

the Scottish red grouse. The Flanders dunes have a very interesting flora, in many ways like that of the dunes of South Wales, western Lancashire or Norfolk. In the wet dunes and pools grow grass of Parnassus, round-leaved wintergreen, purple loosestrife, hemlock, storksbill, and on the dry ones, toadflax, bird's-foot trefoil, creeping willow, pink centaury, squinancy wort, burnet rose, Chinese box thorn, evening primrose, musk orchid, marsh helleborine, etc. The alien evening primrose on the Dutch dunes is associated with the important researches of de Vries and the doubling of chromosomes in *Oenothera Lamarckiana*. The famous Flanders poppies, increased by the calcareous nature of the soil following the bombardment of buildings in the War of 1914-18, had declined in numbers in recent years as the soil had returned to more normal type.

### The Food Industry in War-time

IN a lecture at the Royal Institution on May 21 in the series "The Nation's Larder", Dr. L. H. Lampitt, director and chief chemist of Messrs. J. Lyons and Co., Ltd., discussed "The Manufacture, Preservation and Distribution of Food". The food industry occupies a position between that of catering by households and catering of the canteen type. The economy to be effected by mass production is obvious because wastage is reduced to a minimum; all waste products are taken and so treated that they have an economic value, labour is reduced and—a very important point—the amount of fuel consumed is considerably less. A striking example is in the baking of cakes. An ordinary gas cooker as operated by a housewife consumes approximately 10 cub. ft. of gas for each lb. of cooked weight of cakes, assuming the housewife was making 4-5 lb. of mixed cakes. In the case of a travelling oven, producing thousands of cakes an hour, the consumption of gas for each lb. of cooked weight is about  $1\frac{1}{2}$  cub. ft. In the realm of the homely potato, the average housewife loses approximately 22 per cent in peeling and eyeing. In mass treatment, where peeling is carried out by mechanical means, the loss is only 11 per cent.

By far the greater proportion of the bread baked in Great Britain is produced by large mechanical bakeries, and it is not an easy task to change over plant producing loaves made from white flour to loaves made from brown flour. The utilization of edible products not previously generally used as food, or used in a different form, is comparatively simple. Examples are the *Ersatz* coffee of Germany made from roasted barley and the *Ersatz* tea made from mixed leaves and shoots. These make palatable drinks, but the effect on the body is not the same as the natural products. By complicated chemical reactions, oils of the paraffin type which are unabsorbed by the human organism can be transformed into edible fats, and this is probably being carried out in Germany to-day. The production of protein matter by the activity of specially selected strains of yeast was practised in Germany during the War of 1914-18, and factories for this purpose were in being last year.

### The Differential Analyser

IN the application of mathematics to many problems both of pure and of applied science, rate of change of a quantity is often related to the magnitude of that quantity itself. This situation is expressed formally by a 'differential equation'. The differential analyser, of which the first was designed and built at the Massachusetts Institute of Technology by Dr. V. Bush and his team, is a machine for evaluating by mechanical means the solutions of differential equations, and its main applications are to problems giving rise to such equations which cannot be solved by formal methods.

Prof. D. R. Hartree, professor of theoretical physics in the University of Manchester, described the principles and applications of such a machine in his Friday evening discourse at the Royal Institution on May 17. The machine consists essentially of a number of integrating units each of which is a precision form of continuously variable gear. These units can be interconnected in various ways by shafts and gearing so as to form a translation into mechanical terms of the differential equation to be solved. There is also a number of 'input tables' from each of which information, in the form of a graph expressing the relation between two of the variables in the equation, can be supplied to the machine, and means of recording the solution of the equation either in graphical or numerical form; there are also adding units each of which can form the sum of two terms in the equation. There are at present seven full-size machines of this kind in operation, and also in Great Britain, several small-scale ones, some built mainly of standard Meccano parts, and others workshop-built. It may be recalled that the differential analyser at Manchester was described by Prof. Hartree in *NATURE* of June 8, 1935, p. 940.

### Summer School in Social Biology

THE Educational Advisory Board of the British Social Hygiene Council is arranging a Summer School for Teachers and Social Workers at Westminster College, Cambridge, during August 1-8. The main interest of the School will be focused upon a "School-Leavers' Course in Human Biology" which has recently been prepared by the Educational Advisory Board to assist in meeting the urgent problems that have arisen affecting adolescents as a result of war conditions. Various aspects of the syllabus will be presented in the form of symposia, contributed to jointly by distinguished biologists and practising school teachers. These symposia and the ensuing discussions should be of considerable value in helping participating teachers to a deeper understanding of the natural endowments of their pupils. Another section of the School will deal with some of the problems in social biology which to-day have become a matter of vital concern for the peoples of the British Empire.

Prof. J. C. Ryle, regius professor of physic in the University of Cambridge, will be president of the School, and Mr. L. J. F. Brimble will be director.