THE SEASON OF BIRTH IN MAN: THE NORTHERN NEW WORLD[1]

Ursula M. Cowgill
Yale University

INTRODUCTION

The season of birth exhibited by man in the Old World and the southern portion of the New World appears to be meteorologically controlled (Cowgill 1964; 1966). It would therefore be expected that the periodicity of birth in North America should resemble that of Europe, the south exhibiting a southern type of European pattern and the north a northern one. Cursory examination of data from Canada, the United States, Puerto Rico and Mexico immediately showed that the North American pattern is dissimilar to that of Europe, and that for any of these New World countries, the season of birth varies from region to region. As a result of this discovery, it appeared worthwhile to make a detailed examination of the various areas of each country and to determine, wherever data were available, how long the present pattern had persisted.

In all cases, the data obtained from various national census statistics are presented as the number of registered live births normalized for the varying number of days per month. To make the data of various regions comparable, an average normalized mean is computed and ratios of each month to the average mean are obtained. No correction has been applied for the fact that with an increasing reproductive population and a constant birth rate, there will inevitably be a slight upward trend in the monthly figures. Correction of this error would be laborious, uncertain, and in many cases impossible. In no case are the effects discussed likely to be due to such an influence.

CANADA

Canadian data (Dominion Bureau of Statistics 1920-1962) were available from 1920 through 1962. During the first twelve years of this period the major peak in births occurred in March with the minimum in November. No secondary maximum or minimum oscillations were exhibited. This annual

cycle is typical of that shown by northern Europe, as in England and Wales, Scotland, Norway and Sweden, though the European pattern exhibits some secondary variations. In the subsequent ten year period there was a primary maximum in April and a secondary one in September. The major low remained in November and a small secondary one appeared during August. The northern European pattern still persists though the typical one of the United States is slowly becoming superimposed. The secondary minimum is similar to that exhibited by northern Europe. Three seasonal peaks of birth occur during the next decade: June, April and September. Minima appear in January and August, but on the whole the two patterns, one comparable to that of Europe and the other to that of the United States, continue to coexist. During the most recent decade, the major peak appears in September and the secondary one, almost as high and more prolonged, extends from April through July, while the annual low occurs in December with a small secondary one appearing in August. The seasonality of the European pattern is thus decreasing while that of the American one is increasing. The data are shown graphically in Figure 1.

Quebec and Manitoba show a persistent European pattern with the superimposition of a minor American one, while the most American pattern is exhibited by Newfoundland, Nova Scotia and Alberta. New Brunswick appears to be somewhat between the most European and most American in that the peak of births in the spring extends for three months, yet the seasonality of both peaks, the American and European, are equal. The reverse is true of Saskatchewan, where the American maximum is extended over two months and the European one is present as a distinct and sharp rise. Prince Edward Island and British Columbia exhibit both patterns with more or less equal seasonality. The data are shown in Figure 1.

THE UNITED STATES

As may be recalled, the generalized European pattern was one with the major peak of births occurring in the spring, a secondary maximum appearing in September and the two minima, the first in November or December and the second in August or essentially in the summer. The basic pattern in the United States is in some ways the reverse of this. At present the major peak is in September with the minor one in February, and the main low in April and May with the secondary one appearing in December or January.

The United States as a whole has shown no major change in its birth pattern over the past forty-two years. Some minor changes are worth men-

tioning. The data (Waggoner and Schachter 1959) for the 1920's are not particularly representative of the country as a whole, since only twenty-two states and the District of Columbia had birth registrations at that time. The major increase has always occurred sometime during July, August and September. During the 1920's the major peak appeared in September, shifted to July in the 1930's, remained there during the first five years of the 1940's and returned to September after the war, where it persists up to the present time. The secondary maximum has always occurred sometime during the early months of the year. For the forty-two year period during which there are data, this secondary peak has oscillated between February and March. During the 1920's the annual low appeared in January with the secondary low occurring in April and May. In the 1930's the major minimum was in December and the secondary one in April and May. Subsequently, the major low oscillated between April and May and the minor one appeared in December during the first five years of the 1940's and from then on consistently occurred during january. Generally speaking, the minima in April and May have become more pronounced and the secondary lows in the late and early months of the year less so. Since the war, the seasonality of the peak in births has become greater than it ever was and the February-March secondary rise is becoming less conspicuous. The data are shown graphically in Figure 2.

Since the United States represents something of an anomaly in this study of the season of birth, it was thought that a more detailed analysis of the regions of the United States might elucidate some of the confusion. Data were examined for forty-eight states during the period 1949 through 1961. Broadly considered (cf. Pasamanick et al 1959) the United States appears to exhibit three main regional patterns (Figure 3), though of course they intergrade. In most of the western coastal and mountain states there is a broad and often rather irregular summer peak in natality, with a major minimum in January or December. Usually there are two or more summer maxima, as in Montana where a minor minimum in July separates maxima in June and September. Washington and Arizona diverge somewhat from the pattern, having a marked secondary maximum early in the year.

Throughout most of the middle west, eastward into New York and New England, the pattern that is responsible for the overall United States curve, becomes apparent. Here, the main maximum is in September, corresponding to December conceptions with a small secondary maximum in the spring.

The third pattern, which developes progressively south of New Jersey

reaching its extreme in Florida and Louisiana involves an accentuation of the main maxima, while the minor maximum occurs progressively earlier. In the extreme southern pattern, the secondary maximum is completely lost, so the variation becomes a simple sinusoidal pattern with a minimum in May and a maximum in September.

While the main maximum in the north, corresponding to conceptions in December, must in its present form be largely cultural in origin, it is reasonable to suppose that the great accentuation of the pattern on going south involves a climatic inhibition of summer conceptions (Voranger 1953; Pasamanick et al. 1959). It is therefore very remarkable that on crossing the Mexican boundary either from Texas into the Gulf of Mexico region, or from California into the North Pacific region, the patterns change dramatically, developing deep minima just when the adjacent parts of the United States exhibit maxima. It is difficult to explain this on any but cultural grounds.

As a result of these data, it seemed interesting to examine what reliable earlier figures were available. Data were obtained for Massachusetts (State of Massachusetts 1844-1912; 1916-1932; U. S. National Office of Statistics 1937-1961), New Hampshire (State of New Hampshire 1883-1935; U. S. National Office of Statistics 1937-1961), Connecticut (State of Connecticut 1849-1877; 1906-1960) and Michigan (Department of Health 1911-1920). The data are shown in five year groupings in Figures 4, 5 and 6.

