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THE GENUS HABENARIA IN NORTH AMERICA

BY

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WITH TWENTY ETCHINGS BY

Blanche Ames

Fascicle IV

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D. B. UPDIKE, THE MERRYMOUNT PRESS, BOSTON
THESE PAGES
WHICH I HAD HOPED
TO DEDICATE
TO
ALVAH AUGUSTUS EATON
ARE NOW INSCRIBED
TO
HIS MEMORY
THE present work owes its origin to a long-felt need for a comprehensive treatise devoted to the genus Habenaria in North America. It was begun ten years ago in the form of a card catalogue devoted to every species native of the United States and Canada. As the work progressed the absolute necessity of an acquaintance with types became apparent, and in 1905 an effort was made to consult all the material that had a bearing on the subject.

Visits were made to the foremost European herbaria, and loans secured of all the large collections in the United States. From my own herbarium a representative series of specimens was selected for comparison with type material, and from this series individuals were sought for which matched the types in detail. This method not only necessitated close scrutiny of every character, but rendered the specimen ultimately chosen exceptionally valuable for future reference.

In addition to descriptive notes and suggestive sketches, a clear photograph was made of specimens which promised to be of service in the preparation of a monograph. In this work I was assisted by R. G. Leavitt and A. A. Eaton.

In the interpretation of species I have avoided the tendency of some botanists to recognize subspecies as worthy of specific rank. Many years of experience with cultivated orchids, during which slight variations in structure or color were assiduously sought for among thousands of individuals, has convinced me that caution should be exercised in the segregation of species, and that there is danger of rendering the whole structure of systematic botany unwieldy by an inordinate multiplication of slightly differentiated species. Everyone who has paid close at-
tention to cultivated orchids must realize that while slight distinctions are very serviceable for horticultural uses, they are impracticable for the purposes of systematic botany. Undoubtedly many of these horticultural forms will breed true to type and thus act like species. But should they be given specific rank the orchid flora of the world would be increased tenfold.

Several Habenarias are characterized by a strong tendency to produce variations. The temptation to recognize these variations as distinct species may be strong, but I think the best interests of the science are subserved by regarding them as the components of compound species. Slightly modified, the Linnæan conception of a species forms a convenient basis for systematic work. For economic purposes the subspecies is necessary. When it is propagated from pure cultures and carefully labelled, it is of undoubted value.

The greatest difficulties in the present monograph were experienced among recent segregates. In my treatment of these I may have reduced some which further studies of fresh material will reinstate, but at present they appear to be exceptional forms unworthy of specific rank. In several of these segregates the distinguishing characteristics may be found in the flowers of one inflorescence, so that a single specimen will exhibit the floral peculiarities of two described species. Then again, the vegetative characters in the group to which Habenaria hyperborea and H. saccata belong are extremely variable and unsafe criteria for specific distinction.

In 1904 I made special efforts to obtain in a fresh state, from several localities, large collections of H. hyperborea and H. dilatata. The specimens were taken from different kinds of soil, from sunny and shady places, and the range of variation was represented as completely as possible. The conclusions based on
this material convinced me that it is futile to attempt to dis-tinguish centres of variation, or to recognize such species as Habenaria fragrans, Platanthera huronensis, and P. graminea.

The influence of environment is too frequently ignored by those who pay special attention to slight deviations from the condition represented by the type. Habenaria hyperborea and H. dilatata, which were originally described from plants collected in northern localities, are extremely variable in their vegetative organs. From the characteristic dwarf state met with in the extreme northern part of the range, to the slender or robust tall state common southward, every gradation for a complete series may be found. This fact, in conjunction with the information offered by Gaston Bonnier, is very significant.¹ Bonnier experimented with single individuals which he divided into two. One part of the original plant was grown on the Alps or Pyrenees, the other on low land. In a short time the alpine half assumed the familiar dwarf habit of alpine plants. For an example of the difference between the two halves of a plant treated in this manner, Helianthemum vulgare should be consulted in the illustrations of Bonnier’s paper.

In the “Evolution of the Orchidaceæ,” in the Orchid Review (February, 1910), R. A. Rolfe treats the Habenaria group under two subtribes, namely, Gymnadenieæ and Habenarieæ, the former having one and the latter two distinct stigmas. He says that Platanthera and Gymnadenia are sometimes united with Habenaria, an arrangement which makes of Habenaria one great chaotic aggregate whose characters cannot be defined with any degree of precision. This statement leads to the conclusion that the characters on which the three genera depend for purposes of classification are not sufficiently clear to allow subgeneric

characterization under Habenaria. This conclusion is palpably incorrect, as the basis on which systematists have relied who have upheld the disjunction of Habenaria is the distinctness of these characters. This basis hardly leads to chaos whether adopted or rejected, although it does not simplify classification, as I have attempted to show.

The greater part of the type material of North American Habenaria species is to be found in European herbaria. Fortunately the specimens are usually well preserved and serviceable for the purposes of monographic work. The authors of early botanical books, however, were not always precise in designating the exact specimens which formed the basis of their conclusions, so that in many cases it is not possible to discover what may be the type. As a rule their collections do not contain many representatives of a species, and then it is a simple matter to arrive at a decision by a process of elimination. Notwithstanding the extensive correspondence of Linnaeus and the number of contributors to his herbarium, it is noteworthy that the few species of North American Habenarias which he possessed are with one or two exceptions represented by a single example.

For the student of the native species of the United States the herbaria of the British Museum of Natural History and of the Royal Botanic Gardens at Kew contain rich collections of critical specimens. But both of these herbaria lack extensive series of the forms of a given species.

Of the oldest collections containing American Habenarias those of Gronovius and Walter, preserved in the British Museum, are of special interest. The latter, which is bound in book form, contains only a few specimens of critical value.

Of more modern collections Lindley's occupies a unique position. Here again the different species are represented by only
a few specimens, and it is comparatively easy to pick out the types or individuals of importance. Lindley's practice of drawing the flowers on his mounting-paper constitutes a great aid in the examination of his types, but unfortunately many of his interpretations are faulty and should never be final. A glaring example of this is the drawing on the type sheet of *Habenaria novemfida*, to which I have referred under *H. diffusa*. In this case Lindley drew and described petals as trifid which subsequent examination by Dr. Prain proved to be bifid.

American herbaria are indispensable in any serious work on Habenaria, and among these the Gray Herbarium of Harvard University is of incomparable value. In this collection there are numerous types, cotypes, and duplicates of type numbers.

The collections in the Museum d'Histoire Naturelle de Paris are of special worth in a study of Mexican species, particularly those described by Richard in the *Annals de Science Naturelle*. Richard prepared careful drawings of many of his new species, and of these the greater part has been reproduced in this work. The almost total neglect of Richard's types by subsequent authors is inexplicable, and to American botanists the placid disregard of his material by Europeans must prove an unending source of surprise.

In the following monograph I have attempted to assemble all the known species of Habenaria which have been attributed to North America. In almost every case I have included the original descriptions. The arrangement of the species tends to show their affinities, although clearness has not been sacrificed in favor of a purely natural sequence.

Special attention has been given to bibliography and geographical distribution. These are of importance in showing the extent of the investigations from which conclusions have been
PREFACE

drawn and in a measure present original data. Although the part devoted to geographical distribution may be thought unnecessarily full it is of value from two points of view,—it shows the actual distribution of the species as represented by the great herbaria of the country, and serves as a guide to the material on which the monograph depends. The names of the species are not mere transcripts from herbarium labels, but are the result of an actual identification of the specimens cited. In many cases where these were poorly preserved a flower was soaked off for critical examination. Otherwise identifications were made by careful comparisons with type or authentic material, and are reasonably correct. Although great care has been exercised in copying geographical data from labels, it has proved an extremely difficult task to verify the spelling or exact location of obscure towns, rivers, lakes and mountains, and errors in the geographical lists may have arisen through this difficulty or through undecipherable writing. It has not proved practicable to compare the proof with the labels, and herein may lie another source of error in spelling and in citation of numbers.

The illustrations have been prepared with careful attention to accuracy and the floral parts drawn with the aid of the camera lucida. With few exceptions those species have been chosen for illustration which have never been figured before, and in almost every case type or authentic material has been used. In conjunction with the key and the original descriptions the illustrations form the most useful part of the work, and should remove many of the difficulties which attend the identification of obscure or variable species.

Nomenclatorial problems have been troublesome, although not to such an extent as is experienced in other groups of the Orchidaceæ. Absolute priority is a rational basis from which to
PREFACE

proceed, but it presents numerous difficulties and creates doubts and uncertainty. It gives too much weight to unscientific work. One is never sure of finality. It necessitates researches not only in the literature devoted to the genus under consideration and to allied genera, but even in that devoted to distinct families. When priority sanctions the reinstatement of the name of a genus which has been lost sight of for years because it was originally referred to the wrong family, it not only calls for a close scrutiny of all systematic literature, but demands an examination of the type material of every obscure or insufficiently characterized genus and species. Prolonged effort may ultimately do away with the confusion which the laws based on priority are sure to cause in the beginning, but it is doubtful if the end warrants the means.

If priority is absolute it places a burden on the systematist which must in the end render him indifferent to nomenclature. In the first place actual dates of publication must be known, otherwise priority becomes a misnomer. There are rules which we may follow when in doubt regarding the date of publication of a work, but these rules are arbitrary and useless if accident or other means discover that the date on a title-page is misleading or incorrect. This difficulty is not confined to the older literature of botany. Kränzlin's *Orchidacearum Genera et Species*, for example, bears 1901 on the title-page of the first volume as date of publication. Yet the parts of this volume were issued in 1897, 1898, 1899, 1900, and 1901. If the original covers of the parts are not available Kränzlin's work would be useless in fixing priority of publication. In my copy of Dr. Kränzlin's work the sixteenth fascicle, which contains the title-page and preface, is dated 1897 on the original cover. This fascicle appeared in 1901. Then again botanical periodicals, the parts of which appear monthly, are often inconclusive in settling dates of publication, as a part
THE GENUS HABENARIA IN NORTH AMERICA

INTRODUCTION

The genus Habenaria has undergone a series of changes at the hands of those botanists who have given it special attention until at the present time it is an arduous task to comprehend its rational limits. No two systematists agree in their revisions; and while some have considered the treatment in Bentham and Hooker's Genera Plantarum too broad, including as it does the recognized groups of many authors under one general heading, namely, Habenaria, others have not been content to re-establish as genera such subgeneric groups as Gymnadenia, Platanthera, Peristylus and Coeloglossum, but have made segregates from several of them. Although there may be excellent reasons both for and against the maintenance of Habenaria in the sense in which it was understood by the authors of the Genera Plantarum, the weight of authority seems to uphold the broader view. So eminent a student of the Orchidaceae as Lindley expressed grave doubts as to the validity of the characters on which he admitted as distinct groups Gymnadenia and Peristylus in his Genera and Species of Orchidaceous Plants. In fact it is usually with apologies, doubts, or detailed explanations that authors accept the smaller groups which have been at one time or another put into or removed from Habenaria.

It is futile to discuss what are sufficient characters on which to construct a genus, as personal opinion is largely influential and
as systematists are not in absolute agreement. While a concur-
rence of opinion may be found in regard to several particular gen-
era, a variance of opinion will exist as to others. Each systematist
is likely to attribute to some character a value which his associates
fail to recognize. Abstractly there seems to be general agreement
among botanists as to the value of classificatory groups, although
they differ so considerably in the application of their rules. In
his discussion of the classifications used by botanists and zoö-
logists Herbert Spencer has said that “when aggregating the
smallest groups into larger groups and these into groups still
larger, they have adopted certain general terms expressive of the
successively more comprehensive divisions; and the habitual use
of these terms, needful for purposes of convenience, has lead to
the tacit assumption that they answer to actualities in Nature.
It has been taken for granted that species, genera, orders, and
classes, are assemblages of definite values—that every genus is
the equivalent of every other genus in respect of its degree of
distinctness; and that orders are separated by lines of demarca-
tion which are as broad in one place as another. Though this
conviction is not a formulated one, the disputes continually oc-
curring among naturalists on the questions, whether such and
such organisms are specifically or generically distinct, and whether
this or that peculiarity is or is not of ordinal importance, imply
that the conviction is entertained even where not avowed.”
Furthermore, the same author says that “it is a wholly gratuitous
assumption that organisms admit of being placed in groups of
equivalent values.” And according to the present status of sys-
tematic botany this is undoubtedly true, and necessarily so, as
the same viewpoint can scarcely be held in regard to all classes
of organisms, and as characters which in one family or tribe

1 The Principles of Biology.
would appear of generic value would hardly appear so in another.

Characters which are to serve for generic distinction are not infrequently chosen with total disregard of specific forms throughout a wide range, and this is most likely to take place in the segregations made from amphigean genera which comprise numerous polymorphic species. In a localized flora made up in great part of vagrants which have become introduced into a country from distant, geographically distinct regions, those systematists who lack opportunity to study in large herbaria where general and fairly complete representations are to be had of the flora of adjacent territory, and who confine themselves to the plants of special geographical regions, are inclined to establish genera on characters which a broad knowledge of a given group would clearly show were scarcely of generic weight.

In southern Florida, for example, we find a remarkable orchid flora largely made up of West Indian immigrants. Here the genus Epidendrum is represented by about ten species, belonging to at least six very distinct sections as follows: Epidendrium, Encyclium, Hormidium, Osmophytum, Amphiglottium, and Euepidendrum. With their few representatives these sections might well be regarded as distinct genera,¹ and would appear as six very natural groups if no other species outside of Florida were known. Here too a noteworthy occurrence would perhaps justify a still broader treatment, as the single species representing in Florida the section Osmophytum has three well-developed anthers and is unknown in its normal state in this region. If the components of this triandrous race were recognized, on the basis of the gynæcum, as constituting a distinct genus, we would then have a species which had changed its generic or even its tribal character, while its specific characters remained

¹Hormidium is so recognized.
unaltered.\(^1\) In other words it would differ only from its West Indian congener in respect to the anthers. That this aberration should be maintained as a variety\(^2\) is clear evidence that in the interpretation of structural deviations, natural affinities when they are clear and self-evident are not to be strained.

The Habenarias of Florida on the other hand are few. Those species which belong to the Ophrydinae-Habenariæ of Pfitzer form two fairly distinct sections. One of these sections is represented by a single species, namely, *Habenaria odontopetala* which was originally described as a native of Mexico and which is also known to inhabit the West Indies. This species has been placed in a new genus, described by Dr. J. K. Small as Habenella, and characterized by structural peculiarities of the flower. It is but one species of a small American group, nearly related to *Habenaria strictissima* and *H. eustachya*, and differs from other Floridian Habenarias in little else except the unappendaged petals and undivided labellum; yet its affinity with those species which have divided petals and a three-parted lip is very evident, as at the base both petals and lip have rudimentary processes.

In striking contrast to the treatment of the genus Habenaria which allows the segregation of *Habenaria odontopetala* we have Sir J. D. Hooker’s in the *Flora of British India*. “I accept Bentham’s view,” he writes, “that the genera which he has brought under it [Habenaria] cannot be separated from one another by natural or artificial characters. To these *Herminium* should be added, were it not for the consequent disturbance of much nomenclature and the multiplication of synonyms; and so should also be *Diplomeris* and *Hemipilia*, which, though they have recognizable differential characters, these are of less impor-

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\(^2\) In a recent publication this anomalous Epidendrum has been raised to specific rank.
tance than those of the four last sections here adopted” (namely, Plectoglossa, Diphylax, Diphyla and Dithrix).

Almost of the same opinion are King and Pantling, who in the *Orchids of the Sikkim-Himalaya* give the following note in which they refer to Habenaria as—

“A genus which should certainly be reduced to the older Linnæan genus *Herminium* were it not for the upsetting of synonymy which this would involve. The older genus consists of about 13 species. *Habenaria* contains about 400! Moreover the distinctions between *Habenaria* and *Orchis* are also mostly arbitrary; and were mere consistency the only object, *Orchis* (a genus of Tournefort) would swallow up not only *Herminium* and *Habenaria*, but also *Diplomeris* and *Hemipilia.*”

Cogniaux has supported in his work on the orchids of Brazil\(^1\) the view taken by Bentham, as is indicated by the very full synonymy which he gives under Habenaria, and is at variance with the system adopted by Pfitzer in Engler and Prantl’s *Die natürlichen Pflanzenfamilien*. Pfitzer, not only admits such genera as Cæloglossum, Gymnadenia, Platanthera and Perularia, but separates these from Habenaria, and places them in a separate section, the reason for the division depending mainly on the development of the stigmas.

We might expect to find in Lindley’s work a rational interpretation of the Habenarieæ, as his prolonged study of the orchid family must have placed him on intimate terms with a large number of species. According to the views expressed by him in his *Genera and Species of Orchidaceous Plants* he was of the opinion that Habenaria as generally understood included several clearly marked genera. We find him arguing in a circle, however, and must conclude that he was by no means confident

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\(^{1}\) In *Martii Fl. Bras.*
in his deductions. Under Platanthera he wrote, in reference to the recognition by Robert Brown of a section based on the anthers: "The genus has to depend upon another distinction, to which I can discover no exception, namely, to the absence of the fleshy processes of the lower lip of the stigma. Otherwise Platanthera is the same as Habenaria." Yet in his discussion of Gymnadenia we find the following, which in conjunction with his remarks on Platanthera is of more than casual interest: "It is scarcely possible to find any very precise limits between this genus and Platanthera. . . . Even the stigmatic processes of Habenaria and its allies are to be remarked in almost every species of Gymnadenia; only in most cases in adhesion with the stigma itself." If we examine the distribution of species among the several genera Lindley admitted in his work, we shall find inconsistencies, the most astonishing being those where he places the same species in two genera. The difficulties under which he worked may excuse such slips, but at the same time it is quite pardonable to use this example to illustrate the dangers into which fine distinctions may lead, and as an argument against segregation of genera based on trivial or obscure characters.¹

Among the subgenera of Habenaria which have the best claims for recognition, if we are to rely on the authority of Lindley, Pfitzer and Kränzlin, Gymnadenia, Platanthera, Peristylus and Cæloglossum occupy an important place. If we study these genera, not as convenient categories, but as systematic groups and examine carefully the species distributed among them, the first incongruous discovery will be the lack of agreement as to what species they should contain. This diversity is of a nature to discourage any effort to uphold a single one of these

¹It is of interest to note that Kränzlin refers to the synonyms of Platanthera fuscascens the following species which Lindley regarded distinct from each other: Platanthera herbiola, Peristylus virescens, Perularia flavo.
genera. While Lindley, Pfitzer and Kränzlin agree that Gymnadenia and Platanthera should be upheld, these authors are not in accord as to many of the species which should be referred to them!

The species which Lindley included in Cœloglossum, Kränzlin places in Peristylus, Platanthera and Euhabenaria. He also refers to Orchis, Peristylus and Platanthera, species included by Lindley in Gymnadenia. Pfitzer, on the other hand, throws Peristylus into Platanthera. Habenaria viridis is placed in Peristylus by Lindley, in Platanthera by Kränzlin, and in Cœloglossum by Pfitzer. Pfitzer gives Cœloglossum as a monotypic genus, Lindley placed five species in it, and Kränzlin abandoned it altogether in his Orchidacearum Genera et Species. Pfitzer upholds Perularia, Kränzlin reduces it to Platanthera. Numerous similar examples of disagreement could be cited to show the slender claim for recognition of Gymnadenia, Platanthera, Peristylus and Cœloglossum. It is at least reasonable to assume that genera which are so poorly differentiated that the same species may be referred to several of them by careful students of the orchid family are scarcely tenable in a rational and convenient system of classification.

We are indebted for the most recent revision of a part of the genus Habenaria as represented in North America north of Mexico to Dr. P. A. Rydberg of the New York Botanical Gardens. Dr. Rydberg has gone farther than any other author of modern times in the splitting up of the genus, and has given us several new segregate genera. He is not at all in sympathy with the conservatism of Bentham and Hooker, Torrey, Gray, Cogniaux and others, and is much opposed to the maintenance of large groups which in any way may be divided. An illustration of what I mean may be obtained from Britton's Manual of the
Flora of the Northern States and Canada, for which Dr. Rydberg prepared a revision of the Orchidaceae. In this work eighteen species are admitted which were formerly included by Gray, and Britton and Brown, in the genus Habenaria. Dr. Rydberg has distributed these species among seven genera, of which three by him are newly established. The characters on which he relies for the distinctiveness of these genera are not clearly drawn, so that it is difficult to discuss their claim for recognition, and in his key he makes use of differences which would seem to be rather specific than generic.

Perfect agreement as to the final treatment of Habenaria is hardly to be expected, but it is a fair question to ask if the reasons which influenced Bentham, Gray and Torrey are not as valid to-day as they were thirty years ago, and if, on the whole, they were not pretty good reasons. Furthermore, it is fair to ask if the host of species described since 1840 has thrown new light on the subject which makes invalid the reasoning of Bentham in the Journal of the Linnæan Society. With regard to Bentham's argument it may be said that nothing so convincing has been put forth by those botanists who have disagreed with him.

The following from Bentham's notes on orchids will show clearly the basis for the treatment of Habenaria in the Genera Plantarum.

"Habenaria, Willd., is now a vast cosmopolitan, and in many respects polymorphous, genus, of which there are about three hundred and fifty species in the Kew herbarium, and perhaps fifty more, already published, are not there represented. The differences observed in the anther-cells, in the stigma, and in various appendages to parts of the flower are so great that numerous attempts have been made to dismember it; but the single characters assigned have all proved either so variable from spe-
cies to species, or so little in accordance with any other distinction, that I feel compelled to reunite the proposed genera after the example of A. Gray and some other recent botanists, although I cannot go so far as to agree with Grenier and Godron in uniting the whole genus with Orchis. As it is, I have had to record no less than twenty-eight generic synonyms; and in proposing to distribute the species into the following ten sections I cannot but feel considerable doubts as to the definiteness of the characters assigned to some of them, these characters being often very difficult to ascertain in dried specimens, the only ones I have had to work upon.”

Of the ten sections mentioned above, nine and ten are represented by Platanthera and Habenaria. Of these sections Bentham says: “Platanthera and Habenaria proper, comprise the great mass of the genus which most botanists consider as being susceptible of distribution into two great groups; but the various characters assigned have broken down in detail, and it would require a much longer study than I have been able to give to them, especially from dried specimens, to ascertain the real value of several apparent distinctions. It would appear, however, that Platanthera might be made to include the great majority of northern temperate species with the lateral processes of the stigmatic apparatus rarely much developed; and the more tropical species, with these processes usually, but variously, extended, would form the section Euhabenaria, the flowers in the former usually smaller than in the latter.”

The species of Habenaria which constitute a very distinct part of the orchid flora of North America are surprisingly few in relation to the territory over which they are distributed. With

1 For this and the preceding quotation see Bentham, “Notes on Orchideæ,” Journ. Linn. Soc. 18: 333–355.
several exceptions they are very clearly differentiated, and as to their specific characters offer no perplexing problems. The species in the western United States which Dr. Rydberg referred to Piperia have been variously treated, so that at present several are recognized which in my studies I have not considered specifically distinct. In Mexico the small group composed of H. clyppeata, H. lactiflora, H. Schaffneri, H. jaliscana, and a few others, is perplexing and later may be regarded very differently as more material helps to clarify obscure relationships. That these species are puzzling will be keenly felt by any student who attempts to distinguish them by means of an analytical key. Almost every character which at first appears to differentiate them will be found occurring sporadically here and there in individuals of several of the other species. The relation borne to the middle lobe by the lateral lobes of the trifid labellum would have to be relied on to some extent, though it is not at all constant. Yet it is inconceivable that any serious student would combine these species as variants of one polymorphic species.

Up to the time of his death Mr. A. A. Eaton rendered valuable assistance toward the construction of this monograph and devoted his attention to the bibliography and to the distribution of the species. His notes are incorporated in the body of the work and may be distinguished by the initial letters of his name. His examination of the specimens preserved at Paris, which were described so inadequately by Richard, proved a vast help in the interpretation of obscure Mexican species. During his work at the Muséum d'Histoire Naturelle de Paris he obtained clear photographs of all the Habenarias collected by Galeotti, and identified our specimens by careful comparisons with the types. Through the kindness of Sir W. T. Thiselton-Dyer, Mr. Eaton and I were enabled to compare our material with the
specimens in the Kew Herbarium, where we settled many of the perplexing questions relating to the species included in Lindley's *Genera and Species of Orchidaceous Plants*.

In the citation of specimens the numbers in parentheses after each locality indicate the herbaria in which the material was found. The following is a list of the herbaria loaned to me or which have been consulted, with the numbers used to designate them in the lists of distribution.

<table>
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<th>Author's Herbarium</th>
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<tr>
<td>United States National Herbarium</td>
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<td>Gray Herbarium of Harvard University</td>
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<td>Herbarium of the Missouri Botanical Garden</td>
<td>4</td>
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<td>Biltmore Herbarium</td>
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<td>Herbarium of the Geological Survey Department, Canada</td>
<td>6</td>
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<tr>
<td>Pringle Herbarium (University of Vermont)</td>
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<td>Herbarium of the University of Tennessee</td>
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<td>Herbarium of Parke Davis and Company</td>
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<td>Herbarium of O. A. Farwell</td>
<td>11</td>
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<tr>
<td>Herbarium of the Geological Survey of Alabama</td>
<td>12</td>
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<tr>
<td>Elliott Herbarium</td>
<td>13</td>
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<td>Herbarium of the Alabama Polytechnic Institute</td>
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<td>Herbarium of S. B. Parish</td>
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<td>16</td>
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<tr>
<td>Herbarium of Leland J. Spalding</td>
<td>17</td>
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<tr>
<td>Herbarium of H. D. House</td>
<td>18</td>
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<tr>
<td>Herbarium of the British Museum of Natural History</td>
<td>19</td>
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<tr>
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<td>20</td>
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<tr>
<td>Herbarium of the Muséum d'Histoire Naturelle de Paris</td>
<td>21</td>
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<tr>
<td>Herbarium of the New York Botanical Garden</td>
<td>22</td>
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KEY TO
THE NORTH AMERICAN SPECIES OF
HABENARIA


*Labellum not fringed, if crenate not tripartite (cf. *H. peramana)
†Stem usually leafy. Leaves not basal, or if basal linear (cf. *H. nivea)

1. *H. viridis
   var. bracteata

2. *H. clavellata

3. *H. albida

4. *H. flava

5. *H. integra

6. *H. nivea

7. *H. dilatata
   var. media
   var. leucostachys

1 In strict accordance with priority Satyrium would become the valid name for this genus. I have not adopted it, as to do so would be an indirect violation of the spirit of the Vienna Rules. Harms’s List retains Platanthera, which is clearly referable to Satyrium.

2 *H. hyperborea passes by insensible gradations into the section characterized by a linear labellum. The key is based on normal conditions of the flower. In *H. hyperborea the flowers are usually in a dense cylindrical spicate raceme. In *H. saccata and *H. sparsiflora the flowers are in an elongated, slender raceme.
spicuously longer than the labellum (cf. H. volcanica)

Lip lanceolate, spur stout, longer than the lip
Lip linear or nearly so, dilated or lanceolate in H. volcanica which has an elongated filiform spur
Spur saccate, shorter than the lip
Spur about equalling the lip or slightly longer

Spur much longer than the lip
Leaves reduced
Leaves elongated

††Leaves basal, rarely more than two, soon withering in 18 and 19

‡‡Leaves twice as long as broad or longer, oblong or oblanceolate, never linear or grasslike
Spur more than twice as long as the lip

Spur about equalling the lip

‡‡‡Leaves rarely twice as long as broad, often orbicular
Lip oblong, longer than the spur
Lip lanceolate, acute
Lip oblong-ligulate

Spur 1.5–2 cm. long
Spur 3–4 cm. long

8. H. hyperborea var. purpurascens
9. H. behringiana
10. H. saccata
11. H. Richardii
12. H. Ghiesbrechtiana
13. H. nubigena
14. H. sparsiflora
15. H. brevifolia
16. H. volcanica
17. H. limosa
18. H. elegans var. maritima
19. H. unalascensis
20. H. obtusata
21. H. Chorisiana
22. H. Hookeri
23. H. orbiculata
24. H. macrophylla
**Labellum fringed, but not tripartite (here hybrids may be looked for)**
Flowers yellow

| Spur 5–9 mm. long | 25. *H. cristata* |
| Spur 2–2.5 cm. long | 26. *H. ciliaris* |

Flowers white

| 27. *H. blephariglottis* var. conspicua |

***Labellum fringed, tripartite (here hybrids may be looked for)**
Flowers greenish or whitish

| Petals entire or obscurely crenulate | 28. *H. lacera* |
| Petals toothed or crenate | 29. *H. leucophæa* |

Flowers pale or deep magenta

| 30. *H. psycodes* |
| 31. *H. fimbriata* |
| 32. *H. peramæna* |

II. Plants essentially tropical or subtropical. *Stigmatic processes well developed, conspicuous.*¹ Petals often bipartite. Labellum usually broken up into three *linear* divisions. The majority of the species are Mexican and West Indian.

*Labellum clearly tripartite, the divisions filiform or linear

† Petals bipartite, the posterior division broader than the anterior one

¶ Leaves basal

| 33. *H. distans* |
| 34. *H. jamaiicensis* |
| 35. *H. Türckheimii* |

¶¶ Leaves not essentially basal, usually with parallel sides, oblong to linear, clearly longer than broad
Flowers few, not more than 4, rarely 5

| 36. *H. setifera* |
| 37. *H. mesodactyla* |

Flowers comparatively numerous, more than 4

¹Cf. plate of *Habenaria quinqueseta.*
ORCHIDACEÆ

Spur not exceeding 2 cm. in length
Middle division of the labellum longer than the laterals
Divisions of the labellum subequal

38. H. Leprieuri
39. H. Cruegeri
40. H. repens

Spur exceeding 2 cm. in length
Lateral sepals about 2 cm. in length
Lateral sepals less than 2 cm. in length

41. H. Pringlei
42. H. bicornis

Leaves not essentially basal, ovate to lanceolate, not much longer than broad, not oblong in the sense of having parallel sides

†Petals bipartite
Spur usually exceeding 10 cm. in length, about 8 cm. long in the variety

43. H. macroceratitidis
   var. brevicalcarata

Spur not exceeding 10 cm. in length, not less than 4 cm. long

44. H. lucœcapensis
45. H. quinquesetata
46. H. oreophila

Spur not exceeding 4 cm. in length
Stems maculate
Stems not maculate
Divisions of the labellum glandulose or minutely denticulate
Divisions of the labellum comparatively smooth, not denticulate

47. H. monorrhiza
48. H. crassicornis
ORCHIDACEÆ

Anterior division of the petals longer than the posterior division

49. H. Schaffneri
50. H. lactiflora
   var. buccalis
51. H. clypcata
52. H. entomonantha
53. H. jaliscana
54. H. diffusa

Anterior division of the petals shorter than the posterior division or subequal to it

Raceme lax

55. H. flexuosa
56. H. felipensis
57. H. guadalajarana

Raceme dense

†‡ Petals simple, subauriculate on anterior basal angle

58. H. subauriculata
   [H. virens]

** Labellum simple, or merely lobed or toothed, the lateral lobes, if any, never filiform or linear except in H. virens

† Petals bipartite

†† Petals simple or merely angled, or toothed on the anterior basal angle or at the summit
   Labellum rounded at base, not toothed or angled
   Spur slender

59. H. orizabensis

60. H. stricta
61. H. eustachya
62. H. troyana

†‡ H. virens, which has a trifid labellum, may be looked for here. It belongs, however, with H. odontopetala and its allies.

