to the labours of the late Dr. Parkes and to those of his successor, Dr. de Chaumont, is that, comparing the results of thirty years ago with those which now obtain, there is a saving in the home Army of two battalions per annum. Some substantial progress is also being made in the same direction as regards the general public, and when it is more fully understood that preventible diseases as a rule destroy those members of the population who are most remunerative in so far as the State is concerned, and that, speaking generally, each such premature death means a loss of at least 100*l.*, even parsimonious members of sanitary authorities will not mind expending a little more of the public money in so good a cause.

Leicester was well chosen for this year's gathering, for in many respects the town has acquired some reputation in health matters. It may be regarded as the head-quarters of the anti-vaccination party; it prides itself, not without cause, on the efforts it has made to control the spread of infectious diseases; and it takes precedence amongst those English towns in which autumnal diarrhœa is so fatal to the infantile population. As regards the question of vaccination it would be premature to draw any general inferences from the Leicester results, for although during recent years only a comparatively small portion of the infantile population have been vaccinated, yet a vast majority of the inhabitants are fairly well protected against small-pox, and it is by no means so very strange that a disease which usually recurs in an epidemic form only after a lapse of years, should for a time remain absent from Leicester. Still, we frankly admit that the day of reckoning has been somewhat long in coming; but there are exceptional reasons for this. And in the first place we would note that Leicester is not so free from small-pox as is generally imagined. The Registrar-General's returns have, it is true, long shown an almost absolute blank as regards small-pox mortality there, but it must be remembered that the Leicester Small-pox Hospital, where the deaths from this disease take place, is not in the borough, and hence that the mortality occasioned is registered in altogether another district. Then again, the sanitary authority of Leicester, by the aid of a system of compulsory notification of infectious diseases, acquire the earliest knowledge as to the existence of cases of small-pox, and having provided themselves with an isolation hospital, the patients are at once removed, and their houses and clothing are efficiently disinfected. It may be said that any other town could do the same, and so vaccination would become unnecessary. But this is not so. Removal to hospital is only compulsory under conditions which, were objection raised to it by the people, would make this early isolation impracticable, and all populations are not so proud of their defiance of one of the laws of the country as to submit without resistance to the steps which are held necessary in order to prove that this law is a superfluous one. But Leicester goes much further than this. The authorities not only remove the sick, but they remove the healthy members of the sick person's family, and hold them in a species of quarantine until they know that they have escaped infection. Such a step may be very desirable from a health point of view, but it is altogether illegal, and it is quite certain that if any attempt were made to enforce such a system in other parts of the kingdom it would be resisted. The majority of the nation would also hold it to be unnecessary; and the recent publication by the German Government of the Report of a Commission showing that since re-vaccination was made compulsory in 1874 not a single death from small-pox has occurred in their Army, affords ample evidence that the simple operation of vaccination can fully meet all the difficulty.

But little further light was thrown, at the meeting, upon that obscure zymotic diarrhœa which annually causes so large a mortality in Leicester. But Dr. E. W. Buck, who has made the subject a special study, probably pointed out the essential cause of this fatality by showing how a large portion of the population of Leicester was exposed to the influence of a water-logged soil charged with decomposing organic matter. Temperature so largely influences this mortality that it was at one time regarded as its sole cause; but it is certain that a high temperature alone is powerless to produce it, whereas the effect of temperature on such conditions as obtain in Leicester must be very potent in favouring the development of organic germs, such as are now supposed to lie at the root of the evil. Extensive inquiry is needed as to this subject, and we hope that the results of the investigation which have been conducted for some years past by the Medical Department of the Local Government Board will soon be made public.

Amongst the many other matters of interest which were dealt with at the Congress is that of the provision of dwelling-accommodation for the working classes, and in view of the steadily extending practice of massing together vast numbers of human beings in great buildings where storey is piled upon storey, the warning uttered by Mr. Gordon Smith, President of the Engineering and Architectural Section, and the occupant of an important official appointment which adds weight to his opinion, should receive careful consideration. He asserts that in this class of buildings there has been an excessive infantile death-rate, and it is certain that the provision of ample open space about dwellings, which is, as regards ordinary dwellings, being more insisted on than ever, is especially necessary in the interests of child-life, which is so extremely sensitive to such insanitary surroundings as influence the quality of the air breathed.

