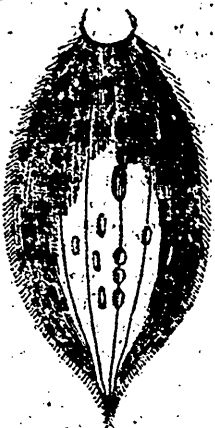




BLIGHTS OF THE WHEAT.

CHAPTER III.

In pursuance of the plan announced in the first chapter, attention will be next directed to the fungi found on the leaves and chaff-scales of the wheat-plant. They are different in appearance from *puccinia*, but one of them sometimes affords reason to suspect that it is in nearer alliance with it, than has hitherto been imagined by botanists who have observed the two separately. These fungi are called *uredines*, the plural of *uredo*, which is a term derived from the Latin word *uro*, to burn, because the discoloration of the parts of plants affected by them produces a burnt appearance. The uredines are chiefly found on the young or old leaves of corn-plants, and occasionally on the stems; but, in the last instance, it has been surmised that the indications similar to *uredo* are only immature forms of *puccinia*. We shall soon have to advert to this point. There is no stage of growth in which the wheat-plant is free from the attacks of a *uredo*. Early in the spring it is found on the young blades; and this year (1846) it was in such quantities in some districts, that the fields looked quite yellow with it; and at one time it produced much alarm. Later in the season, it often abounds in the glumes and paleæ of the ear, even after the grain is formed. These yellow or orange uredines are of two kinds. One of them, from the oblong form of its spores, is called *uredo linearis*, the other *uredo rubigo*, whose spores are nearly spherical. *Uredo rubigo* means red rust, and no name could possibly convey a truer idea of its appearance. Both these uredines are closely allied to the rust on the leaves of rose-trees, called *uredo rosæ*. Their colour varies from orange to a brownish hue, and they cause the parts attacked to look as if they were dusted with rustiness of these colours: They belong to the order *contomyces*, or dusty fungus: It is a rare thing to find any wheat-field altogether free from them at any season of the year.

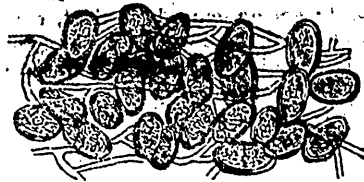


Chaff-scale affected by red-rob, highly magnified.

When the chaff-scales are attacked, the spots look exactly as they are represented in the one here drawn, and the matter forming them exudes like a red gum from the inner surface. Hence, red-gum is a name sometimes given to it; but it is most frequently known as red-robin, red-rust, or red-rag.

The chaff-scale delineated here, gives no further indication of the character of this fungus, than the manner in which it comes out and spots the parts of the plant where it vegetates. To see the form of the spores requires a very high power of the microscope, by which it may first be viewed as an opaque object, and then a small bit should be scraped off and treated in the way described in

the case of *puccinia graminis*. The spores will appear of the forms accurately exhibited in a drawing by Mr. Leonard, from a specimen given him by the author to examine and figure. The fine threads of the *mycelium*, or spawn, are extremely well shown. Thus magnified, the organization of these fungi is perceived to be beautifully delicate, and the red gummy powder is found to be composed of innumerable spores growing from the spawn-threads, as here represented.



Spores of *uredo*, magnified 240 diameters, showing the *mycelium*.

The botanist therefore becomes completely acquainted with the distinctive character of the *uredo* by the aid of the microscope, while the vegetable physiologist is enabled to form an opinion on its peculiar habits and modes of growth. The real habits of this common disease of the wheat-plant, are no longer veiled by inaccurate observations, or popular imaginations. The mystery is cleared up, and the cultivator who has often witnessed the discoloration of his crops by this fungus, without any real knowledge of its nature, may now become thoroughly acquainted with the object of his frequent surprise and annoyance.

Very often, as happened in the spring of 1843, and in that of the present year, 1846, the corn-fields have seemed quite to droop under the influence of this parasite. The aspect on such occasions is so sickly as to create serious alarm. But the arrival of a few bright warm days soon dissipates the evil. The genial beams of the sun seem completely to vanquish it, so that it disappears in an astonishing manner, and a healthy greenness speedily succeeds to the sear and yellow tints that have disheartened the farmer. The fact is, that when the sun dries up the superfluous moisture, the fungus cannot spread, and health returns. It reminds us of the moral maladies which disappear before the light of truth.

We will now proceed to notice the opinion of certain eminent botanists, that *uredo rubigo* and *uredo linearis* are only imperfect forms of minute fungi, which, in their perfect state, are known by other names. For example, it is said the *uredo* of the rose passes into a condition called *aregma*. So it is considered by professor Henslow, an eminent and most judicious observer, that *uredo* in the corn passes to *puccinia*. He published an able paper in the "Agricultural Journal" for 1841, on what he designated "the Specific Identity of the Fungi producing Rust and Mildew;" and his arguments are ingenious and well worthy of perusal. The point is considered by him as fairly established by observation of certain intermediate forms, confirming their connexion and proving the identity of their origin. With regard to these appearances, the author desires to state that, in the autumn of 1845, he found in a wheat-field many specimens of yellow-looking blotches on the straw, which seemed to confirm the professor's opinion. Examination by the aid of his own microscope, revealed forms similar to those drawn and described in the paper recently alluded to. He placed a specimen in the hands of Mr. Leonard, requesting him to observe and delineate what he saw. The result was the group here shown, in which the several stages



Various forms of the spores of the wheat mildew of 1845, magnified 240 diameters.