[ 19 ]
ORCHIDACEÆ

Labellum angled or toothed at the base or near the middle
Leaves linear to linear-oblong

Leaves oblong-lanceolate
Petals cuneate, truncate, not toothed on the anterior basal angle
Petals oblong, not toothed on the anterior basal angle

Petals subquadrate, the anterior basal angle protuberant or toothed

Petals ligulate, anterior basal angle protuberant
Petals spatulate
Petals rotundate-square
Petals lanceolate

63. H. replicata
64. H. triptera
65. H. petalodes
66. H. Selerorum
67. H. brevilabiata
68. H. odontopetala
69. H. Purdiei
70. H. Oerstedii
71. H. virens
72. H. strictissima
73. H. alata
74. H. socialis
75. H. Dussii
HABENARIA

1. H. viridis var. bracteata Gray, Man. ed. 5, 500 (1867). H. viridis Field, For. & Gard. Bot. 325 (1868); Willis, Cat. N. J. 61 (1874); Yale Cat. 45 (1878); Britton, Precl. Cat. N. J. 94 (1881); Day, Pl. Buffalo 139 (1882); Perkins, Gen. Cat. Vt. 37 (1882); Upham, Fl. Minn. 139 (1884); Dudley, Cayuga Flora 95 (1886); Bennett, Pl. R. I. 43 (1888); Perkins, Fl. Vt. 277 (1888); Baldw., Orch. N. Eng. 43, 44, 45 (1894); Morong, Am. Check-list 121 (1894); Brütten, in Journ. Bot. 36: 437 (1898).


Habenaria bracteata R. Br., in Ait. Hort. Kew. ed. 2, 5: 192 (1813); Sweet, Fl. Gard. 1: t. 62 (1823–5); Hook., Exot. Fl. 3: t. 175 (1826); Spreng., Syst. Veg. 3: 689 (1826); Torr., Comp. 318 (1826); Beck, Bot. ed. 1, 348 (1833); Gray, in Ann. Lyc. Nat. Hist. N. Y. 3: 231 (1836); Darl., Fl. Cestr. ed. 1, 506 (1837); Big., Fl. Bost. ed. 3, 342 (1840); Dewey, Herbaceous Pl. Mass. 198 (1840); Torr., in Geol. & Nat. Hist. Surv. N. Y. 174 (1840); Eaton & Wr., N. A. Bot. ed. 8, 260 (1840); Macoun, Cat. 4: 14 (1888); Britton, Cat. N. J. 234 (1889); Watson & Coulter, in Gray’s Man. ed. 6, 507 (1890); Beal & Wheeler, Fl. Mich. 607 (1891); Fernald, Port. Cat. ed. 2, 64 (1892); MacMillan,

1 The bibliographical references have been arranged in chronological order under each specific name. With a few exceptions, the citations are confined to the author’s library.

2 For an account of Gray’s paper, reference should be made to the notes accompanying the bibliography under Habenaria Hookeri.
**ORCHIDACEÆ**


*Orchis viridis* *Pursh*, Fl. 2: 587 (1814), excl. syn. in part; *Nutt.*, Gen. 2: 189 (1818); *Elliott*, Sketch 2: 486 (1824); *Eaton & Wr.*, N. A. Bot. ed. 8, 334 (1840); *Oakes*, in Thompson’s Vt. 199 (1853); *Wood*, Class-book ed. 29, 533 (1853), ed. 41, 533 (1856); *Provanch.*, Fl. Canad. 2: 566 (1862); *Darby*, Bot. S. St. 526 (1866).

*Gymnadenia viridis* *Spreng.*, Syst. Veg. 3: 693 (1826) in part.

*Habenaria viridis* *Cham.*, in Linnaæ 3: 31 (1828).

*Gymnadenia bracteata* *Presl*, Rel. Hænk. 92 (1830).

*Orchis viridis* β *Vaillanti* Ten., Syll. add. 629 (1831).

*Cæloglossum Vaillanti* *Guss.*, Litt. according to Kränzlin.

*Peristylus bracteatus* *Lindl.*, Gen. & Sp. Orch. 298 (1835); *Hook.*, Fl. Bor. Am. 2: 201 (1839); *Steud.*, Nomencll. ed. 2, 2: 305 (1841); *Ledeb.*, Fl. Ross. 4: 71 (1853).


*Cæloglossum bracteatum* *Parl.*, Fl. Ital. 3: 409 (1858); *Correvon*, Orch. Rust. 61 (1893); *Rydb.*, in Mem. N. Y. Bot. [ 22 ]


"* 56. ORCHIS bracteata.

"O. labello lineari apice bifido, petalis subconniventeribus, lateralis ovatis latioribus, cornu obtuso scrotiformi, bracteis flore duplo longioribus patentibus. W.

"Orchis bracteata Mühlenberg in litt.

"Beblätterte Ragwurz. W.

"Habitat in Pensylvania (v. s.)


1 Orchis viridis.
That the North American plant is distinct from the Habenaria viridis of the Eastern Hemisphere is not clear. Lindley regarded his specimens from Siberia identical with those from North America. Reichenbach referred Orchis bracteata Willd. to Platanthera viridis as var. bracteata, and characterized it by the elongated floral bracts.

NOVA SCOTIA
Boggy spots near Island Pond, Sable Isl., July 26, 1899, J. Macoun (6).

NEW BRUNSWICK, VICTORIA COUNTY
Mountain back of Clair’s, July 11, 1904, A. A. Eaton (no. 92) (1).

QUEBEC, OTTAWA COUNTY
In woods, Buckingham, May 11, 1903, J. Macoun (6).—Woods, Chelsea, May 22, 1891, Macoun (6).

KEEWATIN
Mouth of Albany River, James Bay, July 25, 1904, W. Spreadborough (6).

ONTARIO, NIPISSING DISTRICT
In woods, Rainy Lake, June 12, 1900, J. Macoun (6).
HASTINGS Co.: Rich woods, rather scarce, near Belleville, June, 1865, J. Macoun (1, 6).—In damp woods, June 10, 1872, Macoun (6).
YORK Co.: Scarborough, June 1, 1898 (Biltmore 6370a) (5).
WELLINGTON Co.: Puslinch Lake, July 16, 1904, A. B. Klugh (1).

MANITOBA
In damp thickets, Strong Mt., June 4, 1896, J. Macoun (6).—In woods, Rat River, Otterburne, June 1, 1896, Macoun (6).—Brandon, June 13, 1880, Macoun (6).—Lake Winnipeg Valley, 1837, Bourgeau (3).

ATHABASCA
Open prairies, Peace River Landing, June 13, 1903, J. M. Macoun (1, 6).

SASKATCHEWAN
In thickets at Prince Albert, June 30, 1896, J. Macoun (6).

ASSINIBOIA
In boggy places, Qui Appelle Valley, June 22, 1879, J. Macoun (6).—Regina, 1903, T. N. Willing (1).—In thickets, Wood Mountains, June 17, 1896, Macoun (6).—Moore Mt., July 3, 1880, Macoun (no. 173) (3).
ORCHIDACEÆ

ALBERTA

Meadows behind Tunnel Mt., 4450 ft., July 6, 1899, W. C. McCalla (no. 2231) (2, 5).—Athabasca River, June 26, 1898, W. Spreadborough (6).—Athabasca River near Lac Brule, June 30, 1898, Spreadborough (6).—In grassy thickets, Red Deer, June, 1895, Gaetz (6).—Shore of Waterton Lake, South Kootenay Pass, July 28, 1895, J. Macoun (6).—Prairies, Kananaskis, June 13, 1885, Macoun (6).—Burger’s Pass, Yoho Valley, August 27, 1904, Macoun (1).—Damp places, only specimen seen, Calgary, June 7, 1897, Macoun (6).—Rocky Mountain Park, east of Spray Bridge, Banff, July 11, 1891, Macoun (6).—Mountains north of Devil’s Lake, July 5, 1900, N. B. Sanson (6).—Banff, Sanson (1).—Near Banff, July 11, 1891, Macoun (2, 3, 4).

BRITISH COLUMBIA

Telegraph Trail, lat. 54°, June 17, 1875, J. Macoun (6).—Yale Dist.: Northwest of Spence’s Bridge, June 6, 1889, J. M. Macoun (6).—Vancouver Isl.: Grassy places, Mt. Finlayson, June 18, 1887, J. Macoun (6).

ALASKA

Kyska Harbor, July 19, 1873, W. H. Dall (3).—Arakamtchetchene Isl., Bering Straits, Ringgold-Rogers Exp., 1853–6, Ch. Wright (3) (H. viridis?).—Boggy spots, Bering Isl., September 1, 1891, J. M. Macoun (6).—Boggy places, Attu Isl., August 29, 1891, J. M. Macoun (6).—Popoff Isl., July 10, 1899, De Alton Saunders (no. 3302) (4).—Kadiak, July 1, 1899, Wm. Trelease (no. 3300) (4); July 4, 1899, Trelease (no. 3301) (4).—Disenchantment Bay, August 12, 1902, Frederick Funston (no. 112) (3, 4).

MAINE

Jemtland, July 16, 1900, Dr. D. W. Fellows (1).—Moist wooded slopes of Mt. Aziscoos, July 31, 1903, B. L. Robinson (3).—Banks of Wassataquoik River, May, 1837 (Hb. Thurber) (3).—Aroostook Co.: 1903, F. T. Hubbard (1).—Fort Kent, July 11, 1904, A. A. Eaton (no. 92) (1); hillside woods, July 18, 1904, Eaton (no. 169 a) (1).—Piscataquis Co.: Deciduous woods, Rum Mt., July 5, 1895, M. L. Fernald (no. 267) (3, 4).—Franklin Co.: High woods, Mt. Saddleback, July 16, 1902, Clarence H. Knowlton (no. 491) (1).—Bog on Mt. Saddleback, Wilton, August 1, 1899, L. J. Spalding (17).
**ORCHIDACEÆ**

**H. viridis** NEW HAMPSHIRE


Coos Co.: Mt. Adams, July, 1878, *Faxon* (3).

Grafton Co.: Profile House, Franconia, July 6, 1855, *Wm. Boott* (3); Profile House, July 4, 1879, *Faxon* (3).

Cheshire Co.: Wooded slope, Gap Mt., Troy, May 30, 1899, B. L. Robinson & E. L. Rand (no. 723) (3).

**VERMONT,** Orleans County


Orange Co.: Strafford, July 25, 1891, *L. R. Jones* (5).


**MASSACHUSETTS,** Middlesex County

Pine woods, only specimens found, South Framingham, May 12, 1890, *E. L. Sturtevant* (4).


Franklin Co.: Shelburne, June 28, 1873, *Miss S. E. Anderson* (10).

ORCHIDACEÆ

CONNECTICUT, NEW HAVEN COUNTY
Mt. Carmel, near New Haven, June 25, 1884, W. E. Safford (2).

NEW YORK, HERKIMER COUNTY
Cold damp woods, July, 1879, Frank Tweedy (2).
Monroe Co.: Rochester, May 21, 1863, Wm. Boott (3).

NEW JERSEY, SUSSEX COUNTY
Near Bloom Swamp, Stockholm, August 13, 1895, Wm. Van Sickle (2).
Warren Co.: Delaware Water Gap, July 5, 1875, Mr. Knipe (3).

PENNSYLVANIA, CRAWFORD COUNTY
1868, McMullen (2).
Northampton Co.: Vicinity of Easton, 1868, A. P. Garber (2); near Easton, May, 1872, Thos. C. Porter (2).

OHIO, LUCAS COUNTY
Toledo, May 18, 1884, H. A. Young (3).
Lorain Co.: Oberlin, May 17, 1895, W. M. Dick (1).—Amherst, June 12, 1895, A. E. Ricksecker (2).
Medina Co.: Woods, Medina, June, 1897, G. B. Ashcroft (5); May 30, 1898, Ashcroft (14).

ILLINOIS, WINNEBAGO COUNTY
Rockford, May 30, 1888, Kate C. Penfield (2).

MICHIGAN, KEEWEENAW COUNTY
Woods, August, 1886, O. A. Farwell (3).—Clifton, May, 1884, Farwell (11).
—Moist woods, Keweenaw Point, June 13, 1884, Frank E. & Floy J. Wood (2).
Marquette Co.: July 9, 1883, G. F. A. (2).—Turin, May 31, 1901, Bronson Barlow (1, 2).—Marquette, August, 1868, Wm. M. Canby (1, 16).
Mackinac Co.: Mackinac Isl., June 30, 1889, G. H. Hicks (10); June 24, 1888, Hicks (2).
Iosco Co.: Oscoda, June, 1882, R. A. Barr (3).
Ionia Co.: Hubbardston, May, 1872, C. F. Wheeler (8).
St. Clair Co.: Wet woods, Port Huron, May 31, 1888, Houghton (3); August 6, 1893, Chas. K. Dodge (no. 104) (3).
**ORCHIDACÈÆ**

*H. viridis*  
Wayne Co.: Detroit, May 30, 1895, Oliver A. Farwell (11).

**WISCONSIN, BROWN COUNTY**
Racine Co.: Cool woods, shores of Lake Michigan, May 22, 1897, *S. C. Wadmond* (5).

**MINNESOTA**
Winona Co.: Homer Road near Winona, May, 1886, *J. M. H(olzinger)* (2).

**IOWA, FAYETTE COUNTY**
Fayette, rare, June, 1893, *B. Fink* (2).  
Pottawattamie Co.: Prairie groves, near Council Bluffs, rare, April 18, 1839, *Chas. A. Geyer* (2).

**NEBRASKA**
Banks, etc., along canyon streams, near Bonnet, 5000 ft., June, 1890, *Tom A. Williams* (4).

**SOUTH DAKOTA, CUSTER COUNTY**

**MONTANA**
Gallatin Co.: Low wet shady woodlands, not rare, Bozeman, June 22, 1899, *J. W. Blankinship* (1, 4).

**WASHINGTON**
Cascade Mts., lat. 49°, 1859, *Dr. Lyall* (3).—From Fort Colville to Rocky Mts., 1861, *Dr. Lyall* (3).

**JAPAN**
Sappon, June, 1878 (3).

**CHINA**
Hu-pe Province, Central China, 1885–8, *Dr. August Henry* (no. 6874) (3).
2. **H. clavellata** (Michx.) Spreng., Syst. Veg. 3: 689 (1826); Sw., **H. clavellata** Adnot. Bot. 45 (1829); Britton & Br., Ill. Fl. 1: 463, f. 1104 (1896); Chute, Fl. Up. Susq. 105 (1898); Kearney, in Contr. U. S. Nat. Herb. 5: 522 (1901); Gattinger, Fl. Tenn. 62 (1901); Lounsbury, South. Wild Fl. 78 (1901); Jelliffe, Gibson's Nat. Orch. 43, t. 20 (1905); Ames, in Gray's Man. ed. 7, 309 (1908).

Orchis clavellata Michx., Fl. Bor. Am. 2: 155 (1803); Willd., Sp. Pl. 4: 10 (1805); Pers., Syn. 2: 505 (1807); Muhl., Cat. 80 (1813); Pursh, Fl. 2: 586 (1814); Elliott, Sketch 2: 486 (1824).—

**O. tridentata** Muhl., ex Willd. Sp. Pl. 4: 41 (1805); Pers., Syn. 2: 506 (1807); Pursh, Fl. 2: 587 (1814); Torr., Cat. N. Y. 69 (1819); Barton, Fl. 1: 52, t. 15 (1821); Eaton, Man. ed. 4, 374 (1824); Torr., Comp. 317 (1826); Short, Cat. Ky. 10 (1833); Dewey, Herbaceous Pl. Mass. 197 (1840); Wood, Class-book ed. 29, 533 (1853), ed. 41, 533 (1856), not O. tridentata Scop.—

**O. clavellata** β tridentata Muhl., Cat. 80 (1813); Green, Cat. N. Y. 120 (1814); Barton, Comp. Fl. Phil. 2: 137 (1818); Nutt., Gen. 2: 189 (1818).

**Habenaria tridentata** Hook., Exot. Fl. 2: t. 81 (1825); Spreng., Syst. Veg. 3: 689 (1826); Sw., Adnot. Bot. 46 (1829); Lodd., Bot. Cab. t. 1637 (1832); Beck, Bot. ed. 1, 348 (1833); Darl., Fl. Cestr. 507 (1837); Torr., in Geol. Surv. N. Y. 174 (1840); Eaton & Wr., N. A. Bot. ed. 8, 260 (1840); Darby, Bot. S. St. 527 (1866); Gray, Man. ed. 5, 499 (1867), ed. 6, 506 (1890); Willis, Cat. N. J. 61 (1874); J. Robinson, Fl. Essex Co. 107 (1880); Pl. Malden & Medf. 11 (1881); Britton, Prel. Cat. N. J. 93 (1881); Perkins, Gen. Cat. Vt. 37 (1882); Gattinger, Tenn. Fl. 83 (1887); Macoun, Cat. 4: 13 (1888); Dame & Collins, Fl. Middlesex 102 (1888); Britton, Cat. N. J. 234 (1889); Beal & Wheeler, Fl. Mich. 607 (1891); MacMillan, Metasp. Minn. Val. 168 (1892); Baldw., Orch. N. Eng. 97, f. 20 (1894); Galen, [29]
**ORCHIDACEÆ**

_H. clavellata_ Fl. Lanc. Co. (1895), 15 (1898); _Russell_, in Rho. 1: 200 (1899); _Kearney_, in Bail. CycL Am. Hort. 2: 707 (1900); _Brainerd, Jones & Eggleston_, Fl. Vt. 30 (1900); _Mathews_, Field-book 84, 85, 90 (1902).


_Platanthera tipuloides_ _Hook._, Fl. Bor. Am. 2: 195 (1839) in syn.1

_Orchis tipuloides_ _Hook._, Fl. Bor. Am. 2: 195 (1839) in syn., not _Fischer_ in _hb._

_Gymnadenia tridentata_ _β clavellata_ _Wood_, Class-book 683 (1861).


(See _Habenaria lacera x clavellata_, Niles, Bog-trotting for Orchids, 257, sub _H. lacera_.)

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1 _Hooker_ (Fl. Bor. Am. 2: 195) makes _Platanthera tipuloides_ Lindl., _Orchis tipuloides_ L., _O. gracilis_ Fisch. = _Gymnadenia tridentata_, basing his opinion on a fragment of _Fischer_’s distribution in his herbarium. _MacMillan_ and _Macoun_ follow him, but I think he must be entirely mistaken, a view apparently held at Kew, for _Index Kewensis_ makes _Pl. tipuloides_ = _Tipularia Kamtschatcica_. (A. A. E.)
“O. bulbis tenuiter fusiformibus: scapo oblonge unifolio: spica laxiusculae pauciflora; bracteis brevibus: calyce minuto, connivent; cornu longitudine ovarii, clavato; labello ovali, integro.

*Habenaria clavellata* is a very distinct species with no near ally in North America. The appendages of the gynostemium are quite characteristic. These are three in number, erect and tuberculate.

NEWFOUNDLAND


NOVA SCOTIA


CUMBERLAND Co.: Cold bog, Truemanville, July 25, 1884, *H. Trueman* (3).

GUYSBOROUGH Co.: Damp places, Boylston, July, 1890, *Dr. C. A. Hamilton* (6).

PRINCE EDWARD ISLAND

Tracadie, August 2, 1888, *J. Macoun* (6).

NEW BRUNSWICK


1 The type in Michaux’s herbarium at the Paris Museum is annotated as follows: “Orchis clavellata, calcare clavato, labello ignoto. Carolina? innominato.” It would thus appear that Michaux was unfamiliar with the lip of the plant, as suggested by Boott, in a letter to Lindley quoted on pages 277, 278 of Gen. & Sp. Orch. (A. A. E.)
**ORCHIDACEÆ**

*H. clavellata*  
Northumberland Co.: Miramichi, August 4, 1892, Fowler (4).  
Kent Co.: August 14, 1869, Fowler (16).

**QUEBEC**  

**ONTARIO**  
In a peat bog, Catfish Lake, Algonquin Park, July 23, 1900, J. Macoun (6).—White Lake, July 22, 1898 (Biltmore no. 490b) (5).  
Hastings Co.: Bogs and marshes, North Hastings, July 12, 1878, J. Macoun (6).  
Wellington Co.: Blueberry marsh, Killeen, July 19, 1904, A. B. Klugh (1).—Bogs, Edmonton, August 2, 1890, Jas. White (6).  
Essex Co.: Leamington, August 2, 1892 (6).

**MAINE**  
Silver Lake, Scribner, July 31, 1878 (8).  
Aroostook Co.: In sphagnum, Fort Kent, August 11, 1901, M. L. Fernald (3).—Bog at Fort Kent, July 17, 1904, A. A. Eaton (no. 155) (1).  
Somerset Co.: Swamps from Stacyville to City Camp, July 17–18, 1900, M. L. Fernald (3).—Cedar swamp, Madison, July 2, 1903, A. A. Eaton (1).  
Oxford Co.: Moist woods, Waterford, August 8, 1883, Blake (no. 990) (2).—Bethel, July 28, 1865, Wm. Boott (3).  
Waldo Co.: Wet roadside, New Guinea, Islesboro, August 4, 1897, F. Tracy Hubbard (1).  
Kennebec Co.: Augusta, July 1, 1885, E. C. Smith (4).  
Lincoln Co.: Monhegan Isl., 1902, F. Grace Smith (no. 78) (3).
ORCHIDACEÆ

SAGADAHOC CO.: Georgetown, August 9, 1902, Hollis Webster (3).

NEW HAMPSHIRE
Base of White Mts., September, 1842, A. Gray (3).
Coos Co.: Dismal Pond near Glen House, August 15, 1855, Wm. Boot (3).
—Randolph, Faxon (3); July, 1889, Clara E. Cummings (4).—Peat bogs, common, Crawford House, August 14, 1895, E. H. Eames (2).
Grafton Co.: Pond, Cannon Mt., August 1, 1863, Wm. Boot (3).
Belknap Co.: Gilmanton, August 8, 1864, J. Blake (4).
Cheshire Co.: Woods, Jaffrey, July 17, 1898, B. L. Robinson (no. 476) (3); bog, August 11, 1890, Walter Deane (1, 2).

VERMONT
Caledonia Co.: Head of Winooski River, Peacham, August 7, 1886, F. Blanchard (2).
Chittenden Co.: Sphagnous swamp, Charlotte, July 29, 1879, C. G. Pringle (7).—Richmond, July 19, 1899, Eggleston (no. 1627) (2, 4).
Addison Co.: Cold peat bog near summit, Mt. Mansfield, July, 1896 (5).
—Bristol Pond bog, July 30, 1877, September 27, 1878, C. G. Pringle (7).
Rutland Co.: Chittenden, August 18, 1895, W. W. Eggleston (5, 14).

MASSACHUSETTS, ESSEX COUNTY
Middlesex Co.: Medford, August 15, 1858, Wm. Boot (3).
Worcester Co.: Lunenberg, August 18, 1884, C. W. Swan (6).—Rare, wet meadow bordering Lake Chaubunagungamaug, Webster, July 25, 1899, E. A. Spalding (17).
Franklin Co.: Sunderland, September 3, 1874, S. Watson (3).—Shelburne, Miss S. E. Anderson (10).
Hampshire Co.: Southampton, 1892, Hb. Chapman (5).
Plymouth Co.: Swamp near Quaker Leonard Road, Brockton, July 16, 1903, A. A. Eaton (1).
Bristol Co.: North Easton, July, 1899, O. Ames (1); July 31 and September 25, 1901, R. G. Leavitt (5).—Easton, August, 1897, Carl Blomberg (1).—Nonquit, August 30, 1888, E. L. Sturtevant (4).

[ 33 ]
**ORCHIDACEÆ**

_H. clavellata_  
**Barnstable Co.**: Hyannisport, August 29, 1888, Walter Deane (2).  
**Dukes Co.**: Martha’s Vineyard, August, 1888, Carrie Harrison (2).

**RHODE ISLAND, PROVIDENCE COUNTY**  
Swamps, Providence, August, 1844, Geo. Thurber (3).—Low field, Providence, July 31, 1892, J. Franklin Collins (2).  
**Kent Co.**: Warwick, September 3, 1871, J. W. Congdon (4).

**CONNECTICUT, LITCHFIELD COUNTY**  
Wooded swamp, Woodbury, August 19, 1903, E. B. Harger (1).  
**Hartford Co.**: Low ground, Southington, August 20, 1898, L. Andrews (no. 325) (3).  
**Fairfield Co.**: Rich woods, rather rare, Stratford, August 28, 1893, E. H. Eames (2).

**NEW YORK**  
_Dr. Torrey_ (13).—Western New York, A. Gray (3).—Vaughns, July 8, 1897 (14).  
**Warren Co.**: Bear Pond on French Mt., July 25, 1892, Stewart H. Burnham (1).  
**Oneida Co.**: Swampy places near White Lake, Forestport, July 15, 1903, J. V. Haberer (no. 888) (1).  
**Onondaga Co.**: Swamp near Baldwinsville, W. M. Beauchamp (1).—Tully, 1869, S. N. Cowles (4).  
**Chenango Co.**: McDonough, July 27, 1886, F. V. Coville (2); August 2, 1884, Coville (2).  
**Suffolk Co.**: Montauk Point, July 23, 1895, Jos. Schrenk (4).—Wading River, July 12, 1872, E. S. Miller (10).

**NEW JERSEY**  
**Sussex Co.**: Wet woods, Cranberry Lake, July 31, 1904, Kenneth K. Mackenzie (no. 834) (1).  
**Passaic Co.**: Passaic, August, 1887, Sereno Watson (3).  
**Ocean Co.**: Swamps, Tom’s River, August 6, 1903, M. W. Lyon (2).  
**Camden Co.**: Winslow, September 7, 1873, Isaac C. Martindale (4).
ORCHIDACEÆ

KENNSYLVANIA


DELAWARE, NEWCASTLE COUNTY

Swamps, near Wilmington, June, 1896, *Wm. M. Canby* (5).


MARYLAND, MONTGOMERY COUNTY


*Prince George Co.*: Ammendale, 1898, *Dr. Gerritt S. Miller* (2).

DISTRICT OF COLUMBIA

In swamps, rare, August 6, 1900, *Theo. Holm* (1).—Moist spot in hill, August 11, 1896, *E. S. Steele* (3, 4).—Blagden's Run, August 6, 1892, *J. M. Holzinger* (2).—Occoquan Creek, July 16, 1876, *L. F. Ward* (2).

VIRGINIA

Summit of Salt Pond Mt., 4500 ft., 1858, *Wm. M. Canby* (16).

*Fairfax Co.*: Arlington railroad, August 11, 1896, *E. S. Steele* (2).

*Page Co.*: Blue Ridge near Luray, 3600 ft., August 18, 1901, *Mr. & Mrs. E. S. Steele* (no. 108) (2, 3, 4).

*Warren Co.*: Damp thicket near Waterlick, July 30, 1897, *Gerritt S. Miller, Jr.* (2).

*Nansemond Co.*: Damp soil, Suffolk, July 27, 1897 (5).


NORTH CAROLINA


**H. clavellata**

Buncombe Co.: Biltmore, August, 1894 (5).—Wet places, Craggy Mts., August 12, 1897 (Biltmore no. 490a) (2, 3, 5).

Swain Co.: Andrew's Bald, 6000 ft., August 15, 1891, Beardslee & Kofoed (3).

Jackson Co.: Cullowhee, June 15–July 15, 1887, Roland Thaxter (3).

Polk Co.: Spring Mountain Park, August 3, 1897, E. C. Townsend (2).

Moore Co.: Southern Pines, July 18, 1895, J. W. Blankinship (1).

Cleveland Co.: Moist soil near King's Mt., August 1, 1902 (Biltmore no. 490d) (5).

**SOUTH CAROLINA, GREENVILLE COUNTY**

Moist ravines, Caesar's Head, July 30, 1881, John Donnell Smith (3).

Richland Co.: In wet soil near Columbia, July 31, 1900 (Biltmore no. 490c) (5).

Aiken Co.: Aiken, July, 1869, H. W. Ravenel (2).


**GEORGIA, WHITFIELD COUNTY**

Wet woods at eastern base of Taylor's Ridge, 1000 ft., July 26, 1900, Percy Wilson (no. 124) (2).

Sumter Co.: Wet woods near Leslie, July 23, 1901, R. M. Harper (no. 1104) (2, 3, 4, 7).

**FLORIDA**

Hb. Geo. Thurber (3).

**ALABAMA, CLAY COUNTY**

July 24, 1902 (Biltmore no. 490e) (5).

Tuscaloosa Co.: Vance Station, July 24, 1876 (12).

Lee Co.: Auburn, July 8, 1896, F. S. Earle & C. F. Baker (14); August 8, 1897, Earle & Baker (4, 14); August 11, 1897, Earle & Baker (14).

**MISSISSIPPI, SIMPSONS COUNTY**

Saratoga, August 4, 1903, S. M. Tracy (1).—Magee, August 4, 1903 (2).

Marion Co.: Poplarville, July 7, 1891, S. M. Tracy (2).

**TENNESSEE, CARTER COUNTY**

Roan Mt., July 27, 1889, F. Lamson-Scribner (8).

Davidson Co.: Nashville, 1878, Dr. A. Gattinger (2).

Cocke Co.: Wolf Creek, August 23, 1897, Thos. H. Kearney (no. 907) (2).

—Near Summit Max Patch, 4700 ft. alt., September 8, 1897, Kearney (no. 908) (2, 4).
ORCHIDACEÆ

FRANKLIN Co.: Sewanee, August 1, 1878, *Gattinger* (3, 5, 8).

OHIO, LAKE COUNTY
Near Painesville, *Wm. C. Werner* (2).
MEDINA Co.: Munson, July, 1897, *G. B. Ashcroft* (5).

INDIANA, STEUEN COUNTY
In marsh ½ mile east of Clear Lake, July 24, 1904, *Chas. C. Deam* (1).

ILLINOIS, COOK COUNTY
CASS Co.: Beardstown, *Chas. A. Geyer* (4).

MICHIGAN, KEWEENAW COUNTY
Clifton, June, 1884, *O. A. Farwell* (11); woods, July, 1887, *Farwell* (no. 470) (3).
MARQUETTE Co.: In wet sand near a bog, Turin, July 11, 1901, *Bronson Barlow* (1, 2).

WISCONSIN
*J. S. Smith* (3).
BROWN Co.: Big Suamico woods near the shore, July 11, 1886, *J. H. Schuette* (1).
COLUMBIA Co.: Kilbourn, 1861, *Hale* (3, 4).

MINNESOTA, AITKIN COUNTY
Nichols, June, 1892, *E. P. Sheldon* (5).
CHISAGO Co.: Center City, June, 1892, *B. C. Taylor* (2, 5, 14).
ANOKA Co.: Centreville, July 30, 1891, *Dr. J. H. Sandberg* (no. 708) (2).
HENNEPIN Co.: Moist meadow, July, 1890, *Sandberg* (5).

IOWA, FAYETTE COUNTY
"First reported from Iowa, rare," Wadena, July, 1893, *B. Fink* (2).
**H. clavellata** ARKANSAS, Pulaski County
Sandy swamp, south end of Main Street, Little Rock, July 9, 1887, F. V. Coville (no. 60) (2).

DALLAS Co.: Swamps, Hot Springs, July, F. L. Harvey (no. 75) (4, 10, 16).

LOUISIANA
Hb. C. W. Short (4).
Bossier Co.: Alden Bridge, November 2, 1898, Wm. Trelease (4).
RAPIDES Co.: Common along pine wood streams, vicinity of Alexandria, June 6, 1899, Carleton R. Ball (no. 564) (2, 3, 4, 5, 6).

**H. albida**


Orchis palmata palmis inversis, flore albo *Loes.*, Fl. Pruss. 182 (1703).


Orchis palmata, angustifolia, Alpina, flore albo *Tourn.*, [38]


Orchis palmata alpina, spica densa, albo-viridi, Hall., Opusc. 148 (1749).


Helleborine Broccenbergensis Riv., Hex. t. 3 (1760).