The question of a rational system of burial was discussed at the last meeting of the Congress in connection with a paper by the Rev. F. Lawrence, who quoted the authority of the burial service of the Church of England as suggesting a system which would allow of the rapid action of the soil upon the dead, and who advocated burial at a depth of three or four feet only in coffins designed to ensure speedy perishability, and laid singly at a depth of three or four feet only from the surface. The advocates of cremation were naturally represented, but the progress of this method for the disposal of the dead is hindered by considerations which it is not easy to overcome. Foremost amongst these stands the difficulty of tracing cases of poisoning, and, even if the public were ready to assent generally to post-mortem examinations before the cremation was carried into effect, no such examination as is usually carried out could be trusted to decide whether this species of crime was the cause of death or not. Indeeed, in many cases of poisoning the most skilled pathological and chemical knowledge is required in order to avoid error. On the whole, such discussions as have taken place at Leicester tend to improvement in matters where change is desirable in the interests of public health, and the Institute may be congratulated on the results of their recent meeting.

INSECT RAVAGES

THE preservation of our garden and field crops from the attacks of injurious and destructive insects is a study which Miss E. A. Ormerod has made specially her own and which she has carried out with such signal success. Miss Ormerod's labours in popularising the subject so as to bring it within the knowledge of all classes in any way connected with agricultural and gardening pursuits are too well known to need even a reference, so thoroughly has she at heart the welfare of our food crops and field produce that she has taken other steps, besides the dissemination of her well known books, to bring the importance of the subject before those who are not likely to be reached by the works in question. We refer to the

prize offered by her at an agricultural show held at Frome last year, the result of which was satisfactory in drawing a considerable amount of attention to the subject, and one of the outcomes of which has been the preparation of a series of object lessons, so to speak, which have been elaborated from the plan of Mr. W. H. Haley, who took the prize at Frome last year. The plan of these lessons is as follows:—One insect is taken as an example and the life-history of this particular insect is illustrated by showing the creature in all its stages of development where practicable, or by neat and accurate-coloured drawings of pupa, larva, and perfect insect, each stage of which is carefully labelled, then a spray or twig of the plant attacked, or a model showing the insect's ravages is given, and in many cases also the parasites which attack the insect itself. Beneath this is carefully printed the life-history of the particular insect, and an enumeration of the plants upon which it feeds; and, finally, under the head of "Prevention and Remedies," some brief but concise instructions how to proceed to rid one's crops of the pest. All this is arranged on a cardboard mount 12 inches long by 8 inches wide, and placed in a box with a glass cover, so that one insect only is treated of in one case, thus making the information imparted very clear, and preventing all confusion. Of the insects treated in this way are the turnip and cabbage gall weevil, turnip moth, turnip fly, cabbage aphis, large white cabbage butterfly, cabbage moth, vine beetle, bean beetle, pea and bean weevil, winter moth, American blight on apple, magpie moth on gooseberry, celery-leaf miner, silver moth, beet or mangold fly, click beetle and wire-worms, goat moth, lacky moth, daddy-long-legs, and onion fly.

Twenty of these cases have recently been prepared by Mr. Mosley, of Huddersfield, under the superintendence of Miss Ormerod, and are now in the museum at Kew, and a set of ten of a similar character are to be placed in the Aldersey School of the Haberdashers' Company at Bunbury, Cheshire, where plain teaching on such subjects is being satisfactorily carried on. J. R. J.

