

THURSDAY, OCTOBER 29, 1914.

SCIENCE AND THE STATE.

AT the present moment we as a nation are engaged in war; hundreds of thousands of volunteers are joining Lord Kitchener's Army; and it is evident that we are in for a long job. A forecast by the military correspondent of the *Times* of October 17 contains the following paragraph:—"This war, for us, has hardly begun. We have sent the point of our advanced guard into France to skirmish with the enemy. In the spring the rest of the advanced guard will follow, and somewhere towards the close of 1915 the main body will begin to come within view. We are not in any hurry."

With this prospect it may be fitting to inquire whether the best use is at present being made of the material at our disposal. We have multitudes of able-bodied young men willing to serve; there is no likelihood that the supply will fail; but at the worst, we can introduce compulsory military service. We can safely leave this question in the hands of our military advisers. There is also a great body of women in training as nurses, and a still larger body engaged in providing necessary warm clothing for the troops, and for the wounded. The unfortunate refugees in our country are being looked after, and in such ways the nation is rising to the demands thrust upon it. Everyone, in fact, is doing his or her best in individual and in organised effort.

But there is a class of our fellow-subjects which has as yet, so far as we are aware, not been organised. That is the Fellows of the Royal, the Physical, the Chemical, and the Engineering Societies. In their own particular provinces they are the pick of the brains of the country. This war, in contradistinction to all previous wars, is a war in which pure and applied science plays a conspicuous part. Has any effort been made to co-ordinate the efforts of the devotees of physical, chemical, and engineering science, so that they may work together at what for us is the supreme problem of all—how to conquer the Germans? For if we fail, civilisation as we know it will disappear. Democratic rule will have to yield to a military oligarchy. It was pointed out in an article in *NATURE* of October 8 how the originality in science of the Germans has decreased during the past generation, in spite of their enormous output of literature; this is to be attributed, no doubt, to the restraining influence of a military despotism, which has pervaded all aspects of their

life. But in the design and manufacture of their war-material they have worked incessantly for years in their usual methodical manner, trusting rather to myriads of experiments than to the utilisation of original thought, which is for them in a great measure lacking.

The problems which at the present moment require the help of our scientific men are varied and numerous. Our first efforts must be to aid our military forces in suggesting and supplying them with all kinds of appliances and material of which they can make use in vanquishing the enemy and in defending our shores. We know, of course, that expert advisers have been attached to our ordnance factories, to our navy, and to our air-service for years, who have doubtless done much in preparation for the fierce struggle now in progress. But in war, *every man* who has special knowledge of physical, chemical, and engineering problems which confront the authorities responsible for the conduct of the war should be summoned to do his best.

It is not to be expected that under the enormous pressure at which they are working, the authorities of the War Office will have time or strength to effect an organisation such as is here suggested; to create such an organisation must be the duty of the councils of the chief scientific societies and of the British Science Guild; they must offer voluntary aid. A practical method of carrying out this recommendation would be for each council to consider in what way help can be given. It is for the Royal Society to set the example; among its fellows are to be found the *élite* of scientific men, belonging to all the scientific societies. A number of committees should be appointed, small at first, but with power to add to their number; each committee would draft out lines on which its members might advantageously work, and the committees might be strengthened by adding fellows or members of other societies, known for their special acquaintance with the conditions of each particular problem. Such services would, of course, be voluntary, and should be considered as one contribution of men of science to the relief of national needs.

It may be contended, however, that bodies of men such as those suggested have not the practical experience necessary for putting those of their ideas which promise useful outcome into a shape required for present emergencies. This contention, if it should be made, has little weight. There is much contact between those who have devoted their lives to the advancement of the

domain of pure science and those who have interpreted its results in practice; not so much, perhaps, as might be desired, but enough to make it possible to enlist the services of practical engineers, electricians, and chemical manufacturers in bringing to a practical issue any ideas which may commend themselves. Indeed, such men as might serve on the committees might do much to organise the efforts of manufacturers, so that no overlapping should occur, and in such a manner that the utmost efficiency should be secured.