Orchis alpina Crantz, Stirp. Austr. 486 (1769).—O. albida Scop., Fl. Carn. ed. 2, 2: 201 (1771), not Frivald; Oed., Fl. Danica t. 115 (1766); Allioni, Fl. Ped. 2: 149 (1785); Sw., in Act. Holm. 21: 207 (1800); DC., Fl. Fr. ed. 3, 3: 253 (1805); Willd., Sp. Pl. 4: 38 (1805); Wahlenb., Fl. Lapp. 216 (1812); Pollini, Fl. Veron. 3: 21 (1824); DC., Bot. Gal. ed. 2, 443 (1828); Smith, Engl. Fl. 4: 18 (1828); Gaudin, Fl. Helv. 5: 452 (1829); Host, Fl. Austr. 2: 534 (1831); Anonymous, Irish Flora 172 (1833); Woods, Tourist's Fl. 353 (1850); Gaudin. & Godr., Fl. Fr. 3: 299 (1855).


Orchis parviflora Poir., in Lam. Encyc. 4: 599 (1797).

Sieberia albida Spreng., Anleit. 2: 880 (1818).
ORCHIDACEÆ

H. albida  Gymnadenia albida L. C. Rich., in Mém. Mus. Par. 4: 57 (1818); Spreng., Syst. Veg. 3: 694 (1826); Nees von Esenb., Gen. 8, f. 10 (1833); Bluff & Fing., Comp. ed. 2, 2: 531 (1836–8); Koch, Syn. ed. 2, pt. 2, 794 (1844); Brebis., Fl. Norm. ed. 2, 259 (1849); Reichb. f., Orch. Eur. 110, 179, t. 67 (419) (1851); Ambr., Fl. Tir. Aust. 1: 702 (1854); Thiel., in Bull. Soc. roy. Belg. 12: 91 (1873); Bab., Man. Brit. Bot. ed. 8, 346 (1881); Purchas & Ley, Fl. Heref. 293 (1889); M. Schulze, Orch. Deutsch.-Oesterr. u. der Schw. t. 46 (1894); Warren, Fl. Cheshire 299 (1899); Correvon, Alb. des Orch. 67, t. 18 (1899).

Cœloglossum albidum Hartm., Handb. Skand. Fl. ed. 1, 329 (1820); Fries, Fl. Scan. 165 (1835); Hartm., Handb. ed. 3, 205 (1838); Camus, Mon. Orch. Fr. 79 (1892); Bennett, Fl. Alps 2: 139 (1897); Chen. & Braun, in Bull. Herb. Boiss. 7: 419, 472 (1907).


Chamorchis albida Dumort., Prodr. Fl. Belg. 133 (1827); Michot, Fl. Hain. 279 (1845).


Bicchia albida Part., Fl. Ital. 3: 397 (1858); Barla, Ic. Orch. 23, t. 11, f. 1–16 (1868).


Orchis alsaticus Herm., Fl. Als. (according to Thielens in Bull. Soc. roy. Belg.). [ 40 ]
ORCHIDACEÆ

Satyrium albidum:


"Satyrium scanense. It. scan. 153.*

"Orchis palmata alpina, spica densa albo viridi. Hall. It. herc. 68.


"Limodorum montanum, flore albo dilute virescente.

"Chom. act. paris. 1705, p. 517.


GREENLAND

Hartz, July 11, 1889 (3).—Fox Havn in Arsuk Fjord, June 24, 1888, Dr. L. Kolderup Rosenvinge (6).—Julianeaab, 1899, Rink (3).—Pale pinkish yellow, sweet scented, rich damp soil brook banks, Godhavn, Disko I., August 4, 1878, L. Krumlein in Howgate Polar Expedition (3).—Boreal Disko, 1870, Bryssen (3).—Also from numerous localities in Europe. Distributed from Ural Siberia through northern Europe and mountains to Switzerland, England, Iceland, and Greenland. Probably in Arctic America.

I have been unable to discover a single authentic specimen of Habenaria albida from our range. If it occurs on the North American mainland it must be extremely rare and local. The labellum is variously trifid or 3-lobed, the middle lobe being longer and larger than the lateral ones.

**ORCHIDACEÆ**

*H. flava* (1898); Mohr, Pl. Life Ala. 454 (1901); Gattinger, Fl. Tenn. 62 (1901); Jelliffe, Gibson’s Nat. Orch. 45, t. 21 (1905).


Orchis herbiola Pursh, Fl. 2: suppl. 743 (1814); Big., Fl. Bost. ed. 3, 341 (1840).—O. fuscescens Pursh, Fl. 2: 587 (1814); Nutt., Gen. 2: 189 (1818); Elliott, Sketch 2: 487 (1824); Eaton, Man. ed. 4, 375 (1824); Lodd., Bot. Cab. t. 1748 (1832), not *O. fuscescens* Gmel. (*H. fuscescens*) nor L.—*O. flava* var. *virescens* Green, Cat. N. Y. 120 (1814).—*O. bidentata* Elliott, Sketch 2:

Platanthera herbiola Lindl., Gen. & Sp. Orch. 287 (1835); Hooker, Fl. Bor. Am. 2: 197 (1839); Steud., Nomencl. ed. 2, 2:
**ORCHIDACEÆ**


*Tulotis fuscescens* and *T. herbiola* Raf., Fl. Tellur. 2: 37 (1836).


*Orchis flava*:

"14. ORCHIS bulbis palmatis, nectarii cornu filiformi longitudine germinis, labio trifido integerrimo. Gron. virg. 183."

"Habitat in Virginia 24."


*Habenaria flava* is represented by two forms, one of which is common in the northern United States. That these forms are
specifically or even varietally distinct from one another is very \textit{H. flava} doubtful. The specimens in the Linnean and Gronovian herbaria are comparable to the specimens with elongated racemes frequently found in the South and Southwest. The specimen in Lindley’s herbarium at Kew which represents \textit{Platanthera herbibiola} Lindl. is comparable to the form with congested racemes not uncommon in the New England states. The erect horn on the labellum of this species is very characteristic.

**NOVA SCOTIA, Guyborough County**

Low places along the river, Boylston, July, 1891, \textit{Dr. Chas. A. Hamilton} (2, 3, 6).

**QUEBEC**

By outlet of Lake Champlain, July 20, 1878, \textit{C. G. Pringle} (7).

**ONTARIO, Hastings County**

Meadows along Crow River, July 18, 1867, \textit{J. Macoun} (6, 16).

**Wellington Co.:** Wet woods, Snell’s Lake, Edmonton, July 4, 1891, \textit{Jas. White} (6).

**Lincoln Co.:** Woods near the Whirlpool, July 1, 1894, \textit{R. Cameron} (6).

**Essex Co.:** Sandwich, June 22, 1860, \textit{Wm. Boott} (3).

**MAINE, Piscataquis County**

Howard, \textit{Susan M. Hallowell} (2).

**Franklin Co.:** Dry field, poor soil, Chesterville, July 18, 1902, \textit{C. H. Knowlton} (1); sterile field, South Chesterville, July 15, 1902, \textit{Lillian Eaton} (1).

**York Co.:** North Parsonsfield, July 2, 1902, \textit{R. G. Leavitt} (1).

**NEW HAMPSHIRE, Rockingham County**

Hampton Falls, July 12, 1896, \textit{A. A. Eaton} (1).

**VERMONT, Franklin County**

Highgate Springs, July 25, 1901, \textit{E. Brainerd} (1).

**Windham Co.:** Banks of West River, South Londonderry, July 4, 1895, \textit{W. W. Eggleston} (3, 5).

**MASSACHUSETTS, Essex County**

Ipswich, \textit{Oakes} (4); bogs, Ipswich, July 7, 1876, \textit{Thos. Morong} (8); wet meadows among grass, Ipswich, July, 1875, \textit{Morong} (2).

[ 45 ]
**ORCHIDACEÆ**

*H. flava*  
*Middlesex Co.: Meadow, foot of Ball’s Hill, July 13, 1893, Walter Deane (1, 3).—A wet swale near Iron Pond, Woburn, July 2, 1871, Wm. Boot (3).*  
*Suffolk Co.: Spring St., meadow, West Roxbury, June 26 and July 2, 1888, Faxon (2, 3).*  
*Plymouth Co.: Egypt, July 10, 1900, J. G. Hall (1).—Brockton, June 24, 1902, Carl Blomberg (1).*  
*Connecticut*  
*Chas. Wright (4).*  
*Hartford Co.: East Hartford, 1900, A. W. Driggs (3).—Low meadows Southington, July 8, 1893, C. H. Bissell (no. 579) (3).*  
*Middlesex Co.: Middletown, June, 1835, S. B. Buckley (4).*  
*New Haven Co.: New Haven, D. C. Eaton (5); June 30, 1885, A. L. Winton (3).*  
*Fairfield Co.: Green’s Farms, June 22, 1894, C. L. Pollard (no. 79) (2).*  
*Connecticut*  
*New York*  
*Salt marsh, Long Island, June 16, 1877, Addison Brown (16).*  
*Jefferson Co.: Black River, July 26, 1887, J. Porter (6).—Watertown, A. Gray (3).*  
*Oswego Co.: Lake Neahtowanah, Fulton, June 30, 1887, W. W. Rowlee (4); June 30, 1887, F. V. Coville (2).*  
*Onondaga Co.: Near Syracuse, T. Marshall Fry (1).*  
*Madison Co.: Low meadow, among bushes and weeds near Oneida Creek, August, 1903, H. D. House (18).*  
*Queens Co.: Damp sultry place, Inwood, May, 1865, W. W. Denslow (6).*  
*New Jersey*  
*High Point, July 4, 1890, Dr. & Mrs. N. L. Britton (6).*  
*Sussex Co.: Wet meadows, Cranberry Lake, June 26, 1904, Kenneth K. Mackenzie (no. 783) (1).*  
*Bergen Co.: Meadows, Closter, June 17, 1865, C. F. Parker (4).*  
*Essex Co.: Millburn, July, 1879, H. H. Rusby (10).*

[ 46 ]
ORCHIDACEÆ

PENNSYLVANIA, LANCASTER COUNTY

H. flava

Pleasant Grove, June 19, 1889, John K. Small (6).
Chester Co.: Meadows, June, 1861, Wm. M. Canby (16).—West Chester, T. S. D. (?) (4).
Delaware Co.: (2).

DELAWARE, NEW CASTLE COUNTY

Meadows, Granogue, June 29, 1894, E. Tatnall (3).—Meadows on Red Clay Creek above Falkland, June, 1874, Wm. M. Canby (16).

DISTRICT OF COLUMBIA

Wet woods on Eastern Branch at Bennings, July 15, 1899, E. S. Steele (2); June 16, 1881, L. F. Ward (2).—In vicinis Washington, August, 1878, J. W. Chickering, Jr. (6); June 20, 1880, L. F. Ward (2).

VIRGINIA, ALEXANDRIA COUNTY

Hunting Creek, June 15, 1879, Lester F. Ward (2); June 20, 1880, Ward (2, 8).—Hunting Creek and Mt. Vernon Road, Alexandria, August 28, 1904, Philip Dowell (no. 3317) (2).

NORTH CAROLINA, BUNCOMBE COUNTY

Wet places, Biltmore, June 5, 1896 (Biltmore no. 1218) (2, 4, 5).—Mountain bogs (2500 ft. elevation) near Biltmore, June 22, 1897 (Biltmore no. 1218b) (2, 3, 4, 5).

Jackson Co.: Cullowhee, 1887, Roland Thaxter (3).

SOUTH CAROLINA, BERKELEY COUNTY

Santee Canal, July, H. W. Ravenel (3).

GEORGIA

Chapman (4).

Floyd Co.: Rome, Chapman (5).

Early Co.: Swamp of Blue Creek about 4 miles southeast of Blakely, August 1, 1903, Roland M. Harper (no. 1909) (1).

Dekalb Co.: Woods near East Lake, alt. 1025 ft., July 14, 1900, Percy Wilson (no. 54) (2).

Chatham Co.: (H. calycina n. sp.) in sylvis at ripes fl. Savannah (Hb. Bernhardi) (4).

Sumter Co.: Muckalee Creek, swamp above Americus, July 30, 1901, Harper (no. 1141) (2, 4).

FLORIDA, DUVAL COUNTY

Wooded tidal swamps, May (1877?), A. H. Curtiss (no. 2776) (3, 4).—

*St. John* Co.: "The southern form with only two large leaves, 'Chapm.'" — Head of Pellicier's Creek, August 31, 1882, *Miss Reynolds* (16).

*Levy* Co.: Wet cypress swamps, Gulf Hammock, 1877, *A. P. Garber* (no. 191) (3); November, 1877, *Garber* (no. 311) (5, 16).

*Orange* Co.: Oviedo, first week in November, 1903, *T. L. Mead* (1).


**TENNESSEE, CHESTER COUNTY** Bottoms, Henderson, August, 1892, *S. M. Bain* (no. 137) (2, 8).

**WEST VIRGINIA, SUMMERS COUNTY** Meadows near Barger's Spring, July 13, 1900, *E. L. Morris* (no. 981) (2).

**OHIO, LORAIN COUNTY** Oberlin, July 1, 1894 (1).

*Wayne* Co.: Copley Swamp, Akron, June 30, 1889, *Dr. Kent O. Foltz* (2).


*Stueben* Co.: West side of Long Lake in open marsh, one mile east of Clear Lake, July 4, 1904, *Chas. C. Deam* (1).

*Noble* Co.: In low place near Rome City, July 21, 1904, *Deam* (1).


**ILLINOIS, OGLE COUNTY** Oregon, July 25, 1885, *Merton B. Waite* (1, 11).


**MICHIGAN, KENT COUNTY** Grand Rapids, June 22, 1895, *W. E. Mulliken* (5).


*Branch* Co.: Algonac, August, 1884, *A. B. Lyons* (2, 10).

**WISCONSIN, BROWN COUNTY** Big Suamico, July 22, 1888, *J. H. Schuette* (1).
ORCHIDACEÆ

MINNESOTA

St. Anthony Park, July 22, 1888, J. H. Schuette (1).

Chisago Co.: Center City, June, 1892, B. C. Taylor (1).

Goodhue Co.: Zumbrota, July, 1892, A. L. Ballard (2, 5, 14).

MISSOURI, St. Louis County

St. Louis, August 5, 1892, H. Eggert (4). Behind Forest Park, July 6, Eggert (4).—Dry barren hills below Jefferson Barracks on the Mississippi, 1846, N. Richl (4).

Shannon Co.: Sandy places, uncommon, July 22, 1891, B. F. Bush (no. 1467) (4).


LOUISIANA

Hb. Thurber (3).—Red River, Hale (?) (3).

TEXAS

Drummond (no. 402) (3).

Upshur Co.: Common in swamp, Big Sandy, May 28, 1901, J. Reverchon (Bush no. 2484) (4).

5. **H. integra** (Nutt.) Spreng., Syst. Veg. 3: 689 (1826); Torr., **H. integra** Comp. 317 (1826); Beck, Bot. ed. 1, 348 (1833); Eaton & W. R., N. A. Bot. ed. 8, 260 (1840); Gray, in Sill. Journ. 38: 309 (1840); Gray, Man. ed. 5, 499 (1867), ed. 6, 506 (1889), Field, For. & Gard. Bot. 325 (1868), rev. ed., 407 (1895); Willis, Cat. N. J. 61 (1874); Britton, Prel. Cat. N. J. 94 (1881); Gattinger, Tenn. Fl. 83 (1887); Britton, Cat. N. J. 234 (1889); Britton & Br., Ill. Fl. 1: 463, f. 1102 (1896); Gattinger, Fl. Tenn. 62 (1901); Mohr, Pl. Life Ala. 454 (1901); Jelliffe, Gibson’s Nat. Orch. 35, 41, t. 16, f. 2 (1905). (Self-fertilized, see Bull. Torr. Bot. Cl. 20: 33.)


¹ There can be no doubt that Rafinesque’s *Orchis crocea* is a synonym of this species, as the description fits it well, and as there is no other species with saffron-colored flowers and entire lip. His description is as follows:

[ 49 ]
**ORCHIDACEÆ**


**Platanthera integra** *Beck*, Bot. ed. 2, 348 (1856).— *P. flava* *Wood*, Class-book, 683 (1861) in part (?).

**Gymnadeniopsis integra** *Rydb.*, in Britton's Man. 293 (1901); *Small*, Fl. Se. U. S. 316 (1903).


"4. *integra*. Lip oblong, entire, longer than the inner petals; spur longer than the germ, acute at the point; stem leafy, bractes shorter than the flowers. HAB. In the swamps of New Jersey. Nearly allied to *O. ciliaris* and with flowers of the same orange-yellow colour, but somewhat smaller.


The Muhlenberg specimens, and also those cited by Elliott, are undoubtedly *H. integra*, as a specimen in Hb. Elliott sent to him by Muhlenberg is this species.

"*Orchis* (or *Habenaria*) *crocea* *Raf.* Stem angular, leaves lanceolate acuminate, spike short cylindrical, bracts lanceolate equal to flowers, spur slender equal to ovary, petals ovate acute, labellum nearly similar hardly longer, entire.

"Discovered and collected by D. W. Fisher. Very different from *O. ciliaris*, flowers smaller, saffron color, not ciliated. Slender plant 15 inches high. Probably an *Habenaria*." (A. A. E.)

1 Wood cites *O. flava* and *O. nigra* *Nutt.* as synonyms. Doubtless *nigra* is a misprint for *integra*. (A. A. E.)
NEW JERSEY

Muhlenberg (13).—1864, Wm. M. Canby (3).—Austin (5).—Pine barrens, D. C. Eaton (6).

Burlington Co.: Low pine barrens, Atsion, September, 1862, Wm. M. Canby (16).—Quaker Bridge, 1883 (3) (Habenaria Elliottii Beck).—Swamps, August 26, 1863, C. F. Parker (7); August, 1866, Parker (4); September 3, 1867, Parker (3).

NORTH CAROLINA, ROWAN COUNTY


Brunswick Co.: Low pine barrens, August 15, 1884, McCarthy (2).

SOUTH CAROLINA

1848, Met Curtis (4).—Dr. Schweinitz (13).

GEORGIA, WORTH COUNTY

Vicinity of Poulan, August 14-18, 1900, Pollard & Maxon (no. 567) (2).

Colquitt Co.: Wet pine barrens about 3½ miles south of Moultrie, August 25, 1903, R. M. Harper (no. 1948) (1).

Charlton Co.: Sphagnous bog about 2 miles east of Folkston, August 12, 1902, Harper (no. 1507) (2, 3, 4).

FLORIDA

1846, Chapman (4).—Torrey (20).

Calhoun Co.: Wewahitchka, Chapman (4).

ALABAMA

Drummond (20).

Randolph Co.: Damp, piney woods, Pinetucky, September 10, 1874, Dr. E. A. Smith (12).

Baldwin Co.: Low damp pine barrens near Fish River, July, 1878, C. Mohr (12).

MISSISSIPPI

Tchontica Bouffe, August 22, 1898, S. M. Tracy (no. 5080) (2, 4, 14).


LOUISIANA, ORLEANS COUNTY

New Orleans, Drummond (3, 19).—Prairies, Lake Charles, September, 1906, R. S. Cocks (no. 3125) (3).

TEXAS

Drummond (no. 406) (3).
**H. integræ** TENNESSEE

*Met Curtis (4).

*Sumner Co.: Mitchellville, September, 1883, Dr. A. Gattinger (8).

*Davidson Co.: Nashville, Gattinger (16).

*Coffee Co.: Tullahoma, August, 1867, Gattinger (2, 8).


Orchis nivea Nutt., Gen. 2: 188 (1818); Elliott, Sketch 2: 485 (1824); Eaton & Wr., N. A. Bot. ed. 8, 334 (1840).


**Gymnadeniopsis nivea** Rydb., in Britton’s Man. 293 (1901); Small, Fl. Se. U. S. 316 (1903); Bayard Long, in Torreya 8: 16 (1908).

“5. *nivea*. Lip linear-oblong, entire, longer than the inner petals; spur filiform, equal, longer than the germ; segments of the corolla spreading; spike short and oblong; lower leaves linear and very long, cauline subulate. *Hab.* Betwixt St. Mary’s [ 52 ]
ORCHIDACEÆ

and Satilla river, West Florida.—Dr. Baldwyn, who favoured _H. nivea_ me with a specimen under the above name. Flowers clear white, rather small. Lower leaves narrow, a span long, upper ones dis-proportionately small; bractes shorter than the germ. Genitaliferous column remarkably small in proportion, not half so large as the preceding,¹ the pollinia are consequently subsessile. Spike rather dense, 2 or 3 inches long.” Nutt. _loc. cit._

_Gymnadenia conica_ as represented in Lindley’s herbarium at Kew is conspecific with _Habenaria nivea_. Lindley’s tracing from a flower of the plant collected in Florida by Cozzens clearly represents _H. nivea_.

DELAWARE, KENT COUNTY

Savannas near Felton, August 30, 1867, Wm. M. Canby (3, 4, 5, 6, 16).
—Felton, August, 1874 (2, 3); August, 1875 (2).

NORTH CAROLINA

Mountains, North Carolina, S. B. Buckley (4).

PENDER Co.: Shady savanna, July 29, 1884, G. McCarthy (2, 16).

NEW HANOVER Co.: Savannas near Wilmington, July 2, 1897 (Biltmore no. 5202 a) (2, 3, 5).

SOUTH CAROLINA

June, 1877, Dr. Mellichamp (4).

BERKELEY Co.: Santee Canal, July, H. W. Ravenel (3).

CHARLESTON Co.: Pine land near Whiteville, St. Johns, Dr. F. P. Percher (3).

GEORGIA

1845, Boykin (3); 1847, Jones (4).

Bulloch Co.: Rather dry pine barrens, June 26, 1901, Roland M. Harper (no. 954) (2, 3, 4); moist pine barrens, June 15, 1901, Harper (no. 892) (2).

Telfair Co.: Moist soil, McRae, June 6, 1900 (Biltmore no. 5202 c) (5).

LEE Co.: Leesburg, June 20, 1895, F. S. Earle (2).

THOMAS Co.: Grassy pine barrens near Thomasville, August, 1902, Mrs. A. P. Taylor (1); “never really wet places,” June 5 and July 23, 1903, Mrs. Taylor (1).

¹ _Orchis integra_.

[ 53 ]
**ORCHIDACEÆ**

**H. nivea** FLORIDA

_Buckley_ (3, 4).—_E. Rugel_, 1842–9, Field Col. Mus.—_Chapman_ (2, 3, 4, 8, 10, 16).—1839, _Dr. Cooper_ (3).

_Santa Rosa_ Co.: Swamp near Milton, June 23, _A. H. Curtiss_ (no. 32) (3).

_Walton_ Co.: De Funiak, July, 1899, _P. H. Rolfs_ (no. 254) (4).

_Calhoun_ Co.: Swamps in pine barrens, Wewahitchka, May, 1896, _A. W. Chapman_ (Biltmore no. 5202 a) (3, 4, 5).

_Franklin_ Co.: Rivermarsh, Apalachicola, _Chapman_ (Biltmore no. 5202) (5).

_Duval_ Co.: Wet pine land, Baldwin, June 30, 1893, _P. H. Rolfs_ (no. 208) (4).—San Pablo, June 20, 1897, _Rev. L. H. Lighthipe_ (no. 439) (5).—Jacksonville, _A. H. Curtiss_ (2).—Moist pine barrens near Jacksonville, June, 1877, _Curtiss_ (no. 2767) (3, 4, 7, 8); June 6, 1894, _Curtiss_ (no. 4937) (2, 5, 7, 14); June 9, 1898, _Curtiss_ (no. 1696) (7); near Jacksonville, May 20, 1893, _Curtiss_ (no. 4181) (2).

_Orange_ Co.: Low pine woods and sphagnum bog, Oviedo, May 31, 1904, _A. A. Eaton_ (no. 1026) (1).—Borders of depressions in sandy open prairies, Kissimmee, June 2, 1904, _Eaton_ (no. 1066) (1).


**ALABAMA, Mobile County**

Low open pine barrens, Mobile, July, 1878, _C. Mohr_ (12).—Pine flats, May, 1905, _W. C. Dukes_.

**MISSISSIPPI, Jackson County**

_Horn I.,_ June 27, 1901, _S. M. Tracy_ (no. 7530) (2, 3, 4).—Ocean Springs, June 11, 1895, _J. Skehan_ (4); May 8, 1890, _Tracy_ (2).

**ARKANSAS, Arkansas County**

Grand Prairie, July 4, _F. L. Harvey_ (3).

**LOUISIANA**

_Hale_ (3).—Low pine woods, Clearings, East Louisiana, May, 1883, _A. B. Langlois_ (5).

_Calcasieu_ Co.: Wet prairies, Calcasieu River, July, _Dr. Carpenter_ (3).
ORCHIDACEÆ

TEXAS

1843, Lindheimer (no. 190) (3, 4).
Waller Co.: Low places, Hempstead, 1872, E. Hall (no. 625) (2, 3, 4, 16).
Hardin Co.: Long-leaf pine belt, July, 1884, G. C. Neally (3).
Harris Co.: Six miles west of Houston, June, 1843, Lindheimer (?) (4).—Cypress City, Reverchon (3).

7. H. dilatata (Pursh) Hook., Exot. Fl. 2: t. 95 (Jan., 1825); H. dilatata Spreng., Syst. Veg. 3: 688 (1826); Torr., Comp. 318 (1826) in part; Gray, in Ann. Lyc. Nat. Hist. N. Y. 3: 231 (1834); Eaton, Man. ed. 7, 322 (1836); Torr., in Geol. & Nat. Hist. Surv. N. Y. 174 (1840); Dewey, Herbaceous Pl. Mass. 198 (1840); Gray, in Sill. Journ. 38: 311 (1840); Gray, Man. ed. 5, 500 (1867), ed. 6, 507 (1890); Rothr., Alaska 456 (1867); Gray, Field, For. & Gard. Bot. 325 (1868), rev. ed. 407 (1895); Rothr., Bot. Cent. Col. 51 (1874); Porter & Coulter, Syn. Fl. Col. 133 (1874); Rothr., Bot. Wheeler 7, 17, 265 (1878); Day, Pl. Buffalo 139 (1882); Perkins, Gen. Cat. Vt. 37 (1882); Upham, Fl. Minn. 140 (1884); Coulter, Rocky Mt. Bot. 342 (1885); Dudley, Cayuga Fl. 95 (1886); Dame & Collins, Fl. Middlesex Co. 102 (1888); Perkins, Fl. Vt. 277 (1888); Macoun, Cat. 4: 15 (1888), Check-list 53 (1889); Beal & Wheeler, Fl. Mich. 607 (1891); MacMillan, Metasp. Minn. Val. 167 (1892); Fernald, in Portl. Cat. 64 (1892); Baldw., Orch. N. Eng. 69, fig. 20 (1894); Rand & Redf., Fl. Mt. Desert 153 (1894); Holzinger, in Contr. U. S. Nat. Herb. 3: 252 (1895); Britton & Vail, in Bull. Herb. Boiss. 3: 203 (1895); Britton & Br., Ill. Fl. 1: 462, f. 1101 (1896); Kearney, in Bail. Cycl. Am. Hort. 2: 708 (1900); Andrews, in Rho. 2: 115 (1900); Brainerd, Jones & Eggleston, Fl. Vt. 30 (1900); Howell, Fl. Nw. Amer. 628 (1902); Mathews, Field-book 86 (1902); Andrews, in Rho. 4: 80 (1902); Kennedy, Fl. Willoughby in Rho. 6: 111 (1904); Jelliffe, Gibson's Nat. Orch. 39, t. 17, f. 2 & t. 18 (1905), not H. dilatata Wats., Bot. King 340 [55].
H. dilatata (1871) (= H. leucostachys), not Mecosa dilatata Bl. (July, 1825) (= Platanthera Blumii Lindl.).


Platanthera cylindrica de la Pylaie, in Mém. Soc. Linn. Par. 4: 503 (1826?).

Habenaria borealis var. albiflora Cham., in Linnaea 3: 28 (1828).


Habenaria fragrans Niles, Bog-trotting for Orchids 253 (1904).—H. media Niles, Bog-trotting for Orchids 252 (1904).

"17. O. labello lineari integerrimo obtusiusculo, basi subrotundato-dilatato, cornu longitudine labellii: germine breviore, bracteis longitudine florum, caule folioso.
**ORCHIDACEÆ**

_**H. dilatata**  "O. acuta. Herb. Banks. mss."


This variety is distinguished from the species by its greenish-yellow flowers. From _H. hyperborea_, with which it is likely to be confused, it is distinguished by the rhombic base of the labellum. It is found together with the species. No attempt has been made to distinguish between the white and greenish flowered forms in the following citations of specimens.

_Habenaria dilatata_ is an extremely variable species both in its vegetative and floral parts, consequently agreement as to what forms it should include is hardly to be expected. In my studies I have examined material both dry and fresh, both wild and cultivated, and I have found no satisfactory characters by which to separate from one another and from _H. dilatata_ the segregates which have been recognized by botanists. The original or type specimen of _H. dilatata_ preserved in the British Museum of Natural History, although badly damaged, is quite serviceable and exhibits a boreal state which differs from the luxuriant specimens common in more southern localities in nothing but its vegetative parts. The habit of the type is well represented by specimens collected in the Province of Quebec in alpine bogs on Mt. Albert by Collins and Fernald. Such forms
as are represented by Habenaria fragrans, H. borealis var. albi-
H. dilatata flora, and Platanthera graminea are merely vegetative variants
and are scarcely worthy of even varietal distinction. It is a
question whether or not plants referable to these maintain dur-
ing several generations the characteristics which have been re-
garded specifically valid. It is by no means improbable that the
boreal form if transplanted to less rigorous conditions would
assume a more luxuriant and taller habit.

Dr. Rydberg has reinstated Habenaria borealis var. albiflora
Cham. in his genus Limnorchis, and asserts that it differs from
Habenaria dilatata in its shorter, more clavate spurs, dull or
greenish white flowers, and in the usually smaller size. According
to his views H. borealis represents H. dilatata in the Rocky
Mountain region. In addition to specimens collected in the North-
west by Chamisso, distributed as H. borealis var. viridiflora and
H. borealis var. albiflora, I have examined both dried and fresh
material from British Columbia which is well within the range
to which Dr. Rydberg assigns H. borealis. In 1904 I received
material from Mr. E. Wilson, gathered in British Columbia,
which grew very well in the wild garden connected with my
laboratory. Near at hand, in the same garden, were numerous
specimens specially collected in Vermont and Maine for com-
parison with the Northwestern specimens. A careful study of
the different sets of plants showed no appreciable difference in
the color of the flowers, length of spurs, denseness of the in-
florescence, characters of the foliage or outline of the lips. Every
peculiarity exhibited by the plants from the Northwest was found
in plants from Vermont and Maine.

There were two colonies of the British Columbian plants, one
in a shaded locality, the other in an open grassy place, where
during the morning the plants received the full brightness of the
H. dilatata sun. A similar distribution of the Eastern specimens was arranged. The results of this experiment tend to show that Dr. Rydberg's conclusions are by no means convincing, and that the differences on which he relies in making distinctions between the Eastern and Northwestern plants are very often individual peculiarities of trifling importance. The variation in the conformation of the lips in all of the colonies was remarkable and showed every gradation from rhombic-lanceolate to linear. The spurs, too, both in length and stoutness, exhibited no constancy even on the same plant.

The position of the variety leucostachys is not so clear as that of H. borealis. It is evident, however, that the length of the spur is the only conspicuous character which may be relied on for its identification. Among specimens from Little Metis, Province of Quebec, collected in August, 1902, by E. C. Jeffrey, there are flowers, with elongated slender spurs, which resemble so closely specimens from California, collected by E. B. Copeland, that it is impossible to differentiate between them without reference to the labels. The Californian specimens would without hesitation be referred to H. leucostachys, while the Canadian plants would be referred to H. dilatata because of their Eastern origin. On the other hand between these long-spurred specimens and the typical form of H. dilatata there are transitions which tend to show that specific distinction is out of the question. Perhaps H. leucostachys should, after all, be referred to the synonymy of H. dilatata. In 1899 I collected near Mt. Shasta, California, a series of specimens which represents both long and short-spurred forms. The short-spurred specimens if found in the eastern United States would be referred without hesitation to H. dilatata.

