

equal fermentation. The fish, woollen rags, gas tar, or gas liquor, soaked in sawdust (4), should be applied in thin layers between the others, but always covered by the turf and mud, to save the ammonia. The heap will need turning over a few times, to finish the fermentation and make it alike all through; and may then be used as dung, with the addition of nitrate of soda or sulphate of ammonia, as above said, if needed. But perhaps a still easier and cheaper method of enriching outlying lands is green manuring.—*J. Prideaux. —Agricultural Gazette.*

THE WHEAT FLY.

As the season is now at hand when that tiny and delicate insect, the wheat fly, or, more properly, the wheat midge, makes its appearance, it may be interesting to direct particular attention to its habits. About twenty years ago the attention of agriculturists was drawn towards this insect, because of the vast destruction to wheat which then resulted from its operations. The extraordinary deficiency in the crop of 1827 induced much attention to everything connected with the wheat crop of the succeeding year, especially at the time when wheat was at that stage which is termed "coming into flower." Living in a district where wheat is the farmer's staple article of growth, we, along with our neighbours, were on the alert, and held frequent meetings for investigation. In examining the ears in an early field, some yellow maggots were found. This led to the conclusion that some fly or other had deposited its eggs within the glume, where the maggots were discovered; and, by examining the ears with a microscope, numbers of apparently newly laid eggs were observed in clusters near the embryo grain. This, of course led to further research; and, on a latter field of spring sown wheat, just as the one side of the ear had opened the sheath, we observed, as was anticipated, as many as 12 or 14 midges on the exposed part of each ear, busily employed in depositing their eggs within the glume, which, we remarked, were glued to the inside of the glume by a gummy substance exuded at the same time with the eggs. One of our party remarked that he had seen the same fly deposit eggs in the same way on a panicle of grass; on examining which we found it to be the common couch grass, the *Triticum repens* of Linnæus, shewing that the Swede was a more correct botanist than those of modern times who have assigned it another genus than that of *Triticum*, or wheat. We have not heard that it has been ever observed to deposit eggs on any other grass. Having so far found out the cause of what went under the convenient name of blight in wheat, we applied to Kirby and Spence, who had previously written concerning this little gnat, and who knew it by the name of *Tipula*

Tritice, but who still left us in ignorance as to its winter quarters.

Our attention was then directed to find out anything we could about its transformation; and we placed some ears in a glass runner with the stalks inserted an inch in sand, through a paper perforated with holes to let the stalks downwards into the sand. This paper covering the sand was intended to let us observe more readily when the larvæ left the ear; about three weeks thereafter, on examining wheat ears in the field, we found many of them quite empty of the larvæ, and the embryo grain quite dead where the larvæ had been. We then examined the ears in the runner, and found them also empty, without any appearing on the paper below, on lifting of which carefully, we found that the larvæ had descended, and found their way down through the perforations made for the wheat stalks, now in the dormant pupa state, of a semi-circular shape, and copper colour. This led to further observations in such fields as had been somewhat later; when it was observed that the outer parts of the glume were inhabited by small black beetles in great numbers, and we found that as soon as the larvæ escaped from the glume, the beetle, led apparently by the smell, moved about with rapidity, making much use of its feelers; and whenever a feeler touched the larvæ, it instantly darted an egg into its body, making in it the nidus of its future progeny. This beetle is called by naturalists *Ceraphron Destructor*, and seems one of those means by which the Wise and Beneficent Ruler of all things gives a check to creatures that might otherwise prove seriously hurtful. Such investigation to which farmers were led, soon made them quite familiar with everything connected with the habits of the fly. It was found that it came into the fly state when the mean temperature of the preceding ten days was about 56 degrees Fahrenheit. It was also perceived that it was too delicate to be exposed to the sun's rays throughout the day, when it continued amongst the shady wheat foliage; and it could only lay its eggs in a calm evening when the temperature was at or about 56 degrees, betaking itself to the shelter when the temperature fell to 53 or 54 degrees; nor could it deposit eggs except the air was perfectly calm, and its work of mischief it was found could only be performed during three days, at the most, of the plant's growth, just as the one side of the ear appeared. Various plans have been devised for preventing its depredations, but hitherto, so far as we know, these have been all ineffectual. All that seems to be in the farmer's power is just to notice if the temperature has been such as to bring into the fly state at the time that the wheat ear begins to appear, and if the weather for a few days thereafter is favorable for encouraging its work of destruction. The farmer will thus soon see the extent of his loss, or be freed