population and (1) the yearly number of immigrant arrivals, (2) the number of these arrivals still in Canada in the years of the census.

The calculations for 1867 to 1931 were built up as follows: a graduated yearly figure was obtained from the increases between decades, by means of smooth curves run successively through each set of two decades (three censuses); it remained to calculate from this smooth frame-work the extent to which the smoothness was disturbed from year to year. It is reasonable to believe that natural increase alone would tend to produce smooth yearly increases. Reason as well as observation showed that the yearly fluctuations were largely, if not wholly, due to immigration and emigration. It was also observed that the immigrant arrivals during the two years immediately preceding the census years were far more largely represented in the increase in immigrant population during the decade than the arrivals of the remaining eight years.[1] To obtain adequate weights for these considerations, a long-term trend of population growth was first obtained by running a logistic curve (commonly known as the Pearl and Reid curve) through 90 years of the above-mentioned graduated population (for 1841 and onward). The increases shown by this long-term trend were taken as representing the normal increases for these years around which the actual increases fluctuated. As controls for the fluctuations were taken: (1) the immigrant arrivals up to June 1 of the year calculated; (2) the arrivals of the second year preceding, and (3) the average yearly arrivals of the third to seventh years preceding the year calculated. The five years previous to those mentioned were experimented with without changing the results. It is remarkable that a negative weight was obtained for number (3), confirming the belief that where the population was increasing faster than normal the excess was thrown out within a short period.

The yearly estimates shown below (Table 13), therefore, reflect: (1) the normal increases, including natural increase and such additions as the existing size of the population could hold for a considerable period, (2) the fluctuating increases, which the population seemed to hold only for short periods, depending upon the size of the population, the size of the increases and the existing economic conditions. They also reflect emigration.

The results were correlated since 1867 with two indexes of economic conditions, one an index of business conditions and the other an index of wholesale prices, omitting the inflated years 1917-21. It is noteworthy that when the figures were recalculated with weights obtained from these business indexes they remained almost entirely unchanged. The estimates reflect to a high degree the long-term trend, to a lesser but still high degree the so-called business cycle, and, to some degree, the yearly fluctuation of business conditions.

The provincial estimates represent the Dominion estimates distributed among the provinces in proportion to the mean yearly increases of the provinces between census years. However births etc. were used as checks between 1921 and 1931.

The last column of Table 13 shows the calculation for a logistic curve, two cycles (before and after 1891) being shown instead of the continuous curve above mentioned. This column is valuable as showing what, judging from the past, is the steady yearly increase of the population at each stage—*i.e.* the increase which the population can hold more or less permanently. Thus the population at its size in 1931 would seem to be capable of retaining for a long period a yearly increase of about 170,000, while at its size in 1911 it could retain about 140,000.

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[1] The following commentary on the foregoing speaks for itself: Increase in total population 1911-21—1,581,000, or an average of 158,000 a year. Increase in immigrant population 1911-21—368,775, or an average of 37,000 a year. Of this last increase, 145,294 arrived within one year and 215,279 arrived within two years of the census; further, 1,780,688 immigrants "intending settlers" arrived in Canada between 1911 and 1921.