country, the true native American, trifling though this be in practical significance.

Those who have been here termed "native American" are themselves practically but foreigners, differing only from the American of German, of English, or of French parentage by the fact that many generations, centuries, have elapsed since the migration of their ancestors from foreign lands to this American Continent, and that such prolonged residence in distant lands does not of necessity alter racial characteristics is demonstrated by the Germans in Transylvania, who even at the present day, regardless of this shifting about, regardless of change of home and climate, retain the functional characteristics of their ancestors who migrated nearly one thousand years ago, in 1143, from the lowlands of the Rhine to this rugged mountain country, and have in nowise changed their period of pubertal development, but still continue in the habits of their progenitors in this respect as they do in other characteristics. The age of pubescence is 15, as it is at the present day in the villages of the Rhine, whence their ancestors came, as I find it in authoritative numbers among the Germans of St. Louis, although in some parts of the empire, in Bavaria and Prussia, development is by one year later.

The Germans of Transylvania to the present day retain the habit of their race as exemplified by the people of the Rhine, and have in no way varied or approximated to that of any of

the various nationalities in whose midst they live—Gypsies, who develop earlier (13.8), Armenians likewise (14.5), Hungarians later (15.2).

Not so in this country. Here an American nation has developed a people with national and racial characteristics distinct from those of the various nations from whom they sprang—with a distinct individuality marked, too, in the period of pubertal development. This has assumed a distinctly individual, racial type, and, strange to say, resembles that of the native American, the American Indian, more than that of their European progenitors. Unfortunately, I cannot here present all the facts essential for a comparison of functional conditions of the original inhabitant, the primitive red race, with the present American, the acclimated conglomeration of Caucasian immigrants.

Statistical data are scarce. From present authorities who have lived among the Indians, studied and written about them, I can obtain nothing, either as to the Pueblos or the Plains Indians; but energetic friends will in this direction soon supply the lacking material, I am assured. From the more civilized Senecas, Oneidas, and Tuscaroras of the Cattaraugus Reservation in New York State I have received some data—23 cases, school girls—indicating precocious development at the early age of 12.1 years, which is verified by the only figures I can find previously recorded—82 cases collected by the indefatigable Robertson, giving 12.04 as the age of pubescence, but of which of the many tribes, differing greatly in their habits of life, he says not.

Early travellers make varying statements as to the age of development among the American Indian, which, however, in the main agree with the facts I can substantiate. Edwin James gives the twelfth year as the mean age of pubescence; Dougherty says that the Omahas develop between 12 and 13; the Pottawattamies of Lake Michigan at 14, according to Keating, who accounts for the later arrival at womanhood of the Sioux and Dakota girls, between 15 and 16, by the raw

climate of their homes. Rush is the only writer whose vague statement of the eighteenth and twentieth year seems without foundation. The Alaska Indian is said to mature from 14 to 17, and this corresponds fairly with observations culled for me, naming the fifteenth year.

Until statistical data are received, I shall accept the statements made to me by Eagle Eye, a Winnebago, captured as a child, and adopted by the tribe among whom he has lived and married, and married repeatedly; a keen, observant, and thinking man, whose observations I value far more than those of the passing traveller, as he cannot fail to be cognizant of conditions existing, since the Indian still observes the coming of the period as an important event in the girl's life, by ceremonies of various kinds; and these are determined purely by the appearance of the flow, not by the whim of the family, as among the Siamese, the Wanjamuesi, and other African tribes, who have extensive festivities, and mark the event by change of costume or change in manner of wearing or cutting of the hair. These afford no indication of actual pubescence, as they are performed at such times as suits the wishes or plans of the parents, mostly long before the advent of the period, in order to give the child the semblance of nubility and to declare her marriageable.

The American Indian still observes the ancestral custom, and *isolates the girl, and this is only done upon the first appearance of the flow.* She is sent away from the village to the woods, where she sings religious songs and fasts, but she is watched at a distance by an older female relative. She is at once removed from the routine of daily duty and drudgery, and is given some instruction as to the import of this occurrence. She cannot well lay the foundation for future suffering, for a depleted physique and an irritable nervous system, by dancing and tennis, or by study and cramming for high-school examination, like her much favored civilized sister.