The most interesting change that occurs for the period studied appears from 1916 to 1920 where Massachusetts and Connecticut indicate a major peak in births in March and a minor one in September. Michigan shares the maximum, but the secondary high appears in August. The two minima occur in November and May in Michigan and Massachusetts, but in Connecticut the reverse is true, namely they appear in June and December. The pattern exhibited by these three states at this time is certainly reminiscent of that of Europe. Possibly this change is related to the mass migration westward of the unskilled and semiskilled laborers. This migrant group is entirely made up of people that were born in the region (U. S. Department of Commerce 1949). Thus, their departure enhances the foreign group remaining, which possibly may still be reflecting the European type of birth pattern, even though their contribution to it is on the decline during this period, due to the virtual stoppage of immigration during World War I.

PUERTO RICO

A preliminary report on the changes in the season of birth exhibited by Puerto Rico (Government of Puerto Rico 1948-1950; U. S. National Office of Vital Statistics 1937-1961) from 1941 through 1961 has been published elsewhere (Cowgill 1964). Unfortunately, no data were available prior to this time. Essentially, during this twenty year period, the season of birth changes, quite gradually, from an initially rather European pattern of unknown antecedents, to one that is typical of the continental United States, though prior to 1941 both patterns may have coexisted (Figure 2). From 1941 to 1945, the late spring peak is considerably more pronounced than the early fall one, though this is the last time that this pattern prevails during the twenty years for which there are data. From 1945 onward, the magnitude of the fall peak becomes greater and greater, while that of the spring maximum slowly sinks into oblivion; in fact, in the end, it is replaced by the major minimum. Initially, January and November are the two minima which then, during the subsequent five year period, shift into three minima occurring in July, December and March. During 1951 to 1956, the minima have changed again, this time to February, December and June and finally in the last five year sequence, they have all become concentrated in the three month span, so typical of the United States since 1949, of April, May and June.

The remarkable changed that have occurred in the season of birth in Puerto Rico can reasonably only be attributed to cultural changes, since no changes in climate of sufficient magnitude to produce the effects have been recorded here or elsewhere. Two possible hypotheses may be advanced; both are quite likely to be correct and to reinforce each other. Firstly, the spread of mass communication, particularly television, is likely to induce a rhythm into the year in phase with that of the United States, particularly since many television programs used in the island are transcribed bilingually (Aaronson 1958). Secondly, the seasonal migration and return of migrant labor may be involved, reducing conceptions in the summer and autumn months when the potential fathers are engaged in harvesting various crops in the continental United States. Special studies would be needed to substantiate either possible determinant.

SUBSPECIFIC PATTERNS IN THE UNITED STATES

There is amazingly little difference between the season of birth pat-

tern exhibited by whites and non-whites in the United States during the period from 1951 through 1961. The major peak and trough occur in the same months for both groups, but the secondary increase occurs in January instead of February and March and the minor minimum in November instead of January for non-white group. Hawaii (Figure 2) published data (U. S. National Office of Vital Statistics 1949-1951) on the season of birth for the Caucasian, Japanese and Hawaiian and Part-Hawaiian. Each group shows several maxima: The Caucasian in September, July and January; the Hawaiian and Part-Hawaiian in April, June and October and the Japanese in June, Spril, December and August. In 1951 the method of dividing the population was discontinued and replaced by the simple division of white and non-white. The trend remains, generally speaking similar to that of the continental United States. The major point of interest is that the white group shows a strong September maximum while the other has an equally pronounced one in October, doubtless due to the large Japanese population. It would appear therefore that there is no major difference in the pattern of the season of birth exhibited by the various groups the census wishes to isolate.

MEXICO

It was of interest to examine the season of birth exhibited by various Mexican states (Figure 7) to see if, as was the case with the Canadian-United States border, any similarities appeared between states on either side of the Mexican-United States border, as this would be expected if non-cultural forces such as meteorology were primarily responsible. The Annuario estadístico de los Estados Unidos Mexicanos 1939-1960 divided the country into five major regions: North Pacific (Baja California, Baja California Sur, Nayarit, Sinaloa and Sonora); North (Coahuila, Chihuahua, Durango, Neuvo León, San Luis Potosí, Tamaulipas and Zacatecas); Central (Aguascalientes, Distrito Federal, Guanajuato, Hidalgo, Jalisco, México, Michoacán, Morelos, Puebla, Queretaro and Tlaxcala); Gulf of México (Campeche, Quintana Roo, Tabasco, Vera Cruz and Yucatán) and South Pacific (Colima, Chiapas, Guerrero and Oaxaca).

The two regions that are most similar in their season of birth are the Gulf of Mexico and the South Pacific. Their major peak in births occurs in December, the secondary one in March and February, the annual low in September and October, and the minor low in January and April respectively for the two areas. The most probable months of conception for

births occurring in December, February and March are March, May and June.

The variation observed in the Gulf of Mexico is extremely interesting as it suggests some correlation with local practice and belief. It is commonly held in southern Mexico and Guatemala (personal communication to author) that December is a favorable time for births, in contrast to the period from the middle of June to the end of November, for during the rainy season, which starts in the middle of June, there are an abundance of respiratory and intestinal infections to which the new born are extremely susceptible. The unfavorableness of the wet months is born out by the tabulation of infant deaths by month in Guatemala (Dirección General de Estadística 1960). It is commonly believed that efforts are made to avoid having children born in this period. The very high December maximum seems to suggest the efficacy of such behavior however it may be brought about. The secondary maximum in births in February and March corresponds to conception in May and June, about or shortly after the time of the main planting of corn. It is known that traditionally the latter event is accompanied by ceremonials that are in part erotic (Thompson 1930) and it is tempting to suggest that at least in some vague way there is some connection between the rise in conception rates and such practices.

The time of planting appears to be important since generally the secondary maximum for all of Mexico is believed to be related to the sowing of major or minor crops (cf. Cowgill 1961). The Central region shows its secondary high in February while the North and North Pacific areas exhibit theirs in December.

The major birth peak in the North region is in August with the main minimum in January and a minor one in November. This region is primarily beef producing but over 50 per cent of the migratory labor that formerly came to the United States was derived from it (Dirección General de Estadística de Estados Unidos Mexicanos 1946-1953). The August birth peak corresponds to October and November conceptions which coincide with the return of migratory labor, while the April minimum in conceptions reflects its departure. The Central region, involved in pig raising, provides 45 per cent of the migratory labor. In this region the maximum of births is in June, corresponding to conceptions in September, at which time migratory labor is returning to the Central region, rather earlier than to the North Region (Dirección General de Estadística de Estados Unidos Mexicanos 1946-1953).

