pristis chrysopterus were taken at Palermo, in Cape May County, by Mr. George Z. Hartman, and at Cape May Mr. H. Walker Hand reports *Lagodon rhomboides* and *Limanda ferruginea*.

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QUOTATIONS.

'BOTANY IN ENGLAND.'

PROFESSOR F. W. OLIVER'S presidential address to the botanical section of the British Association consisted of two parts, one dealing with 'The Seed, a Chapter in Evolution,' the other with 'Botany in England.' With the former we do not propose to deal; but the latter raises so many points for discussion that we can not but wonder that Professor Oliver selected for its delivery an opportunity when discussion was impossible. Although headed 'Botany in England,' it is mainly occupied with an attack upon the two great public herbaria—which, in Professor Oliver's opinion, 'stand apart from the ordinary botanical current,' and must consequently 'languish' or suffer 'atrophy through disuse.'

Professor Oliver's style is not easy to follow, and we sometimes find it difficult to grasp his meaning. We propose, however, to offer a few remarks upon some of his statements, premising that we do not admit his claim to act as a judge in matters with which it is abundantly evident he is but imperfectly acquainted.

Having given a very brief sketch of what he considers 'the prevailing school of botany,' Professor Oliver proceeds to inform us that it 'has arisen very independently of that which preceded it.' Here we must at once join issue with him. He continues: 'All through the middle parts of the last century we were so busy amassing and classifying plants that the great questions of botanical policy were left to solve themselves.' Yet this period included the morphological work of Robert Brown, Lindley and Sir Joseph Hooker, not to mention that of Carruthers and W. C. Williamson, who were largely instrumental in establishing the science of paleobotany, and without whose work the first part of Professor Oliver's address would hardly have been written. In view of the above references, can it be said with any degree of accuracy that 'the prevailing school of botany has arisen very independently of that which preceded it?'

Professor Oliver continues:

> Great herbaria became of the order of things; they received government recognition, and they continue their work apart. Those who built up these great collections neglected to convince the schools of the importance of training a generation of botanists that would use them. The schools were free, and they have gone their own way, and that way does not lie in the direction of the systematic botany of the herbarium. So long as this tendency prevails, the herbaria must languish. When I say languish, I do not mean that they will suffer from inefficient administration—their efficiency probably has never been greater than at the present time. But the effort involved in their construction and up-keep is altogether disproportionate to any service to which they are put. * * * If things are left to take their course there is the fear of atrophy through disuse.

It is not easy to understand what Professor Oliver means in the first portion of this paragraph. The main function of 'the schools,' as it appears to us, is not to train a generation of botanists to use herbaria, but to impart a general knowledge of the subject which will enable the student to follow up any line which may have a special attraction for him, including, of course, systematic botany. But the flourishing existence of herbaria depends very little upon 'the schools.' The students of botany both at the British Museum and at Kew are sufficiently numerous to show that Professor Oliver's fear of 'atrophy through disuse' is groundless, although according to him these herbaria 'stand apart from the ordinary botanical current.' Whatever may have been 'the effort involved in their construction,' it is a thing of the past, and its proportion or disproportion to the 'service to which they are put' can not be discussed: their 'efficiency,' he admits, was 'never greater than at present.' It may be that besides the 'ordinary botanical current' with which Professor Oliver is acquainted, there is another of whose course he is ignorant.

Having, however, satisfied himself that the 'general position of systematic botany' re-

quires 'alleviation,' and that atrophy is imminent, the professor proceeds to 'attempt an analysis of some of the causes which have led to this condition of affairs.' Neither the British Museum nor Kew "has any connection, direct or indirect, with any university organization; there are no facilities for teaching; there are no students; no machinery exists for training recruits or for interesting anybody in the ideals and methods of systematic botany." If by this Professor Oliver means that herbaria are not teaching bodies in the sense that a university is, he is accurate enough; but when he proceeds to argue as a consequence that there are no means for interesting folk in systematic botany, he evidently speaks in ignorance of what can be and is being done. As regards the national herbarium, of which we are in a position to speak, it would not be difficult to find systematists of European reputation who would acknowledge with gratitude the help they have received in acquiring a knowledge of 'the ideals and methods of systematic botany'; and we have no doubt that similar testimony could be given at Kew. To take one example from each—Mrs. Gepp, who has a world-wide reputation as an algologist, owes her position to the 'ideals and methods' acquired as a student in the department of botany; Mr. Hiern, whose monograph of Ebenaceæ (1873) was but the first of a long series of contributions to systematic botany, first became 'interested' at Kew, and has since, at both herbaria, availed himself of the 'facilities'—for learning if not for teaching—which they afford.