It would be well, too, that some means should be adopted whereby these committees should come into contact; an engineering problem, for example, often requires co-operation from the physicist or chemist for its successful solution. Such co-operation, however, should not be difficult to arrange for.

We referred last week to the publication of a reasoned statement by British scholars, as a reply to a manifesto by German professors. This is all to the good; but we need action as well as words. Action is being taken by the Master of Christ's College, Cambridge, and the secretary of the Appointments Board of the University, to form a committee of members of that University to advise the "Entente Trade League." Here, again, is an effort in the right direction; but it cannot be too strongly emphasised that WE ARE AT WAR, and the first duty of all men of science must be to organise, and to place their services unreservedly at the disposal of our War Office.

In this hour of national emergency there is no time to be lost. We cannot all be soldiers, but we can all help, we men of science, in securing victory for the allied armies. Every day lost means the destruction of a number of our fellow-countrymen and of our allies, and the sooner we co-operate for the good of the nation the sooner will the war be over.

CROPS, STOCK, AND SOIL.

- (1) *The Natural History of the Farm: A Guide to the Practical Study of the Sources of Our Living in Wild Nature.* By Prof. J. G. Needham. Pp. 348. (Ithaca: The Comstock Publishing Co., 1913.) Price 1.50 dollars.
- (2) *Investigation into the Disease of Sheep called "Scrapie" (Traberkrankheit; La Tremblante); With Especial Reference to its Association with Sarcosporidiosis.* By Dr. J. P. M'Gowan. With an Appendix on a Case of John's Disease
NO. 2348, VOL. 94]

in the Sheep. (Edinburgh and East of Scotland College of Agriculture.) Pp. ix+116. (Edinburgh: Wm. Blackwood and Sons, 1914.)

- (3) *Die Typen der Bodenbildung, ihre Klassifikation und geographische Verbreitung.* By Prof. K. Glinka. Pp. iv+365. (Berlin: G. Borntraeger, 1914.) Price 16 marks.

(1) PROF. NEEDHAM'S "Natural History of the Farm" is one of those books that could only be written in America, where individuality of outlook is allowed, not only to a professor of limnology, but to all who are engaged in doing anything with agricultural students. For it is recognised that the methods must not become stereotyped and that every teacher should have his own way of doing things. This book is a combination of natural history and nature-study, with much fluent writing about the joy of communing with nature and the things that really count in life; the chapters are ushered in with quotations from Robert Burns, Ecclesiastes, Whittier, Micah, etc., and along with the fluent writing is set a practical exercise. Anyone who knows the American student, with his (and especially her) capacity for taking things seriously, will realise that a book of this kind will get its chance, and that the intention of the author will be duly respected. His aim is not so much to teach as to arouse such interest in country life that men and women shall remain in the country and not migrate to the town. We have the same problem ourselves, and may yet have to deal with it in the same manner.

(2) Dr. M'Gowan's book deals with a disease in sheep which has become widely known in some of the border counties during the last few years, especially in Roxburghshire and in Northumberland. The symptoms exhibited are persistent itching without any evidence of "scab," a gradual emaciation, but no diarrhoea or loss of appetite, a change in gait and a weakening of the muscle power; the disease is almost universally fatal. It is known in the north as "scrapie," but it appears to be identical with diseases described by older writers as rickets, goggles, shakings, cuddie trot, etc., and with "la tremblante" and the "traberkrankheit" of the Continent.

The author's investigations lead him to believe that it is caused by a heavy infection of the sheep with a protozoan parasite (sarcosporidium). He attributes the infection to the system in vogue in the north of breeding from the two-year-old ewes for the purpose of keeping up the ewe stock; he finds no evidence that the disease is spread by the ram. His reasons for attributing the disease to the sarcosporidium are (1) that the sarco-