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F. O. Bower

Excerpt

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CHAPTER I

PRESENT-DAY BOTANY--A CONTRAST

FEW pursuits are more thoroughly misunderstood by the average person of education than that of the present-day botanist. It is not want of sympathy which leads to this. Almost everyone has an interest in the plants which he sees around him, sometimes from the point of view of their beauty, sometimes of their use to himself or to the human race at large : sometimes the interest is the more philosophical one of their place in organic nature, or of their origin in point of time as disclosed by the evidence of the fossils. On one or another of these grounds the botanist finds some feeling for the science of his choice already alive in the minds of his friends.

The conversation in ordinary educated society may often throw an illuminating light, revealing the layman's estimate of what a botanist is actually about. In this case it commonly appears that the estimate errs by being belated. Old time-worn aspects of the science are assumed to be still the

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living problems of the day. In no point does this emerge more clearly than in the undue importance attributed to the finding and recording of new species and varieties. This is a survival of the time when the science, still in its infancy, was mainly engaged in the recognition and tabulation of living forms. Personal credit was then apt to be measured by the number of the new determinations. Far be it from me to suggest that the process of recording new species is yet complete, or even approaching completion. But whereas in earlier periods most botanists were engaged in this duty, the work is now so far advanced that it remains in the hands of comparatively few. It is indeed a fact that some of the most prominent investigators and writers have never recognised or described a single new species.

An illustration of the misconception on this point in the minds of well-educated people may be quoted in my own case. When preparing for a recent visit to collect Ferns in Jamaica, a kindly Dignitary of the Church expressed the hope that I should return with several new species. I, however, congratulate myself on looking over my collections that all my specimens fall under well-known and recorded determinations. The reason for this callousness to novelties may be demanded: it is this. In the island of Jamaica the Fern-Flora has been so well worked, that all the most prominent and typical plants have been already

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discovered and described. If new species were found, the chances are strongly against their presenting any feature of special importance for purposes of comparison with others: and in the absence of such the duty of describing and delineating is unprofitable for one whose aim is comparison with a view to tracing Descent. If this be the case for Jamaica, what will be the chance of discovery of important novelties in our own carefully searched islands? The home botanist can only look for fresh "finds" among minute and obscure forms, or among the subordinate shades of varietal distinction. To most of us the game is not worth the candle at home, and we do not lay ourselves out for it in the better known localities abroad. Specially organised expeditions in little known countries where much that is found is new, are a different matter; but they should be undertaken only by those specially trained for the purpose. Thus the recording of new forms no longer takes the premier place in the progress of the science.

If the conversation at some social gathering turns, as it often may when a botanist is present, to the floral decorations, the unfortunate victim of a misplaced confidence will as likely as not betray a lamentable ignorance of the most fashionable new varieties of decorative plants circulated from some celebrated nursery, or be unable to give the usual social or trade name of some common greenhouse plant;

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though he might give an hour's lecture on its structure, and its systematic and biological characteristics. The sympathetic layman is disappointed and perplexed when he finds this, for he dearly loves a name. He does not realise that in point of fact names are necessary symbols: a means of recording, and nothing more: and that for the student the interest in a given plant may have begun long before the identification, and will as a rule intensify with study quite apart from the exact designation. It is when he puts his observations on public record that the necessity arises for accurate determination. The names which are used to stamp specific or varietal identities of plants are like the words of a language. Their value *per se* is small. It is in collocation that identities stamped by specific names acquire their interest and their worth. The individual who stores his mind merely with the names of plants may know as little of the science as one who memorises a dictionary would know of literature. It is considerations such as these that justify many botanists in their neglect to commit a multitude of names to memory. The knowledge of characteristics and of relations is the important matter, and this should go along with a facility in ascertaining the correct naming whenever it is required for purposes of description, in case the memory has failed to bear that burden.

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Which of us has not been assumed to know at once by sight and to be able to name the various Conifers growing in the plantations round some country house, or planted proudly as "solo trees" in prominent spots to challenge the eye? The assumption is complimentary, but it is apt to be embarrassing. The plain fact is that the Coniferae are a family with an irritating sameness of habit for those who have not made them a special study, however distinct their features may appear to those who live with, and know so to speak personally, certain individual specimens. When one is found at fault in the specific distinctions of *Abies* or *Cupressus*, there is some risk of attainments in other branches being unduly discounted. Such knowledge is doubtless desirable, as is all knowledge: but to the majority it would be but so much mental ballast, and would take no direct part in the working of the intellectual ship.

Another subject which leads to misunderstanding is Horticulture. Theoretically every botanist ought to be an expert gardener, and doubtless every one of them would wish to be. It will usually be assumed that he is, but in many cases that assumption is ill founded. The man whose life-work is in the herbarium may have little time or opportunity, or it may be even inclination for horticulture. The laboratory student, even with a good knowledge of the current problems,

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is often in the same position. He will probably use a microtome better than a trowel, and judge better of the methods of fixing and embedding with a view to cutting sections than of potting. Such men will probably have spent, perforce, the greater part of their time in towns, and will thus have missed the experience which falls naturally to those who live in the country, and are observant.

