From the summary of the evidence produced it is quite possible to extract some comfort. Sir William Beveridge's appeal to the barometer makes it clear that he regards a low mean annual pressure as a direct indication of bad harvests, and points to the years 1878, 1893, and 1909 as the three years of lowest pressure in a forty-year period over the greater part of the habitable globe. It is, on the face of it, practically impossible that the pressure over the whole earth should vary from year to year; so perhaps we are to assume a higher selective pressure over the ocean areas in such years. In any event, we were very fortunate in this country in 1893 with a glorious summer, shared also by France, in spite of the world-conditions. There is another aspect which must not be ignored, and that is the physical basis on which the period depends. The lecturer contented himself with suggestions of a combination of periods of shorter length, hinting that $15\frac{1}{2}$ years is a sort of least common multiple of two or more of these. The actual figures given are, however, singularly unconvincing. Sir William Beveridge mentions a meteorological period of just over five years, without any details in support of it, and couples this with "the important $2\frac{3}{4}$-year cycle." Is this a period in itself, or is it merely one of the harmonics of the 11-year sun-spot period? He says eleven of these make two of his $15\frac{1}{2}$-year periods; so if the $2\frac{3}{4}$-year period is really "important," his new one should be $30\frac{2}{3}$ years. What *is* apparently important, as we remarked before, is the 12-month period, and this would indicate 46 years as a super-period, but there is no indication of any specially bad harvests at every third period in his table.

Sir William Beveridge's forecast for 1924–5–6 is given with some diffidence, showing that he is not too confident of the reality of the period, and it is not likely that he has made much impression on the devotees of the sun-spot period, which has been claimed to show direct correlation with such different phenomena as the price of wheat and the number of fellows of the Royal Astronomical Society.

One last question we might raise is: Does fine weather necessarily mean lower food prices, considered in the light of the suggestion that strikes and labour unrest are generally regarded as fine-weather phenomena? W. W. B.

## The National Food Supply.

SIR DANIEL HALL, in the first of his three recent Chadwick public lectures on "Gardening and Food Production," dealt with the national food supply and the possibility of self-support. According to the values obtained by a committee of the Royal Society for the five-year period prior to the war, only 42 per cent. of the total food supply consumed in the United Kingdom was produced at home. At the beginning of the nineteenth century the country was practically self-supporting, but since that time the population has greatly increased, while the productivity has decreased. In 1872 there were 14 million acres under the plough in England and Wales, but by 1914 nearly 4 million acres of this land had been put down to grass. Grass land is comparatively unproductive of food as compared with arable land, for, according to Sir Thomas Middleton's calculation, 100 acres of arable land in this country normally produce food that will maintain eighty-four persons, whereas the same 100 acres under grass will maintain only fifteen to twenty persons. The great difficulty is that arable land requires much more labour than grass land, and farmers naturally refrain from ploughing up their land when the cost of labour has risen very much more than have the prices of the produce. In 1917–18 another $2\frac{1}{2}$ million acres were added to the acreage already under the plough, but the food crisis is not yet over. It is essential that we should increase our productivity, and to attain this end we must agree to pay the prices necessary to make arable farming reasonably profitable to the farmer. Moreover, the population will have to change its habits and eat more bread, potatoes, etc., than meat, while pork will have increasingly to replace the more expensive animal foods.

The second lecture was concerned with the development and uses of allotments. The history of allotments appears to go back to a very early date; for from the time of Henry III. onwards there are statutes dealing with pieces of cultivated land of the allotment type. The first period of active growth of the allotment scheme was in the nineteenth century, when the industrial system and the large towns developed. A noteworthy example is the still flourishing group of allotments started by the late Sir John Lawes on his Rothamsted estate, in connection with which a club-house for the use of the allotment-holders was built as early as 1857. Without doubt the greatest extension of the allotment movement occurred during the years 1916 onwards, when the country was threatened with a serious food shortage. At the present time it is estimated that about one million allotments are in use. The typical allotment of one-sixteenth of an acre is rarely capable of providing all the potatoes and vegetables needed by an ordinary small household, but when a million of such allotments are considered, it is clear that they do bring about a marked saving in the national food bill. Unfortunately, the typical allotment is not always cropped to the best advantage, but it is hoped that this will be improved through the publication of a detailed scheme for allotments by the Ministry of Agriculture. In dealing with fertilisers the lecturer pointed out that many allotments are deficient in humus, and must be supplied with stable manure in addition to artificial fertilisers. Town-dwellers are faced with further difficulties over the tenure of their allotments, but it is hoped that all building schemes in the future will provide for a reasonable amount of allotment land.

"Social and Hygienic Conditions Respecting Gardens and Allotments" provided the subject for the third of Sir Daniel Hall's lectures. Under this heading was discussed the extreme importance of "vitamines," of which three at least have been found to be present in food. These vitamines occur mostly in living plants, although they are found also in certain animal foods. They are essential for the healthy development of human beings. In this connection appears one of the great values of allotments, for by their means a large number of people are provided with fresh vegetables containing the all-important vitamines, without which various diseases are liable to occur. The lecturer next dealt with the social value of allotments. Passive amusements, such as picture palaces, etc., fail to satisfy completely one's need for amusement, but there is enormous satisfaction in growing things; moreover, some of our best varieties of flowers and vegetables are the result of the efforts of working-men, who found much to interest them in the allotments which provided a welcome diversion from work that was often monotonous and carried out under unpromising conditions. The growth of the allotment movement will surely put men on a sounder economic basis, in addition to providing an active interest in life and to ensuring the better health of their families.