I have mentioned the ceremony among the Indians upon the first appearance of the flow to emphasize the positiveness of

such observation ; no doubt can exist as to the fact of pubertal development, and the age of the girl is, approximately at least, well known to every villager who has watched her from childhood ; time and age of pubescence must be known to every member of the tribe, so that we cannot but accept the statements made by one who has spent a lifetime in the very midst of the people.

The more southerly Indians—Pueblos, Pimas, Lagunos, Maricapas, Zunis, the Digger Indians, and Apaches—who are spoken of as “vegetable eaters,” mainly because they do not subsist on beef, develop between the twelfth and fourteenth year ; the more northerly, and the Plains Indians, Sioux, Omahas, Blackfeet, and Cheyennes, are less precocious, and mature between the fourteenth and sixteenth year. These are called “meat eaters.”

This places the age of pubescence for the American Indian between 12 and 16, with a general average of 14, like that of the American of the present day, that composite of European nationalities whose functional life has been changed by transplantation to the new world, and seems to have assumed the periodicity of the original inhabitants.

My faith in these statements, and my limited statistics, are, moreover, confirmed by the correctness of other observations with regard to different phases of functional life, which are substantiated by my statistics from other countries : thus, that puberty is precocious in the lascivious, with early intercourse of the sexes and low morality ; later, in the virtuous, who esteem the honor of woman. This is noticed as influencing the time of development in individuals and in tribes. Among the Digger Indians, dirt-eaters, degenerates of the lowest type, we should expect a late pubescence, as they are all ill-fed, mentally and physically retarded ; but, on the contrary, they mature earlier than the Pimas, Pueblos, and other Southern Indians of a higher type, which is ascribed to their low morality—the promiscuous sexual life, with an early and free intercourse of the sexes.

SUBARCTIC INDIANS. Pubescence among the red race is retarded as we progress northward, though to substantiate this I have but some few facts from the Alaska Indians; still farther north it would seem that the Indian, like the Eskimo, as we near the pole, matures earlier. This I should say is established beyond question. Matthews has collected the facts from 500 subarctic Indians in the Hudson Bay territory. Here, notwithstanding our deep-rooted but fallacious belief in the retarding influence of cold, development takes place at 12.6, an early puberty characteristic of primitive peoples of the far north, which I can substantiate by many equally positive observations, though none in such numbers.

Until disproved by reliable statistical data in sufficient numbers, we must accept the facts so far ascertained, which, moreover, seem reasonable and harmonize with previous records. Fourteen is the mean age of pubertal development for the American Indian, as it is for his white brother; 12.5 among the great majority, varying among the southern tribes from 12 to 14, and among the northern from 14 to 16, but *more precocious in the far north—not later*, as was the universal belief; and in this, too, conditions here found harmonize with those existing elsewhere, as the same is true in the Eastern Hemisphere—retarded development in the more northern regions of the temperate zone and greater precocity as the Arctic circle is neared.

I hope ere long to have detailed statistical data to substantiate farther the observations here presented.

2. THE AMERICAN ESQUIMAUX.

All facts point to the precocious development of this Arctic race, although the only statistical data available, by von Haven, do not substantiate this; all other observers record a comparatively earlier puberty. Matthews asserts that puberty among the Eskimo, both among male and female, is, if anything, earlier than among the subarctic Indians, which he shows to be 12.6 for the female. Schliephake says that the Cumberland Eskimo

develops between 13 and 14; Turner gives 14 as the age among the Eskimo of Labrador, in the Ungava district, which is corroborated by my own information from the Alaska Eskimo at Point Barrow, where pubescence is even more precocious, at 13, or between 12 and 14—earlier than it is among the subarctic Indians in that region, who do not extend so far north.

All observations from the Pacific as well as the Atlantic borders of the Arctic regions of this Continent are unanimous in affirming the early puberty of the native Eskimo, apparently more precocious the farther north we go.