Professor Oliver then goes on to suggest "another way in which a great economy could be effected in effort, time and money; this is the transfer of the collections and staff of the botanical department from the Museum to Kew. This is a very old proposal, first seriously entertained some fifty years ago after the death of Robert Brown." It may be remarked *en passant* that this 'old proposal' was first made in the course of Brown's own evidence before the Royal Commission on the British Museum in 1848, and rebutted by him (Q. 3468–9). "There must," he continues, "be endless files of reports and blue books in official pigeon-holes dealing with this question." This, of course, is pure hypothesis. "The most recent report of a departmental committee is known to all interested in the matter. From the character of the evidence tendered it is not surprising that no action has been taken." Professor Oliver must know that the 'evidence' was tendered by men of qualifications at least equal to his own—men, moreover, acquainted, as he manifestly is not, with the work and functions of a herbarium; and that if 'no action was taken' it was because none seemed desirable. This, however, does not prevent an *ipse dixit* which at any rate shows that the professor will allow no undue modesty to hinder the expression of his opinion: 'I am at a loss to find any adequate reason for the maintenance of two separate herbaria.' We have no intention of entering upon a discussion of the matter; suffice it to say that those best acquainted with both collections have long been of the contrary opinion, and that that opinion is strengthened as their knowledge increases. We note that in contemplating the fusion, Professor Oliver assumes that this would be done by the transfer of the museum collections to Kew; but his acquaintance with the report of the departmental committee to which reference has been made will have shown him that the reverse process has been advocated, and in view of his hope for an alliance of the herbarium officials with a 'local university,' it would seem a more reasonable plan.

It is clear from the whole tenor of his remarks that Professor Oliver is unacquainted with the functions or the value of public herbaria, and it is only when we recognize this that his position becomes intelligible. His ignorance is the more remarkable considering the eminent position as a systematic botanist attained by his father when keeper of the Kew Herbarium; but it is obvious when, for example, he tells us that 'in the long run it may be that our present collections will prove obsolete,' and adds significantly, 'the scrap-heap is the sign and measure of all progress.' He does not understand that a public herbarium

fulfills a variety of purposes with which the 'schools' have, and can have, nothing to do. At the national herbarium, for example, the botanical history of the last two or three hundred years can be traced; the types of Linnean species, of the early American collectors, and the great Sloane Herbarium are therein preserved; and so far from showing any signs of becoming 'obsolete,' they are constantly consulted by botanists from all parts of the world, both by personal visits and by correspondence. Apart from these, the student of the British flora, the amateur botanist, the horticulturist, the elementary teacher and the intelligent inquirer find the herbarium a convenient center for prosecuting their studies, and for obtaining information which they could not readily obtain elsewhere. If Professor Oliver's ideal were realized, botany would become the sole possession of the schools; and not only the foreign systematist, but the general public, the private student, the amateur and the monographer would be excluded from consideration. The national herbarium and that at Kew are supported by public funds; it is, therefore, manifestly but common justice that the public, rather than the schools, should have the prior claim to their services.

The fact is that Professor Oliver looks at botany exclusively from his own somewhat narrow standpoint—that of a successful and capable teacher obsessed by the notion that teaching is the only thing worth troubling about. For this purpose there must be an alliance between the authorities of the herbaria and the 'local university'; for 'directly you give the keepers or assistants in the former a status in the latter, you place at the disposal of the systematists a considerable supply of recruits in the form of advanced students possessing the requisite training to carry out investigations under direction.' But where are these students to find employment? If the fusion of the two herbaria to which he looks forward would effect 'a great economy in effort, time and money,' it would seem that the openings for trained students would have to be reduced rather than increased.

Professor Oliver has not adduced convincing evidence of the organizing capacity of 'the local university,' or of the desirability of entrusting to it, or to 'the schools,' the sole management of botanical affairs. The London University, for example, has recently been severely criticized in the daily press for the mismanagement and neglect of the valuable libraries entrusted to its charge. The *Tribune* of August 16, says:

> The university, when it migrated from Burlington Gardens to its present quarters, had two magnificent collections of books—the 'Grote' and the 'De Morgan,' besides a considerable accumulation gathered at various times. When the removal took place the books were conveyed in trolleys by workmen, 'dumped down' anywhere, and allowed to remain in the utmost confusion exposed to great risk and damage. Rare editions were actually found later on at the bottom of the lift-hold in a pool of water. Books lay about in rooms where committees sat; any one who took a fancy to a volume carried it off, entering his name, and the name of the author, if he were very scrupulous, in a little washing-book. A porter was librarian, and the lift-boy sublibrarian. At one time it was proposed to make a subject-catalogue, and a former official of the university began to carry out the scheme on slips of paper, as he rode to and from his work on the omnibus. His notes have been preserved as a curiosity. He catalogued a famous antiquarian work on 'Seals' under 'Zoology.'