The North Pacific section does not contribute <u>braceros</u> to the United States. It is essentially a large farming region, though not nearly as

large as its neighbors, that also raises cattle and produces some lumber. Nayarit, for example, has as many small farms (i.e., less than five hectares) as large ones. The northern portion of the area is occupied by a sizable desert (Dirección General de Estadística 1939-1960).

The North Pacific, curiously enough, shows the reverse of the maxima of the South Pacific with the annual high in February, implying May conceptions, which may be related to the sowing of some crop, and the secondary in December, also reflecting the planting season. The minima appear in August and May, probably involving November and August conceptions, no doubt, connected with concentrated agricultural efforts on the large farms.

The season of birth pattern exhibited by the states north of the United States-Mexican border is, as has been pointed out, distinctly different from that shown by those south of it. This is not the case with provinces and states on either side of the United States-Canadian border. It would appear therefore, that the season of birth in those countries that have been considered in this paper, is largely culturally determined. The cultural similarities between those people living on either side of the United States-Canadian border are much greater than they are between those living in the south-west of the United States and in northern Mexico. The general lack of uniformity within Mexico in its season of birth, the somewhat greater uniformity exhibited by the provinces of Canada and the pronounced similarity of the pattern shown by forty-seven states of the United States would tend to confirm the hypothesis that the birth season in these countries is culturally determined.

SEASONALITY

The majority of the Canadian provinces (Prince Edward Island, Newfoundland, Quebec, Manitoba, Saskatchewan, Alberta) indicate a relatively high seasonality (18), with Nova Scotia exhibiting the greatest amplitude (23), while Ontario and British Columbia reflect the lowest ones (12). It is felt that geographical variation in seasonality is probably in some way related to the immense industrial growth and a concurrent rise in urbanization that Canada has experienced in recent years.

The change in seasonality exhibited by the United States as a whole since 1920 is largely a reflection of World War II. Initially the amplitude is quite low (10) and does not change significantly until after the war. There are no data available for 1942 and 1943. Presently it is declining.

Generally, for the individual states the seasonality is quite low in the northeast, the intermountain states and those of the Pacific west. It gradually increases as one approaches the midwest and then slowly declines as one moves further west. Nevada and Montana are exceptions to this trend. Moving southward, the amplitude increases greatly, with the deep south exhibiting enormous values, by far the highest of the country. The high seasonality of the south is most probably due to poverty (cf. Pasamanick et al. 1960). The anomalous amplitude exhibited by Montana and Nevada is doubtless a statistical artifact due to the small number of births.

The detailed variation in seasonality does not appear to depend on high temperature. Louisiana, for example, has the highest amplitude of the country (41), but its annual mean difference in temperature, as well as the difference between maximum for any given year, is less than that of Texas or Mississippi; yet their seasonality is smaller. It is possible that defective registration of the poorest families in some states may invalidate conclusions that might be drawn from southern data.

The three long sequences from Massachusetts, Connecticut and New Hampshire show certain similar variations in seasonality. In the case of Massachusetts the major drop in amplitude begins in 1894, the lowest drop appearing between 1904 and 1908, at which point the seasonality slowly increases until 1926 when it returns to what it was in 1893. Similarly, Connecticut shows a trough from 1906 to 1920. There are no data for this century prior to 1906. New Hampshire also indicates a decline from 1908 to 1923, though it is not as great as that shown by the other two states. Except for these noticeable drops, the rest of the curves are inclines in either direction around this period, with the exception of occasional oscillations.

An examination of the Historical Statistics of the United States, 1789-1945 (U. S. Department of Commerce 1949) offers some illuminating data that may explain the persistence of the trough in the first two decades of the country. From 1890 to 1920 the states west of the Mississippi River gained roughly twelve million eight hundred thousand people from the east. The regional breakdown shows that the northeastern states for the same period lost roughly six million people to the west. The peak of such internal migrations declines slowly after 1920. It would appear obvious that the people most likely to migrate are those who are still within the reproductive age. They probably were largely unskilled laborers who belong to the lower socio-economic group, which is believed to be the largest

contributor to seasonality (Pasamanick 1960). This hypothesis tends to be substantiated by the fact that their absence has such a great effect on the seasonality. It would appear that the migration began earlier in Massachusetts than in Connecticut, since the trough occurs over a larger span of time. The question remains as to why this large group of people found it necessary to move. Undoubtedly, part of the explanation lies in the fact that opportunities for the improvement of their standard of living were greater in the west. Another reason is that the cost of living was increasing rapidly. This index is based on costs in 1913. By 1920 the index had reached 203.7 (U. S. Department of Commerce 1949). This undoubtedly offered a greater incentive toward leaving than the mere promise of better opportunities further west. Since part of this migration occurred during the war, it is more likely related to unskilled and possibly semiskilled workers rather than the highly skilled, since the latter group would be most important for the war effort, however, no doubt many of these people were conscripted.

Moving southward to the small country and territory that has so emulated the continental United States in the past years, in the case of seasonality it is dissimilar. During the period 1941-45 the amplitude exhibited by Puerto Rico is the same as that of the continent. However, subsequently, just after the war, it drops, contrary to that of the United States and then increases quite quickly to a rather high degree (23) by 1961.

In the United States, the great amplitude after the war may be due to the sudden return of large masses of soldiers. In Puerto Rico, not as great a number were involved in the war and possibly many did not leave the island, but gradually were released from service. The issue is somewhat confused by what ever effects the Korean War had on seasonality.

In the case of Hawaii which only involves three years of data, the Caucasian group show the lowest seasonality, the Japanese population the next and the highest by the Hawaiian and Part Hawaiian. Generally, for the world, the caucasoid group indicates the lowest amplitude when compared to others living in the same region. This presumably reflects the dominent economic position of the group. It is particularly interesting, however, that the Maoris, a Polynesian people, show a lower seasonality than the Caucasians in New Zealand (Cowgill 1966).

Moving back to continental North America, Mexico exhibits a range of seasonality. The North, Central and South Pacific regions exhibit a similar amplitude. The North Pacific tends to be somewhat higher while that of the states of the Gulf of Mexico is extremely high (40). It is believed that the latter may be due to irregular registration in some years. One receives the impression that the month of birth is correct, but that if the registrar one year does not obtain all the records for say December, he adds them on to the subsequent December. Hence, in such a short sequence of years, the seasonality would become greatly effected by such

practices, especially if such occurred at the initial and final year of the run. The amplitude exhibited by the states of the Gulf of Mexico is probably equivalent, or possibly slightly higher than that of the North Pacific. The reason for thinking in this fashion is that both regions have a similar distribution of large and small farms, many of the latter being of the subsistence level, though the actual number of these remains unknown. The number of animals in both regions is similar. The distribution of population is somewhat different since the north has a substantial desert, however, this section occupies 21 per cent of the land of Mexico while the Gulf of Mexico region has only 12 per cent, yet the south has many more small villages than the north. Excluding the large landowners, grain in the north and henequin in the south, the question of poverty is difficult to ascertain. In the author's experience an increase in finances does not necessarily bring about a change in the standard of living.