Limnorchis fragrans Rydberg is, as its name implies, partly
distinguished by fragrant flowers. Fragrance is not uncommon in *Habenaria dilatata*. It has been detected frequently enough to be regarded an attribute of the species. I have detected it in all the material I have collected, and in the plants from Mt. Albert, Quebec, which resemble the type, fragrance was noted by Collins and Fernald.

*Platanthera graminea* Lindl., which Rydberg reinstated in his genus Limnorchis, under the specific name *graminifolia*, was described originally by Lindley from Western specimens collected by Menzies. I examined Lindley’s type with extreme care in 1905, and compared it with a rich series of *dilatata* forms from my herbarium. The results of my examination absolutely convince me that *P. graminea* is nothing more than a slender, narrow-leaved condition of *Habenaria dilatata*.

In *Orchidacearum Genera et Species* Dr. Kränzlin reduces *Habenaria dilatata* to a variety of *H. hyperborea*. This treatment of the subject, while it may appear very radical to American botanists, is more comprehensible than the course which Rydberg has pursued in his monograph of the genus Limnorchis. These two authors stand at the extremes in their views of the systematic arrangement of the Dolichostachyæ. Kränzlin reduces species because he finds it a fruitless task to try to differentiate them; Rydberg multiplies species, using characters which Kränzlin finds inconstant. In my opinion both of these writers have gone too far, yet, notwithstanding an extended study of numerous specimens, many of them constituting the types of the species examined, I feel that finality is hardly to be expected where the Dolichostachyæ group is concerned until material from numerous localities has been observed under cultivation, or at least while fresh and equally developed. Stoutness and thinness of spur, comparative length of spurs and lips,
**ORCHIDACEÆ**

*H. dilatata* and similar distinctions, are too much influenced by the age of the flowers examined to be seriously considered in the differentiation of plants supposed to be distinct.

When one studies the work of European botanists devoted to our orchid flora, the fact must not be overlooked that they often had to draw conclusions from inadequate material and were unable to ascertain the range of variation or the extent and effects of distribution.

**GREENLAND**


**SUBARCTIC AMERICA**

1861–2, *J. S. Onion* (2).

**NEWFOUNDLAND**


**LABRADOR**

UNGAVA
Southern Ungava, July, 1895, A. P. Low (6).—Between Sandy Lake and Lake Michikaman, July 19, 1894, Low (6).—North of Cape Jones, Hudson Bay, July 6, 1899, Low (6).

NOVA SCOTIA, INVERNESS COUNTY
By spring, Big Intervale, Cape Breton Isl., July 16, 1898, J. Macoun (6).
Cape Breton Co.: Cold bogs, Louisburg, July 17, 1883, Macoun (6).
Guysboro Co.: Boylston, July, 1890, Dr. C. A. Hamilton.

NEW BRUNSWICK, VICTORIA COUNTY
Boggy places, Little Tobique River, July, 1884, Geo. U. Hay (6).

QUEBEC
Rimouski Co.: Swamp, Little Metis, August, 1902, E. C. Jeffrey (1).

ONTARIO, NIPISSING DISTRICT
In a peat bog, Catfish Lake, Algonquin Park, July 23, 1900, J. Macoun (6).
Thunder Bay Dist.: In lit. boreal, Lake Superior, Macoun (4).—Michipicoten Isl., July 24, 1869, Macoun (16).—Pic River, Loring (3).
Frontenac Co.: Soughboro Lake, 1886, W. Nicol (2).
Hastings Co.: In swamps and marshy woods, July 10, 1867, Macoun (6).
Victoria Co.: Boggy places, Ops, August 1, 1893, W. Scott (6).
Northumberland Co.: In swamps and bogs, July 27, 1874, Macoun (6).
ORCHIDACEÆ

_H. dilatata_ York Co.: Newmarket, June 21 and October 13, 1897 (Biltmore no. 2520 a) (5).

Huron Co.: Wingham, July 6, 1895, _J. A. Morton_ (no. 3026) (5, 14); bogs, July 20, 1890, _Morton_ (6).

Wellington Co.: Guelph, June 28, 1904, _A. B. Klugh_ (1); August, 1908, _Klugh_ (1).

Lambton Co.: Near Sarnia, June 19, 1893, _C. K. Dodge_ (6).

KeeWATIN


YUKON

White Horse, August 30, 1902, _J. Macoun_ (1).

SASKATCHEWAN


ASSINIBOIA

Thickets by a spring, Cypress Hills, June 27, 1894, _J. Macoun_ (6).

ALBERTA

Shore of Waterton Lake, July 28, 1895, _J. Macoun_ (6).—In boggy woods, South Kootenay Pass, August 8, 1881, _Dawson_ (6).—Red Deer, July 23, 1904, _Willing & Fletcher_ (1).—Mt. Molar Creek, Pipestone Creek, July 8, 1904, _Macoun_ (no. 65,643) (1); Pipestone Creek, July 10, 1904, _Macoun_ (no. 65,644) (1).—Between Field and Emerald Lake, August 20, 1904, _Macoun_ (no. 65,642) (1).

BRITISH COLUMBIA

Northern British Columbia, 1865–6, _J. T. Rothrock_ (no. 66) (2).—In swamps and bogs, Tanyabunkat Lake, July 9, 1876, _Dawson_ (6).—Macleennan River, a branch of Fraser River, July 31, 1898, _W. Spreadborough_ (6). Cassiar Dist.: Lake Lindeman, near boundary of Yukon Territory, July 8, 1902, _J. Macoun_ (1).—Boggy places, Swamp River, July 10, 1879, _Dawson_ (3).

ORCHIDACEÆ

Comox Co.: Bogs near Union Mines, Comox (Vancouver Isl.), June 26, 1893, Macoun (2, 4, 6).

Nanaimo Co.: Damp woods, Mt. Benson, June 6, 1887, Macoun (6).—Westwood spring, June 6, 1887, Macoun (2).

Yale Dist.: Chilliwack Lake, alt. 4000 ft., July 12, 1901, J. M. Macoun (no. 65,646) (1); July 24, 1901, Macoun (1).—Armstrong, July 11, 15 and 17, 1904, E. Wilson (1).—Boggy places, Craigellachie, July 18, 1889, J. Macoun (6).—Mountains south of Tulameen River, July, 28, 1888, Dr. C. M. Dawson (6).

Kootenay Dist.: Springy places, Revelstoke, 1890, Macoun (6).—Springy places, Hot Springs, Kootenay Lake, Ainsworth, 2800 ft., July 7, 1890, Macoun (6).—Glacier, August, 1903, Chas. Schaffer (1).

ALASKA

Chamisso (H. borealis var. albiflora) (3); 1880, Fischer (4, 21); 1871–2 M. W. Harrington (3).—Karluk, June 30, 1903, Cloudsley Rutter (9); July 25, 1903 (9).—Popoff Isl., July 8, 1899, Trelease & Saunders (no. 3284) (4).—Unalaska, Harrington, Dall’s Exp. 1871–2 (4).—Along streams, Iliuliuk, Unalaska, September 24, 1871, Harrington (3).—July 8, 1899, Trelease & Saunders (no. 3285) (4).—Kukuk Bay, Alaska Peninsula, July 5, 1899, Trelease & Saunders (no. 3286) (4).—Kadiak, Unalaska, &c., Cruise “Albatross,” 1888 (9); July 1, 3 and 26, 1899, Trelease & Saunders (nos. 3281, 3282, 3291, 3292) (4).—Disenchantment Bay, June 19, 1899, Trelease & Saunders (no. 3280) (4).—La Perouse Glacier, June 18, 1899, Trelease & Saunders (no. 3287) (4).—Shumagins, Nagai Isl., July 27, 1872, Harrington (3).—Banks, Shumagins, Popoff Isl., June 28, 1872, Harrington (3).—Kyska Harbor, July 19, 1873, W. H. Dall (3).—Bering Isl., 1882, L. Stejneger (no. 51) (3); September 1, 1891, J. M. Macoun (6, 7).—Amchitka Isl., Doll (3).—Unalaska, July 25, 1891, Macoun (no. 142?) (3).—Douglas Isl., July 25, 1891, Grace E. Cooley (3).—Along the Ankow River, near Ocean Cape, July 1, 1891, F. Funston (no. 52) (3, 4, 6).

MAINE, AROOSTOOK COUNTY

Valley of the Aroostook, July 12, 1902, Williams, Collins & Fernald (1).—Wet roadside in spring water, Bicker Brook, near Fort Kent, July 16, 1904, A. A. Eaton (nos. 151, 152) (1); sphagnum bog, 3 miles west of Fort Kent, July 19, 1904, Eaton (no. 178) (1); sphagnum bog, Fort Kent, July 18, 1904, Eaton (no. 168) (1); bank of St. John at Fort Kent, July 19,
**ORCHIDACEÆ**


**NEW HAMPSHIRE**


**Carroll Co.**: Cold bogs on mountain sides, June 10, 1874, *Morong* (6).

**VERMONT**

ORCHIDACEÆ

Orleans Co.: Willoughby, July 11, 1903, Winslow (1).—Willoughby Bog, July 27, 1904, A. A. Eaton (no. 249) (1).—Willoughby Lake, July 13, 1887, E. Faxon (16).—Willoughby Lake House, July 13, 1887, Faxon (2, 3).—Willoughby, July 26, 1892, H. H. Rusby (10).—Tinkham's Bog, Brownington, July 26, 1904, Eaton (nos. 230 and 233) (1); July 13, 1903, E. J. Winslow (1); July 15, 1905, Winslow (1).

Lamoille Co.: Mt. Mansfield, June 25, 1900, A. H. Howell (2); near summit Mt. Mansfield, July 3, 1896, L. R. Jones (5).—Stowe, June, 1899, Howell (2); July, 1884, C. W. Swan (6).

Caledonia Co.: Stoddard's swamp, Peacham, July 13, 1892, Dr. F. Blanchard (4); July 13, 1892, Mrs. A. E. Stevens (2).

Addison Co.: Bristol Pond bog, June 15, 1877, C. G. Pringle (7).—Middlebury, July 1, 1880, T. E. Boyce (1).—Lincoln, July 2, 1877, Ezra Brainerd (10).

Rutland Co.: Cold, springy places, Killington Mt., Sherburne, July 4, 1892, W. W. Eggleston (2).

Windsor Co.: Hay meadow on the eastern slope of a hill, June, 1899, E. M. Kittridge (2).

Windham Co.: Grout Pond, Stratton, July 4, 1895, A. J. Grout (2); June 28, 1902, W. H. Blanchard (7).—Swamp, West Westminster, June 24, 1902, Blanchard (3); July 5, 1902, Blanchard (7).

Bennington Co.: Manchester, July 18, 1898, M. A. Day (no. 313) (3).

Massachusetts, Middlesex County

Peaty meadow, left side of road to S. Reading, Stoneham, Wm. Boott (3).


Connecticut, Hartford County

East Hartford, Miss Elmore (2).

New York

Flowers green, western New York, A. Gray (?) (3).

Franklin Co.: Axton swamp, July 9, 1899, Rowe, Wiegand & Hastings (3).

Herkimer Co.: Mud Lake, Warren, July, 1873, Edwin Hunt (1).—Hidden Lake, Litchfield, June 27, 1901, J. V. Haberer (1); July 12, 1903, Haberer (1).

Washington Co.: East Greenwich, 1867, Dr. Asa Fitch (10).—Swampy woods east of Tripoli, May–June, 1893, S. H. Burnham (1).
ORNITACEÆ

**H. dilatata**

Oswego Co.: Bogs, tamarack swamp, North Hannibal, July 9, 1882, O. E. Pearce (2); June 27 and 28, 1885, Pearce (2).

Onondaga Co.: Near Syracuse, T. Marshall Fry (1).

Oneida Co.: Tamarack swamp, Bridgewater, Gray (3).

Wayne Co.: Galen, H. P. Sartwell (3, 4).

Madison Co.: Bog beside road, 3 miles south of Chittenango, alt. 700 ft., August 9, 1903, H. D. House (18).—Near South Bay, August, 1903, House (18).

Genesee Co.: Bergen, G. W. Clinton (16).

Yates Co.: Penn Yan, Sartwell (9).

Tompkins Co.: Mud Creek, Dryden, July 27, 1893 (4).

NEW JERSEY

In cold bog, July, 1880, Rev. Chas. Hall (no. 486) (2).

MICHIGAN, Keweenaw County

Cold marshes, July, 1886, O. A. Farwell (no. 372) (3).—Clifton, June 15, 1886, Farwell (nos. 371, 372½) (11).—Keweenaw Point, July 14, 1884, F. E. & F. J. Wood (2); 1863, Dr. Robbins (no. 151) (4).

Marquette Co.: Turin, July 13, 1901, Bronson Bartow (2).—Michigamme, July 17, 1887, Wm. Trelease (4).—Republic, July 17, 1887, Trelease (4).

Emmet Co.: Bogs, Paige Brook, August 28, 1897, C. W. Fallass (5).

Oakland Co.: Clarkston, July, 1888, G. H. Hicks (2, 3).

Ingham Co.: Agricultural College, June 30, 1895, W. E. Mulliken (5).


St. Joseph Co.: Constantine, June 6, 1890, C. F. Wheeler (2).

WISCONSIN, Door County

Bogs, Lily Lake, July 16, 1890, J. H. Schuette (1).

Sheboygan Co.: Peat bogs, Elkhart Lake, June 29, 1879, J. H. Schuette (1); swamps, August 6, 1892, Schuette.

MINNESOTA

Rat Lake, July, 1891, F. F. Wood (2).

Chisago Co.: Lindstrom, August, 1892, B. C. Taylor (5).

Beltrami Co.: Sphagnum swamps, Itasca Lake, July 9, 1891, J. H. Sandberg (no. 1186) (2); bogs, June 24, 1891, Sandberg (no. 1020) (2); July, 1891, Geo. B. Aiton (1).

SOUTH DAKOTA, MEADE COUNTY  
Gravelly soil, Deadman's Creek, near Fort Meade, August 23, 1887, *W. H. Forwood* (no. 339) (2).

MONTANA  

FLATHEAD Co.: Columbia Falls, July 5, 1894 (no. 812) (2) and August 20, 1894 (no. 519), *R. S. Williams* (2, 5).


MADISON Co.: Old Hollowtop, near Pony, July 7, 1897, alt. 9000 ft., *Rydberg & Bessey* (no. 3903) (3).

WYOMING  

ORCHIDACEÆ

**H. dilatata**

*J. W. Blankinship* (1).—Along shady brooks, Continental Divide, July 11, 1899, *Blankinship* (1).

**ALBANY CO.** : Bear Creek, about four miles from Laramie Peak, August 22, 1899, *Chas. Schuchert* (2).—Laramie Peak, July 22, 1898, *Aven Nelson* (no. 1706?) (4).—In bogs near alpine lakes, Telephone Mines, July 30, 1900, *Nelson* (no. 7845) (1, 3, 4, 7).


**COLORADO**


**ROUTT CO.** : Watton Creek, July, 1892, *Alice Eastwood*, in part (9).


**CLEAR CREEK CO.** : Subalpine swamps, head-waters of Clear Creek, 1861, *C. C. Parry* (no. 357) (3, 4).

**GARFIELD CO.** : Golden City, 1870, *Greene* (no. 555) (9).

**GILPIN CO.** : Central City, 1869, *Dr. J. T. Scovell* (8).

**HINSDALE CO.** : Near Lake City, 1879, *F. N. Pease* (no. 155) (3).

**UTAH**


**WEBER CO.** : Mountains near Ogden, 1872, Hayden’s Exp. (2).

**SALT LAKE CO.** : Alta, August, 1880, *M. E. Jones* (2).


**NEW MEXICO**

Pecos River, August 6, 1898, *G. E. Coghill* (no. 147) (4).

[ 70 ]
**ORCHIDACEÆ**

**IDAHO**

Santianne Creek Bottoms, alt. 950 m., June 24, 1895, *John B. Leiberg* (no. 1035) (2).—MacAbee’s Ranch, Priest River Valley, alt. 600 m., July 23, 1900, *D. T. MacDougal* (no. 7) (6).

Shoshone Co.: Region of the Cœur d’Alene Mts., alt. 950 m., June 24, 1895 (no. 1035) (2).


**WASHINGTON**


King Co.: Seattle, June, 1892, *Emma A. Shumway* (4).


Chehalis Co.: Along tide-water, Chehalis River, June 12, 1897, *Frank H. Lamb* (no. 1199a) (4, 5, 9).


**OREGON**, Union County

1880, *W. C. Cusick* (1, 3).

Wallowa Co.: Banks of Wallowa River, June, August, 1886, *W. C. Cusick* (no. 1441) (3, 16).

**CALIFORNIA**


Mendocino Co.: Pt. Arenas, July 17, 1868, *Dr. A. Kellogg* & *W. G. W. Harford* (no. 958) (3, 4).

**Habenaria dilatata var. leucostachys comb. nov.**

*Platanthera leucostachys* Lindl., Gen. & Sp. Orch. 288 (1835); *Hook.*., Fl. Bor. Am. 2: 198 (1839); *Steud.*., Nomencl. [71]


1 This is the plant to which, under the name H. flagellaris, Kränzl in refers in Orch. Gen. et Sp. It would seem that the "n" in "flagellans" became "ri" in his manuscript. Rydberg states (Bull. Torr. Bot. Cl. 28: 612) that H. flagellars was never published, but he does not refer to H. flagellans in his monograph and was probably misled by Kränzl in's error.

[ 72 ]

“16. PLATANTHERA leucostachys.

“P. caule folioso, foliis oblongo-lanceolatis obtusis, spica longissimâ densâ, bracteis forum longitudine, sepalis ovatis obtusis, petalis membranaceis linearibus emarginatis, labello rhomboideo lineari-lanceolato calcare filiformi arcuato duplè breviore, antherae lobis parallelis rostello maximo plicato.

“Hab. in ora occidentali Americae septentrionalis, Douglas. (hab. s. sp. comm. Soc. Hort.)

“Rostellum fère Gymnadeniæ sed magnum et prominens. Flores verosimiliter albi.” Lindl. loc. cit.

BRITISH COLUMBIA, Kootenay District

Boggy places, Donald, Columbia Valley, July 4, 1885, Macoun (6); swamps, July 13, 1885, Macoun (3).

VICTORIA Co.: Beacon Hill, June 12, 1893, Macoun (3, 6).

WASHINGTON

Yakima Region, 1882, T. S. Brandegee (no. 480) (4).—Cascade Mts. 49° N. lat., 1859, Lyall (3).—1889, G. R. Vasey (no. 77) (2, 3).—1880, J. M. Grant (no. 11) (9); 1884, Grant (2).—Moist ravines, marshes, 5100 ft., head of Poison Creek, September 1, 1897, M. W. Gorman (no. 812) (2).—Nason City, July, 1893, alt. 2000–3000 ft., J. H. Sandberg & J. B. Leiberg (2).—Kuskuskie River, Capt. Wilkes’ Exp. (no. 256) (2).—Open, wet ground, upper valley of the Nesqually, July 10, 1894, O. D. Allen (no. 75) (2, 3, 4, 5, 6, 7).

Clallam Co.: Olympic Mts., August, 1900, A. D. E. Elmer (no. 2551) (2, 4).

Spokane Co.: Mt. Carleton, July 17, 1902, Frank O. Kreager (no. 195) (3).

Kittitas Co.: Slopes of Mt. Stuart, alt. 545 m., July 24, 1893, Sandberg & Leiberg (no. 576) (2).

Lindley’s type of Platanthera leucostachys, collected by Douglas in 1826, is accompanied by a drawing which represents reverted petals. This peculiarity is not characteristic of the flowers of the type.
**ORCHIDACEÆ**

*Dilatata var. leuco-stachys*


**Thurston Co.**: Near Olympia, alt. 500 ft., July 14, 1898, *A. A. & E. G. Heller* (no. 4046) (2, 3, 4, 5, 14).

**Klickitat Co.**: On wet meadows, Falcon Valley, June 25, 1893, *W. N. Suksdorf* (no. 1356) (1, 2, 3, 4).

**Walla Walla Co.**: Waitsburg, June 4, 1897, *R. M. Horner* (no. 466) (2).

**Columbia Co.**: Near springs, Blue Mts., August 10, 1897, *Horner* (no. 467) (2, 3).


**Clackamas Co.**: Milwaukee, August 9, 1903, *Howell* (1).

**Wasco Co.**: Paulina Lake, alt. 2100 m., July 23, 1894 (no. 553) (2).— Wet places, Hood River, June 4, 1883, *Joseph Howell* (6).

**Klamath Co.**: Swan Lake Valley, August, 1894, *Elmer I. Applegate* (no. 692) (3).


**Idaho**


**Latah Co.**: Marshes in woods, Craig and Moscow Mts., June 23, 1894, *Henderson* (2, 5, 14).


**California**

ORCHIDACEÆ

Tahoe, August, 1896, Miss M. E. Parsons (9).—Lake Tahoe, July, 1895, Mr. Abraham (9); July, 1898, Mrs. Edward Probert (9); in uliginosis prope L. Tahoe, August 31, 1892, John H. Redfield (4).—Lincoln Valley, July 23, 1901, P. B. Kennedy & S. B. Doten (9).—Hetch-Hetchy Valley, June, 1900, F. T. Bioletti (9).—Sierra Nevada Mts., 1875, Dr. A. Kellogg (9).—School Station, May, 1869, Kellogg & Harford (no. 958) (2).

Siskiyou Co.: Wet mountain meadow, near camp on Mt. Shasta, August 22, 1880, G. Engelmann (4).—Near Shasta Springs, June, 1899, O. Ames (1).

—In grass beside railroad track, Moss Brae Falls, June, 1899, Ames (1).

—Foot of Mt. Eddy, 4000 ft., August 17, 1903, E. B. Copeland (no. 259) (1).—Sisson, alt. 3555 ft., June 1–10, 1897, H. E. Brown (no. 320) (2, 3, 4, 5, 9).—Mt. Shasta and vicinity, July 13–27, 1892, Dr. Edward Palmer (no. 2568) (2, 5).

Modoc Co.: Sugar-Loaf Hill Swamp, August, 1885, Mrs. R. M. Austin (9).

Shasta Co.: Mountains about head-waters of the Sacramento River, 6500 ft., August 31, 1881, C. G. Pringle (7).

Trinity Co.: Cañon Creek, July 2–18, 1901, Alice Eastwood (9).

Plumas Co.: Indian Valley, J. G. Lemmon (3) (type of H. flagellans Wats.).—Mrs. Austin (5); 1877, Mrs. Austin (3, 5, 6); 1880, Mrs. Austin (2, 16).

—Prattville, July, 1902, Mrs. A. L. Coombes (9).—Butterfly Valley, August, 1896, Mrs. Austin (no. 540) (4).

Mendocino Co.: 1876, Vasey (3).—Oak Hills near Ukiah Valley, June 10 (1).—Swamp, August 6, 1902, J. W. Congdon (2).

Butte Co.: Butte Creek, July, 1896, Mrs. C. C. Bruce (2, 4); July, 1896, Mrs. Austin (no. 6) (4).—Colby Ranch, Butte Creek, August, 1902, Bruce (9).

Sierra Co.: 1874, J. G. Lemmon (3, 16).

Nevada Co.: Lower end of Donner Lake, July 13, 1903, A. A. Heller (no. 6919) (1, 2, 3, 4, 9).

Lake Co.: Drew’s Creek, Mrs. Austin (no. 243) (9).—Susanville, four miles below Eagle Lake, alt. 5000 ft., June 30, 1897, M. E. Jones (2, 4).—In the “Horse Pasture” near the summit of Mt. Sanhedrin, July 20, 1902, Heller (no. 5999 in part) (1, 2, 3, 4, 9).

Placer Co.: Summit Soda Springs, June 12, 1898, Eastwood (9).—Cisco, June 21, 1870, Dr. Kellogg (9).

Eldorado Co.: Tallac, July 8, 1897, alt. 6200 ft., Ezra Brainerd (5).—“Meadows,” near Meisner’s Sheep-ranch, July 17, 1897, alt. 7600 ft.,

H. dilatata var. leuco-stachys

[ 75 ]
**H. dilatata var. leuco-stachys**

*Brainerd* (7).—Tallac, Lake Tahoe, alt. 6280 ft., *Dr. F. C. Blaisdell* (no. 81) (9).—Slippery Ford, summer, 1903, *Mrs. F. M. Meigs* (9).—Fallen Leaf Lake, June 28, 1900, *Wm. W. Price* (9).


**TUOLUMNE Co.:** Lord's Ranch, 5300 ft., July 7, 1888 (9).


**MONO Co.:** Mammoth, July 22, 1891, *Coville & Funston* (no. 1822) (2, 3).


**SAN DIEGO Co.:** Along creeks at 8000 ft., San Jacinto Mt., July 22, 1897,
ORCHIDACEÆ

H. M. Hall (no. 727) (2); August, 1901, Hall (no. 2513) (2, 9). — San Jacinto Mt., June, 1880, S. B. & W. F. Parish (no. 670) (15).

H. dilatata

var. leuco-stachys

NEVADA, Elko County


WASHOE Co.: Base of Sierra Mts., near Washoe Lake, Dr. C. L. Anderson (no. 7) (3). — Abundant in moist meadows, Washoe Valley, 1901, Grace G. Niles (1).


NYE Co.: Toyabe Mts., 5500 ft., July, 1868, Watson (no. 1153 in part) (2, 3).

UTAH

Southern Utah, 1877, Dr. E. Palmer (no. 461) (2, 4, 16).

ARIZONA

1881, G. R. Vasey (2).

**ORCHIDACEÆ**

*H. hyperborea*  

*Orchis hyperborea* L., Mant. 121 (1767), Syst. Veg. ed. 14, 810 (1784), ed. 15, 854 (1797); *Gunn.*, Fl. Norv. 2: 103 (1772); *Oed.*, Fl. Dan. t. 333 (1770); *Houttuyn*, in Linn. Pfl. Syst. 11: 567 (1784); *Retz.*, Obs. Bot. 4: 30, t. 3 (1786); *Poir.*, in Lam. Encyc. 4: 598 (1797); *Sw.*, in Act. Holm. 21: 207 (1800); *Pers.*, Syn. 2: 505 (1807); *Martyn*, in Mill. Dict. ed. 9, no. 42 (1807); *Nutt.*, Gen. 2: 189 (1818); *Eaton & Wr.*, N. A. Bot. ed. 8, 334 (1840); *Oakes*, in Thompson's-Vt. 199 (1853); *Wood*, Classbook ed. 41, 592 (1856); *Provanch.*, Fl. Canad. 2: 565 (1862).—*O. Koenigii* *Gunn.*, Fl. Norv. 2: 103 (1772); *Retz.*, Fl. Scand. 1: 628 (1779); *Sw.*, in Act. Holm. 21: 208 (1800); *Pers.*, Syn. 2: 505 (1807); *Spreng.*, Syst. Veg. 3: 688 (1826).—*O. huronensis Nutt.*, Gen. 2: 189 (1818).

*Habenaria dilatata* *Big.*, Fl. Bost. ed. 2, 319 (1824) in part; *Torr.*, Comp. 318 (1826) in part; *Dewey*, Herbaceous Pl. Mass. 198 (1840).—*H. huronensis Spreng.*, Syst. Veg. 3: 688 (1826); *Torr.*, Comp. 318 (1826); *Beck*, Bot. ed. 1, 348 (1833); *Eaton & Wr.*, N. A. Bot. ed. 8, 260 (1840).—*H. borealis var. viridiflora Cham.*, in Linnaea 3: 28 (1828).
Gymnadenia hyperborea *Link*, Handb. 1: 242 (1829).

Orchis dolichorrhiza *Fisch.*, MS.


Orchis dilatata *Big.*., Fl. Bost. ed. 3, 342 (1840) in part.


1 Reichenbach f. cites this figure for both *P. dolichorrhiza* and *P. hyperborea* var. genuina.
Platanthera hyperborea var. major and var. minor

Lange, Consp. Fl. Groenl. 118 (1880).


“Habitat in Islandia. König.


I have been obliged, as in my treatment of H. dilatata, to reduce several of Dr. Rydberg’s species, as they are founded rather on geographic and inconstant distinctions than on real differences.

In Habenaria hyperborea we have, from every viewpoint, a perplexing species which presents many problems. The most difficult point to settle is the amount of variation we are to allow...
in a species so clearly polymorphic. Many careful observers have expressed the opinion that *H. hyperborea* is excessively variable, and that it includes not only the form which is represented by the Linnæan type, but the variants which some botanists have regarded as specifically distinct.

The plant in the Linnæan herbarium is a boreal form of unusual aspect. Dr. Rydberg is inclined to regard it as separable from the plant which has been found so common in the northeastern part of the United States and Canada, and which has been identified as *Habenaria hyperborea* by the majority of American botanists. On the other hand Dr. Kränzlin is emphatic in his views expressed in his *Orchidacearum Genera et Species*, where he makes the synonymy of *H. hyperborea* a repository for the species which are regarded as distinct in most American botanical works. He has been Draconian in his treatment of the species allied to *H. hyperborea*, and of these he has considered as variants several which appear to have no close relationship with that species. The contrast between the views of Kränzlin and Rydberg is so radical that it induces caution in accepting their opinions. They view from diametrically opposite standpoints the phenomena of variation and polymorphism, and consequently they both pass to extremes which are significant and at the same time instructive.

In my studies of *Habenaria hyperborea* I have examined numerous specimens both fresh and dried, and aside from observations made in the field I have kept many plants under cultivation, where I could examine them throughout their growing season. I am convinced that it is futile to multiply the number of our species by paying close attention to minor traits, such as relative length of spurs and lips and comparative thickness of spurs. When I examined the specimen preserved in the Linnaean herbarium I was unable to discover any constancy in the
form of the spurs in accordance with Dr. Rydberg's descriptions. Aside from its dwarfness there is no character which separates the Linnaean plant satisfactorily from the slender *H. hyperborea* of northeastern America.

I cannot agree with Kränzlin's treatment of the species which constitute the Hyperborea group, because I find constant conspicuous differentiating characters for *H. sparsiflora*, *H. saccata*, *H. dilatata*, and *H. brevifolia*,—species which he refers to the synonymy of *H. hyperborea*.

It is quite true that all of these species are closely allied to one another, but extreme forms of any one of them appear to be conspicuously distinct. In this group no satisfactory work can be done which is not based on rich series of specimens taken throughout the range.

NEWFOUNDLAND
Woods, Coal River, July 17, 1896, A. C. Wagorne (2); July 14, 1897, Wagorne (4).

NOVA SCOTIA, VICTORIA COUNTY
Grand Narrows, Cape Breton Isl., July 27, 1898, J. Macoun (6).
CUMBERLAND Co.: Parrsboro, July 10, 1884, J. Fowler (2).

NEW BRUNSWICK
Kennebecasis, July 6, 1871, J. Fowler (16).
VICTORIA Co.: By shaded spring, Andover, August 14, 1901, M. L. Fernald (3).
—Clair's, July 11, 1904, A. A. Eaton (no. 107) (1).
YORK Co.: Boggy places, Campbellton, July, 1877, R. Chalmers (6).—Grass-land beside railroad at Giroux, July 17, 1905, O. Ames (no. 26) (1).

QUEBEC
Peat bogs and wet cold woods, Salt Lake, Anticosti Isl., August 10, 1883, J. Macoun (6).
BONAVENTURE Co.: Wet red sandstone bluffs and steep slopes between Balde and Baie des Chaleurs, Bonaventure River, August 5, 6, and 8, 1904, Collins, Fernald & Pease (1).—Alluvial thickets between the Forks and
ORCHIDACEÆ

Brule Brook, Little Cascapedia River, July 29–30, 1904, Collins, Fernald H. hyperboræ (1).


Ottawa Co.: In swamp, Wakefield, July 27, 1903, Macoun (6).

