say 4*s*. 6*d*. a week was the amount available for food among the poorest 10 per cent of the population, the price of these basic foods should be fixed so that a sufficient amount of them can be bought for, say, 3*s*., leaving 1*s*. 6*d*. for the purchase of other foods, such as beef, mutton, fish, fruit, and tea and other beverages.

With such a policy it is doubtful whether it would be worth while maintaining a costly and elaborate organization for the detailed control of food. The Government is the wholesale purchaser. It can fix wholesale prices at a level estimated to have the retail price within the purchasing power of everybody. If the wholesale prices are known and wholesale distribution equitable, competition between merchants and shopkeepers, who are dependent upon the goodwill of their customers, will probably be sufficient to prevent any profiteering. Indeed, it has never been suggested that there was any gross profiteering amongst shopkeepers. Speculation and profiteering, in so far as it existed at all, was in large wholesale dealing, which is now under Government control.

The policy would provide a flexible system for adjusting the national dietary to what we can afford in money or in shipping space. The few essential foods chosen to be subsidized and to be provided in such abundance as there would be no need for rationing, would be regarded as the rock-bottom diet below which we cannot go with safety. Consumption of the other foods could be controlled by price. If we wish to economize in shipping and foreign exchange, we can limit consumption by increasing the price. On the other hand, if supplies of some other foods were sufficient, they could be added to the list of 'essential' subsidized foods and so brought within the reach of everybody. It is most probable that at the present time some other foods such as cheese and dried fruits could be added to the list. If the Government controls the wholesale trade, which is the bottle neck of our food supply, it can regulate consumption as seems desirable by regulating wholesale prices.

In the same way, home production can be regulated by price. The farmer produces for profit. He increases or decreases his output of different foods according to the price he thinks he will get. The farmer should be given a guaranteed minimum price calculated to call forth the additional food we need. The guaranteed prices of the different foods should be adjusted to each other in such proportion that the foods would be produced in the proportion we want. The control of production by the regulation of the price offered would enable farmers to devote their land to the crops for which they are most suited. This would utilize the land of Great Britain to better advantage and give a greater increase in production than a system of compulsory ploughing-up according to a fixed ratio, without any guidance as to what additional foods should be grown.

THE SEVERE WINTER OF 1939-40

THE frost which began on December 27, 1939, and continued with few intermissions until about February 18, 1940, was the most severe in Great Britain since 1895. December 1939 was cold on the whole, the average temperature of 37·8° F. at Kew being nearly 4° F. below the normal; but apart from a short spell of frost about December 22 it did not approach in severity the latter part of the winter. At the end of the month the minimum at Kew fell to 19° F., but comparatively mild conditions returned during the first week in January. The main period of frost came between January 10 and 24, when the mean temperature at Kew was continuously below freezing except for January 12 and fell to 22° F. on January 20. Some very low minima were recorded in all parts of England and Scotland: — 5° F. in the screen at Dalwhinnie, — 6° F. at Bodiam in south-east England and Ambleside in the north-west, and — 10° F. at Rhayader, all between January 17 and 21. At Greenwich the lowest minimum was 12° F., identical with the lowest minimum there in February 1929 and 5° higher than in February 1895. After a short break the month ended with another cold spell, and the mean temperature at Kew was as low as 31·3° F., compared with a normal of 40·5°. February began cold, but severe weather was not encountered until February 10, when another week of frost began, with very low temperatures about February 14.

There was not a great deal of snow in Britain, except in the north, but an even more disastrous phenomenon, glazed frost, occurred over the South and West of England on January 27–28. All through the Saturday night and most of Sunday, fine rain fell through a layer of air which was just below 32° F. The raindrops were cooled below freezing point, but remained liquid until they struck the ground or exposed objects, when they froze instantly into hard clear ice. Twigs and branches of trees, telephone wires and railway tracks were coated several inches thick; one length of telegraph wire in Gloucestershire carried a cylinder of ice 2·4 in. in diameter, and weighing

130 times as much as the wire alone. Mr. C. J. P. Cave calculated that in Hampshire there was a weight of 85–90 lb. of ice on a single wire between adjacent posts. Under the strain, wires and posts gave way, blocking roads and disorganizing the telephone service. Trees were split or brought down by the weight of ice on their branches, and added to the confusion, while the frozen road and rail surfaces caused an almost complete breakdown of transport. The weather continued very cold, and it was some days before conditions approached normal; there was even a second, though less severe, glazed frost on the morning of February 3.