DISCUSSION

Initially, the Canadian birth pattern favored a spring maximum with a late fall minimum which gradually changed to an early fall maximum and a spring minimum. It may be postulated that the earlier pattern so similar to that of Europe, may be the last remnant, in the northern hemisphere of the New World, of an annual cycle that is largely meteorologically determined. In the 1920's the Canadian population was still largely dispersed, with the exception of certain relatively isolated urban centers. We may suppose that as a result of better means of communication as well as of heating and lighting, dominant cultural patterns most probably developed in the cities, have become more influential in the country as a whole, exerting a more unifying effect, and as a result the birth pattern gradually altered. This hypothetical explanation for the observed phenomenon becomes somewhat more plausible when it is realized that what is so far really known of the European pattern, covers no more than a century and a half, and this pattern had many centuries in which to develop. In the New World the tabulation of vital statistics began about the time erratic changes were still taking place which became more noticeable as the statistical services began to gather data on a widely dispersed and previously unregistered population. Aside from this basic problem, the region was beset with continual waves of immigrants coming from all over the world, carrying with them many cultural patterns and presumably to some extent the season of birth pattern of the area from which they came.

The changes that have just been described can only be reasonably ascribed to cultural factors, since there is no evidence of a dramatic variation in the climatic progress of the seasons during the period in question. Moreover, it seems very much more likely that when cultural determinants are involved they would act primarily on conception rate rather than prenatal mortality rate. In fact the occurrence of changes both geo-

graphical and temporal in birth season, of the kind discussed in this paper, renders rather unlikely the hypothesis (Pasamanick et al 1959) that major variations in the birth season are due to seasonal variations in prenatal death. At least direct evidence would be needed to substantiate such a conclusion.

Probably, the most interesting observation offered by the variation in amplitude by various patterns of season of birth around the world is that the subspecific variations are largely a result of culture. If a given non-caucasoid group is living out of contact with a caucasoid one, the seasonality may be the same as that of an isolated caucasoid group. However, the effect of competition when both groups are living in the same area is such that the non-caucasoid group tends to show a higher seasonality than it would were it alone. It is gratifying to note that the seasonalities shown by three groups in Hawaii, which is reputed to have less problems among its various groups, are not very different. On the other hand, it is significant that the dominant group in areas where such discrepancies occur is in the minority in this state, yet it still shows the least seasonality of the three.

SUMMARY

The study of the season of birth pattern shown by various countries of the northern New World has produced some interesting results.

1. Prior to 1942, Canada showed a typical European season of birth pattern with a peak in the spring. During the past twenty years it has approached that of the United States, developing a peak in September. It is suggested that this change in pattern is due to a better means of communication whereby the cultural patterns of the cities were able to influence the country as a whole.

2. The general curve of the United States shows a marked September peak. It is suspected that this is a result of holiday celebrations.

3. Minor transitions in the birth peak between July and September in the United States are considered to be a reflection of improved communications between urban and rural populations.

4. The change in birth pattern exhibited between 1916 and 1920 by Massachusetts, Connecticut and Michigan is probably due to a mass migration of native born Americans. It is suggested that they were the less highly skilled of the population.

5. Over the past twenty years, the Puerto Rican birth pattern has changed from that of Europe to that of the continental United States. Since television is a postwar phenomenon and programs are similar in both countries, it is suggested that this, coupled perhaps with seasonal migration, is the vehicle most likely to be responsible for the change.

6. The three subspecific populations of Hawaii reflect the seasonal birth pattern of the continental United States. The difference in season-

ality of the three groups is not great, suggesting that no inherently different responses on the part of genetically different groups are likely to be important.

7. Mexico exhibits seasonal patterns that are largely culturally determined and differ dramatically from those of the United States. The effect of subsistence living is still noticeable in its selective capacity on conceptions that result in births occurring at times most beneficial to the offspring.

8. The season of birth pattern of the countries studied show it to be largely culturally controlled in contrast to that of Europe where it is largely meteorologically determined.

9. Studies of seasonality show that it is effected by industrial growth, urbanization, migration, poverty, inflation and subspecific differences.

NOTES

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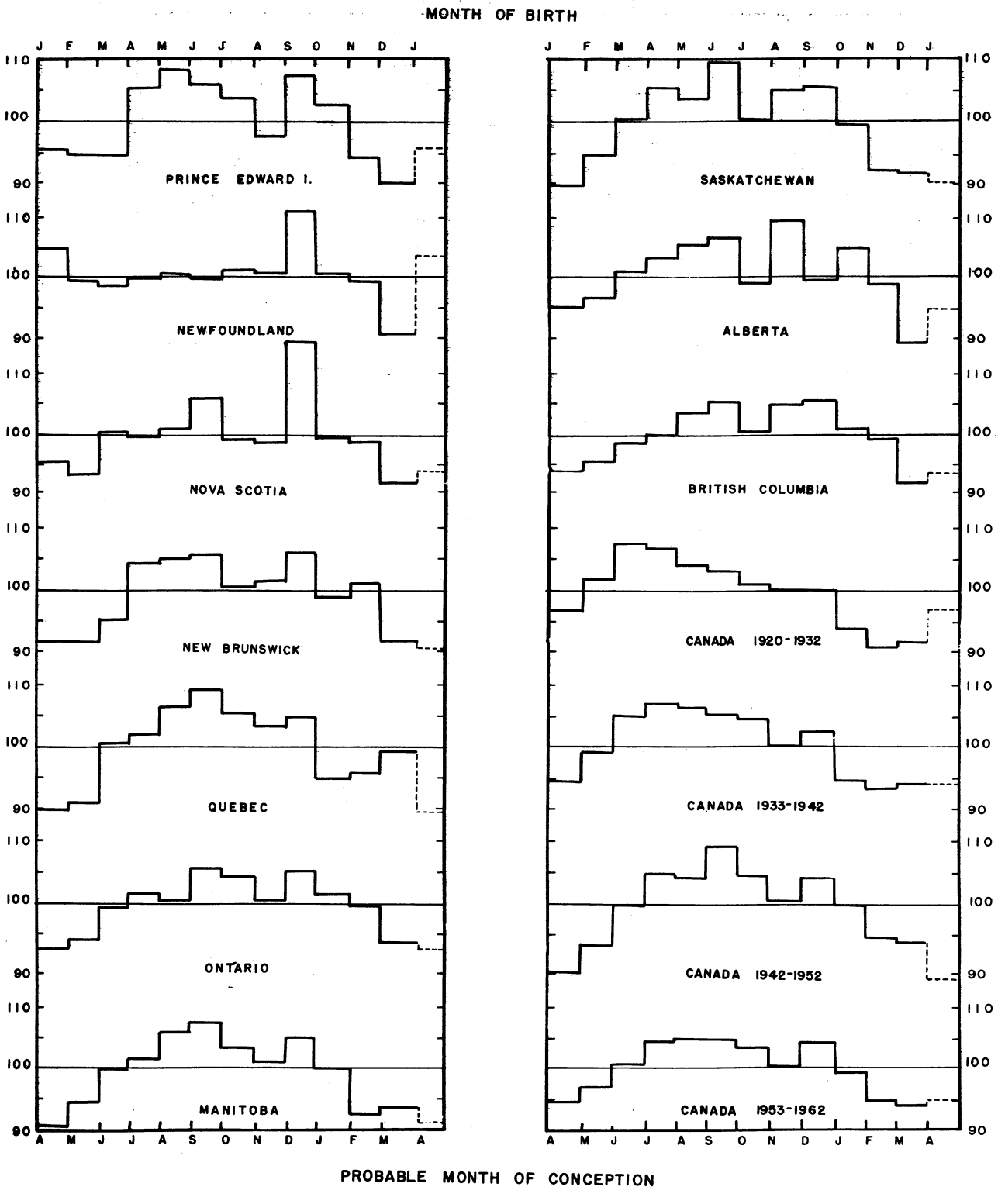