Hochelaga Co.: Montreal, July 5, 1904, Rev. Robert Campbell (1).—Wet sand, Lake Mistassini, July 23, 1885, Macoun (6).—Ungava, Fort Chimo, Ungava River, August 28, 1896, W. Spreadborough (6).

Ontario, Algoma District

Moose Factory, James Bay, July 1, 1904, W. Spreadborough (6).

Thunder Bay Dist.: Peat bogs and wet cold woods, Lake Nipigon, July 15, 1884, J. Macoun (6).

Renfrew Co.: Ashdad, July 23, 1893, J. Fowler (2); July 24, 1893, Fowler (4).

Carleton Co.: Ottawa, Wm. Macoun, July, 1886 (6).

Hastings Co.: Cedar swamps, Belleville, June, 1865, J. Macoun (16).

Ontario Co.: In a bog, Wick, June 16, 1894, W. Scott (6).

York Co.: Near Toronto, June 17, 1898 (Biltmore no. 2522 b) (5).—Scarboro Heights, Toronto, June 25, 1892, C. W. Armstrong (2).—Springy places, Toronto, July 18, 1891, Scott (6).—Deep rooted in clay bank, Don River, north of Toronto, August 20, 1897, J. Dearnless (6).—Rosedale, Toronto, August 21, 1897, Scott (6).

Wellington Co.: Wet woods, Edmonton, June 21, 1890, James White (6).—Guelph, June 28, 1904, A. B. Klugh (1); Killean swamp, July 3, 1904, Klugh (1); September 2, 1904, Klugh (1).

Huron Co.: Wet cold woods, Wingham, July, 1890, J. A. Morton (2, 6).

Welland Co.: Wet ground, Niagara Falls, July 1, 1897, W. C. McCalla (no. 333) (5, 6).—Niagara Falls, June 28, 1897, Scott (6).

Keeewatin


Manitoba

1898, E. S. Thompson (4).—In boggy places, near Ellice, June 20, 1879, J. Macoun (6).—Ravine at the Insane Asylum, Brandon, July 18, 1896, Macoun (6).
ATHABASCA


SASKATCHEWAN


ASSINIBOIA

Damp places, Fannell Creek, Cypress Hills, June 27, 1895, J. Macoun (6); Cypress Hills, June 23, 1894, Macoun (4, 6); in boggy places, August 6, 1880, Macoun (6).— Regina, 1893, T. W. Willing (no. 2243) (1).

ALBERTA


BRITISH COLUMBIA, YALE DISTRICT


CASSIAR DIST.: Lakes Lindeman and Takko, June 12-24, 1883, Lieut. F. Schwatka (3).

ALASKA


MAINE, AROOSTOOK COUNTY

Fort Kent, July 17, 1903, Dr. D. W. Fellows (1); swamp back of Eagle House, July 8, 1904, A. A. Eaton (no. 14) (1); Professor Powers (1); July 10, O. W. Knight (1). — In sun and shade, wet places, in grass and spruce
ORCHIDACEÆ

swamp, back of Eagle House, July 14, Eaton (no. 136) (1).—Wet roadside, H. hyperborea
in cold spring water, Bickerbrook, three miles east of Fort Kent, July 16, 1904, Eaton (no. 152) (1).—Sphagnum bog, three miles west of Fort Kent, July 18, 1904, Eaton (no. 169) (1).—Clay soil, on landslide, shore of St. John River, July 10, 1904, Eaton (no. 83) (1).—Cold, wet soil, shore of river at Horseback, St. Francis, July 20, 1904, Eaton (no. 196).—Clay soil, Ashland Junction, July 7, 1904, Eaton (no. 2) (1); turfy soil, July 7, 1904, Eaton (no. 3) (1).

Piscataquis Co.: Wet woods, Dover, September 4, 1894, M. L. Fernald (3).
—Greenville, July 17, 1888, Faxon (3); July 19, 1888, Faxon (3).

Somerset Co.: Deep humus in cedar swamp, in wet but well drained soil, Madison, July 2, 1903, Eaton (1).

Franklin Co.: Wet field, New Sharon, July 26, 1902, Clarence H. Knowlton (1).

Waldo Co.: Moist meadow, Dark Harbor, Islesboro, July 8, 1897, F. Tracy Hubbard (1).


NEW HAMPSHIRE, Coos County
Crawford's, July 12, 1889, Faxon (3).

VERMONT, Orleans County
Wet place by roadside, Brownington, July 26, 1904, A. A. Eaton (no. 232) (1); Tinkham's Bog, July 26, 1904, Eaton (no. 231) (1).—Bog back of Willoughby House, Willoughby, July 28, 1904, Eaton (no. 248) (1); bog, July 11, 1903, E. J. Winslow (1); August 26, 1903, Winslow (1); July 15, 1887, Faxon (2); June 23, 1885, Faxon (3); August 15, 1889, Faxon (3); July 28, 1892, H. H. Rusby (10).—Mt. Annance, Willoughby Lake, July 2, 1854, Wm. Boott (3); swamp between West Burke and Willoughby, July 20, 1887, Faxon (3).—Dry woodland, Barton Landing, August 26, 1903, Winslow (1).

Caledonia Co.: Peacham, June 29, 1884, June 16, 1892, Dr. F. Blanchard (4); June 16, 1892, Mrs. A. F. Stevens (2).—Sutton, August 17, 1889, Faxon (3).

Addison Co.: Salisbury, July 26, 1903, W. W. Eggleston (1).—Swamps,
**H. hyperborea**

Monkton, September 26, 1878, C. G. Pringle (7). — Middlebury, July 19, 1878, Ezra Brainerd (1); Middlebury Mt., June 19, 1878, Brainerd (10). — About a large, cold spring, East Middlebury, June 10, 1902, Brainerd (1, 3); July 25, 1903, Eggleston (1).

Rutland Co.: Swamps, Rutland, July 10, 1892, Eggleston (2); August 26, 1908, Eggleston (no. 3197) (3). — Pittsford, June 14, 1902, Eggleston (no. 2855) (1).

Bennington Co.: Woods, base of Mt. Equinox, Manchester, July 1, 1903, W. H. Blanchard (1); Middlebury Mt., June 19, 1878, Brainerd (1, 3).

About a large, cold spring. East Middlebury, June 10, 1902, Brainerd (1, 3); July 25, 1903, Eggleston (1). — Manchester, July 9, 1898, M. A. Day (no. 314) (3).

**MASSACHUSETTS, Berkshire County**


Hampshire Co.: Woodlands, Amherst, June, 1895, E. L. Morris (5).

**CONNECTICUT**

Salisbury, June 8, 1903, Mrs. O. P. Phelps (3).

**NEW YORK**

Cold swamps, New York, Dr. Gray (3).

Washington Co.: About ponds, Fort Ann, August 2, 1892, Stewart H. Burnham (5). — East Greenwich, 1867, Dr. Asa Fitch (10).

Herkimer Co.: Litchfield marshes, June, Dr. J. V. Haberer (8); wet places, shade of arbor-vitae, southwest border of Cedar Lake, July 12, 1903, Dr. Haberer (no. 2668) (1); tamarack and arbor-vitae marshes around Mud Lake, June 4, 1903, Dr. Haberer (no. 2671) (1). — Frankfort Hill, June or July, 1874, Dr. Haberer (1). — Newport, July 25, 1899, H. D. House (18).

Onondaga Co.: New Syracuse, 1891, F. C. Straub (2).


Otsego Co.: Banks of the Susquehanna, Cooperstown, 1867, B. D. Gilbert (4).

Albany Co.: Dry deciduous woods, Alcove, July, 1891, C. L. Shear (9).

Yates Co.: Penn Yan, Dr. SartweU (4); T. Marshall Fry (1).

Tompkins Co.: Freeville, May 25, 1878, Wm. Trelease (4). — Danby, August 6, 1885, F. V. Coville (2).
ORCHIDACEÆ

PENNSYLVANIA, Chester County
Ex Hb. Wellesley College (2).

MICHIGAN, KeweenaW County
In peninsula Keweena, 1863, Dr. J. W. Robbins (3); Keweena Point, June, 1886, O. A. Farwell (1).—Clifton, June 15, 1886, O. A. Farwell (no. 371 ½) (11); wet ground, August, 1884, F. E. Wood (2).
Marquette Co.: In swamp of Coniferae, Turin, June 27, 1901, Bronson Barlow (2).
Mackinac Co.: Common, Mackinac, July 26, 1882, Wm. Trelease (4); Mackinac Isl., July 15, 1893, Fritchey (4).

INDIANA
Low thickets, Miller's, June 19, 1897, L. M. Umbach (2, 5).

ILLINOIS, Woodford County
Springy bogs, Spring Mills, July, 1898, F. E. McDonald (no. 3034) (14).
Peoria Co.: Peoria, Dr. F. Brendel (9).

WISCONSIN, St. Croix County
1861, ex coll. T. J. Hale (3).
Brown Co.: June, 1885, J. H. Schuette (1).—Depere Ledge, June 10, 1891, Schuette (1).
Kewaunee Co.: Kewaunee, July 29, 1892, Schuette (1).
Sheboygan Co.: Damp woods, flowering from the last days of May, Elk-hart, Schuette (1).
Dane Co.: Madison, S. H. Watson (16).
Milwaukee Co.: Milwaukee, 1843, I. A. Lapham (3, 4).
Racine Co.: Low meadows, Barnes Prairie, July 2, 1898, S. C. Wadmond (5).

MINNESOTA, Chisago County
August, 1892, B. C. Taylor (2, 5, 14).—Franconia, July, 1890, J. M. Holzinger (2).

SOUTH DAKOTA, Lawrence County
Lead City, alt. 5500 ft., July 8, 1892, P. A. Rydberg (no. 1028) (2).

NEBRASKA
Keya Paha River, August 1, 1893, Fred Clements (no. 2865) (2).
Sioux Co.: Hot Creek Basin, August 2, 1887, H. J. Webber (4).
Thomas Co.: Wet meadow, on the Middle Loup, near Thedford, June 19, 1893, P. A. Rydberg (no. 1297) (2, 3).
H. hyperborea

Hooker Co.: In meadows near the forks of Dismal River, July 12, 1893, Rydberg (no. 1297) (2).

MONTANA

Muddy border, Ray Creek, alt. 4500 ft., July 6, 1883, F. L. Scribner (no. 267) (3).—Upper Madison River, July 16, 1899, J. W. Blankinship (1).

Flathead Co.: Columbia Falls, August 20, 1894, R. S. Williams (no. 812) (5).

Lewis and Clarke Co.: Craig, June 21, 1900, E. V. Wilcox (no. 331) (2).


Deerlodge Co.: Deerlodge, July 8, 1895, P. A. Rydberg (no. 2608) (4).

WYOMING

La Plata mines, August 23, 1898, Elias Nelson (no. 5095) (2).


Bighorn Co.: Pass Creek, Bighorn Mts., 4000 ft., July 23, 1890, Blankinship (no. 235) (1).

Fremont Co.: Marshy places, Wind River, July 28, 1881–2, W. H. Forwood (2).—Big Wind River, August 8, 1894, Aven Nelson (no. 725) (2, 3, 4).


Albany Co.: In open wet meadows, Centennial, July 26, 1900, Nelson (no. 7686) (3, 4, 7).—Centennial Hills, August 17, 1895, Nelson (no. 1706) (5).

COLORADO

1862, Hall & Harbour (no. 585) (3, 4, 16).—East River, August 13, 1873, J. M. Coulter (2).

Larimer Co.: Swamp border, North Park, near Teller, alt. 8000 ft., August 4, 1884, C. S. Sheldon (no. 180) (2).—In wet soil, La Porte,
ORCHIDACEÆ


Grand Co.: Grand Lake, August, 1888, E. W. D. Holway (2).

Garfield Co.: Alpine swamp near Walling’s Mill, August 9, 1870, E. L. Greene (no. 378) (3).


Clear Creek Co.: Damp places in the valley near Empire, about 8500 ft. alt., July 14—August, 1892, H. N. Patterson (no. 262) (3, 4, 10).—Open grassy places on upper Clear Creek, July, 1861, C. C. Parry (no. 356) (3 in part, 4).—Banks of Clear Creek, vicinity of Georgetown, June 28—August 7, 1875, Patterson (1).

Lake Co.: Twin Lakes, July, 1873, John Wolf (no. 964) (2, 4), (no. 965) (2).

Gunnison Co.: Crested Butte, August, 1891, Alice Eastwood (9).—Gunnison, 1889, B. W. Everman (2); 7680 ft., July 7, 1901, C. F. Baker (no. 364) (1, 2, 3, 4).

Chaffee Co.: Low wet grounds, Buena Vista, 8000 ft., July 5, 1892, C. S. Sheldon (no. 275) (2); 7970 ft., Sheldon (no. 584) (2).

El Paso Co.: Palmer Lake, July, 1890, Eastwood (9).

Hinsdale Co.: Swamp below Lake City, June 26, 1878, F. N. Pease (no. 73); July 15, 1878, Pease (nos. 79, 154) (3).

La Plata Co.: Durango, alt. 7500 ft., August 2, 1896, Frank Tweedy (no. 480) (2); La Plata Mts., August, 1892, Eastwood.—Upper La Plata Basin, July, 1898, Baker, Earle & Tracy (1).


Las Animas Co.: Gulnare, 1904, Alice Phelps (9).

UTAH

Sandy soil, wet bottoms, Dyer Mine, Uintah Mts., July 12, 1902, Leslie N. Goodding (no. 1328) (3, 4).

Cache Co.: Wet meadow, June 24, 1897, J. H. Linford (5).

Utah Co.: American Fork Cañon, August, 1880, M. E. Jones (3).

Sevier Co.: Gravel, Fish Lake, 9000 ft., August 3, 1894, Jones (no. 5730) (4).

IDAHO, Blaine County

Marsh, fork of Wood River, alt. 6000 ft., July 25, 1895, L. F. Henderson (no. 3588) (2).
ORCHIDACEÆ

H. hyperborea

**Bear Lake Co.: Bear Lake, August 8, 1898, A. Isabel Mulford (no. 277)** (4).

**ICELAND**

Near Akureyri, June 21, 1895, *Miss Elizabeth Taylor* (3).—Hb. L.

**GREENLAND**


H. hyperborea var. purpurascens *(Rydb.)* comb. nov.


"A rather stout plant, 3–5 dm. high, with fleshy-fibrous roots. Leaves ovate to lanceolate, acute, 6–10 cm. long, 1.5–3 cm. wide, dark green; bracts lanceolate, the lower exceeding the flowers: spike rather dense: flowers 10–12 mm. long: lateral sepals green, oblong-linear, or linear, obtuse, 4–5 mm. long; the upper sepal tinged with purple, broadly ovate, erect, obtuse; petals slightly shorter, erect, purple, lanceolate, oblique: lip broadly linear-lanceolate, about 5 mm. long, purplish, scarcely at all dilated at the base, the edges almost straight: spur scarcely more than half as long as the lip, much thickened and saccate.

"This species belongs to the *L. hyperborea* group, and is perhaps nearest related to that species. It differs, however, in the purple petals and lip and the shorter and more saccate spur. The spur has almost the same form as that of *L. stricta*; but from that species it differs in the dense spike and the broader lip. *L. purpurascens* grows in damp woods at an altitude of 2700–3000 m.

"**COLORADO:** Iron Mountain, 1900, *Rydberg & Vreeland, 6414* (type); Manitou, 1900, *Fred Clements, 172*; Georgetown, 1878, *M. E. Jones, 314." *Rydb. loc. cit.*

[ 90 ]
This plant when well developed can be distinguished readily by its very saccate spur, but it passes so gradually into the typical form of *H. hyperborea* that it is not worthy of more than varietal rank. Dr. Rydberg describes the flowers as purplish. It is to be regretted that this indefinite term has been used to characterize the flowers of a species of the *H. hyperborea* group.

COLORADO

July, 1877 (2).


Grand Co.: From head-waters of Clear Creek and alpine ridges east of Middle Park, 1861, C. C. Parry (no. 356 in part) (3).

Clear Creek Co.: Georgetown, June 27, 1878, M. E. Jones (no. 314) (2).


Dolores Co.: Rico, alt. 10,000 ft., July 15, 1895, Frank Tweedy (no. 126) (2).—Common in wet places at altitude of 9000 ft. and above, west La Plata Mts., June 28–July 8, 1898, Baker, Earle & Tracy (no. 277) (2, 3, 4, 5, 10, 14). (Most of these are characteristic, but some immature specimens are doubtful.)

NEW MEXICO

Santa Fe Mts., August (1884?), F. H. Snow (2).—Hermit's Peak, 1884, Snow (15).—Along streams, Mogollon Mts., July 19, 1881, H. H. Rusby (no. 399 in part) (2).

9. *H. behringiana* (Rydb.) comb. nov.


"Stem low, 1–1.5 dm. high, about 3-leaved: tubers elongated fusiform, about 5 mm. thick: lower leaf ovate-lanceolate, about 5 cm. long and 1.5–2 cm. wide; the upper lanceolate and smaller: spike dense, 3–4 cm. long; bracts linear-lanceolate, the lower about twice as long as the flowers: flowers purplish, about 12 mm. long: upper sepal ovate, obtuse, 4–5 mm. long; the lateral ones
**ORCHIDACEÆ**

**H. behringiana** oblong; petals equalling the sepals, broadly lanceolate; lip about 5 mm. long; spur fully 10 mm. long, filiform. (Fig. 9.)


This is not closely related to any other American species. The type specimens were labelled *Habenaria gracilis* Wats., with which species it has little in common.

Dr. Rydberg describes the flowers as purplish. I think that he must be in error regarding this detail. From dried specimens—the only ones which I have seen—the flowers appear to have been greenish.

**ASIA, BERING ISLAND**
July, 1891, Grebnitzky (6); August, 1891, Grebnitzky (no. 143) (type in herb. Columbia Univ.). Rydb. loc. cit.

**NORTH AMERICA, ATTU ISLAND (?)**
August 29, 1891, J. M. Macoun (no. 221) (3, 6); August 28, 1891, Macoun (7).


**Habenaria gracilis** Wats., in Proc. Am. Acad. 12: 277

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1 The specimens in hb. 6 are not uniform. On the upper half of the sheet are three plants of *H. behringiana* which, in a note, J. Macoun has attributed to Grebnitzky, who collected them on Bering Island. On the lower half of the sheet are two specimens of *H. viridis* var. *bracteata*. The label which originally accompanied these five specimens tells that they were found in boggy spots, Attu Island, by J. M. Macoun in August, 1891. As Macoun's note refers directly to the specimens of *H. behringiana* it is impossible to state definitively that they came from North America. Presumably the specimens of *H. viridis* var. *bracteata* were collected on Attu Island.
HABENARIA behringiana (Ryd.)
Plate 60. Habenaria behringiana
Plants, natural size, reproduced from the specimens collected by Grebnitzky (I) on Bering Island, and by Macoun (II) on Attu Island.
1. Flower, enlarged. 2. Petal, enlarged.
**ORCHIDACEÆ**


“Two feet high or more, slender, rather conspicuously leafy up to the lax and not long, bracted raceme of green flowers: base of the stem with a single quite ample subscarious sheath: leaves lanceolate, acute, 3 or 4 inches long, spreading; braets of the raceme linear-lanceolate, surpassing the flowers: lateral sepals oblong-lanceolate, the upper ovate-oblong and shorter: lateral petals falcate; lip linear, much longer than the short and thick sac-like spur: capsule sessile.” Greene, _loc. cit._

_Platanthera gracilis_ Lindl. “P. caule folioso, foliis linearibus acuminatis obtusis debilibus patentibus, spicâ laxâ elongatâ floribus inferioribus remotis, bracteis angustis acuminatis floribus longioribus, petalis obliquis acuminatis obtusis, labello lineari obtuso calcaris apice inflati obtusissimi longitudine.
“Hab. in ora occidentali Americae septentrionalis, Menzies; H. saccata
Observatory inlet. Herb. Hooker. (hab. s. sp. comm. cel. Menzies.)
“Caules debilis, \(1\frac{1}{2}\)-2-pedales. Folia 3-poll. longa, parum acuminata, nullo modo acuta.” Lindl. loc. cit.

I have studied Lindley’s type specimens of *Platanthera gracilis* and *P. stricta* in conjunction with numerous specimens, selected for comparison, from my own herbarium. *P. gracilis* is a slender plant with linear, obtuse or acute leaves. *P. stricta*, on the other hand, is a stout plant with rather broad leaves; ovate-lanceolate according to Lindley’s description. I have found that the only characters which Lindley employed to separate these species are inconstant, and consequently negligible. Aside from these characters used by Lindley there are no others that I have been able to discover which may be used to separate *P. gracilis* from *P. stricta*. (Plate 61.)

NORTHWEST AMERICA
1830, *Douglas* (type of *Platanthera stricta* in Hb. Kew.).

ALASKA
1867, *A. Kellogg* (no. 132) (9). — Along the Ankow River, about ten kilometers above its mouth, July 16, 1891, *Frederick Funston* (no. 64) (3, 4, 6).

BRITISH COLUMBIA, CASSiar DISTRICT
I. Habenaria saccata. Plant, natural size, drawn from a specimen collected by W. N. Suksdorf (no. 2689), California. 1. Petal. 2. Labellum. 3. Flower. Flower and parts drawn, enlarged, with the aid of the camera lucida.

II. Habenaria sparsiflora. Plant, natural size, drawn from specimen collected by C. V. Piper (no. 5090), Oregon. 4. Flower drawn, enlarged, with the aid of the camera lucida.
H. sparsiflora Watson

H. saccaia Greene
ORCHIDACEÆ


VANCOUVER ISLAND


RENFREW Dist.: Moist places in the forest, June–July, 1901, C. O. Rosendahl & C. J. Brand (no. 97) (2, 3, 4, 6); in bogs and swamps, July 19, 1902, Rosendahl (no. 780)(4, 6); August 11, 1902, Rosendahl (no. 912 in part)(4).

ALBERTA

Emerald Lake, Yoho Valley, Rocky Mountain Park, August 26, 1904, *J. Macoun* (1).

MONTANA

Swamps, Flathead Valley, July 25, 1883, Wm. Canby (no. 311) (3, 16).

Gallatin Co.: Spanish Basin, 6500 ft., June 28, 1897, P. A. Rydberg & E. A. Bessey (no. 3894) (2, 5); July 11, 1896, J. H. Flodman (no. 362) (2, 4).

Madison Co.: Summit, Great Northern Railroad, July 25, 1894, R. S. Williams (1).

WYOMING

In shaded bogs, Iron Spring Creek, Yellowstone Park, August 2, 1899, A. & E. Nelson (no. 6273) (4).

COLORADO

Sawatch Range, 2500 ft., July, 1880, T. S. Brandegee (9).

El Paso Co.: Walton Creek, July, 1892, Alice Eastwood (9).—Moist soil, Cheyenne Cañon, June 19, 1896 (Biltmore Exp. no. 522 a) (5).

IDAHO, KOOTENAI County

Moist places, Packsaddle Peak, August 6, 1892, Sandberg, MacDougal & Heller (no. 861) (2, 3).—Wet ground along rills, Sept. 10, 1894 (fruit), L. F. Henderson (2).—Along mountain streams, July, 1887, Sandberg (16).

Shoshone Co.: Springy mountain slopes, summit of Stevens Peak, 1980 m., August 5, 1895, John B. Leiberg (no. 1478) (2).

Latah Co.: July 7, 1893, C. V. Piper (9).—Frequent in cañons, Bald [ 97 ]
H. saccata

Knob, Cedar Mt., June 20, 1892, Sandberg, MacDougall & Heller (no. 471) (2, 3).—Cedar Mts., June, 1899, A. D. E. Elmer (no. 1715) (4).—On moist sandy stream banks, Moscow Hills, June 25, 1896, Elmer (no. 344) (2, 4).


Lemhi Co.: Woods near source of Mill Creek, above Indian Reservation, 8800 ft., August 20, 1895, Henderson (no. 4004) (2).

Washington Co.: Seven Devils Mts., 6000 ft., August 5, 1899, Marcus E. Jones (no. 6603) (2, 4).

WASHINGTON

Cascade Mts., 49° N. lat., 1859, Dr. Lyall (3).—Park River, 1861, Dr. Lyall (3).—Cascade Mts., 1882, Frank Tweedy (no. 337) (16).—Lake Wenatchee, 610 m., August 1, 1893, Sandberg & Leiberg (no. 647b) (2).

Skagit Co.: Skagit Pass, August, 1892, Lake & Hull (no. 624) (9).

Clallam Co.: Olympic Mts., August, 1900, A. D. E. Elmer (no. 2549) (2, 4).

King Co.: Green River Hot Springs, July 18, 1888, C. V. Piper (2).—Lake Washington, June 20–July 12, 1898, T. E. Savage, J. E. Cameron & F. E. Lenocker (4).—Stevens Pass, 4000–6000 ft., August, 1893, Sandberg (5).

Kittitas Co.: Mt. Stuart, August, 1898, Elmer (no. 1231) (2).

Spokane Co.: Mt. Carleton, July 16, 1902, Frank O. Kreager (no. 189) (2, 3).

Chehalis Co.: Big Creek prairies, 2500 ft., August 11, 1897, Frank H. Lamb (no. 1401) (4).

Pierce Co.: Meadows, Mt. Rainier, 5500 ft., August, 1890, E. C. Smith (4); near Mt. Rainier, August, 1889, Smith (874) (3); rich meadows, 6500 ft., Mt. Rainier, August 1–15, 1895, Piper (no. 2094) (3).—Common in swamps, upper valley of the Nesqually, June 18, 1894, O. D. Allen (no. 76) (2, 3, 4, 5, 6, 7).

Pacific Co.: Ilwaco, June 22, 1904, Piper (no. 5001) (1).

Yakima Co.: Damp places and wet meadows, Mt. Adams, July 6, August, 1882, W. N. Suksdorff (3, 15, 16).

Skamania Co.: Springy places in mountain forests, July 23, 1901, Suksdorff (no. 2689) (1).

OREGON

1871, E. Hall (no. 504) (3, 4, 16).—Howell (2, 16).—Swamps, Simcoe Mts., July, 1880, J. & T. J. Howell (no. 302) (3).—Subalpine stream banks,
ORCHIDACEÆ

East Oregon, 1897, Wm. C. Cusick (no. 1738) (2, 4, 7).—Cascades, July, H. saccata 1893, Mrs. R. M. Austin (9).—Marsh, Cascade Mts., Hood River, June 29, 1883, L. F. Henderson (10).

Wasco Co.: Mt. Hood, August 6, 1881, T. J. Howell (2, 7).
Union Co.: In small mountain stream, July, 1878, Cusick (3).
Klamath Co.: Bogs, Upper Camp Spring, Crater Lake, August 16, 1896, Elmer I. Applegate (no. 691) (2, 3); moist slopes, Crater Lake, August 22, 1896, M. W. Gorman (no. 503) (2).—Near Pole Bridge, road to Crater Lake, 1730 m., August 12, 1896, Coville & Leiberg (no. 335) (2).

CALIFORNIA, Modoc County
Hills, in wet places, July, 1884, Mrs. R. M. Austin (9).—Swamps, Sugar Loaf Hill, August, 1885, Mrs. Austin (9).—Head-waters of Davis Creek, July, 1885, Oliver Austin (9).

II. H. Richardii nom. nov.


The type specimen of Platanthera longifolia is very unsatisfactory. The lowermost leaf is about 14.5 cm. long, linear, acute. The uppermost leaf is about 9.5 cm. long. The flowers are very difficult to observe, and, unfortunately, few. Measurements of the floral segments are as follows: dorsal sepal 5 mm. long; lateral sepals 7 mm. long; petals 5 mm. long, acute. Measurements of the lip and spur can only be made from moistened material. (Plate 62.)

MEXICO, Vera Cruz

Fl. verdâtre, Pic d'Orizaba 8000, January–October, 1840, Galeotti (type).1

1 This collection remains unique to this day. At Paris there is a single individual 2.5 dm. high, without roots; and a good drawing by Richard. No species known to me approaches it closely, although the individual flowers resemble those of H. sparsiflora. (A. A. E.)
PLATE 62

I. Habenaria Richardii. 1. Flower. 2. Petal. 3. Column and base of labellum. (Reproduced from a photograph of the original drawing by Richard of Platanthera longifolia Rich. & Gal.)

II. Habenaria nubigena. 1. Flower. 2. Column and base of labellum. 3. Petal. 4. Pollen-mass. (Reproduced from a photograph of the original drawing by Richard.)

III. Habenaria volcanica. 1. Flower. 2. Pollen-mass. (Reproduced from a photograph of the original drawing by Richard of Gymnadenia neottioides Rich. & Gal.)
HABENARIA Richardii nom. nov.

HABENARIA nubigena comb. nov.

HABENARIA volcanica Watson


Habenaria Ghiesbreghtiana is closely allied to H. brevifolia, and may be inseparable from it, but the material I have examined has not been sufficient to warrant a definitive conclusion. The leaves of H. Ghiesbreghtiana are 8.5 cm. in length on the type specimen and somewhat spreading, thus differing from the leaves of H. brevifolia which are rarely 7 cm. long and conspicuously appressed to the stem. The specimen collected by Conzatti, cited above, was compared with Richard's type, and agreed with it in detail save as to leafage.

MEXICO, OAXACA
Ghiesbrecht (type).¹

13. H. nubigena (Rich. & Gal.) comb. nov. H. nubigena


The type of this, a Mexican species (Galeotti no. 5257), consists of a single individual 9 cm. tall, with lanceolate-triangular leaves,

¹ There is one individual of this at Paris and a drawing of a flower and bract, a lip and column and a pollen-mass. (A. A. E.)

[ 101 ]
ORCHIDACEÆ

_H. nubigena_ about 3 flowers and several buds. In addition to this material there is a drawing of a flower, petal, column and lip-base, and pollinium. It appears to be distinct. The dorsal sepal is 5 mm. long, 3 mm. wide. The lateral sepals are 6 mm. long. The oblong, linear lip is 5 mm. long. (Plate 62.)

_H. sparsiflora_.


_Habenaria aggregata_ _Howell_, Fl. Nw. Amer. 628 (1902).

"HABENARIA SPARSIFLORA. Stem rather slender, a foot or two high, leafy: leaves narrowly lanceolate, acutish or acute: bracts linear-lanceolate, acuminate, usually much exceeding the greenish flowers, which are few (10 to 20) and distant: perianth thin and delicate, apparently spreading: sepals 3-nerved, the lateral ones oblong or lanceolate, 2 or 3 lines long, the upper ovate and a little shorter: lip several-nerved, narrow, linear or lanceolate,

¹ That this species, heretofore not reported south of the United States, has been found in Guatemala is extremely doubtful. Probably Schlechter's identification was based on the closely related _H. volcanica_, which is common southward, or on _H. limosa_, which extends throughout Mexico.

² Kränzlin (loc. cit.) cites _P. Thurberi_ var. _Grayi_ Wats. There never was such a combination. Watson says that "_Habenaria Thurberi_, var., Gray, Proc. Am. Acad. vii. 389," is _H. sparsiflora_.

[ 102 ]
ORCHIDACEÆ


_Habenaria sparsiflora_ is very closely allied to _H. saccata_. It differs from that species in its more slender spurs and larger flowers. Usually in _H. sparsiflora_ the spur is subequal to the lip, and if short and stout is cylindrical rather than saccate or scrotiform.

_H. aggregata_ surely belongs with _H. sparsiflora_. (Plate 61.)

COLORADO, Archuleta County
Piedra, 7000 ft. alt., July, 1899 (no. 265 in part) (2).

UTAH

Utah Co.: Region of Lake Utah, 1875, _C. C. Parry_ (no. 89) (4, 16).—American Fork Cañon, August, 1880, _M. E. Jones_ (3).—Alta, August, 1880, _Jones_ (2).

Piute Co.: Marysville, alt. 8000 ft., August 27, 1894, _Jones_ (no. 5920) (4, 5).


NEVADA, Washoe County
Little Valley, 2000–2155 m., _C. F. Baker_ (no. 3410) (1).