3. THE NEGRO.

I here again refer to the black race, to the plantation Negroes of Jamaica and Barbadoes, to note the retarded development of this people in a tropical region, where, in a lower state of civilization, they may well be termed semicivilized. Upon these islands and on the coast of South America in the equatorial belt development takes place, according to the painstaking investigation of Robertson, at 15.6 years, among these lowest plantation Negroes, as it does in their African home; while throughout the Southern States of the Union, under better mental and physical conditions, puberty is earlier—at 14 among the lower classes, and still earlier, 13.2, among the daughters of the better situated, as found in the higher schools.

The facts here briefly cited I desire to emphasize, as they are indicative of an early puberty at the pole and retarded development near the equator, conditions diametrically opposed to all that has hitherto been accepted.

III. RÉSUMÉ.

A careful review of the facts presented shows the exceptional position of American women, as to the time of functional development, very much more precocious than the women of other continents in the same region of the temperate zone, more precocious than the peoples from whom they have sprung,

an average age of 14 on this Continent and of 15.5 in Europe. The present inhabitants of this country are more like the true native American, the American Indian, who matures at an earlier age than the people of any other land in the temperate zone. Then, too, there is but little difference between the extremes in this country—at most one year, from 13.5 in the girl of highest refinement and education, to 14.5, which is the period for the American born of Irish and German parentage among the laboring classes; practically the difference is only 0.5 year—13.8 among the mass of school girls to 14.3, the average age for the great body of laboring women.

Climate does not appreciably influence pubertal development within the temperate regions of the North American Continent; the age of first menstruation is the same (14.3) among the laboring classes in Ottawa, Montreal, Boston, and St. Louis; women of the same class and group attain puberty at the same age, whether in the northern regions of Canada or the warmer climates of the Middle States. Racial characteristics, well-marked in European countries, here rapidly fade away, barely noticeable in the very first generation.

The native American is more precocious than the American born of foreign parents; but the latter, while somewhat later than the girl of American parentage, much more closely approximates her than she does the woman of her native country. The difference due to social status as indicated by the laboring class of the dispensary and the better situated from private practice is inappreciable—14.2 and 14.3—while in European countries this causes a difference of fully two years in the time of pubertal development—frequently more.

Climate here has practically no influence; race, very little; mentality, surroundings, education, and nerve stimulation stand out prominently in this country as the factors which determine precocity.

ADDENDUM.

SOME extremely important data have been received since this paper has been in press, and I greatly regret the impossibility of giving due consideration to these valuable and interesting observations, although they in nowise alter results; on the contrary, they but confirm and emphasize previous deductions.

266 Seneca, Oneida, and Tuscarora Indians from the Cattaraugus Reservation, reported by Dr. Lake, are mainly older women, whose early life was that of the native Indian, far removed from the influences of civilization and very different from that of their more progressive daughters in the Agency schools, and puberty is over one year later, 13.2.

Some Negro school girls, daughters of the better situated colored families of Boston and vicinity, are reported to me with the precocious development to be expected, 13.2 years; among the Negroes of the laboring class of the South it is 14; and on the plantations of Jamaica and Barbadoes 15.6.

This confirms for the red and black races all that has been observed among the whites as to the effect of culture and education in hastening pubertal development; but the result is more striking still because the difference between the lower class Negro of the Southern States and the school girl among the better situated in Northern cities is far greater than it is among the whites, and so also is the difference in educational and social status greater between the Indian girl of the Agency School and her mother, who has passed her youth in the primitive life of the American Indian of earlier days. Precocity of development is in consequence correspondingly greater among

the Indian and Negro school girl of the better classes, as compared with the lower order, than among whites of the same classes.

230 observations among the well-to-do of the white population of Baltimore, just received from Dr. Williams, show the same relation in time of development to the laboring class of that city, as noted elsewhere, 13.9 and 14, both more precocious by 0.3 year than the same classes in all other cities from which I have records, even of those in the same latitude and with the same mean annual temperature.

This is the only discrepancy, and a trifling one in all the observations here recorded, and this is, I take it, due to the fact that the American element preponderates in Baltimore, and that the patients of the Johns Hopkins Hospital, here representing the laboring class, are of a somewhat higher order than those in similar institutions in other cities, consequently with an earlier pubescence.