Figure 1. The season of birth in Canada and the individual Canadian provinces.

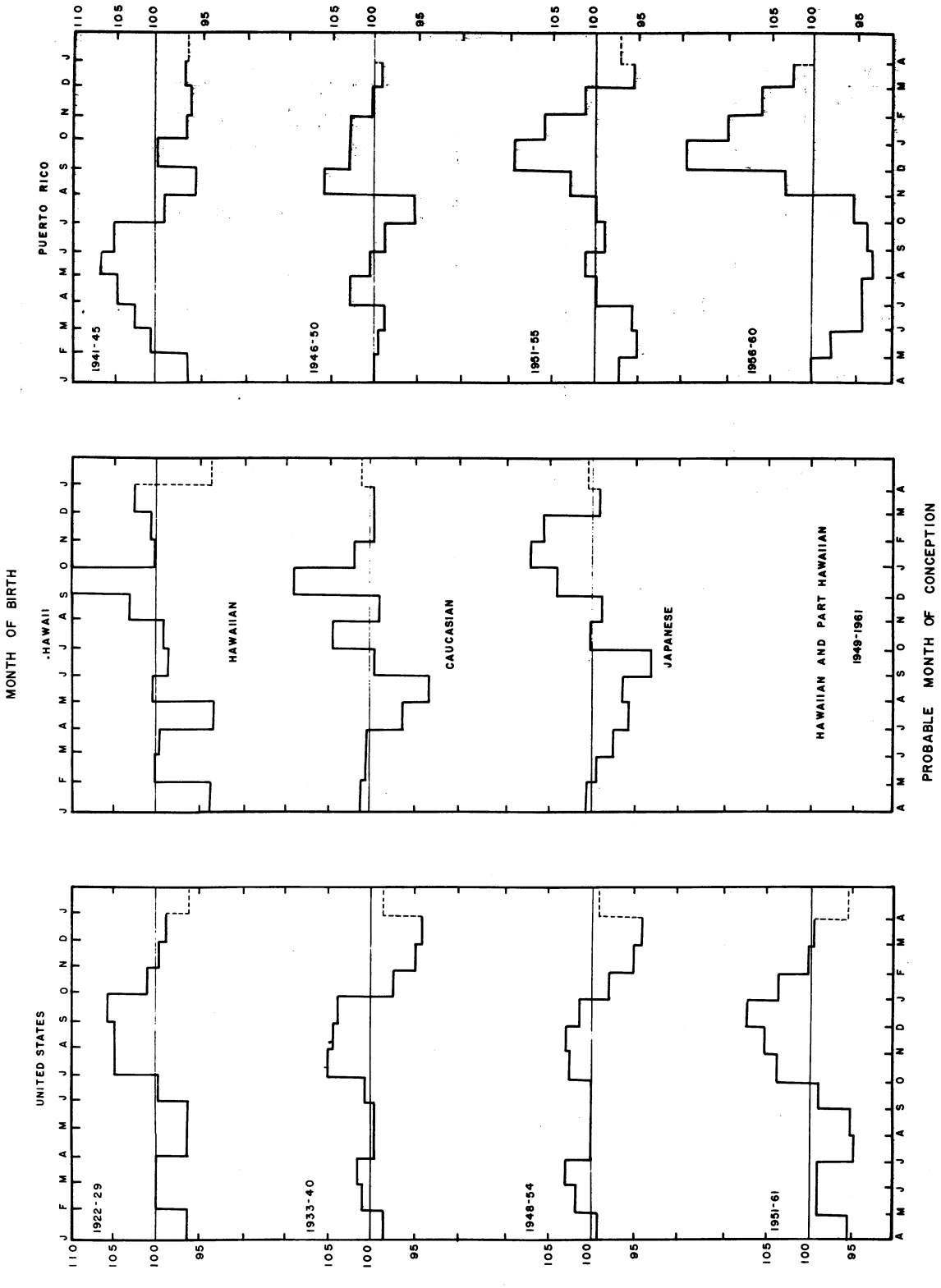
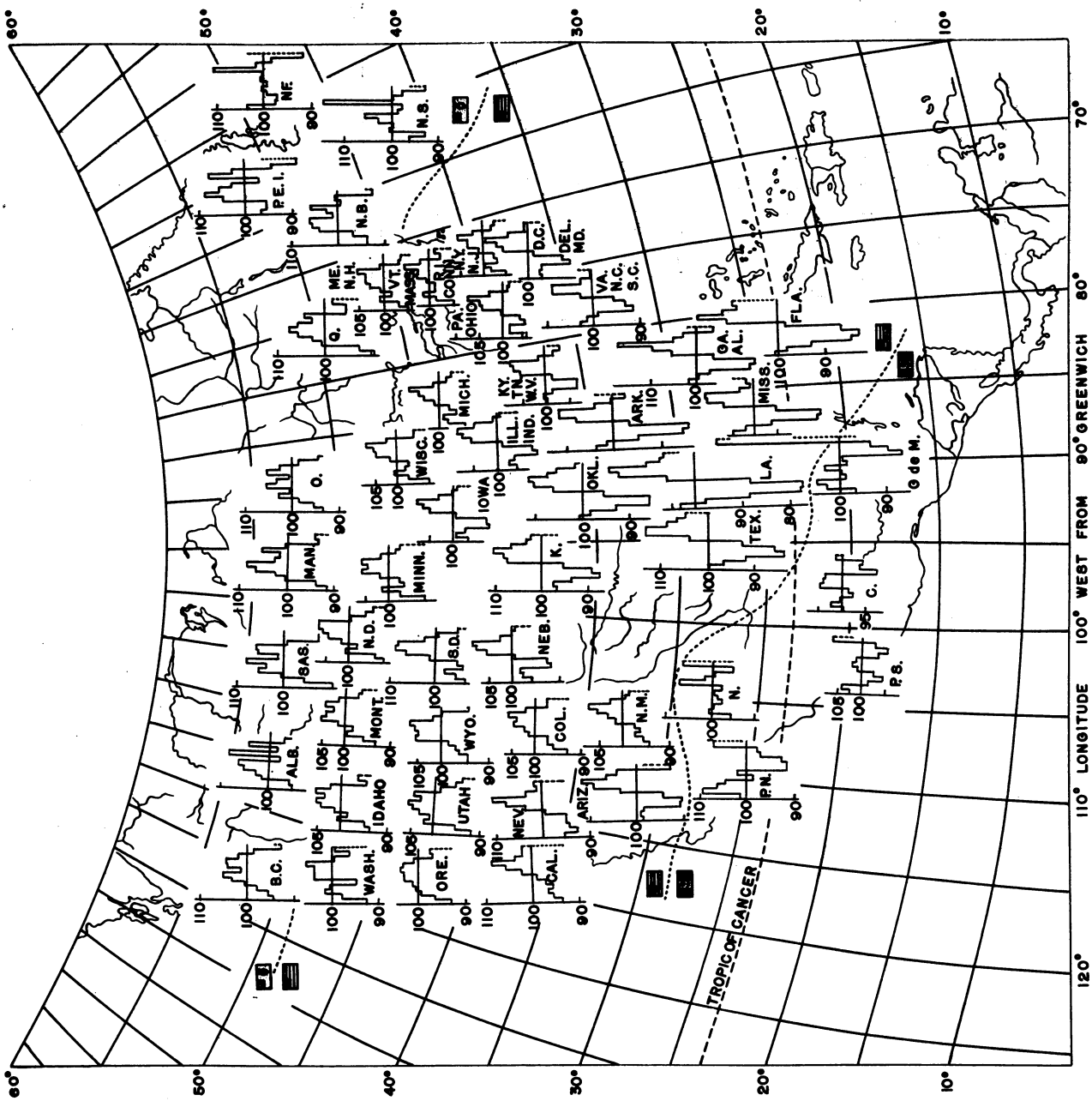