Esmeralda Co.: D. Davis Ranch, 7000 ft., July, 1886, _W. H. Schockley_ (no. 506) (3).

NEW MEXICO, Socorro County
Along streams, Mogollon Mts., July 19, 1881, _H. H. Rusby_ (no. 399) (2, 4, 10).

Grant Co.: Spring at Twin Sisters near Silver City, June 22, 1880, _E. L. Greene_ (3, 16).

[ 103 ]
ORCHIDACEÆ

_H. sparsi-flora_

1883, _H. H. Rushy_ (no. 449) (9).—Willow Spring, 7195 ft., July, 1874, _Dr. J. T. Rothrock_ (nos. 209, 269) (2, 3, 16).

Coconino Co.: Flagstaff, July, 1891, _D. T. MacDougal_ (2).—Mt. Agassiz, August 29, 1883, _Rushy_ (no. 833) (2, 3, 6, 10, 16).

OREGON, WASCO COUNTY

Wet borders of Lost Lake, high cascades near Mt. Hood, August 25, 1884, _L. F. Henderson_ (9).

Josephine Co.: In tussocks 1 to 5 inches in diameter, Eight-Dollar Mt., May 31, 1884, _Thos. Howell_ (3); June 13, 1904, _C. V. Piper_ (no. 5090) (1).—In dense tufts, in boggy rivulets near summit of Siskiyou Mts., July 31, _Wm. C. Cushman_ (no. 2933 a) (1).—Upland marshes and springs near Kerbyville, May 30, 1884, _Howell_ (2, 9, 16).

Curry Co.: (?) Coast mountains, June 8 and 9, 1884, _Howell_ (2, 3, 6) (type locality for Limnorchis laxiflora Rydb.).

CALIFORNIA

Foothills of the Sierra Nevada, 1865, _John Torrey_ (no. 511 a) (3).—Flowers and whole plant alike pale green, Summit Camp, Sierra Nevada, July 10, 1870, _Kellogg_ (9).—Near Donner Lake, 1865, _Torrey_ (no. 511) (3).

Modoc Co.: Swamps, Sugar-Loaf Hill, August, 1885, _Mrs. R. M. Austin_ (9).

Siskiyou Co.: By streamlets at 7000 ft. in Scott Mts., August 22, 1876, _E. L. Greene_ (no. 1036) (3).—Foot of Mt. Eddy, 7500 ft., August 17, 1903, _E. B. Copeland_ (no. 259) (1).—Mt. Shasta, 6000 ft., August 23, 1881, _C. G. Pringle_ (3, 7); below timber-line, Mt. Shasta, August 12, 1900, _J. W. Congdon_ (9).

Del Norte Co.: Gasquet, June 21–27, 1903, _Alice Eastwood_ (9).—Between Gasquet and Shelley Creek, June 21–27, 1903, _Eastwood_ (9).—Darlingtonia bogs, Illinois and Smith rivers, June, 1879, _V. Rattan_ (3).

Shasta Co.: Lassen’s Peak, 6000 ft., July 7, 1897, _M. E. Jones_ (2).

Trinity Co.: Along Cañon Creek, July 2–18, 1901, _Eastwood_ (9).


Butte Co.: Butte Creek, July, 1896, _Mrs. Austin_ (4); _Mrs. C. C. Bruce_ (2).

Sierra Co.: 1874, _J. G. Lemmon_ (no. 679) (3, 16).

Placer Co.: Wet springy places on Truckee River, July, 1886, _C. F. Sonne_ (no. 20) (9).—Summit, 1877, _H. Edwards_ (9); June 8–16, 1898, _Eastwood_ (9).

Lake Co.: In the “Horse Pasture” near summit of Mt. Sanhedrin, July 20, 1902, _A. A. Heller_ (no. 5999 in part) (1).

[ 104 ]


“Habenaria brevifolia.—Stem a foot or two high and stout; leaves numerous, mostly less than 2 inches long, all but the lanceolate uppermost ones loosely sheathing the stem; bracts linear-lanceolate, all but the uppermost exceeding the greenish flowers, which are numerous, in a long, rather dense spike; lateral sepals linear-oblong, 4 lines long, the upper ovate; lip linear or linear-lanceolate, entire, rather acute, nearly a half inch long, shorter than the spur; anther retuse; pedicels of the pollen masses slender; glands orbicular; capsule oblong, 6–8 lines long, sessile; root fleshy-fibrous.

“Dry southward slopes of the Pinos Altos Mountains, New
PLATE 63. Habenaria brevifolia

Three plants, reduced, drawn from a photograph of specimens in the herbarium of the San Francisco Academy of Sciences, collected by Edward Lee Greene in the Pinos Altos Mountains, New Mexico, July, 1880. 1. Flower. 2. Labellum and spur. 3. Petal. 4. Flowers, natural size. (2, 3 and 4, from specimens in Gray Herbarium, collected by Greene on dry ground under Pinus ponderosa, Pinos Altos Mountains, New Mexico, September 14, 1880, no. 369.)
orkidaceae

Mexico, in open woods of Pinus ponderosa, in flower September 14, 1880.

"A striking species, in floral character most like H. sparsiflora, Watson, which grows by shady streamlets in the same region, but of very different habit, being nearly leafless, the foliage reduced to mere loosely sheathing bracts, their tips only somewhat leafy-spreading, and the stout stems flowering from near the ground." Greene, loc. cit.

New Mexico

In dry ground under Pinus ponderosa, Pinos Altos Mts., September 14, 1880, Edward Lee Greene (no. 369) (3, 4, 9, 16) (type).

Lincoln Co.: White Mts., 7000 ft., August 17, 1897, E. O. Wooton (2, 4, 5).

Mexico, Chihuahua

Damp soil, Sierra Madre, October, 1887, C. G. Pringle (no. 1374) (2, 3, 7, 16); Sierra Madre, near Colonia Garcia, 7500 ft., August 8, 1899, C. H. Townsend & C. M. Barber (no. 216) (2, 3, 4, 5); August 1-20, 1899, E. W. Nelson (no. 6201) (2).

Michoacan: Mountains near Patzcuaro, October 12, 1892, Pringle (no. 5314) (3, 7).

Federal Dist.: Eslava, Valley of Mexico, 8000 ft., September 7, 1901, Pringle (no. 9626) (3), a single specimen.

Guerrero: Top of Sierra Madre near Chilpancingo, alt. 9000-10,200 ft., December 24, 1894, Nelson (no. 2194) (2).

Oaxaca: Wet soil, Sierra San Felipe, 8500 ft., August 8, 1894, Pringle (no. 5758) (3); September 12, 1897, C. Consatti & V. Gonzales (no. 458) (1).


ORCHIDACEÆ


“_Platanthera_ (§ 1. a.) _volcanica_; caule folioso, foliis ensiformibus erectis trinerviis, spicâ elongatâ cylindraceâ, bracteis herbaceis acuminatissimis floribus longioribus, petalis ovatis sepalisque obtusis, labello lanceolato obtuso medio subcalloso calcare filiformi triplò breviore, antherâ subhorizontali, rostello plano 3-lobo.—_Mexico:_ Real del Monte, in agro volcanico prope Guajolote, Oct. Hartweg.

“The stem of this plant is from 1 to 3 feet high, or even more. Its nearest affinity is with _P. leucostachya_. The sepals are herbaceous; the petals and lip purple.” Lindl. _loc. cit._

Furthur studies on more material may prove that _Habenaria volcanica_ and _H. limosa_ are conspecific, in which case _H. limosa_ should become the name of the species. The difference in the outline of the lip appears to be the only satisfactory means of separating _H. volcanica_ from _H. limosa_. In the former the lip is lanceolate, in the latter oblong-linear. (Plate 62.)

MEXICO, LOWER CALIFORNIA

La Chuparosa, October 17, 1893, T. S. Brandegee (1, 3).


Zacatecas: In the Sierra Madre, August 18, 1897, J. N. Rose (no. 2386) (2).

Federal Dist.: Serrania de Ajusco, 10,000 ft., August 18, 1896, Pringle (no. 11,858) (7).

Oaxaca: Fl. vertes, août, sur les roches trachytiques à 11,500 pd., 1840, _H. Galeotti_ (no. 5191) (21),(_Gymnadenia prasina_ A. Rich.).—Fl. vertes, Cerro San Felipe, 8000 ft., November, 1840, _Galeotti_ (no. 5053) (21) (type

This species has been reported as follows:

MEXICO

Michoacán (?): Real del Monte, Hartweg (type).

Vera Cruz: Peak of Orizaba, 10,000–12,000 ft., Liebmann (nos. 141, 235, 242, 244).


The type of Gymnadenia propinqua Rich. & Gal., according
ORCHIDACEÆ

_H. limosa_ to notes made at Paris by Eaton, consists of a single specimen in bud which is unserviceable for a definitive conclusion regarding its position in synonymy. Judging from Richard’s drawing it may be conspecific with _H. limosa_, although it may be referred also to _H. volcanica_ with equal surety. _H. Thurberi_ is similar to _H. limosa_. The type has a linear lip. It is difficult to comprehend Dr. Rydberg’s treatment of _H. Thurberi_. He has confused it with _H. dilatata_ var. _leucostachys_, and described as _Limnorchis Arizonica_ material which agrees beautifully with Gray’s type of _H. Thurberi_.

NEW MEXICO, SOCORRO COUNTY
Along streams, Mogollon Mts., July 19, 1881, _H. H. Rusby_ (no. 399) (2, 4); 8000 ft. alt., July 20, 1903, _O. B. Metcalf_ (no. 282) (4).

ARIZONA
Rincon Mts., 1891, _G. C. Neally_ (no. 78) (2, 4), (type of _Limnorchis Arizonica_ Rydb.).


COCHISE Co.: Tanner’s Cañon, near Fort Huachuca, August, 1882, _J. G. Lemmon_ (nos. 2884, 2885) (3).—Cold brooks and springs, Huachuca Mts., July 1, 1884, _Pringle_ (3).

MEXICO
In the Sierra Madre, June 21–July 29, 1899, _E. W. Nelson_ (nos. 6052, 6151, 6153) (2).

CHIHUAHUA: Cañon parallel with Cañon de los Alamos on Rio San Miguel, June 28, 1891, _C. F. Hartman_ (no. 711) (2, 3).—Near Colonia Garcia, Sierra Madre, 7500 ft., June 5, 1899, _C. H. Townsend & C. M. Barber_ (no. 77) (4); August 8, 1899, _Townsend & Barber_ (no. 442) (4).

NUEVO LEÓN?: Sierra Madre, forty miles south of Saltillo, August, 1880, _Dr. Edward Palmer_ (3).

SONORA: Mexican Boundary Survey (no. 1423) (2).—Near spring, between Babocamori and Santa Cruz, September 22, 1851, _G. T. Thurber_ (no. 925) (3, 9), (type of _H. Thurberi_); Babocamori, near Santa Cruz, 1851, _C. Wright_ (no. 1900) (2, 3). Though no two labels on these five sheets are
precisely alike, a comparison of all, with the plants, leaves no doubt but
that the specimens were collected at one time and place. All the specimens
are in early fruit. Wright's are accompanied by a label on which is printed
"C. Wright, Coll. N. Mex., 1851–2," but the sheet in the Gray Her-
barium is annotated as above. Some sheets of this number are not an-
notated, so, naturally, they have been referred to New Mexico by Dr.
Rydberg.

MICHOACÁN: In swamps on the Asoleadero, Angangueo, September, Hart-
weg (20), type.

OAXACA: Fl. vertes, Sierra de la Virgin, Océan Pacif., September, 1840,
Galeotti (no. 5055) (21).

18. H. elegans Bol., Fl. San Francisco 29 (1870); Wats., Bot. H. elegans
306 (1894); Rattan, Fl. 176 (1898); Jepson, Fl. Mid. Cal. 131 (1901); Howell, Fl. Nw. Amer. 627 (1902).

Platanthera elegans Lindl., Gen. & Sp. Orch. 285 (1835);
Hook., Fl. Bor. Am. 2: 196 (1839); Steud., Nomencl. ed. 2, 2: 351 (1841); Kränzl., Orch. Gen. et Sp. 1: 644 (1899); Piper &
Beattie, Fl. Palouse 49 (1901).

Gymnadenia longispica Durand, Pl. Pratten. in Journ.

Surv. 213 (1859) in part (as to specimens from Mokelumne, &c.).

1"GYMNADENIA LONGISPICA sp. nova. (specimen cui folia radicalia desunt.) Scapo
gracili erecto, fere pedali; folii 4 infra spicam, parvulis, bracteiformibus, ovato-lanceolatis;
spicâ cirriter 50-florâ, gradatim ad apicem gracilescenti, 7" longâ, bracteis lanceolatis,
ovaria equantibus; floribus minimis, albis? in sicco fuscantibus; corollis cernuis, sepalis
subequantibus, labio integro, calcare tenui, clavato, ovario longiori.

"The spike is very long, tapering, with at least fifty flowers. Sepals and petals almost
equal, lip entire, spur longer than the gern, filiform, clubshape, with a much longer spike
than Spiranthes bracteosa of Lindl. in Bot. Reg. t. 1934, to which Gymnadenia longispica
has a great resemblance. The inflorescence seems spirally twisted round the scape." Du-
rand, loc. cit.
Plate 64. Habenaria elegans

I. Plant, natural size, drawn from a living specimen.

II. Inflorescence from another plant. 1. Flower. 2. Pollen-mass. 3. Petal. 4. Lateral sepal. 5. Upper sepal. 6. Labellum and column.—Parts drawn, enlarged, with the aid of the camera lucida.
HABENARIA elegans Bolander


—P. leptopetala Rydb., in Bull. Torr. Bot. Cl. 28: 637 (1901);


3. Platanthera elegans.

"P. foliis binis oblongo-lanceolatis, caule squamis parvis ramentaceis, spicâ longâ densâ cylindraceâ, bracteis lineari-subulatis florum longitudine, sepalis campanulatis acuminatis obtusis, petalis labelloque carnosis ovato linearibus obtusis subæqualibus, calcare filiforme arcuato ovario longiore.

“Hab. in America boreali occidentali, Douglas. (hab. s. sp. comm. Soc. Hort.)


H. elegans var. maritima (Greene) comb. nov.—H. ma-
ORCHIDACEÆ


“Habenaria maritima. Very robust, only 6 to 16 inches high, at flowering time destitute of foliage, but the upper part of the stem bearing many lanceolate-subulate appressed and more or less imbricated green bracts ½ inch long or more: spike 1½ to 3 inches long, 1 inch thick, the flowers closely crowded, white, heavily honey-scented: sepals oblong, obtuse, 1½ lines long, white, with a narrow and delicate deep-green midvein; petals not quite equalling the sepals, oblong-lanceolate, the upper 2 plane, deep-green at base and well up the middle, otherwise white, the lip pure white even to the prominently elevated and broad midvein: spur slender, longer than the ovary.

“On dry hills near the sea at Point Lobos, near San Francisco, flowering from August to October; leaves probably appearing in early spring and soon dying. Species apparently referred to _H. leucostachys_ in the State Survey Botany, but most distinct.” Greene, *loc. cit.*

_H. elegans_ var. _maritima_ differs from the type in its congested habit and more nearly white flowers. After an examination of numerous specimens I failed to find any structural differences which in my judgment warranted the maintenance of _H. maritima_ as a distinct species. One can find a full series of specimens in one region connecting the variety with _H. Michaeli_, _Piperia multiflora_ and the type. All these forms appear to be conditions of one species. The variety is found only under the influence of salt air of the littoral of California from San Francisco to Monterey County. Bolander's specimen, numbered 2490, in the Gray Herbarium, consists of a slender
form of *H. elegans* and a fairly typical plant of *H. Michaeli*, *H. elegans* while his number 2429, from the same locality, is a transitional form between *H. maritima* and *H. multijoria*. Hartweg's no. 1976 is very similar to *H. Michaeli*. As the transition from one of these forms to the other is so complete, and as all often grow together, it has been impossible to distinguish centres of variation; therefore no attempt to do so has been made in the following list of localities.

**BRITISH COLUMBIA**

Boggy places near Frazer River, August, 1883, *Fletcher* (6).

**Yale Dist.**: Rich woods, Sicamous, July 8, 1889, *J. Macoun* (6).

**Queen Charlotte Isls.**: Long Arm, Skiddegate, July 27, 1897, *Dr. C. F. Newcombe* (6).


**MONTANA, Flathead County**


**IDAHO, Kootenai County**


**Shoshone Co.**: Shady woods, valley of north fork of Cœur d'Alene River, 950 m., August 13, 1895, *Leiberg* (no. 1527) (2).

**Latah Co.**: Very dry fir woods, Moscow Mts., September 10, 1894, *L. F.*
**ORCHIDACEÆ**


**WASHINGTON**


Stevens Co.: Calispell Valley, August 8, 1902, *Frank O. Kreager* (no. 624) (2); August 10, *Kreager* (no. 624) (3).

Okanogan Co.: Lake Wenatchee, 610 m., August 1, 1893, *Sandberg & Leiberg* (no. 647a) (2).

Kittitas Co.: Mt. Stuart, August, 1898, *A. D. E. Elmer* (no. 1236) (2).

King Co.: Seattle, June 26, 1889, *Smith* (4).


**OREGON**


Yamhill Co.: Open woods, North Yamhill, July 8, 1882, *Howell* (2).

Jackson Co.: Wimer, July 29, 1892, *E. W. Hammond* (no. 364) (9).

CALIFORNIA

1872, Miss Mary J. Bancroft (16).—H. N. Bolander (3).—Hartweg (no. 1976) (3, 19, 21).—1868-9, Kellogg & Harford (no. 959) (3).—Under pines, Balenas Bay, Brewer (no. 2429) (3); under oaks, 1863, Bolander (no. 2490) (3).—Santa Lucia’ Mts., 1885, T. S. Brandegee (9).

Southern California: 1876, C. C. Parry & J. G. Lemmon (no. 384) (3).


Siskiyou Co.: Mt. Eddy, 4500 ft., August 19, 1903, E. B. Copeland (no. 297b) (1).—Dry woods near Yreka, May 23, 1876, E. L. Greene (no. 804) (3).

Shasta Co.: Fir woods, mountains about the head-waters of the Sacramento River, 5000 ft., August 14, 1881, C. G. Pringle (7).

Plumas Co.: 1875, Mrs. Austin (16).

Mendocino Co.: July, 1895, Miss K. E. Cole (9).—Mill Creek, June 23, 1901, Alice Eastwood (9).—Red Mt., August 4, 1902, Eastwood (9).

Lake Co.: Foothills south of Mt. Sanhedrin, midway between Potter Valley and Hullville, July 15, 1902, A. A. Heller (1).

Placer Co.: Dutch Flat, July, 1900, Cole (9).—Applegate, June, 1900, Cole (9).

Eldorado Co.: Pyramid Peak, 1903, Mrs. F. M. Meigs (9).


Sonoma Co.: Cazadero, July 4–14, 1904, Gwendolan Newell (9).—Near Mark West Springs, June 28, 1902, Heller (1).

Marin Co.: San Rafael, October, 1878, Moore & Kellogg (9).—Lagunitas, August, 1894, Eastwood (9).—Rodeo Lagoon, September, 1902, Eastwood (9).—Sausalito, July, 1896, Eastwood (9).—Vision Hill, Tomales Bay, September 1, 1900, Eastwood (9).—Mt. Tamalpias, May, 1900, Eastwood (9); July 14, 1894, Eastwood (9); July 11, Mrs. Brandegee (2); July 21, Mrs. Brandegee (9); July 17, 1898, Eastwood (9).—Mill Valley, August 2, 1896, Eastwood (9).

San Francisco Co.: September 19, 1892, Michener & Bioletti (4).—Land’s End, August, 1900, Eastwood (9); September, 1895, Eastwood (2, 3, 9);
**ORCHIDACEÆ**

_H. elegans_  
August 2, 1897, _Mrs. Brandegee_ (8, 9). — Bluffs along the Golden Gate, September, 1895, _Eastwood_ (3). — Point Lobos, March 25, 1893, _Michener & Bioletti_ (4).

**ALAMEDA Co.:** Dry hills, Oakland, July and August, _Brewer_ (no. 2431) (9).

**SAN MATEO Co.:** Crystal Springs near San Mateo, 1872, _A. Gray_ (9).

**SANTA CLARA Co.:** Near San José, June, 1879, _Mrs. A. E. Bush_ (3). — Foothills west of Los Gatos, July 1, 1904, _Heller_ (1). — Santa Cruz Mts., near Los Gatos, October, 1900, _Mrs. H. N. Wright_ (9).

**SANTA CRUZ Co.:** Santa Cruz, June 24, 1881, _M. E. Jones_ (2). — Santa Cruz Mts., July 24, 1882, _C. G. Pringle_ (7). — Glenwood, July, 1900, _Horace Davies_ (9). — Mountains near Santa Cruz, _Bolander_ (3).


**FRESNO Co.:** Sequoia Mills, July 19, 1892, _T. S. Brandegee_ (9). — Dunlap, July 15, 1893, _Eastwood_ (9).


**MONTEREY Co.:** Pacific Grove in pine woods, August 27, 1903, _Heller_ (no. 7197) (1, 2, 3, 9); August, 1900, _Dr. Wilson_ (9). — July 13, 1905, _Chas. Piper Smith_ (no. 1028) (1); August 19, 1905, _Smith_ (nos. 1099, 1100) (1). — Monterey, _Miss E. Cannon_ (9); June 1–15, 1908, _Newell_ (9). — In the woods, Rose Valley, August, 1900, _Wm. Barber_ (9). — Pacific Valley, May, 1898, _R. A. Plaskett_ (9). — Santa Lucia Mts., July 6, 1898, _Plaskett_ (no. 167) (2, 5); July 6, 1898, _Plaskett_ (no. 164) (9). — Point Sur, July, 1888, _Brandegee_ (3, 9).

**SAN LUIS OBISPO Co.:** San Simeon, June, 1887, _T. S. Brandegee_ (9); June, 1884, _G. W. Michael_ (9) (H. Michaeli); 1880, _Michael_ (16).

**SANTA BARBARA Co.:** Santa Cruz Isl., July and August, 1886, _Greene_ (9). — Santa Rosa Isl., June, 1880, _Brandegee_ (9). — Santa Inez Mts., near Santa Barbara, 1888, _Brandegee_ (9).

**LOS ANGELES Co.:** Under bushes, foothills of Sierra Santa Monica, June, 1891, _H. E. Hasse_ (2). — Wooded volcanic region under Adenostoma, Avalon, Santa Catalina Isl., June, 1897, _Blanche Trask_ (4, 9).

Parish (no. 1157) (3, 16), August, 1881 (no. 1157) (16).—Cuyamaca H. elegans Mts., July, 1889, C. R. Orcutt (2, 3, 4) (H. Orcuttii, J. N. R[ose] in lb. Gray).—Talley's, 1875, Dr. Edward Palmer (no. 373) (3).—Mountains near Potrero, June 20, 1906, Orcutt (1).


Spiranthes unalascensis Spreng., Syst. Veg. 3: 708 (1826).

Habenaria Schischmareffiana Cham., in Linnæa 3: 32 (1828).


[119]
ORCHIDACEÆ

H. unalascensis  Neottia macrophylla Hook. f., Fl. Brit. Ind. 6: 130 (1890) in part.


The most conspicuous difference between Habenaria unalascensis and H. elegans is the comparative lengths of the spurs and lips. In H. elegans the spurs are usually long and slender and as a rule conspicuously longer than the lips. In H. unalascensis, on the other hand, the spurs are shorter than the lips.

The foliage of this species is very variable. Usually there are no leaves at the flowering season.

Habenaria Cooperi appears to be a luxuriant form of H. unalascensis. The type specimen in the Gray Herbarium is in a poor state of preservation, but the flowers which remain on the plant are sufficient to make comparisons possible. The label-lum is broader than usual, and the scape is very stout, yet these characters are not sufficient to warrant specific distinction when attention is given to the normal variation of H. unalascensis.
QUEBEC

Mossy woods, Jupiter River, Anticosti Isl., August 20, 1883, J. Macoun (3); boggy places, Jupiter River, August 20, Macoun (16); open gravelly woods, August 20, Macoun (6).

ONTARIO

In bogs and swamps, Fishing Islands, Lake Huron, July 31, 1874, J. Macoun (6).—Lake Superior, June, 1860, Wm. Boott (3).

ALBERTA

Crow Nest Pass, lat. 49° 30', August, 1897, J. Macoun (9); mountain slopes, Crow Nest Pass, 6500 ft., July 31, 1897, Macoun (6).—Along the base of Ship Mts., Waterton Lake, July 28, 1895, Macoun (6).—On sand or gravel, Bow River Pass, September 14, 1879, Macoun (no. 211) (3, 6).

BRITISH COLUMBIA

Gravelly soil, Prospect Creek, July 18, 1888, Dr. G. Dawson (6).—MacLeod Lake, July 16, 1875, Dawson (9).—In boggy woods, vicinity of MacLeod Lake, July 14, 1879, J. Macoun (6).—West of Sophie Mt., International Boundary, between Kettle and Columbia Rivers, 4500 ft., July 11, 1902, J. M. Macoun (1).

YALE Dist.: Swampy woods, Batanie, near Spence's Bridge, July 6, 1890, Dawson (6).—Head-waters of Fraser River, July 21, 1898, W. Spreadborough (6).

VANCOUVER Isl.: Mt. Finlayson, June 28, 1887, J. Macoun (2).

ESQUIMALT Dist.: Gravelly banks, Goldstream, July 5, 1887, Macoun (6).

VICTORIA Dist.: Vicinity of Victoria, July 22, 1893, Macoun (2, 3, 6).

ALASKA

Unalaska, Chamisso in itin. (3) (H. Schischmareffiana).—Bernhardi Hb. (4).

MONTANA


FLATHEAD Co.: Mountain near Columbia Falls, August 18, 1894, Williams (no. 521) (5).
**ORCHIDACEÆ**

**H. unalascensis**


Gallatin Co.: Wooded hillside, Mystic Lake, Bozeman, August 1, 1898, *J. W. Blankinship* (1).

Wyoming, Uinta County

Woods, Yellowstone Park, August, 1884, *Frank Tweedy* (no. 10) (2, 16).

— In loose, loamy soil among the spruce and pines, Mammoth Hot Springs, July 21, 1899, *Aven & Elias Nelson* (no. 6033) (1, 2, 3, 4, 5, 9).

Utah, Summit County

Parley’s Park, 8000 ft., July, 1869, *Sereno Watson*, King Exp. (no. 1155) (2, 3).

Idaho

Mountains, July, 1892, *A. Isabel Mulford* (3, 4, 5).

Shoshone Co.: Dry ground amongst conifers, St. Mary’s River, August 5, 1894, *L. F. Henderson* (2).

Latah Co.: Meadows near Viola, July 26, 1892, *Sandberg, MacDougall & Heller* (no. 1039) (2, 3).


Lemhi Co.: Carmen Creek woods, near Freeman Mine, near Salmon, 6800 ft., August 27, 1895, *L. F. Henderson* (no. 4005) (2).


Washington


Kittitas Co.: Slopes of Mt. Stuart, 1400 m., July 24, 1893, Sandberg & Leiberg (no. 568) (2).
Pierce Co.: Mt. Rainier, O. D. Allen (1, 3).
Wallawalla Co.: In woods, Blue Mts., July 15, 1896, C. V. Piper (1, 3); July 17, 1897, Robert M. Horner (no. 468) (2).
Skamania Co.: Grassy ground in open pine forests, July 24–September 23, 1901, W. N. Suksdorf (no. 2690) (1).
Klickitat Co.: Woods, June, 1881, W. N. Suksdorf (2, 10, 16).—Falcon Valley, July, 1905, Suksdorf (1).

OREGON

Geyer (no. 534) (3).—Columbia woods, Nuttall (H. demudata Nutt. in Brit. Mus.).—Dry soil, 4000 ft. alt., July, 1882, W. C. Cusick (no. 204) (16).—Rocky places, June, 1880, Thos. J. Howell (4, 16).—June, 1877, Howell (7).—June, 1881, Howell (9).—Dry mountains, shade, 4000 ft., July 28, Cusick (no. 2062) (3); Cusick (no. 2060) (2, 4).—1897, E. P. Sheldon (no. 8659) (2).—1871, E. Hall (no. 507) (3, 16).—Cascades, July, 1893, Mrs. R. M. Austin (no. 199) (9).—1873, Rev. R. D. Herius (3).

Clackamas Co.: Under oaks and firs, Eagle Creek, June 11, 1882, L. F. Henderson (15).

Wasco Co.: Dry hills, under oaks, Hood River, June 23, 1896, Henderson (5, 14).

Union Co.: June, July, 1876, Cusick (no. 204) (4).

Lane Co.: Moist cliff, McKinzie River, between Gate Creek and Blue River, July 15, 1903, M. W. Gorman (no. 1642) (2).


Josephine Co.: Trail to Happy Camp, June 27–28, 1903, Alice Eastwood (9).

CALIFORNIA, Siskiyou County

Foot of Mt. Eddy, 4500 ft., August 19, 1893, Edwin B. Copeland (no. 297b) (1); August 17, 1903, Copeland (no. 259) (1).—Mt. Shasta and vicinity, July 13–27, 1892, Dr. Edward Palmer (no. 2569) (2).—Dry woods near Yreka, May 23, 1876, E. L. Greene (no. 804) (9).

Del Norte Co.: Gasquet, June 23, 1903, Alice Eastwood (9).

Humboldt Co.: Hupa Indian Reservation, 1000 ft., June, 1901, Harley P. Chandler (no. 1385) (2, 3, 4, 5, 9).

Trinity Co.: Cañon Creek, July 2–18, 1901, Eastwood (9).
**ORCHIDACEÆ**

_H. unalascensis_

**Shasta Co.**: Mountains about head-waters of the Sacramento River, 4000 ft., August 14, 1881, _C. G. Pringle_ (no. 45) (3).

**Lassen Co.**: Butte Creek, July, 1896, _Mrs. R. M. Austin_ (no. 18) (4).—Susanville, July 12, 1892, _T. S. Brandegee_ (9).

**Plumas Co.**: 1877, _Mrs. Austin_ (6).—Prattsville, July 14, 1892, _Brandegee_ (9).

**Mendocino Co.**: Redwoods, _Bolander_ (with no. 4706) (3).

**Lake Co.**: Snow Mt., _Mrs. Brandegee_ (9).—Foothills of Mt. Sanhedrin, midway between Potter Valley and Hullville, July 25, 1900, _A. A. Heller_ (1).

**Sierra Co.**: 1874, _J. G. Lemmon_ (3, 4, 16).

**Eldorado Co.**: Trail to Snowy Falls, 6200 ft., July 13, 1897, _Ezra Brainerd_ (5).—Fallen Leaf Lake, June 28, 1900, _Wm. W. Price_ (9).—In shade of large conifers, slope of Strawberry Creek, 5900 ft., July 14, 1897, _Brainerd_ (7).


**Mariposa Co.**: Wawona, July 5-19, 1902, _Eastwood_ (9).—Near Sherlock's (?), May 15, 1900, _J. W. Congdon_ (9).—Footman Mt., June, 1885, _Congdon_ (9).—1881, _C. C. Parry_ (no. 324) (3).—Yosemite Valley, 1866, _H. N. Bolander_ (no. 6252 in part) (3).

**Santa Cruz Co.**: Mountains near Santa Cruz, June, 1860, _Bolander_ (no. 53) (8, 9).

**Fresno Co.**: Converse Basin, south fork of Kings River, July 1-13, 1899, _Eastwood_ (9).—North fork of Kings River, 7000 ft., July, 1900, _Hall & Chandler_ (no. 554) (2, 4).—Pine Ridge, 5400 ft., June, 1900, _Hall & Chandler_ (no. 329) (9).

**General Grant National Park**: July 20, 1892, _Brandegee_ (9).

**Tulare Co.**: Open woods, middle fork of Tule River, alt. 5000-6000 ft., April, September, 1897, _C. A. Purpus_ (no. 5606) (2, 3, 4).

