

have put their best brains and energies into the cause of agriculture, with the result that their system of rural economics is a model to the world. The high standard of agricultural education is chiefly responsible for this success; it is significant that 20,000 Danish farmers possess covered manure sheds, while 90,000 have water-tight liquid manure tanks. But in comparing this state of affairs with conditions on our farms at home, it must always be remembered that our system of land tenure does not favour similar development here. It is not only ignorance that still causes so much of the fertilising value of farmyard manure to be lost by careless storage. The Danish farmer, owning his holding, is able to borrow from his credit society the capital necessary for these improvements; the English tenant farmer is not in the same position. Many landlords cannot provide these aids to successful farming, even if they realise that it is to their ultimate advantage to do so.

It is, however, to the rural high school that we must look as the real source of Denmark's present agricultural prosperity. It may surprise many to learn that no merely utilitarian outlook dominates these schools. On the contrary, they endeavour to show the power of history, poetry, and science, and of a higher level of life and thought to glorify ordinary workaday existence. How will a man trained in an atmosphere of this kind fill the place of a typical agricultural labourer on our farms? If Danish workers are introduced in any numbers into English rural life the results cannot fail to be of great interest.

THE CULTIVATION OF SPONGES.

AN industry which promises a return of 3000 per cent. per annum on a very moderate capital expenditure is an attractive proposition. In the last issue of the *West Indian Bulletin* Mr. W. R. Dunlop describes the successful rearing of sponges from cuttings in the Caicos Islands, near Jamaica, and also the results of some earlier experiments in Florida. The sponges occurring naturally in West Indian waters have little commercial value, so that the material for planting must be imported. Although sponges are to a remarkable extent creatures of environment, and tend when transplanted to approach the native types in quality, there is evidence that this may not occur in selected localities in the Lesser Antilles. As the cuttings will only grow when attached to an anchorage, it is necessary to provide them with suitable means of support when planting out. Cement discs are used in Florida, to which the sponges are held by metal clips, but it has been found in the Caicos Islands that slabs of coral are quite as effective as the discs and naturally much cheaper. On soft or sandy bottoms a spindle is set in the disc to hold the cutting, otherwise the sinking of the disc tends to bury the sponge and kill it.

The crop is ripe for harvesting in from one to four years, according to the variety grown. To plant, harvest, and market one acre of sheep's-wool sponges costs about 4*l.* This is a large and valuable variety, taking four years to mature, and yielding 116*l.* per acre in the New York market. Assuming that one acre is planted each year, then, after four years, an annual expenditure of 4*l.* will yield an annual profit of 112*l.*, if four acres only are under cultivation. No charge for management is included in this estimate. The growers in the Caicos find that the small reef sponges, in spite of their lower market value, give an even better return on capital than the wool sponges, because they mature in twelve or fourteen months. It will be surprising if this industry, apparently so profitable, needs much official encouragement.

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NATIONAL ASPECTS OF CHEMISTRY.¹

EXACTLY seventy-five years ago from March 30, 1916, the Chemical Society met for the first time at the Royal Society of Arts after a preliminary meeting on February 23, 1841, at which it was decided "that it is expedient that a Chemical Society be formed." Though the society has continued to hold its anniversary meetings on or about March 30, ever since then, under various conditions, no meeting except that in 1915 has ever been held in circumstances at all approaching those now prevailing throughout the entire globe. The Crimean and Boer Wars did not awaken in the nation any appreciation of the increasingly important rôle played by chemical science in warfare. On the other hand, the enormous possibilities for the destruction of human life afforded by the application of scientific methods to warfare had inclined people to the belief that such a war as the present, with its ruthless disregard of life, could never occur. Short of demonstration, chemists would never have believed that their science could have been prostituted as it has been by the enemy.

Many thoughts arise in our minds on such an occasion as the seventy-fifth anniversary of our society, leading us to reflect on the state of chemical science before 1841, on the aims and purposes for which it was deemed expedient to form such a society, and to examine the measure of success that has been achieved by the society in fulfilling the objects as laid down in the charter.

Reference was made to various letters received from the founders of the society, and to one in particular from Henry Fox Talbot, the well-known pioneer in photography, expressing the view that the science of chemistry alone was not sufficient to engage the attention of a society, and suggesting that electricity should be added. How erroneous was this view is shown by the fact that within a month or so of its formation the Pharmaceutical Society was founded, and of later years, amongst other societies which have sprung from the parent society, may be mentioned the Society of Public Analysts, the Institute of Chemistry, and the Society of Chemical Industry, each of which has its important functions to perform.

Looking back to the time of the "father of chemistry and brother of the Earl of Cork," who in his introduction to the "Sceptical Chymist" stated "that of late chymistry begins, as indeed it deserves, to be cultivated by learned men, who before despised it; and to be pretended to by many, who never cultivated it, that they may not be thought to be ignorant of it," one may indeed wonder, on perusing our Parliamentary and legal reports, how our legislators should be classed in accordance with this statement, and to doubt whether the attitude of so-called learned men towards chemistry had done more than "begin" to change during the last two centuries. The beginnings of this change and the initiation of the experimental method into true science by Robert Boyle and his contemporaries followed closely upon the Civil War. For a hundred years or so onwards from the time of Boyle, the gradual substitution of careful experimental work in place of speculation on the reasons for chemical and physical changes added greatly to our knowledge. The rise and development of the phlogistic theory and its final overthrow by Lavoisier illustrate this phase in the growth of our science. The vast strides made in the progress of chemistry date back to the time when the use of the chemical balance was insisted on by Black; by its use chemistry became an exact science. Black's modesty and his devotion to scientific inves-

¹ Abstract of the Presidential Address, entitled "Our Seventy-fifth Anniversary," delivered before the Chemical Society on April 6, by Dr. Alexander Scott, F.R.S.