Figure 2. The season of birth in the United States, Hawaii and Puerto Rico.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100°
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110° LONGITUDE 100° WEST FROM 90° GREENWICH
TROPIC OF CANCER
N.F.
P.E.I.
N.S.
N.B.
ME.
N.H.
VT.
MASS.
R.I.
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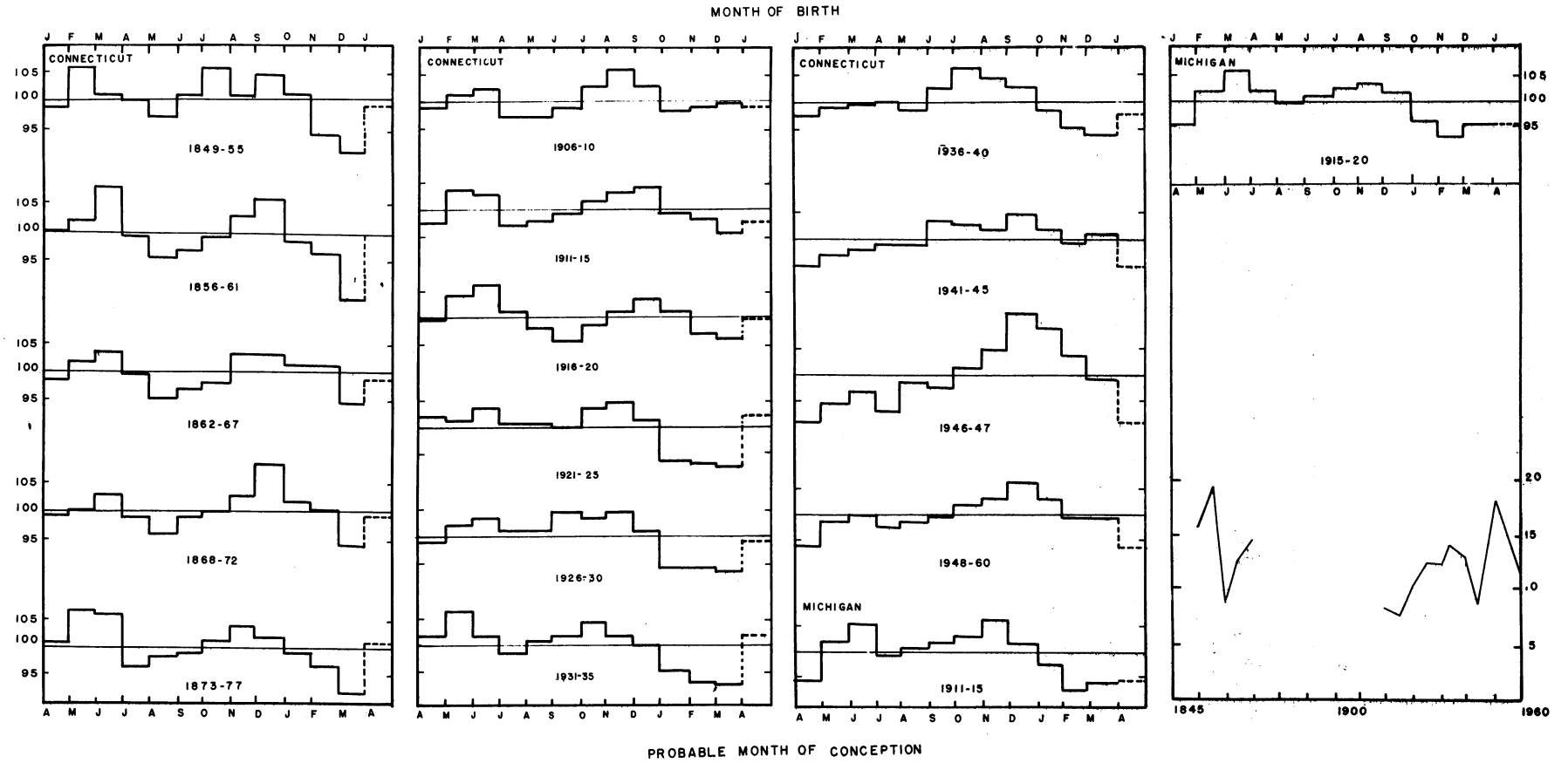


Figure 4. The season of birth in Connecticut and Michigan and the change in seasonality for the periods for which data are available from Connecticut.

