

The Gardeners' Chronicle.

SATURDAY, DECEMBER 31, 1859.

MEETINGS FOR THE ENSUING WEEK.

MONDAY, JAN. 2—Entomological 8 P.M.

To how many of our gardening readers has it ever occurred to investigate the origin of any of the "favoured races" of plants with which they are familiar in the garden, the orchard, or the forest? Many know or take for granted that the most dissimilar kinds of Strawberries, Apples, and Potatoes have all sprung from one stock, and that most of them have originated within a very recent period; as also that the history of many is attainable, did they think it worth the trouble of searching for. Even this limited knowledge is seldom acquired; and it is rarer still to find a gardener who has ever reflected upon the possible origin of the wild plants that surround him; though he not only knows that these are composed

of the very same elements as are contained in the soil and air, but that they are themselves the immediate ancestors of the cultivated plants whose nurture provides him with remunerative labour, and whose increase at the same time supplies him abundantly with food. Little, however, as our gardening friends may have thought of these matters, still the terms "favoured race" and "origin of species," are more or less intelligible to most: but it is very different with "struggle for life." In its application to man civilized and savage, at peace and at war, and in a certain degree to the lower animals, the significance of the phrase is obvious enough; but how it can apply to the vegetable kingdom is not so evident at first sight, and still less evident is its connection with the "origin of species" and with "favoured races."

Perplexed with these thoughts on reading for the first time the title of Mr. DARWIN'S new volume ON THE ORIGIN OF SPECIES,* and knowing that the author is of first-rate standing in science, of great popularity, and a frequent contributor to our columns, we awaited the publication of his book with great curiosity and interest. It is true that we had been referred to a notice in the *Gardeners' Chronicle* (1858, p. 735) of a paper communicated by Mr. DARWIN to the Linnean Society, which gives a clue to the general nature of his work, but rather whetted the curiosity than allayed it; being little more than an indication of one method of research now fully developed, and giving little idea of the extent, variety, and suggestive value of that research, and still less of the comprehensiveness and talent of the present work.

From the above expressions it will be inferred that we have risen from the perusal of Mr. DARWIN'S book much impressed with its importance, and have moreover found it to be so dependent on the phenomena of horticultural operations, for its facts and results, and so full of experiments that may be repeated and discussed by intelligent gardeners, and of ideas that may sooner fructify in their minds than in those of any other class of naturalists, that we shall be doing them (and we hope also science) a service by dwelling in some detail upon its contents. Thus much we may premise, that it is a book teeming with deep thoughts on numberless simple and complex phenomena of life; that its premises in almost all cases appear to be correct; that its reasoning is apparently close and sound, its style clear, and we need hardly add its subject and manner equally attractive and agreeable; it is also a perfectly ingenuous book, bold in expressions as in thought where the author adduces what he considers clear evidence in his favour, frank in the statement of objections to the hypotheses or conclusions founded on its facts and reasonings; and uniformly courteous to antagonistic doctrines. In fine, whatever may be thought of Mr. DARWIN'S ultimate conclusions, it cannot be denied that it would be difficult in the whole range of the literature of science to find a book so exclusively devoted to the development of theoretical inquiries, which at the same time is throughout so full of conscientious care, so fair in argument, and so considerate in tone.

Before entering upon an analysis of those parts of Mr. DARWIN'S work which more immediately concern our readers, we may explain that it is devoted to the inquiry of how it is that the world has come to be peopled by so many and such various kinds of plants and animals as now inhabit it; and why it is that these do not all present a continuous, instead of an interrupted series, capable of being divided into varieties, species, genera, orders, &c. To all careless and many careful naturalists the assertion is sufficient, that they were so created, and have been endowed with power to remain unchanged; but there are considerable difficulties in the way of the adoption of this theory, which all reflecting naturalists allow; whilst more to our present purpose is the fact, that in Mr. DARWIN'S opinion the objections to it are more numerous and some of them more conclusive than the arguments in its favour. In the first there is the fact, that gardeners and cattle and bird breeders have made races which are not only more dissimilar than many species in a state of nature are, but if found in a state of nature would unquestionably be ranked as species and even genera; while the possibility of their reversion to their parent forms is doubted by many and denied by some. Then, there is the fact, that in a great many genera many so-called species present a graduated series of varieties which have puzzled the best natura-

lists; and that in such genera at any rate it is easier to suppose that the species are not separate creations than that they are so. Again, the whole system of animal and plant classification into individuals, species, genera, &c., presents a series strictly analogous to that of the members of the human or any other family; and we further express our notions of the mutual relations of animals and plants in the very terms that would represent their affinities as being due to a blood relationship; so that either Nature has mocked us by imitating hereditary descent in her creations, or we have misinterpreted her in assuming that she has followed one method for families and another for species. There is then the geological evidence of species not having all been introduced at one period on the globe, but at various successive periods, and in like manner there is abundant evidence that they are being extinguished one by one; and as geologists are now pretty unanimous in believing that the past changes of the globe were the same in kind and degree as those now going on, we can no longer cling to the old vague belief that species were created at a time when all other conditions were different from those now existing; and thus hide one mystery under another. Again, if we hold to original creations we must also admit that it is more likely that a new kind of Strawberry, as different from all the wild as the British Queen is from the Alpine, should naturally originate in England or elsewhere out of air and earth and water, than that it should have originated in accordance with the laws that favoured the gardener's skill in producing the above-mentioned form. Finally, we know that on the one hand all changes of the surface of the globe (of climate, geographical limits, elevation and depression) are extremely slow; and that on the other relations of co-adaptation subsist between the climate, &c., of every country and the animals and plants which it contains; but such co-adaptations could not harmoniously exist if the physical changes were slow, and the creations of species sudden, for in such cases the species must be created either before or after they were wanted, a state of things which no orthodox naturalist would admit; but if, on the contrary, the organisms are supposed to change with the changed conditions of the country they inhabit, perfect adaptation and continuous fitness would be the necessary result.