**Monterey Co.**: In pine woods, Pacific Grove, August 27, 1903, _Heller_ (no. 7197) (1); July, 1900, _Robert M. Horner_ (9).—Monterey, _Miss Cannon_ (9).

**Los Angeles Co.**: Dry ridges of foothills, May, 1888, _Dr. H. E. Hasse_ (2, 9, 11).—Brushy foothills, April 28, 1888, _Hasse_ (3).—Arroyo Seco Cañon, Pasadena, May 16, 1904, _Fordice Grinnell, Jr._ (9).—Ostrich farm near Los Angeles, April, 1888, _Hasse_ (15).—One locality, a few
ORCHIDACEÆ

plants, under shade of Adenostoma, on volcanic upland, Avalon, Santa Catalina Isl., May, 1897, Blanche Trask (2).

RIVERSIDE Co.: Coast Range Mts., near S. Riverside, 1895, W. I. Lester (15).

SAN DIEGO Co.: San Diego, April, 1894, Brandegee (15).—Mesas, San Diego, May 8, 1884, C. R. Orcutt (7, 9, 16); San Diego, May 4, 1892, G. W. Dunn (9); on clay hills, San Diego, 1860–1, Dr. J. G. Cooper (3) (type of H. Cooperi); National Ranch, San Diego, May, 1882, D. Cleveland (no. 569) (3).—Alpine, Mrs. Brandegee (9).—Bluffs of the sea, Soledad, April 26, 1882, Pringle (7).

MEXICO, Lower California

1888, Dr. Palmer (2); May, 1885, D. Cleveland (10).—Sierra Nevada Mts., 1875, Lemmon (2); Thomas Bridges (no. 355) (2).—Pine woods near Fawn (?) Valley, July 25, 1886, C. F. Sonne (no. 8) (9).—Grove of large trees (Sequoia gigantea) 1865, J. Torrey (no. 512) (3).—1868–9, Dr. A. Kellogg & W. G. W. Harford (no. 960) (3).

Plate 65. Habenaria obtusata
1. Flower. 2. Labellum and spur. 3. Petal.
All the analytical parts drawn, enlarged, with the aid of the camera lucida. The general habit taken from living specimens.
ORCHIDACEÆ

Orchis obtusata Pursh, Flora 2: 588 (1814); Nutt., Gen. H. obtusata 2: 189 (1818); Eaton & Wr., N. A. Bot. ed. 8, 334 (1840); Oakes, in Thompson’s Vt. 199 (1853); Wood, Class-book, ed. 41, 533 (1856); Provanch., Fl. Canad. 2: 565 (1862).


"On Hudson’s Bay, near Fort Albany. Hutchinson. 2. v. s. in Herb. Banks. A small species, with a few flowers only.” Pursh, loc. cit.

LABRADOR

1875, W. A. Stearns (2).—Turner’s Head, August 6, 1892, Waghorne (6).
— Battle Harbor, September 1, 1891, Waghorne (6).—Red Bay, July 4, 1892, J. D. Sornborger (no. 74) (3).—Hamilton Inlet, Indian River, August 2, 1891, Bowdoin College Exp. (no. 198) (3).—Hillsides, Butler’s (10).

NEWFOUNDLAND

July 14, 1897, A. C. Waghorne (4).—Woods, Whitbourne, August 15, 1904, Robinson & Schrenk (no. 109) (2, 3, 4, 6, 7).—Near Blanc Sablon,
**ORCHIDACEÆ**

**H. obtusata**

—Woods, Middle Arm, Bay of Islands, August 22, 1896, *Waghorne* (no. 50) (3).—Cool River, Bay of Islands, July 14, 1896, *Waghorne* (no. 1) (3).
—In spruce woods, Hell’s Torrent, Canada Bay, July 30, 1887, *Wm. Palmer* (2).

**NOVA SCOTIA**

—Pictou, *C. B. Robinson, Jr.* (1).

**NEW BRUNSWICK**

Lily Lake, July 31, 1877, *J. Fowler* (5).

**Restigouche Co.**: Boggy places, Dalhousie, August, 1876, *R. Chalmers* (6).


**Northumberland Co.**: Little Miramichi, July 11, 1892, *Fowler* (4); August 5, 1892, *Fowler* (5).

**Kent Co.**: July 24, 1871, *Fowler* (16).

**Charlotte Co.**: Grand Manan, *Rothrock* (3).

**St. John Co.**: St. John, July 24, 1877, *Fowler* (2).

**QUEBEC, GASPE COUNTY**


**Ottawa Co.**: In a swamp near Wakefield, August 22, 1903, *Macoun* (6).

**UNGAVA**

Along a river, Southern Ungava, July, 1895, *A. P. Low* (6).—Mosquito Bay, east coast Hudson Bay, August 19, 1893, *Low* (6).—North of Cape
ORCHIDACEÆ

Jones, Hudson Bay, July 6, 1899, Low (6).—Boggy woods, Lake Mistassini, July 13, 1885, J. M. Macoun (6).

ONTARIO, Nipissing District
Hastings Co.: Cedar swamps, July 17, 1870, Macoun (5); July 12, 1878, Macoun (6).—Madoc, June 17, 1897, Scott (6).
Wellington Co.: Guelph, August, 1903, A. B. Klugh (1).—Algonia, One-Mile Portage, Nipigon River, July 3, 1884, Macoun (6).—Kakabeka Falls, July 14, 1869, Macoun (3).

KEEWATIN
Albany, James Bay, July 25, 1904, W. Scott (6).—Raft River, James Bay, August 9, 1904, W. Spreadborough (6).—Sixty miles up Kapisco River, west of James Bay, July 9, 1902, W. J. Wilson (6).

MANITOBA
In rich damp woods, Lake Winnipegosis, June 30, 1881, J. Macoun (6).

ASSINIBIOA
Boggy places, Cypress Hills, June 15, 1884, J. M. Macoun (6).—Springy places, Farewell Creek, Cypress Hills, June 27, 1895, J. Macoun (6).—Regina, 1903, T. N. Willing (1).—Springy places, Indian Head, June, 1892, W. Spreadborough (6).

SASKATCHEWAN
In the Muskeg, north of Prince Albert, July 8, 1896, J. Macoun (6).

ATHABASCA
Rapids of the Drowned Slave River, June 28, 1892, Miss E. Taylor (no. 12) (3).—Smith Portage, Great Slave River, July 1, 1892, Taylor (no. 24) (6).

ALBERTA
Boggy ground along Cave Avenue, Banff, 4500 ft., July 3, 1899, W. C. McCalla (no. 2233) (2, 5).—Swamps, Spray Avenue, Banff, June 30, 1891, J. Macoun (6).—Rocky Mountain National Park, Banff, March 12, 1904, N. B. Sanson (1); July 4, 1891, Macoun (2).—Devil’s Head Lake, National Park, 4500 ft., July 7, 1899, Sanson (6).—Between Field and Emerald Lake, Rocky Mountain Park, August 20, 1904, Macoun (1).—Jumping Pound Creek, June 14, 1897, Macoun (2, 6).—MacLeod River,
**ORCHIDACEÆ**

**H. obtusata**


**BRITISH COLUMBIA**

In rich damp woods, Gatcho Lake, July 25, 1876; *Dawson* (6).—Damp woods, North Thompson River, June 14, 1889, *J. M. Macoun* (6).—In swamps and bogs, MacLeod Lake, lat. 55, June 23, 1875, *J. Macoun* (6).

**MACKENZIE**


**YUKON**

Mountains back of Dawson, July 12, 1902, *J. Macoun* (1).

**ALASKA**


**MAINE, AROOSTOOK COUNTY**


**SOMERSET Co.:** In rich, damp woods, John's Pond, Jackman, July 19, 1903, *E. R. Hodson* (no. 64) (2).

**FRANKLIN Co.:** Mossy cedar swamp, Chesterville, July 18, 1902, *C. H.*
ORCHIDACEÆ

Knowlton (no. 936) (1); evergreen swamp, July 14, 1903, Lillian O. H. obtusata Eaton (1).

Hancock Co.: Swamps, Little Cranberry Isl., August 12, 1885, John H. Redfield (4).

NEW HAMPSHIRE

Woods, side of White Mts., July, 1862, J. Blake (4, 16).—White Mts., June 20, 1860, J. W. Chickering, Jr. (8); damp woods, July 10, 1862, Chickering (2); Oakes (2, 3); August 8, 1881, Warren H. Manning (6).

Coos Co.: Mt. Adams, July and August, 1889, Clara E. Cummings (2).—Swamps, Sutton, July 29, 1890, H. H. Rusby (10).—In moss under dwarf conifers, Mt. Lafayette, July 9, 1891, J. F. Collins (2).

VERMONT

Killington Peak, August 10, 1875, Mr. & Mrs. A. P. Morgan (7).

Orleans Co.: Willoughby Lake, June, 1889, G. H. Leland (5); July 11, 1903, E. J. Winslow (1); July 29, 1892, H. H. Rusby (10).—Cedar woods, July 27, 1904, A. A. Eaton (no. 246) (1).—Mt. Annance, Willoughby Lake, July 2, 1834, Boot (3).

Essex Co.: Canaan, August 2–12, 1899, W. W. Eggleston (no. 1625) (2).

Caledonia Co.: Swamp between Willoughby and West Burke, July 20, 1887, Faxon (3).—Swamps, Sutton, July 15, 1887, Faxon (3); July 15, 1887, Faxon (2, 16).—Peacham, July 21, 1892, Alice F. Stevens (2).—Hollow woods, Peacham, 1881 (8), July 6, 1884 (4), July 17, 1886 (4), July 21, 1892 (4), F. Blanchard.

Chittenden Co.: Sphagnum bog, Mt. Mansfield, August 22, 1880, C. G. Pringle (7); shaded sphagnum woods, July 7, 1894, W. W. Eggleston (2).

Addison Co.: Lost Pleiad Lake, Hancock, July 18, 1878 (10), June 26, 1883 (1), July 6, 1890 (5), E. Brainerd.—Mountain woods, Hancock, July 18, 1878, Brainerd (7).

MASSACHUSETTS, HAMPSHIRE COUNTY

South Hadley, 1887, A. C. Clark (2).
ORCHIDACEÆ

H. obtusata  NEW YORK

North woods, August 17, 1879, Lester F. Ward (2).—In a balsam swamp, St. Regis Falls, June 10, 1903, E. R. Hodson (no. 19) (2).

Franklin Co.: West of Upper Saranac Lake, July 1, 1899, Rowlee, Wiegand & Hastings (3).

Essex Co.: Adirondacks, August 10, 1877, Addison Brown (8).—Upper flank of Whiteface Mt., Adirondacks, July 22, 1870, J. H. Redfield (4).

Herkimer Co.: North woods, J. A. Paine (3).

MICHIGAN, ISLE ROYALE

Deep moist woods, July, 1889, J. H. Sandberg (1, 5).

Keweenaw Co.: Keweenaw Point, 1863, Dr. Robbins (4).—Woods, July, 1888, O. A. Farwell (no. 515) (3).—Low ground, Clifton, August, 1884, F. E. Wood (2).—June, 1886, Farwell (no. 515) (11).


Mackinac Co.: Mackinac, July 4, 1879, Thos. E. Boyce (1).

Cheboygan Co.: July 13, 1890, H. C. Beardslee (1, 5); cedar swamp, July 10, 1890, Beardslee & Kofoid (4).

Emmett Co.: Cedar swamp, Little Traverse Bay, August 3, 1897, C. W. Fallass (5).

WISCONSIN

Door, July 27, 1887, J. H. Schuette (1).

Oneida Co.: Mossy woods, borders of Spirit Lake, June 19, 1898, S. C. Wadmond (5).

MINNESOTA


Lake Co.: Two Harbors, July, 1891, J. H. Sandberg (no. 467) (2).


Beltrami Co.: Bogs, Itaska Lake, June 26, 1891, Sandberg (no. 1054) (8).

Wright Co.: Rich woods, Silver Creek, August 29, 1891, Sandberg (no. 911) (2).

MONTANA, FLATHEAD COUNTY

Columbia Falls, July 6, 1895, R. S. Williams (no. 628) (5).

Meagher Co.: Clendenin, Belt Mts., July 3, 1889, Williams (no. 628) (2).
ORCHIDACEÆ

WYOMING
Soda Butte, Yellowstone Park, July, 1885, Frank Tweedy (2, 16).

COLORADO
Rocky Mts., 1862, Hall & Harbour (no. 536) (3, 4, 16); 1872, C. C. Parry (16).—Sawatch Range, alt. 10,500 ft., July, 1880, T. S. Brandegee (4, 9).—Rocky Mts., 1872, E. L. Greene (9).—Wet places, upper Clear Creek Valley, August 6, 1874, G. Engelmann (4).—Beaver Creek Camp, July 15, 1898 (4).—Rich soil along mountain stream, Berthoud Pass, near Cozzen’s, alt. 8500 ft., August 15, 1884, Chas. S. Sheldon (no. 221) (15).


Grand Co.: Head-waters of Clear Creek and alpine ridges east of Middle Park, 1861, C. C. Parry (no. 355) (3, 4).—Middle Park, July, 1871, T. S. Brandegee (no. 135) (3).


Clear Creek Co.: Wet mossy banks along streams, Berthoud Pass, near Georgetown, 8500 ft., August 15, 1884, Sheldon (no. 221) (2).

Lake Co.: Twin Lakes, 10,000 ft., July 31, 1873, J. M. Coulter, Hayden Geological Survey (2).—At 10,000 ft. altitude in the Willis Gulch, July 7, 1896 (Biltmore no. 2525a) (5).

La Plata Co.: Along dark, mossy banks of stream, Chicken Creek, West La Plata Mts., June 27, 1898, Baker, Earl & Tracy (no. 801) (2, 3, 4, 5, 10, 14).

NORWAY, FINMARK
Kaaffjord prope Alten, Th. M. Fries (3).


**ORCHIDACEÆ**


"P. foliis subradicalibus duobus ovatis, labello integerrimo obtuso lacinias haud excedente, calcar scrotiforme.

"Habitat in montosis Unalaschcæ passim.

"Satyrium L.

"Transitum generis Platanthera in Gymnadenias galeatas Rich. demonstrans, superiori speciei affinis; diversa: statura minori vix digitali, foliis ovatis, spica pauci- 10–12 flora, bracteis instructa flores superantibus, cornu scrotiformi etc. Radix: tubera duo fusiformia, gracilia, descendentia, radiculis fibrosis paucis ad collum instructa. Folia vaginantia subradicalia duo, vagina extima aphylla accedente; externum inferumve latius atque obtusi, late ovatum, in speciminius majoribus 16 lineas longum, 10 latum; internum superumve in aliiis speciminius approximatum, in aliiis paulo altius in caule situm, acutius et angustius; rete vasculosum e nervis primariis utrinsecus circiter 6 constans, arcuatis, in apicem submuconulatum conniventibus, venulis obliquis inter se connexis. Caulis digitalis, saepius brevier, in unico specimine sexpollicaris, gracilis, supra parte nudus, unicoe foliolo instructus sessili lanceolato acuto. Spica unguiculairis pollicarisve 10–20 flora; bracteæ folio caulino similes, varia longitudine, floribus semper longiores; flores quam in praecedente specie minores, erecti. Germin simile, contortum, erectum, rectum, crassiusculum, maturo fructu ellipsoides. Calyx fornicatus, lacinii comparibus paulo descendentibus; laciniae exteriore late lanceolata obtusæ; interiores consimiles paulo minores; labellum indivisum, obtusum, lacinii brevius, calcaratum, calcare brevi scrotiforme." Cham. *loc. cit.*

¹Kränzlin confused the details of *H. bracteata* on Reichenbach’s plate with those of this species and prepared his diagnosis accordingly.
ORCHIDACEÆ

The only material of *H. Chorisiana* which I have studied has been immature and unsatisfactory. In the Gray Herbarium there is a single specimen from Unalaska collected by Chamisso. The leaves, two in number, are basal or subradical. Above the leaves there is a single linear bract. The raceme is congested and bears buds only.

ALASKA

Chamisso (3).—Said by Kränzlin to have been collected in Unalaska by Eschscholtz.

JAPAN

According to Finet, *loc. cit.*


*Platanthera Hookeri* Lindl., *Gen. & Sp. Orch. 286* (1835); *Hook.*, *Fl. Bor. Am. 2: 196* (1839); *Torr.*, *Fl. N. Y. 2: 275* (1843); *Gray*, Man. ed. 1, 470 (1848), ed. 2, 445 (1856), ed. 3, 445 (1859); *Beck*, *Bot. ed. 2, 347* (1856); *Wood*, *Class-book 683* (1861); *Paine, Pl. Oneida Co. 83* (1865); *Portl. Cat. 7* (1868); *Correvon,*
H. Hookeri

—P. Hookeri var. oblongifolia Paine, Pl. Oneida Co. 83 (1865).


Habenaria Hookeri var. oblongifolia Gray, Man. ed. 5, 501 (1867), ed. 6, 508 (1890); Macoun, Cat. 4: 18 (1888); Gray, Field, For. & Gard. Bot. rev. ed. 408 (1895).—H. Hookeri Torr., Gray Man. ed. 5, 501 (1867), ed. 6, 508 (1890), Field, For. & Gard. Bot. 326 (1868), rev. ed. 408 (1895); Willis, Cat. N. J. 61 (1874); Yale Cat. 45 (1878); J. Robinson, Fl. Essex Co. 107 (1880); Arthur, in Proc. Dav. Acad. Nat. Sci. 3: 2 (1880); Britton, Prel. Cat. N. J. 94 (1881); Day, Pl. Buffalo 139 (1882); Perkins, Gen. Cat. Vt. 37 (1882); Jackson, Fl. Worcester Co. 32 (1883); Upham, Fl. Minn. 140 (1884); Dudley, Cayuga Fl. 95 (1886); Dame & Collins, Middlesex Fl. 103 (1888); Perkins, Fl. Vt. 277 (1888); Bennett, Pl. R. I. 43 (1888); Macoun, Cat. 4: 17 (1888), Check-list 53 (1889); Beal & Wheeler, Fl. Mich. 607 (1891); Fernald, in Portl. Cat. 64 (1892); Rand & Redf., Fl. Mt. Desert 153 (1894); Baldwin, Orch. N. Eng. 102 (1894); Deane, Fl. Met. Park 79 (1896); Mill. & Whit., Wild Fl. Northeast. St. 552, t. (1898); Andrews, Pl. Meriden Mt. no. 213 (1899); Driggs, Fl. Conn. 16 (1901); Kennedy, Fl. Willoughby in Rhod. 6: 111 (1904).

Lysias Hookeriana Rydb., in Britton’s Man. 295 (1901); House, in Torreya 3: 51 (1903); Small, in Porter’s Fl. Pa. 93 (1903).

Habenaria oblongifolia Niles, Bog-trotting for Orchids 250 (1904).

"Scape 8–12 inches high, bearing at the base two orbicular, oval or obovate leaves. Leaves fleshy, smooth and shining, 3–4 inches long. Spike 4–6 inches in length, somewhat loosely flow-
ORCHIDACEÆ

Flowers 10–20, yellowish-green, erect or a little spreading, \textit{H. Hookeri} subsessile. \textit{Bracteae} lanceolate, nearly as long as the flowers. \textit{Sepals} ovate-lanceolate, acute; the upper one connivent with the petals, erect; the lateral ones deflexed, so as to meet posteriorly. \textit{Petals} a little shorter than the sepals, linear, very acute, dilated at the base. \textit{Lip} lanceolate, acuminate, scarcely as long as the ovary, standing forward and somewhat incurved. \textit{Spur} straight, acute, depending, about twice the length of the ovary. Cells of the \textit{anther} linear-clavate, widely separated at the base by the broad stigmatic surface. \textit{Ovarium} \(\frac{1}{2} - \frac{3}{4}\) of an inch in length, straight." Gray, \textit{loc. cit.}

The variety \textit{oblongifolia} is surely only an individual variation. There is a specimen in the Gray Herbarium with leaves about 1 dm. long by about 4 cm. wide, collected at Little Falls, N. Y., by J. A. Paine, which is typical \textit{H. Hookeri} var. \textit{oblongifolia}.

In the third volume of the \textit{Annals of the Lyceum of Natural History of New York}, on page 229, Gray published, presumably for the first time, the combination \textit{Habenaria Hookeriana}, referring to "\textit{Torrey, Herb.}" as authority for the name. In the library of the Gray Herbarium there is a copy of Gray’s paper in quite a different edition of the \textit{Annals}, in which the typography and pagination are not in agreement with the regular issue and in which, on page 228, \textit{Habenaria Hookeri} is given instead of \textit{H. Hookeriana}. This copy is accompanied by a manuscript note which states that the first impression was destroyed by fire. In my library there is a copy of the \textit{Annals} bound up with the original covers. According to this copy it would appear that numbers 5, 6, and 7, in the last of which Gray’s paper was published, were issued simultaneously in April, 1836. Beginning with these numbers the typography of the work changes. In the preceding numbers the typography is in agreement with that of
H. Hookeri  Gray's copy to which reference has already been made. On the last page of the cover of the 1836 issue the following notice is printed: "The delay which has occurred in the publication of the present volume has been owing to a series of difficulties and misfortunes beyond the power of the Lyceum to guard against. The remaining numbers, comprising a Monograph of the Cyperaceae of North America by Dr. Torrey, are now in the press, and will be speedily issued." Although Gray's paper was not regularly published before April, 1836, Lindley, in September, 1835, in his Genera and Species of Orchidaceous Plants, referred to the Annals, and adopted the specific name Hookeri. This leads naturally to the supposition that Lindley had a copy of the Annals similar to Gray's, and that originally Gray had adopted Hookeri and not Hookeriana. This also leads to the supposition that the first impression of Gray's paper may have been in the form of proof-sheets and not a valid publication. As Lindley's Genera and Species of Orchidaceous Plants on this assumption antedated Gray's paper in the second issue of the Annals, it would seem that Hookeri must stand as the correct name of the species. I have suggested 1835 as the date of the first impression of Gray's paper, as it was not read until December, 1834.

CANADA, Hb. Pursh (3).

NOVA SCOTIA, GUYSBOROUGH COUNTY
Rich woods, Pirates' Cove, July 6 and 7, 1883, J. Macoun (3, 6); July 7, 1884, Macoun (16).
Annapolis Co.: Annapolis, Macoun (?) (6).

NEW BRUNSWICK, VICTORIA COUNTY
Mountain back of Clair's, July 11, 1904, A. A. Eaton (no. 92) (1).
Northumberland Co.: Little Miramichi River, July 11, 1892, J. Fowler (2).
Kent Co.: In swamps and bogs, Bass River, July 20, 1867, Fowler (6).
York Co.: Boggy places, Campbellton, July, 1877, R. Chalmers (6).

[ 138 ]
QUEBEC, Rimouski County
Pine woods at crest of headland south of l’Anse Original, Bic, July 17, 1904, J. F. Collins & M. L. Fernald (1).

ONTARIO, Thunder Bay District
Pic River, Loring (3).
Frontenac Co.: Kingston, June 12, 1886, J. Fowler (4).
Hastings Co.: Cedar swamps, July, 1864, J. Macoun (16).—In swamps, Oak Hills, August 16, 1874, Macoun (6).
Lincoln Co.: Foster’s Flats, Niagara, June 7, 1891, J. Macoun (6).

MAINE, Aroostook County
Spruce woods, mountain-side back of hotel, Fort Kent, July 8, 1904, A. A. Eaton (no. 30) (1).—Three and a half miles west of Fort Kent, July 18, 1904, Eaton (no. 154 a) (1).
Somerset Co.: In rather flat mixed woods, Skowhegan, July 1, 1903 Eaton (1).
Penobscot Co.: Orono, 1882, Mrs. C. H. Fernald (2); June, 1898, P. L. Ricker (no. 424) (2).
Oxford Co.: Woods, Dixfield, June, 1884, J. C. Parlin (3).—Fryeburg, July, 1872, Faxon (3).—Norway, 185—, A. Gray (3); S. I. Smith (16).
Cumberland Co.: Harrison, A. P. Chute (3).

NEW HAMPSHIRE
White Mts., Susan M. Hallowell (2).
Coos Co.: Shelburne, July, 1872, Faxon (3).
Grafton Co.: Forest Hills, Franconia, September 30, 1892, Faxon (3); Wallace Hill, Franconia, July 26, 1891, Faxon (3); June 9, 1893, Faxon (3).—Holderness, June 6, 1886, Faxon (3).—Rather open woods,

VERMONT, ORLEANS COUNTY
Willoughby Mt., August, 1865, Dr. F. J. Bumstead (6).
CALEDONIA Co.: Barnet, June 29, 1888, Dr. F. Blanchard (2, 4).
CHITTENDEN Co.: Hills, under poplars, Charlotte, June 1, 1878, C. G. Pringle (7); June 9, 1876, Pringle (1). — Burlington, May, 1891, L. R. Jones (?)(5).
ADDISON Co.: Lost Pleiad Lake, Hancock, June 10, 1902, E. Brainerd (1). — Monkton, October 9, 1878, C. G. Pringle (7). — Middlebury, June 20, 1880, Thos. E. Boyce (1); June 6, 1886, Brainerd (1, 5). — Salisbury, July 25, 1903, W. W. Eggleston (1).
RUTLAND Co.: Rutland, July 14, 1898, Eggleston (5).
BENNINGTON Co.: Manchester, June 27, 1898, Mary A. Day (no. 170)(2, 3, 5).

MASSACHUSETTS, WORCESTER COUNTY
FRANKLIN Co.: Shelburne, June 24, 1873, Miss S. E. Anderson (10).

CONNECTICUT, MIDDLESEX COUNTY
Middletown, June, 1835, S. B. Buckley (4).

NEW YORK, HERKIMER COUNTY
Little Falls, S. H. Wright (1); July, 1854, J. A. Paine (3) (H. oblongifolia). — Herkimer, A. Gray (3).
CAYUGA Co.: Owasco, June 15, 1885, F. V. Coville (2).
ORCHIDACEÆ

Otsego Co.: Cooperstown, August, 1886, Rev. C. H. Hall (11).  
Yates Co.: Penn Yan, Dr. Sartwell (3).  
Tomkins Co.: Near Ithaca, June 8, 1885, O. E. Pearce (2).—Turkey Hill.  
Chemung Co.: Rich upland woods, rare, June 16, 1898, Dr. T. F. Lucy (no. 699) (5).  
Sullivan Co.: Cocheecton, August 10, 1889, H. Schrenk (4).  
Westchester Co.: Peekskill, June, Hb. Thurber (3).  

Pennsylvania, Monroe County  
Delaware Water Gap, 1874, S. W. Knipe (16).—Fox Hill, June, 1872, Knipe (2, 4).  
Blair Co.: Bald Eagle Furnace, June 3, 1860, Böcking (3).  

Ohio  
Wm. Krebs (1).  

Michigan  
Michigan (3).  
Keweenaw Co.: Evergreen woods, frequent, August, 1890, O. A. Farwell (3).  
—Copper Harbor, August 15, 1888, Farwell (11).—Rich woods, Keweenaw Point, July 7, 1884, F. E. Wood (2).  
Montcalm Co.: Stanton, 1878, Ervin F. Smith (no. 41) (2).  
Ionia Co.: Hubbardston, May, 1876, C. F. Wheeler (8).  
Wayne Co.: Near Detroit, June 21, 1863, Wm. Boott (5).  

Wisconsin, Oconto County  
June, F. H. Plumb (2).  
Door Co.: Newport, June 22, 1883, J. H. Schuette (1).  
Dane Co.: Madison, 1890, L. S. Cheney (5).  
Milwaukee Co.: Woods, Milwaukee, June, 1843, I. A. Lapham (4).  

Minnesota, Beltrami County  
Copse, Itasca Lake, July, 1891, Geo. B. Aiton (2); bogs, Itasca Lake, June 30, 1891, J. H. Sandberg (no. 1102) (2).  
Cass Co.: Lake Kilpatrick, June, 1893, C. A. Ballard (5).  
Chisago Co.: Franconia, 1890, J. M. Holzinger (2).  
Goodhue Co.: Zumbrota, June, 1892, A. L. Ballard (2, 5, 14).
ORCHIDACEÆ

H. Hookeri  IOWA, FAYETTE COUNTY
Fayette, June, 1893, B. Fink (2).

H. orbiculata  23. H. orbiculata (Pursh) Torr., Comp. 318 (1826); Spreng., Syst. Veg. 3: 689 (1826); Lodd., Bot. Cab. t. 1623 (1832); Gray, in Ann. Lyc. Nat. Hist. N. Y. 3: 228 (1836); Dewey, Herba-
ceous Pl. Mass. 198 (1840); Gray, in Sill. Journ. 23: 311 (1840); Torr., in Geol. & Nat. Hist. Surv. N. Y. 174 (1840); Gray, Man. ed. 5, 501 (1867), ed. 6, 508 (1890), Field, For. & Gard. Bot. 325 (1868), rev. ed. 408 (1895); Willis, Cat. N. J. 61 (1874); Sweezey, Cat. Pl. Wisc. (1877); Yale Cat. 45 (1878); J. Robinson, Fl. Essex Co. 108 (1880); Britton, Prel. Cat. N. J. 94 (1881); Perkins, Gen. Cat. Vt. 37 (1882); Upham, Fl. Minn. 140 (1884); Dudley, Cayuga Fl. 95 (1886); Macoun, Cat. 4: 18 (1888); Dame & Collins, Fl. Middlesex 103 (1888); Perkins, Fl. Vt. 277 (1888); Britton, Cat. N. J. 234 (1889); Beal & Wheeler, Fl. Mich. 607 (1891); Fernald, in Portl. Cat. 64 (1892); Baldw., Orch. N. Eng. 101, f. 31 (1894); Rand & Redf., Fl. Mt. Desert 153 (1894); Holzinger, in Contr. U. S. Nat. Herb. 3: 252 (1895); Mills & Nutt., Fl. W. Va. 200 (1896); Britton & Br., Ill. Fl. 1: 461, f. 1096 (1896); Clute, Fl. Up. Susq. 106 (1898); Brainerd, Jones & Eggleston, Fl. Vt. 30 (1900); Kearney, in Bail. Cycl. Am. Hort. 2: 707 (1900); Gattinger, Fl. Tenn. 62 (1901); Howell, Fl. Nw. Amer. 629 (1902); Mathews, Field-book 86 (1902); Niles, Bog-trotting for Orchids 250 (1904); Kennedy, Fl. Willoughby in Rho. 6: 111 (1904); Jelliffe, Gibson's Nat. Orch. 25, 29, 53, t. 13 (1905); Ames, in Rho. 8: 1, fig. (1906). Not H. orbiculata Hook., Exot. Fl. (= H. Hookeri).

?Orchis bifolia  Forst., Cat. Pl. N. A. 39 (1771), not L.—
?O. lata  Walt., Fl. Carol. 220 (1788).—O. orbiculata Pursh,

1 Nearly all the works cited include H. macrophylla.
**ORCHIDACEÆ**

Fl. 2: 588 (1814); *Eaton, Man. ed. 4, 375 (1824); Torr., Cat. H. orbiculata N. Y. 69 (1819); Big., Fl. Bost. ed. 2, 319 (1824), ed. 3, 342 (1840); *Oakes, in Thompson's Vt. 199 (1853); *Wood, Class-book ed. 41, 532 (1856); *Provanchn., Fl. Canad. 2: 565 (1862).


**Habenaria Menziesii** Macoun, Cat. 4: 17 (1888).


"orbiculata. 16. O. labello lineari integerrimo obtusiusculo, petalis 3. superioribus conniventibus, 2. lateralibus patentibus basi obliquis, cornu germine longiore, scapo basi diphyllolo, foliis planis orbiculatis.