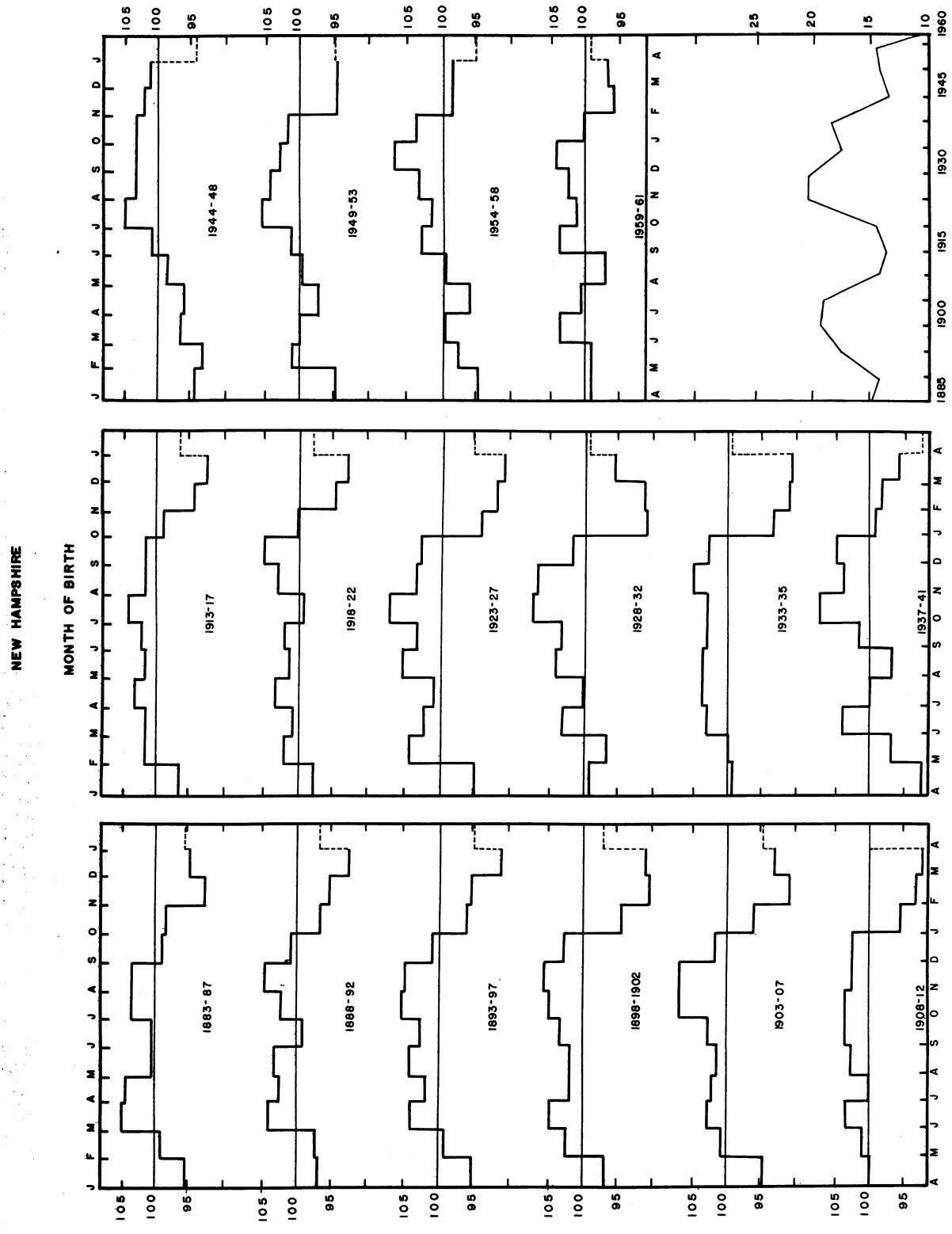
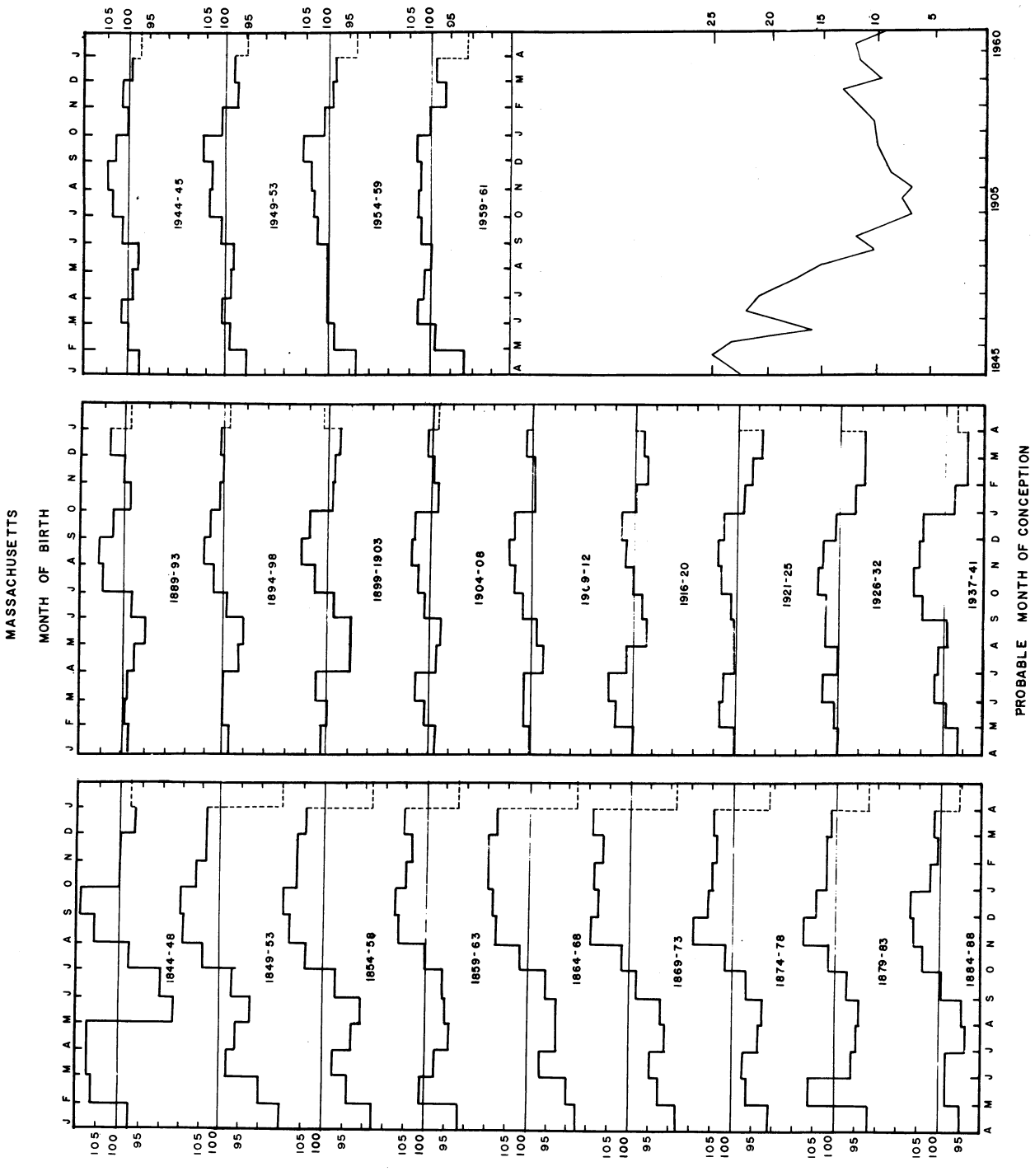