The difference of eleven years between 1929 and 1940 at once suggests the influence of the sunspot cycle, especially when it is remembered that February 1917 also produced a severe frost, while that of 1895 came 22–23 years earlier. All these occurred about one year after a sunspot maximum. There was, however, no similar frost in 1906 or 1907 and the eleven-year recurrence is completely absent before 1895, so that the succession 1917–1929–1940 must be regarded as most probably a coincidence. D. Brunt, in his study "Periodicities in European Weather" (*Phil. Trans. Roy. Soc., Lond.*, A, 225, 247–302), finds no trace of a periodicity of eleven years in the temperatures of London, Stockholm, Paris or Vienna. The cycle of eleven years is the largest periodic element in the temperature of Edinburgh, and shows a minimum about 1938–39; but the double sunspot cycle of 22–23 years is almost equally prominent and is now near its maximum. For London this 22–23 year cycle is the largest component and is likewise near its maximum. In any event the amplitude of these periodic terms is small in comparison with the departures from normal temperature during a severe winter.

The other well-known cycle, Brückner's of thirty-five years, also fails to appear in Brunt's tables for London and Edinburgh, though he found it at Paris and Berlin. It happens that the interval between the last two great frosts, 1895 and 1929, was thirty-four years, but the Brückner cycle is of no help on this occasion, for the winter of 1904–5 was not particularly cold. Nor was 1840, in spite of the supposed grand cycle of a hundred years. Cycles are useless for forecasting severe winters.

On the other hand, although really severe winters may come at irregular intervals, they do present a considerable regularity in the course of events which constitutes them. The greatest intensity of cold rarely occurs until some time in January and quite frequently not until February, and in Great Britain it tends to come in waves of ten or fifteen days separated by brief intervals of milder weather. In a prolonged severe winter, central Europe is occupied by a persistent stream of very cold air coming from the east and north-east, with a temperature sometimes many degrees below 0° F., but over the Atlantic the normal south-westerly winds still prevail. For most of the time the cold winds succeed in crossing the North Sea or English Channel, though sometimes by devious routes, but now and again they give place to the mild south-westerlies. Even the brief passage over the North Sea warms the cold air appreciably, and temperatures in Britain do not fall so low as those on the Continent. Minimum temperatures are not yet available; but at 7h., temperatures only a degree or two above 0° F. were recorded at Copenhagen on January 17 and at Paris on January 23–25. Farther east much lower figures were recorded, down to — 26° F. at Dorpat on January 17. The whole period from about January 1 until January 25 appears to have been generally cold in Europe.

Another cold wave began about February 9, and on February 12, when Copenhagen recorded — 4° F. at 7h., the Baltic between Denmark and Sweden was firmly frozen and, according to reports in the Press, was crossed on foot for the first time in centuries.

OBITUARIES

Colonel R. E. B. Crompton, C.B., F.R.S.

WE deeply regret to record the death on February 15 at ninety-four years of age of Colonel R. E. B. Crompton. He was one of the greatest pioneers both in mechanical road traction and in electrical engineering.

Rookes Evelyn Bell Crompton was born at Sion Hill, Yorkshire, on May 31, 1845. In 1871, he married Elizabeth Gertrude, daughter of George Clarke of Tanfield House, Ripon, and had two sons and three daughters. He was educated at Harrow and served as a naval cadet in the Crimean War (medal and Sebastopol clasp); in the Rifle Brigade (1864–76); in South Africa, 1900 (despatches, Queen's medal with three clasps, C.B.). He was founder of Crompton and Co.; twice president of the Institution of Electrical Engineers; president of the Institution of Automobile Engineers; founder member of the Royal Automobile Club.

Colonel Crompton had a most varied and interesting life and career, and had numerous friends all over