Such ideas as these, either in whole or in part, have occurred to many naturalists, when in endeavouring to classify their animals and plants, or to account for their distribution, they have found themselves forced to face the difficulty of accounting for their origin. Hitherto most have, as we have already observed, contented themselves with the hypothesis that they were independently created, and the minority have clung to the only other explanation hitherto conceived, that they have all been created by variation from a single first-created living organism, or a few such. Now it must be borne in mind that both these views are mere hypotheses in a scientific point of view; neither has any inherent or prescriptive right to a preference in the mind of the impartial inquirer; but the most superficial observation will show that the hypothesis of original creations is incapable of absolute proof, except the operation be witnessed by credible naturalists, and can only be supported by facts that are either not conclusive against the opposite doctrine, or may be regarded as equally favourable to it; and this hypothesis is hence placed at a disadvantage in comparison with that of the creation of species by variation, which takes its stand on the familiar fact that species do depart from the likeness of their progenitors, both in a wild and domestic state.

On the other hand the hypothesis of creation by variation labours under the disadvantage of being founded upon a series of phenomena, the action of each of which individually, as explained by Mr. DARWIN, would appear to prevent the possibility of species retaining their characters for any length of time, and it therefore appears at first sight opposed to the undisputed fact, that many hundreds of animals and plants have transmitted their characters unchanged (or nearly so) through countless generations, and covered, even within the historic period, many square miles of country each with millions of its exact counterpart. To explain this anomaly and to raise this hypothesis of creations by variation to the rank of a scientific theory, is the object of Mr. DARWIN'S book, and to do this he has endeavoured to invent and prove such an intelligible rationale of the operation of variation, as will account for many species having been developed from a few in strict adaptation to existing conditions, and to show good

may by the operation of natural laws be so far fixed as to reconcile both the naturalist and the common observer to the idea, that what in all his experience are immutable forms of life may have once worn another guise. The hypothesis itself is a very old one; it was, as all the world knows, strongly advocated by LAMARCK, and later still by the author of the "Vestiges of the Natural History of the Creation," but neither of these authors were able to suggest even a plausible method according to which Nature might have proceeded in producing suitable varieties, getting rid of intermediate forms, and giving a temporary stability to such as are recognised as species by all observers. Mr. DARWIN has been more successful, though whether completely so or not the future alone can show. We shall proceed to examine his method in another article.

It was formerly supposed that but one kind of Mushroom ever made its appearance on artificial MUSHROOM BEDS. The notion probably arose from the circumstance of the spawn being often prepared from a mere admixture of different matters, without any positive spawn brought in from the fields, and as Mushrooms were supposed to spring from this mixture by a sort of spontaneous generation, it was conceived that it would require a different concurrence of circumstances to produce any other species. It is now, however, notorious that no Mushroom will ever make its appearance without the presence of spores, and if the spores of one kind are accidentally present, those of another have at least a certain chance of being so.

Be this, however, as it may, many other species of Agarics make their appearance in the Mushroom bed, as was first pointed out to us some 30 years ago by Mr. J. HENDERSON, the scientific gardener of Earl FITZWILLIAM.

A very remarkable case is now before us which is worthy of an especial notice. We have, indeed, no information as to the mode in which the Mushroom bed of which we are about to speak was prepared, or from whence the spawn was obtained with which it was inoculated; but certain it is that the general crop is very different from anything we have met with before, nor can we find anything similar recorded in scientific works on Fungi. One patch alone in the bed, which produces a succession of scattered Mushrooms true to the type of those which first appeared in the patch, accords with the usual produce of our sheds. The cap, for example, is nearly hemispherical, of a delicate reddish brown, and marked with little close-pressed scales, while the stem is short and stout.

A second form appears in large quantities, deviating distinctly from the more ordinary form. The whole plant is smaller, the pileus convex but inclined to expand early, its colour a deep red-brown, and the surface finely silky but not scaly. The stem is much more slender than in the common type and inclined to be bulbous at the base, and the whole plant approaches near to *Agaricus silvaticus*,* but has not its peculiar smell.

The principal crop consists of a very peculiar Fungus, which is at once distinguishable by the pileus being almost uniformly strongly depressed in the centre, and of an opaque white as if whitewashed and either perfectly smooth or ornamented with a few scattered scales. The pileus in fact has rather the appearance of that of one of the white-gilled than of the dark-gilled Agarics, and is extremely like that form of *Agaricus pileolaria* figured by BATSCH under the name of *A. subulmaria*, and which is reckoned by Dr. BADHAM as one of the best and most wholesome of our Fungi, though we cannot quite subscribe to the former part of this opinion. The stem is stout and moderately high, and the flesh does not exhibit any of that pale brownish-purple tinge which is so common in some forms of the Mushroom when grown in the field or the Mushroom-house; but is very white, with occasionally a tinge of yellow. It is soft, succulent, and well-flavoured, and in some respects superior to those which are usually cultivated. Indeed, we never partook of any so highly flavoured and excellent in every respect as they are when stewed.

Had the specimens appeared naturally in the woods, they would undoubtedly have been considered as constituting a distinct species; but as no similar wild plant is known, it will be best for the present to regard it as a variety produced by cultivation.

The matter however is interesting, as it tends to show that something may be done even in this department of horticulture towards an improvement.

* On the Origin of Species by means of Natural Selection; or the Preservation of favoured races in the Struggle for Life. By CHARLES DARWIN, M.A. F.R.S. &c. &c. 502

* Eaters of Fungi must distinguish *A. silvaticus* from the common *Mushroom* which is excellent, but there are others which are very stout.