AMERICAN AGRICULTURAL GRASSES[1]

HOWEVER complicated the systematic synonymy of the Gramineæ may be, the popular nomenclature of the grasses is probably in an even more unsatisfactory state. In the former case the name of the author appended to the scientific name of the plant is usually sufficient to dispel any ambiguity as to what particular plant is meant, even though that plant may have received half a dozen systematic names from as many different botanists. In the case of the trivial name, however, even this means of identification is lacking, and it is no uncommon circumstance to find the same name applied to several different grasses, each one of which may, moreover, have one or two additional names. To those who are studying the grasses in their agricultural aspect this confusion is very perplexing, particularly as both the English and the American agricultural journals usually refer to a grass by its trivial name. The difficulties which surround this subject are well exemplified in the volume before us. For example, in American agricultural publications the term "salt-grass" is frequently met with, and we searched this volume in the hope of finding out the species so denominated. But instead of one we find no less than four distinct species, in as many genera, called "salt grass," namely, *Vilfa depauperata*, *Sporobolus airoides*, *Brizopyrum spicatum* (*Distichlis maritima*), and *Spartina juncea*. To an English agriculturist foxtail means *Alopecurus pratensis* only, whereas in America the name is also given to *A. geniculatus*, *Hordeum murinum*, *H. jubatum*, and *Setaria setosa*. Rye-grass in England is *Lolium perenne*; in America the term is applied in addition to four species of Elymus. Blue grass is the name given to four distinct species of Poa, varying considerably in their agricultural value, and one of these, *P. pratensis*, often spoken of as Kentucky blue-grass, is also called "June grass," "spear grass," and "red top," the last name being equally applied to *Agrostis vulgaris*. Bunch grass is more vague in its application, for it embraces at least six species in five genera, while in Canada the same name is given to two other grasses, *Elymus condensatus* and *Kœleria cristata*, the former of which is known in the United States as "giant rye grass." The term "goose grass," which in England is restricted to the rubiaceous hedgerow weed *Galium Aparine*, is, in America, applied to *Poa annua*, which is also called annual spear grass, and to *Panicum Texanum*, further known as Texas millet. The grass *Holcus lanatus*, which to all English farmers is known as Yorkshire fog, is variously termed velvet grass, velvet mesquite, satin grass, and meadow soft grass, this last term being also current in England.

There are about 600 species of grasses in the United States, a few only of these having been introduced. The work under notice embraces descriptions of 120 species, each accompanied by a plate. Of these, about forty, included under twenty-six genera, are identical with British species. Five additional British genera are represented, but not by British species; these are Elymus, Melica, Spartina, Stipa, Triodia. About a dozen British genera do not appear, the most noteworthy among these being, perhaps, Brachypodium, Briza, and Cynosurus. Two dozen of the genera enumerated are extra-British; the chief ones are Andropogon, Aristida, Bouteloua, Buchloë, Danthonia, Muhlenbergia, Paspalum, Sorghum, Sporobolus, and Zizania. The so-called buffalo grasses are *Bouteloua oligostachya*, *Stipa spartea*, and *Buchloë dactyloides*; the first two may be gathered in quantity by any one who travels across the Canadian prairies, but the last-named, which is regarded as the true buffalo grass, does not extend into Canada.

In upwards of 100 pages of text we find collected much information both of botanical and of agricultural interest. The structural and economic characters of each grass figured are detailed at some length, but Dr. Vasey has, perhaps wisely in a work of this kind, made no attempt at classification. Though systematic synonyms are seldom given, there is a lavish display of trivial ones, for which the agricultural reader, at all events, will be grateful. Orthographic blunders are rather numerous, and the index might be more complete. The term *chartaceous* ("the texture resembling paper or parchment in thickness") is, we believe, not current on this side of the Atlantic; let us hope we may do without it.

The chemical analyses are of much agricultural interest, and readers should compare the results here given with those obtained by Wolff in his analyses of German grasses. The figures before us serve to show how considerably the same gramineous species may vary in composition according to the soil and climate in which it is grown, this point being specially illustrated by analyses of *Phleum pratense* and *Dactylis glomerata*, each from half a dozen different localities. How variable is the composition of gramineous herbage generally is well shown in the following table, in which are given the highest and lowest percentages of the constituents named, obtained in 136 analyses of different species of grasses:—

Dry substance	Highest	Lowest
Ash	19·24	3·57
Fat	5·77	1·48
Nitrogen free extract	66·01	34·01
Crude fibre	37·72	17·68
Albuminoids	23·13	2·80

[1] "The Agricultural Grasses of the United States." By Dr. George Vasey, Botanist of the Department of Agriculture; also, "The Chemical Composition of American Grasses," by Clifford Richardson, Assistant Chemist. (Washington: Department of Agriculture, 1884.)