

These diversities of venation would have appeared much more extraordinary a few years ago, before the modern observations upon the formation of the tissues of the leaf. It was then usual to speak of the veins as the *framework* of the leaves, which implied, more or less positively, the idea that they preceded the parenchyma, and that this was formed around them as about a solid point of support. We now know that every organ commences by being cellular and of slight consistence, and that the projecting parts precede the veins. Hence the woody tissues and the bones of organisms are only a consequence of the soft parts. It is, however, singular that in very nearly allied plants, and sometimes in two portions of the same leaf, the solid parts should sometimes occur in the middle of the lobes and sometimes outside of them; and it appears probable that at the actual moment of formation of the veins they would present a more constant position. Observations on the formation of leaves, and especially on the development of the veins, are not yet sufficiently numerous to lead to any conclusion upon this point. But probably it will be found that the exceptional veins, or those which run towards the lateral sinuses of the leaf, are veins which have deviated at a certain epoch, or veins which originally corresponded to a projection the termination of which has been arrested in its development, whilst the parts originally depressed have increased in size.—*Bibl. Univ., Archives des Sciences*, Oct. 1864, p. 164.

On the Development of the Flowers of the Compositæ.

By Professor WOLFGANG.

The course of development, which may be observed particularly well in the common Sowthistle (*Sonchus arvensis*), is described by the author as follows:—"The flowers of the capitulum are developed after the leaves of the involucre, in a direction from the periphery of the receptacle to its centre. The first traces of leaves appear in the form of oblique prominences, directly continuous with the epithelium of the receptacle. The future point of the flower by no means corresponds with the point of this prominence. Subsequently these commencements of flowers become perfectly hemispherical; the organic point of the bud remains behind in its growth, whilst around the apex there is formed a circular elevation, which in a short time forms a sort of crater. On the outside, a little above this annular rampart, there appear sometimes some cushion-like inflations, perhaps the commencement of the obliterated calyx. There is no trace of the pappus. Subsequently the five petals originate on the margins of the crater-wall; their increase takes place at the base, and they curve inwards successively in a geniculate form. The anthers follow these, alternating with them; they are developed on the inner slope of the crater. The petals become soldered together from the base up to the place where the lobes afterwards make their appearance. The pappus projects from the outer wall of the crater-margin, but not until the anthers have advanced considerably in their development: from its origin and its nature, it must be regarded as an accessory

organ. The ovary, which is truly inferior, is produced by a discoidal formation. The ovule is lateral. The succession of the development of the leaf-cycle is altogether abnormal.

In describing the pappus of *Sonchus*, the author remarks that its degree of fragility depends upon its state of cultivation; but it cannot yet be decided whether a stony soil plays any part. The fragility depends very closely upon the thickness of the hairs of the pappus, and this is governed by the number of rows of cells which form the hairs. In *Sonchus* the base of the pappus is formed by three or four series of cells; the oldest part of the hairs is the extremity. The very fine pappi of *Sonchus*, when examined by the microscope, present at their extremity a system of hooks, formed, on the average, of five or six cells, arranged upon eight lines, recurved externally in the form of a hatchet; these will probably hereafter furnish specific characters. The author indicates the characters thus displayed by *Sonchus arvensis*, *arboreus*, *asper*, *oleraceus*, *palustris*, and *tenerimus*. All these species, especially the two last, most clearly show this system of recurved teeth, whilst the pappus of *Sonchus divaricatus* departs considerably from them, and more nearly approaches that of the exotic *Rhabdotheca*.—*Bibl. Univ.* October 1864, p. 169.

On the Remains of Plants found beneath the Swiss Lake-dwellings.
By Professor O. HEER.

At the late meeting of the Société Helvétique des Sciences Naturelles, on the 23rd of August, Professor Heer exhibited a collection of vegetable remains found under the ancient lake-dwellings of Switzerland. In his remarks upon these remains he referred particularly to some interesting recent discoveries at Robenhausen, on the Lake of Pfäfikon. The subsoil of the layers of peat at Robenhausen is formed by a white mud; above this white mud, and also below the peat, are the vegetable remains, nearly all of which are carbonized. They are evidently the débris of plants that the former inhabitants have thrown into the lake.

The remains of useful plants are particularly interesting for the history of agriculture. Among cereals we find wheat and barley of the following kinds:—A small-grained variety of *Triticum vulgare*, Linn., occurs most frequently at Robenhausen, and also at Wangen, in the Lake of Constance, and at Moosedorf, in the Canton of Berne; a *Triticum vulgare*, with grain of the ordinary size, is also met with. These two varieties have been sent to Prof. Heer from the locality near Olmütz, the age of which is unknown. Near Robenhausen *Triticum turgidum* occurs, a species still cultivated in the south of Europe, but scarcely in Switzerland. At Wangen the *T. dicoccum* and *T. monococcum*, Linn., are known to occur; and *T. Spelta* is found only in the recent lacustrine locality of the île de St. Pierre (age of bronze?). Of barleys, the *Hordeum hexastichum*, Linn., is generally diffused. Its ears, from which the grain has fallen, are found well preserved in most of the lacustrine villages. According to Unger, this barley is also that of the ancient monuments of Egypt; whilst our common barley (*H. vulgare*) is wanting in both localities,



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