Still another ground for misunderstanding is the terminology of the science. No subject has been more heavily weighted by technical terms and uncouth names than Botany. The very pronunciation of them is often an offence to the ear of the cultivated classic, while to those who love nature and natural things the language commonly used in Botany is an effectual barrier to the pursuit of this spontaneous line of interest. A certain thoughtlessness of those within the pale in the use of what can hardly be designated otherwise than as their "slang" must be admitted. It has given reasonable ground for the idea that a botanist loves his terminology, and even glories in it. As a matter of fact the profession groans under the burden. It is largely a legacy of a misguided past, which can only be thrown off by a determined and collective effort. It is true old terms are constantly becoming obsolete, and dropping out of use, but others are being introduced to meet current needs. The result is that the vocabulary to be heard at

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any sitting of the Botanical Section of the British Association is certainly not such as is “commonly understood of the people.” The practical effect of this is an unhappy isolation, and the unconscious ostracising of many whose interests are already engaged in kindred questions. Occasionally among the exponents of the subject a brilliant exception arises, who either from the nature of his investigation, or from his power of conveying it, or better from the combination of both, succeeds in touching the general interest: and perhaps the most striking example was Charles Darwin, whose use of technical expressions in the *Origin of Species* was reduced to its lowest terms, a fact which conduced in no small degree to its effect upon the general reading public.

Several distinct causes of the misunderstanding between the modern botanist and the lay public have now been recognised. They all arise more or less directly from a common source. It is not generally realised how far the science has progressed in its differentiation. In the course of the last half century there has been a vast increase in the number of those who pursue it. Institutes in Universities and elsewhere have multiplied greatly, each with its more or less complete staff of workers. Most of these are contributing to knowledge by practical enquiry of some sort, and their observations and arguments are published in a continuously growing stream. Professor

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Scott-Elliott in his *Botany of To-day* has estimated that about a quarter of a million pages of printed matter relating to botany are produced annually. Naturally it has become increasingly difficult for any one mind to grasp the multitudinous details, or to follow the descriptions of them as they appear. Accordingly it has become necessary for each one to specialise, if he is to be a practical worker at all: to take up some limited area of the science, and make it his own by reading and by personal observation. In proportion as this is realised other parts of the subject are apt to be neglected. This is the point which has not been fully grasped. It still remains to be learned that an expert on fossils of the coal may not ever have grown a living plant; an authority on physiology may be sadly lost in the determination of rare exotics; a leading cytologist may be hopelessly puzzled by the identification of the Conifers; or a student of Algae may know little or nothing of the source and supply of condiments and drugs. And yet all of them pass under the comprehensive name of "botanist."

On these facts it may perhaps be hastily concluded that the position of the science is highly unsatisfactory: that each will take his own way, and that coherence of intention among the workers is at an end. It must be admitted that there is some danger of this. It is difficult even for the most enthusiastic

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student to keep himself adequately informed on the general progress of the science as a whole. And were it not for the compulsion which binds the professional botanist in most cases to his duty as a teacher, the risk would be greater than it actually is. Fortunately almost all have to take their turn both in elementary and advanced teaching of branches of the science quite apart from that which is the chosen speciality. This compulsion tends to right the balance, and leads to a periodical revision of the science, as it grows, by each teacher. Thus his interest is compulsorily kept alive over the general field of the subject.

In presence of this pronounced tendency to specialism, the amateur is apt to miss the main ends which the expert has ultimately in view. It would seem accordingly to be worth while to embody in a series of short essays some reflection of the outlook of an average botanist, himself a specialist, it may be, upon the ordinary objects that surround him. To show how he regards such vegetation as he would encounter on a holiday, and to touch lightly and with the least possible technicality upon some of the problems which arise in relation to them. Such lines of thought converge more or less directly towards one central problem, still so far from ultimate solution, viz., how the plant-organisms we see around us came to be such as they are, and where

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they are? The effort is in fact to reconstruct evolutionary history. It is clear when once this general problem is enunciated, its solution must involve enquiry not only as regards form and structure, but also as regards function with which form and structure are so closely related. These questions expand naturally into numerous cognate phases of enquiry, such in fact as the various individual specialists have made the subject of their detailed research. Thus, while apparently driving lonely furrows, they are all at work for a common end. But the field is so vast that the casual onlooker may fail to grasp the general scheme, by reason of visualising only that part of it which happens to be nearest to him. He may see perhaps a solitary investigator working in a way that may seem trivial or unsatisfactory. But the doubts of the critic may really arise from the fact that the value of the work cannot be estimated without some knowledge of its relations to the ultimate goal. On the other hand, it must be confessed that it is not every worker who understands the general scheme of which his labour forms a part, however well he may be carrying out his own particular research. And furthermore, since there is seldom any master-hand directing the efforts of individuals, some workers, having a perverted idea of the general scheme, may lay out their own investigations on mistaken lines, and their labour may be in vain. This is the fate