Figure 5. The season of birth and change in seasonality in New Hampshire.


MASSACHUSETTS
MONTH OF BIRTH
PROBABLE MONTH OF CONCEPTION
1844-48
1849-53
1854-58
1859-63
1864-68
1869-73
1874-78
1879-83
1884-88
1889-93
1894-98
1899-1903
1904-08
1909-12
1916-20
1921-25
1926-32
1937-41
1944-45
1949-53
1954-59
1959-61
J F M A M J J A S O N D J
A M J J A S O N D J F M A
105
100
95
25
20
15
10
5
1845
1905
1960

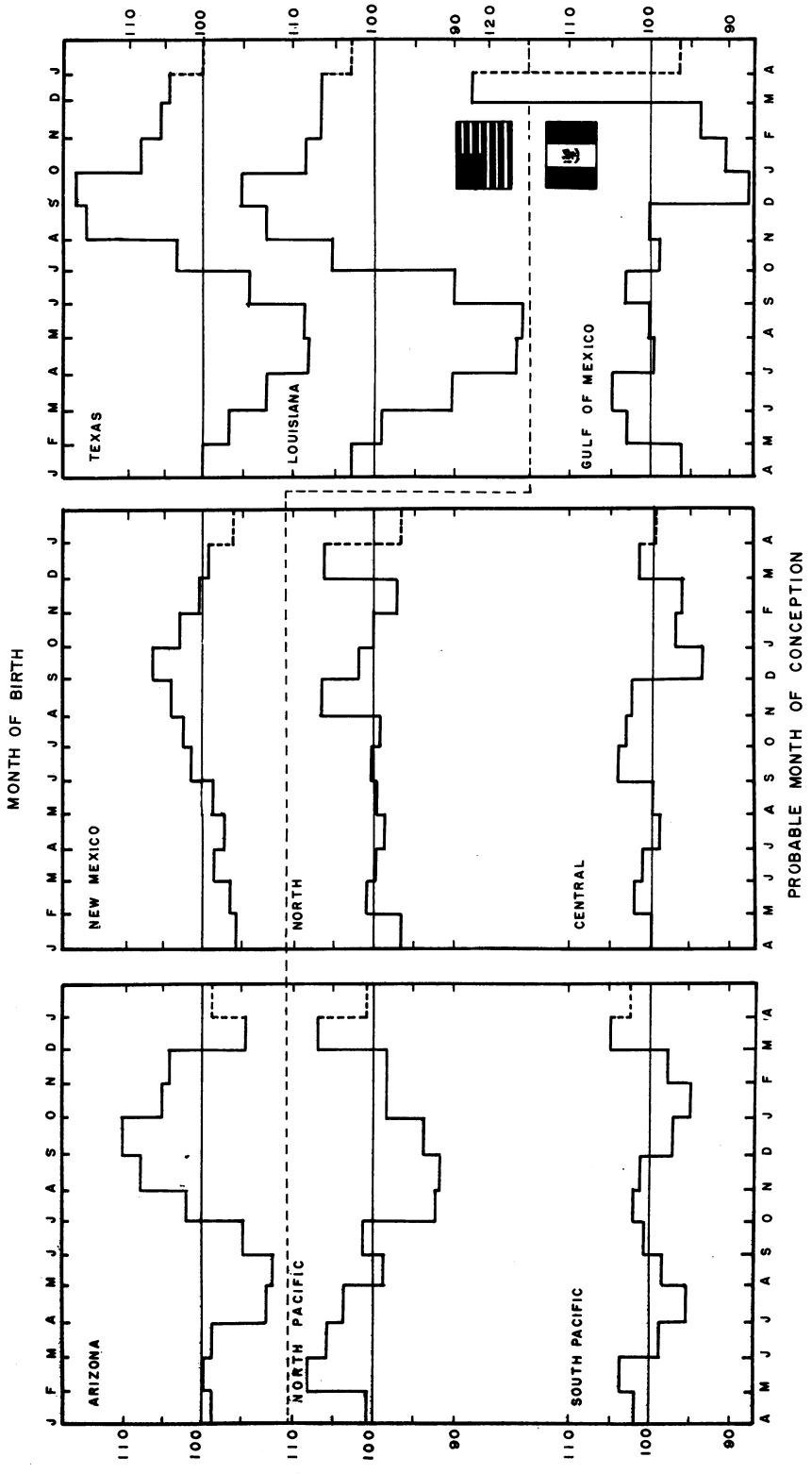


Figure 7. The season of birth in Mexico.