May it not be asked whether the universities or 'the schools' have done more for the advancement of 'botany in England' than men like Robert Brown and Sir Joseph Hooker, whose work was unconnected with either? Is it not the case that at the present time botany in our oldest university finds its most active exponent in the person of an amateur systematist?

One lesson which may be gathered from Professor Oliver's onslaught is the extreme importance of retaining the national herbarium under the management of trustees One shudders to think what would happen were it handed over to the tender mercies of men of his stamp, or to some purely bureaucratic body. This danger was pointed out by the

Westminster Gazette in its account of the British Association meeting:

> It is interesting to note the dangers to a scientific institution directly under our bureaucracy when Professor Oliver, in his address this morning to the botanical section, actually urges that the British Museum botanical collections should be transferred from the enlightened charge of the independent trustees to Kew, which is under the board of works. If government is to advance the pursuit of scientific research by subsidies, it must be content to entrust the disposal of these subsidies to boards of independent men.

It seems to us that, of course unconsciously, he has supplied a weighty argument in favor of retaining the two herbaria, so that if at one the 'dead Welwitschia' should be ousted by the 'live dandelion,' the former may yet be retained in safe custody for the benefit of future students.

Much more might be said did space allow. It would be possible, for instance, to show more fully what has already been indicated—namely, that Professor Oliver is hardly qualified, either by knowledge or by position, to pronounce judgment upon matters as to which older if not wiser men have expressed very different opinions. We think that, on reflection, he will regret that he introduced what was felt by many who heard it to be an element of discord into an assembly of botanists from all parts of the country. 'He is evidently,' as Bentham said of Naegeli, 'a man of great ability and zeal, and a constant and hard worker'; and we can only hope that increasing years will enable him to take broader views, and at least to recognize that his individual standpoint is not the only one, and need not necessarily be the best.

James Britten.

Note.—The death of Mr. C. B. Clarke since the above was written suggests the mention of him as one who was in no sense a creation of 'the schools,' and whose name will always be associated with Kew, where he did most of his work, and with the national herbarium, to which he was a frequent and welcome visitor. —*The Journal of Botany.*

Current Notes on Meteorology.

The Monthly Weather Review.

The July, 1906, number of the *Monthly Weather Review* (dated October 11) contains the following papers:

'The Waterspout seen off Cottage City, Mass., on Vineyard Sound, on August 19, 1896,' by Professor F. H. Bigelow. This is one of a series of papers on the thermodynamics of the atmosphere, and is the most complete discussion of a waterspout which we have ever seen. Several excellent half-tones are given. An early notice of this waterspout and of some of the photographs here reproduced was included in these notes in Science, N. S., Vol. IV., 1896, 718–719. Professor Bigelow has made a careful study of all the available accounts of this waterspout, and has made calculations as to its dimensions.

'Climatology of Porto Rico from 1867 to 1905, inclusive,' by W. H. Alexander. Mr. Alexander has already contributed other studies of West Indian climatology. The present paper contains numerous tables of climatological data which will be valuable to any one who seeks information regarding Porto Rican climate.

'Snow Rollers,' by Wilson A. Bentley. Mr. Bentley's name is well known in connection with his remarkable studies of snow crystals by micro-photography. The present article deals with the formation of 'snow rollers' at Jericho, Vt., on January 18, 1906, and is illustrated by means of two half-tones. 'Snow Rollers at Mount Pleasant, Mich.,' by Professor R. D. Calkins, is another study of a similar occurrence, at a different place.

Mammato-cumulus clouds.

The September, 1906, number of the *Meteorologische Zeitschrift* contains a study of mammato-cumulus clouds by H. Osthoff, with some illustrations reproduced from drawings. In all, sixty-seven observations of this peculiar cloud form were made by the writer, the majority being in summer and during the warmer hours. A rapid disappearance of the cloud was noted as characteristic, the form being a passing stage of an existing cloud.