"In shady beech-woods: on the mountains of Pensylvania and Virginia. 2. July, Aug. v. v. Resembles *O. bifolia*. Two leaves of a fleshy texture are spread flat on the ground, between [143]"
**ORCHIDACEÆ**

*H. orbiculata* which rises the stalk about a foot or eighteen inches high, which bears a loose spike of greenish-white flowers. It is known in the mountains by the name of *Heal-all.* Pursh, *loc. cit.*

In the herbarium at Kew there is a specimen of *Habenaria orbiculata* which appears to be the type. On the reverse of the sheet on which it is mounted, in the upper left-hand corner, the name “Fred Pursh” is written. Presumably, this specimen was obtained by Hooker when the Lambert collection was sold, as Lambert possessed Pursh’s herbarium. The specimen in question is surely conspecific with *Platanthera Menziesii.*

**LABRADOR**
Labrador Swamp, Ryegate, July 8, 1884, Dr. F. Blanchard (4).

**NOVA SCOTIA, VICTORIA COUNTY**
New Campbellton, July 23, 1897, David White & Chas. Schuchert (no. 25) (2).


**PRINCE EDWARD ISLAND, QUEENS COUNTY**
Shady woods, Brackley Point, August 14, 1888, J. Macoun (6).

**NEW BRUNSWICK, VICTORIA COUNTY**


Kent Co.: Bass River, July 27, 1870, Fowler (3).

**QUEBEC, GASPE COUNTY**
In rich damp woods, Ste. Anne des Monts, August 9, 1883, Porter (6); rich cool woods, rather rare, August 22, 1882, J. Macoun (6). — Swamp, Little Metis, August, 1902, E. C. Jeffrey (1).

Quebec Co.: Lake Edward, August 11, 1897, J. W. Blankinship (1).

Ottawa Co.: In woods north of the railway station, Wakefield, August 10, 1903, Macoun (6).

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1 For a detailed study of *H. orbiculata, H. macrophylla* and *Platanthera Menziesii* reference should be made to *Rhodora* 8: 1 (1906).

[ 144 ]
ORCHIDACEÆ

ONTARIO, THUNDER BAY DISTRICT
Rich woods, Lake Nipigon, July 12, 1884, J. Macoun (6).
NIPISSING DIST.: In woods, Island Lake, Algonquin Park, July 18, 1900, Macoun (6).
HASTINGS Co.: Pine woods, North Hastings, July 12, 1878, Macoun (6).
— Rich woods, east of Belleville, July, 1870, Macoun (6).
WELLINGTON Co.: Puslinch Lake, August 8, 1904, A. B. Klugh (1).
YORK Co.: Near Toronto, July 3, 1898 (Biltmore no. 2524a) (5).

MANITOBA
In rich woods, Swan Lake, July 10, 1881, Macoun (6).

BRITISH COLUMBIA
(?) Northwest America, Menzies (19, 20), (type of Platanthera Menziesii).
NEW WESTMINSTER Co.: In damp woods, Burrard Inlet, June, 1892, Law (6).
KOOTENAY DIST.: Deep woods near Ward’s, Kootenay River, July 17, 1890, Macoun (6).— Rich woods, Donald, July 17, 1885, Macoun (6); July 9, 1885, Macoun (16).—Rich woods, Kootenay Lake, July 8, 1889, Dawson (6).—Woods, Grand Fork, head-waters of Frazer River, July 22, 1898, W. Spreadborough (6).—Nelson, September, 1903, E. Jacobs (1).—Moss in damp woods, Armstrong, July 16, 1904, E. Wilson (1).
YALE DIST.: Rich woods, Sicamous, July 8, 1889, Macoun (6).—Chilli-wack Lake, July 24, 1901, J. M. Macoun (1); July 31, 1901, Macoun (1).

ALASKA
Port Chester (9).—Karta Bay, Prince of Wales Isl., 1901–2, C. F. Newcombe (no. 119) (3).

MAINE, AROOSTOOK COUNTY
Cold woods, St. Francis, July 31, 1878, C. G. Pringle (7).—Very abundant in mossy spruce woods, valley of St. Francis River, August 11, 1902, W. W. Eggleston & M. L. Fernald (1, 3).—Deep humus of evergreen forest, St. John’s Plantation, July 20, 1904, A. A. Eaton (no. 205 in part) (1).
PISCATAQUIS Co.: Deciduous woods, North Squaw Brook, July 6, 1895, Fernald (no. 273) (3, 4).—Open rich mixed woods, trail to Deer Pond, July 24, 1905, F. T. Hubbard (no. 11) (1).
HANCOCK Co.: Swamp, Seal Harbor, Mt. Desert, July 28, 1885, John H. Redfield (4).
OXFORD Co.: Norway, S. I. Smith (5).
ORCHIDACEÆ

**H. orbiculata** NEW HAMPSHIRE


Grafton Co.: Franconia, September 24, 1895, Faxon (3), July 26, 1891, Faxon (3); deserted farm, Franconia, September 24, 1895, Faxon (3); Pond Brook back of deserted farm, September 23, 1888, Faxon (3).—Breezy Hill, Lisbon, July 25, 1903, J. G. Hall (3).

**VERMONT, ORLEANS COUNTY**

Cold brook, Willoughby Lake, July 21, 1887, Faxon (3).

Caledonia Co.: Peacham, July 25, 1888, F. Blanchard (2); July 31, 1884, Blanchard (4).

Addison Co.: Middlebury, August 1, 1880, Thos. E. Boyce (1).—Lost Pleiad Lake, Green Mts., 1875, Wm. E. Sufford (no. 426) (2).—Ripton, alt. 1500 ft., July 18, 1878, E. Brainerd (5).

**MASSACHUSETTS, MIDDLESEX COUNTY**

Abundant, Sherbourne, July 13, 1890, E. L. Sturtevant (4).

Franklin Co.: Shelburne, June 15, 1873, S. E. Anderson (10).

Berkshire Co.: Washington, July 4, 1856, Wm. Boott (3).

Hampshire Co.: Cummington, 1838, Dr. Dwight (4).

**NEW YORK**

North woods, August 15, 1879, Lester F. Ward (2).

Essex Co.: Between Mirror Lake and Lake Placid, July 9, 1903, Miss Jessie Ames (1).—West of Upper Saranac Lake, July 3, 1899, Rowlee, Wiegand & Hastings (3).

Herkimer Co.: Near North Lake, July, 1897, Dr. Joseph V. Haberer (no. 1884) (3).

Washington Co.: East Greenwich, 1869, Dr. Asa Fitch (10).

Onondaga Co.: Manlius (?), August, 1837, J. D. Dana (18); 1845, Dr. W. M. Smith (?) (18).

Yates Co.: S. H. Wright (1).

Columbia Co.: Dark woods, rare, Lebanon Spa, July 14, 1888 (2).

Greene Co.: Catskill Mts., 1845, Geo. Thurber (3); July, 1868, Wm. M. Canby (16).
ORCHIDACEÆ

H. orbiculata

Pennsylvania

? Pursh (20), (type of Orchis orbiculata).
Westmoreland Co.: June 21, 1878, P. E. Pierron (8).
Carbon Co.: Hemlock woods near Moses' Lake, Pocono Mt., August 20, 1863, Dr. Traill Green (3, 16); hemlock woods, June, 1867, Wm. M. Canby (16).
Blair Co.: 1870, Miss N. J. Davis (2).
Chester Co.: West Chester, 1891, W. W. Jefferis (2).

Maryland, Garrett County
Damp hemlock forest, July 14, 1885, John Donnell Smith (16).

Virginia

May, 1838, S. B. Buckley (4).

North Carolina, Buncombe County
Roandale Farm, July 8, 1895, A. G. Wetherby (no. 148) (2).

South Carolina
September, A. Gray (?) (3). — In montibus Carolinæ et Georgiæ, 1842, S. B. Buckley (4).

Tennessee
East Tennessee, June, 1870, C. C. Parry (2).

West Virginia, Preston County
Aurora, 3000 ft., September 9, 1898, Mr. & Mrs. E. S. Steele (2).

Ohio, Cuyahoga County
Near Cleveland, Wm. Krebs (1).

Illinois, Kane County
Aurora, 1885, Thomas Boyce (2). (This may have been collected at Winona, Minn.)

Michigan, Keweenaw County
Clifton, June, 1884, O. A. Farwell (11). — Keweenaw Point, 1863, Dr. Robbins (no. 25) (4).
Marquette Co.: Thirty-five miles north of Marquette, July 24, 1887, Wm. Trelease (4). — In a swamp of Coniferae, Turin, July 15, 1901, Bronson Barlow (1).

Wisconsin
Pine woods, northern Wisconsin, July, 1883, Dr. H. E. Hasse (8).
**H. orbiculata** MINNESOTA

Rat Lake, July 18, 1891, F. F. Wood (2).
Lake Co.: Two Harbors, July 9, 1891, J. H. Sandberg (2).
St. Louis Co.: Pine woods, sixteen miles west of Duluth, July, 1889, Wood (2).
Beltrami Co.: Swamps, Lake Itasca, June, 1891, Geo. B. Aiton (1, 5, 14);
July 9, 1891, Sandberg (no. 1185) (2).
Anoka Co.: Centreville, July 30, 1891, Sandberg (no. 710) (2).
Martin Co.: Rose Lake, July 13, 1891, Wood (8).

MONTANA, FLATHEAD COUNTY

Woods near upper Flathead River, July 26, 1883, Wm. M. Canby (no. 312) (3).—Deep woods north of Flathead Lake, July 29, 1883, Canby (no. 312) (16).—Near Whitefish Lake, August 25, 1892, R. S. Williams (no. 920) (1, 2, 5).

IDAHO, KOOTENAI COUNTY

West fork Priest River, alt. 900 m., August 4, 1897, John B. Leiberg (no. 2839) (2).—Deep forests, Fourth of July Cañon, alt. 850 m., July 21, 1895, Leiberg (no. 1331) (2).—Lake Pend d’Oreille, July 28, 1892, Sandberg, MacDougall & Heller (no. 767) (2, 3).
Latah Co.: Janesville, July 24, 1898, C. V. Piper (1).

WASHINGTON

Cascade Mts., 49° N. lat., 1859, Dr. Lyall (3).—From Fort Colville to Rocky Mts., 1861, Dr. Lyall (3).—Puget Sound and interior of the country, 1838–42, Wilkes Expedition (no. 453) (2).—1889, Geo. R. Vasey, (no. 80) (2).
Stevens Co.: Rare, Calespell Lake, July 30, 1902, Frank O. Kreager (no. 342) (2, 3).
Snohomish Co.: Index, July, 1898, T. E. Savage, J. E. Cameron & F. E. Lenocker (4).
King Co.: Snoqualmie, June 4, 1889, E. C. Smith (4).—Green River Hot Springs, 1888, C. V. Piper (3).
ORCHIDACEÆ

24. H. macrophylla Goldie, in Edinb. Phil. Journ. 6: 331 (1822); H. macrophylla Hook., Exot. Fl. 2: sub t. 145 (1825); Torr., Comp. 318 (1826); Beck, Bot. ed. 1, 349 (1833); Ames, in Rho. 8: 1, fig. (1906), in Gray's Man. ed. 7, 310 (1908); Knight, in Rho. 8: 188 (1906); Macoun, in Ottawa Nat. 20: 139 (1906).

Platanthera orbiculata Lindl., Gen. & Sp. Orch. 286 (1835), and of authors in part.

Habenaria orbiculata Gray, Man. ed. 5, 501 (1867), and of authors in part, not H. orbiculata Hook.

Lysias orbiculata Rydb., in Britton's Man. 294 (1901) in part.—L. macrophylla House, in Muhlenb. 1: 127 (1906).

"Habenaria macrophylla, labello lineari-elongato integerrimo, anthera basi utrinque producta, cornu germine duplo longiore, foliis binis planis elliptico-orbiculatis.


"Of all the Orchideous plants which I have seen in North America, this is, without a question, the largest and most striking. It must rank next to Habenaria orbiculata (Orchis of Pursh and Nuttall), having, like it, two plane, orbicular, approaching to elliptical, leaves, which spring from immediately above the fasciculated root, and which, in this plant, are four times as large as those of H. orbiculata, measuring from six to eight inches in length, very thin and pellucid, beautifully marked with longitudinal and transverse veins. The scape is equally long in proportion, and is furnished with a few lanceolate scales. Bracteas similar to these, and shorter than the germen. Flowers large, white, resembling those of H. bifolia, and arranged in a lax spike of about five or six inches in length. The three superior petals are connivent, the uppermost is nearly orbicular, the others ovate, attenuated, the two lateral ones of the same shape, but much larger, reflexed, their bases decurrent with the labellum, which,
standing forwards, is linear, as long as the germen, quite entire. 

Germen about an inch in length, slender, tapering down into a footstalk. Column of fructification very short. Anther large, broad, much like that of H. bifolia, but having the base of the cells remarkably apart and elongated into two projecting horns. Pollen-mass yellow, with a very long footstalk, and a jointed gland at the base. Stigma large, viscid.” Goldie, loc. cit.

CANADA
Goldie (20), type.

NEWFOUNDLAND
Moist woods, Whitbourne, August 15, 1894, B. L. Robinson & H. Schrenk (3, 6).

NEW BRUNSWICK, VICTORIA COUNTY
Moist spruce woods near Clair's, July 11, 1904, A. A. Eaton (no. 93) (1).

ONTARIO, MUSKOKA DISTRICT
Shady woods, Muskoka, July 10, 1892, W. Spreadborough (6).

MAINE
Northern Maine, Susan M. Hallowell (2).
Aroostook Co.: Hilltop, in deciduous woods, Bickerbrook, three miles east of Fort Kent, July 15, 1904, A. A. Eaton (1).—Hillside in woods three and a half miles west of Fort Kent, July 18, 1904, Eaton (no. 160) (1).—Deep humus of evergreen woods, St. John’s Plantation, July 20, 1904, Eaton (no. 205, in part) (1).
Franklin Co.: Dark woods, Farmington, July 25, 1902, Clarence H. Knowlton (no. 435) (1).—Rich woodland, South Chesterville, July 18, 1903, Lillian O. Eaton (1).
Oxford Co.: Norway, S. I. Smith (3).
York Co.: Deep, low woods, North Parsonsfield, June 28, 1902, R. G. Leavitt (1); July, 1902, Leavitt (1).

NEW HAMPSHIRE, CHESTER COUNTY
Rich woods, Jaffrey, July 9, 1897, B. L. Robinson (no. 191) (3).
Rockingham Co.: Derry, Seeman (2).
VERMONT, Addison County
Cold woods, Monkton, July 12 and October 9, 1878, C. G. Pringle (7).

MASSACHUSETTS, Essex County
Salisbury, 1895, A. A. Eaton (1); low hemlock and pine woods, July 3, 1904, Eaton (1).
Middlesex Co.: South Framingham, July 13, 1890, E. L. Sturtevant (4).
—In open pine woods, North Tewksbury, near Lowell, June 28, 1902, Oakes & Blanche Ames (1).
Plymouth Co.: Brockton, July 16, 1903, O. Ames & A. A. Eaton (1) (leaves only).

CONNECTICUT, Litchfield County
Pine woods, Norfolk, July 6, 1889, J. H. Barbour (4).

NEW YORK
West New York, A. Gray (3).
Herkimer Co.: Rich woodlands, Frankfort Hill, six miles south of Utica, June 27, 1903, Dr. J. V. Huberer (no. 886) (3).
Washington Co.: Dark woods north end of Podunk Pond, west of Fort Ann, June 26, 1896, Stewart H. Burnham (1).
Chenango Co.: Bainbridge, July 20, 1897, D. LeRoy Topping (2).

MICHIGAN, Keweenaw County
Rich wood, Keweenaw Point, July 25, 1884, Frank E. & Floy J. Wood (2); evergreen woods, infrequent, August, 1890, O. A. Farwell (3); woods, 1863, J. W. Robbins (3).
Cheboygan Co.: C. H. Beardslee (2).

25. **H. cristata** (Michx.) R. Br., Prodr. 312 (1810), in Ait. **H. cristata**
Hort. Kew. ed. 2, 5:194 (1813); Spreng., Syst. Veg. 3:690 (1826); Torr., Comp. 317 (1826); Lodd., Bot. Cab. t. 1661 (1832); Beck, Bot. ed. 1, 348 (1833); Eaton & Wr., N. A. Bot. ed. 8, 260 (1840); Darby, Bot. S. St. 527 (1866); Gray, Man. ed. 5, 501 (1867), ed. 6, 508 (1890), Field, For. & Gard. Bot. 325 (1868), rev. ed. 408 (1895); Willis, Cat. N. J. 61 (1874); Britton, Prel. Cat. N. J. 94 (1881); Tracy, Fl. Mo. 84 (1886); Gattinger, Tenn. Fl. 83 (1887); Britton, Cat. N. J. 234 (1889); Britton &
**ORCHIDACEÆ**


Orchis psycodes *L.*, Sp. Pl. ed. 1, 943 (1753), ed. 2, 1336 (1763); *Willd.*, Sp. Pl. 4: 40 (1805); *Muhl.*, Cat. 80 (1813); *Elliott*, Sketch 2: 485 (1824). All as to *Gron.*, Fl. Virg. 184.—


"**Cristata.** O. bulbis indivisis: foliis lanceolatis: spica floribus confertis, parvulis, luteis: cornu dimidii ovari longitudo: [ 152 ]"
laciniiis duabus interioribus rotundatis, cristato-denticulatis: la-

H. cristata

bello oblongo, pennatim lacero.


"Hab. in sylvis Carolinæ." Michx. loc. cit.

NEW JERSEY

New Calverly (3).

BURLINGTON Co.: Swamps, Quaker Bridge, August, 1862, Canby (16).

CAMDEN Co.: Winslow, August, 1878, Isaac C. Martindale (2).—Griffith's, six and a half miles southeast of Philadelphia, August 10, C. E. Smith (3).

ATLANTIC Co.: Bogs near Egg Harbor City, July 28, 1878, C. F. Parker (no. 11,543) (4).

PENNYSYLVANIA

T. C. Porter (9).—Muhlenberg (13).

DELAWARE

Sussex Cap, July, 1878, Wm. M. Canby (8).—Lewiston, July, 1878, Canby (3).

Sussex Co.: Meadows, Ellendale, August, 1874, Canby (16).—Swamps, Rehoboth, July, 1879, Canby (5).—Swamp, one mile south of Lewes, July 27, 1878, Canby (16).

MARYLAND

Annandale (?) 1898, Dr. Gerrit S. Miller (2).

BALTIMORE Co.: Baltimore (3).

WORCESTER Co.: Ocean City, July 25, 1878, A. Commons (10, 16).

VIRGINIA, NANSEMOND COUNTY

Near Suffolk, July 11, 1898, Thos. H. Kearney, Jr. (no. 1575) (2); July 18, 1898, Kearney (no. 1708) (2).

NORTH CAROLINA

In sylvis Carolinæ, florib. luteis, autumnus floret? Hb. Michaux (21), type.

CHOWAN Co.: Edenton, July 29, 1898, Thos. H. Kearney, Jr. (no. 1890) (2).

WAKE Co.: Raleigh, September 13, 1897, W. W. Ashe (2). 

HENDERSON Co.: Swamps of Muddy Creek, August 20, 1881, John Donnell Smith (2, 3).

CRAVEN Co.: Swamps near Newbern, July 21, 1897 (Biltmore Dist. no. 4887a) (2, 3, 4, 5); Newbern, July 31, 1898 (no. 1944), August 1, 1898, (no. 1964), Thos. H. Kearney, Jr. (2).
**ORCHIDACEÆ**

*H. cristata*  
CUMBERLAND Co.: Low ground, Fayetteville, August 13, 1903 (Biltmore no. 4887h) (5).

SOUTH CAROLINA, RICHLAND COUNTY  
Small sphagnum swamp, Columbia, August 1, 1900 (Biltmore no. 4887d) (5).  
AIKEN Co.: Aiken, August 27, 1866, W. Ravenell (4).  
BERKELEY Co.: Summerville, August, 1893, J. B. (5).  
BEAUFORT Co.: Beaufort district, 1886, Dr. Mellichamp (10). — Bluffton, 1873, Mellichamp (16).

GEORGIA, DODGE COUNTY  
Moist pine barrens, Eastman, August 7, 1901 (Biltmore no. 4887g) (5).  
SUMTER Co.: Moist pine barrens, July 26, 1901, Roland M. Harper (no. 1122) (2, 3, 4).  
THOMAS Co.: Thomasville, August 4–14, 1903, Mrs. A. P. Taylor (1); July 18, 1905, Mrs. Taylor (1).

FLORIDA  
Chapman (2, 4, 5, 8, 16).  
DUVAL Co.: August, 1876, A. H. Curtiss (7). — Moist pine barrens near Jacksonville, August, 1877, Curtiss (no. 2758) (2, 4, 6, 8); August 6, 1894, Curtiss (no. 5120) (14). — San Pablo, July 25, 1896, L. H. Lightpipe (no. 440) (5).  
MADISON Co.: Damp, dark, fertile hammock woods near a pond, August 2, 1898, Combs (2).  
GADSDEN Co.: Quincy, September 4, 1895, Geo. V. Nash (no. 2560) (2, 3, 4).  
WASHINGTON Co.: Swamps, Point Washington, August 10, 1901 (Biltmore no. 4887 f) (5).  
ST. JOHN Co.: St. Augustine, 1877, Mary C. Reynolds (8).  

ALABAMA, CULLMAN COUNTY  
Cullman, August 5, 1896, Chas. Mohr (12).  
TUSCALOOSA Co.: Low grassy pine barrens, June, E. A. Smith (12). — Wet soil, Tuscaloosa, August 1, 1899 (Biltmore no. 4887b) (5).  
CLAY Co.: August 24, 1897, F. S. Earle (14).
ORCHIDACEÆ


Butler Co.: In swamps near Greenville, August 11, 1899 (Biltmore no. 4887c) (5).

Mobile Co.: Mobile, 1872, *Wm. Harvey* (no. 39) (2); July 21, 1905, W. C. Dukes (1).—Common in swamp, Spring Mill, August 1, 1897, B. F. Bush (no. 87) (2, 4).

Mississippi, Harrison County

Hancock Co.: July 28, 1887, H. V. Arnz (4).

TENNESSEE, Putnam County
Swampy ground, August 8, 1900 (Biltmore no. 4887e) (5).

Coffee Co.: Tullahoma, August, 1878, Dr. A. Gattinger (7).

Franklin Co.: Sewanee, August 1, 1878, Gattinger (8).

ARKANSAS, Pulaski County
Little Rock, July, 1885 (11).

LOUISIANA

*Hale* (3).—Paroisse des Rapides, 1839, Prof. Steinhauer (4).—Aldenbridge, November 1, 1898, Wm. Trelease (4).

× *H. Chapmanii* (Small) comb. nov. (*H. ciliaris × H. cristata* × *H. Chapmanii*).

*Blephariglottis Chapmanii* Small, Fl. Se. U. S. 314 (1903).

“Roots coarse; stems 6–10 dm. tall; leaves few; blades broadly linear to linear-lanceolate, 1–2 dm. long or shorter above, acute, the lower ones with clasping bases, the upper reduced to sessile bracts: spikes cylindric, about 1 dm. long, 4 cm. thick, many-flowered: perianth deep orange: sepals about 4 mm. long, the lateral suborbicular, the other concave, often notched at the apex: lateral petals fan-shaped, 3.5–4 mm. long, pectinate-fringed: lip about 1 cm. long, the body linear, with a terminal drooping fringe of 6–8 simple or forking hair-like appendages and 2 basal staghorn-like forking appendages: spur as long as the ovary or longer.

[ 155 ]
x H. Chapmanii

"In pine woods, Apalachicola, Florida, Summer." Small, loc. cit.

FLORIDA, FRANKLIN COUNTY
Low pine woods near Apalachicola, 1868, Dr. Saurman (4, 5); Chapman (5); 1882, Chapman (3).
DuVAL CO.: Moist pine barrens near Jacksonville, August, A. H. Curtiss (no. 2758) (3); August 6, 1894, Curtiss (no. 5120) (2).

H. ciliaris

26. H. ciliaris (L.) R. Br., Prodr. 312 (1810), in Ait. Hort. Kew. ed. 2, 5: 194 (1813); Sims, Bot. Mag. t. 1668 (1814); Lindl., in Donn’s Hort. Cant. ed. 10, 332 (1823); Torr., Comp. 317 (1826); Spreng., Syst. Veg. 3: 690 (1826); Lodd., Bot. Cab. t. 1326 (1832); Short, Cat. Ky. 7 (1833); Beck, Bot. ed. 1, 348 (1833); Gray, in Ann. Lyc. Nat. Hist. N. Y. 3: 230 (1836); Darl., Fl. Cestr. ed. 1, 507 (1837); Eaton & W. N. A. Bot. ed. 8, 259 (1840); Torr., in Geol. & Nat. Hist. Surv. N. Y. 174 (1840); Dewey, Herbaceous Pl. Mass. 198 (1840); Darby, Bot. S. St. 526 (1866); Gray, Man. ed. 5, 502 (1867), ed. 6, 509 (1890), Field, For. & Gard. Bot. 325 (1868), rev. ed. 408 (1895); Willis, Cat. N. J. 61 (1874); Yale Cat. 45 (1878); J. Robinson, Fl. Essex Co. 108 (1880); Gard. Chron. n. s. 14: 305 (1880); Ward, Fl. Wash. 119 (1881); Britton, Prel. Cat. N. J. 94 (1881); Perkins, Gen. Cat. Vt. 37 (1882); Galen, Fl. Lanc. Co. (1884), (1895), 15 (1898); Gattinger, Tenn. Fl. 83 (1887); Macoun, Cat. 4: 18 (1888); Dane & Collins, Fl. Middlesex 103 (1888); Bennett, Pl. R. I. 43 (1888); Perkins, Fl. Vt. 278 (1888); Britton, Cat. N. J. 234 (1889); Macoun, Check-list 53 (1889); Watson, Orch. Cult. ed. 1, 527 (1890), ed. 2, 527 (1895); Beal & Wheeler, Fl. Mich. 607 (1891); Morong, in Bull. Torr. Bot. Cl. 20: 36 (1893); Williams, Orch. Grow. Man. ed. 7, 417 (1894); Baldwin, Orch. N. Eng. 90, 113-115, f. 35 (1894);
ORCHIDACEÆ

Moran, in Journ. des Orch. 6: 254 (1895); Britton & Br., Ill. H. ciliaris
Fl. 1: 464, f. 1167 (1896); Millsp. & Nutt., Fl. W. Va. 200 (1896);
Kearney, in Bail. Cycl. Am. Hort. 2: 706, f. 1015 (1900); Meehan,
Monthly 10: 17, t. 2 (1900); Gattinger, Fl. Tenn. 62 (1901);
Mohr, Pl. Life Ala. 454 (1901); Mathews, Field-book 88, fig.
(1902); Jelliffe, Gibson's Nat. Orch. 47, t. 23 & frontisp. (1905);
Harper, in Rho. 7: 73 (1905).

Orchis Marilandica, grandis & proceræ, floribus luteis,
calcari longissimo, labello fimbriato Ray, Suppl. 588 (1704).
— O. palmata elegans lutea Virginiana cum longis cal-
caribus luteis Mor., Hist. 3: 499 (1715).— O. nectarii labio
lanceolato ciliato, seta germine intorto longiore Roy.,
Lugdb. 15 (1729).— O. bulbis indivisis, nectarii labio lan-
ceolato ciliato cornu longissimo L., in Act. Ups. 6 (1741).

Fl. Virg.), ed. 2, 1381 (1763); Forst., Cat. Pl. N. A. 39 (1771);
Walt., Fl. Carol. 280 (1788); Muhl., Ind. Fl. Lanc. 178 (1793);
Salisb., Prodr. 6 (1796); Poir., in Lam. Encyc. 4: 588 (1797);
Andrews, Bot. Repos. 1: 42, t. 42 (1797); Sw., in Act. Holm. 21:
206 (1800); Willd., Sp. Pl. 4: 8 (1805); Sw., Gen. et Sp. Orch.
(Schrader's Neues Journ. 1) 8 (1806); Pers., Syn. 2: 502 (1807);
Martyn, in Mill. Dict. ed. 9, 2: no. 14 (1807); Pursh, Fl. 2: 585
(1814); Green, Cat. N. Y. 120 (1814); Barton, Comp. Fl. Phil. 2:
136 (1818); Nutt., Gen. 2: 188 (1818); Torr., Cat. N. Y. 68
(1819); Elliott, Sketch 2: 483 (1824); Big., Fl. Bost. ed. 2, 319
(1824), ed. 3, 341 (1840); Eaton, Man. ed. 4, 374 (1824); Oakes,
in Thompson's Vt. 199 (1853); Wood, Class-book ed. 41, 534
(1856); Provanch., Fl. Canad. 2: 567 (1862).— O. Floridana,
flore aureo fimbriato longis calcaribus donato Pluk.,
Amalth. ed. 2, 162, t. 432, f. 5 (1769).

Platanthera ciliaris Lindl., Gen. & Sp. Orch. 292 (1835);
ORCHIDACEÆ


_Blephariglottis flaviflora_ Raf., Fl. Tellur. 2: 38 (1836).—
_B. ciliaris_ Rydb., in Britton’s Man. 296 (1901); _Burnham, in Torreya 1: 119 (1901); _Small, in Porter’s Fl. Pa. 93 (1903), Fl. Se. U. S. 314 (1903); _House, in Torreya 3: 52 (1903); _Light-hipe, in Torreya 3: 80 (1903).

“ORCHIS bulbis indivisis, nectarii labio lanceolato ciliato: cornu longissimo. _Act. ups. 1741. p. 6._

“Orchis nectarii labio lanceolato ciliato, seta germine intorto longiore. _Roy. lugdb. 15. Gron. virg. 183._

“Orchis palmata elegans lutea americana, cum longis calcari-
bus luteis. _Moris, hist. 3, p. 499._

“Orchis marilandica grandis & procera, floribus luteis, calcari
longissimo: lobulo fimbriato. _Raj. suppl. 588._

“_Habitat in Virginia, Canada. 2f._” _L. loc. cit._

In Catesby’s Herbarium, preserved at the British Museum of
Natural History, there is a very good specimen of this species to-
gether with two other specimens of the genus, probably _H. nivea_
and _H. repens_. In the Gronovian Herbarium there is a speci-
men which has been identified as _Habenaria ciliaris_ R. Br., ac-
companied by the following description: “Orchis nectarii labio
lanceolato ciliato, seta germine intorto longiore.” Probably Gro-
novius confused two species in his work on the flora of Virginia.

[158]
_H. ciliaris_ is very rare in the northernmost part of its range. _H. ciliaris_
With the exception of one collection from Vermont, which I
refer to _H. ciliaris_ with reasonable sureness, the species has not
been reported from the United States north of Massachusetts.
In the southernmost part of its range great variation may be ex-
pected, especially in the size of the raceme and the fringe of the
labellum.

**ONTARIO, Essex County**
Low sandy woods, Leamington, August 15, 1886, _Burgess_ (6); in a
swamp west of Leamington, July 24 and 25, 1892, _J. Macoun_ (3, 6).

**VERMONT, Orleans County**
Troy, 1841, _John Carey_ (4).

**MASSACHUSETTS, Middlesex County**
Lexington, 1852, _W. Boot_ (3).
Norfolk Co.: Dedham, August, 1888, _E. H. Hitchings_ (3).—West Ded-
ham, August 9, 1888, _Faxon_ (2).
Nantucket Co.: Nantucket, August 1897, _L. L. Dame_ (3).

**RHODE ISLAND, Washington County**
South Kingston, August 26, 1880, _Faxon_ (3); August 24, 1881, _Faxon_ (3);
Providence Co.: Damp woods, Burrillville, September, 1902, _Leland J.
Spalding_ (17).—Foster, August, 1878, _Dennis Tonery_ (1).

**CONNECTICUT, New Haven County**
New Haven, August, 1830, _S. B. Buckley_ (4).—East Haven, near New
Haven, July 31, 1886, _A. L. Winton_ (3); open swamp, rare, August 15,
1903, _E. B. Harger_ (1); August, _H. M. Denslow_ (2).—Branford, August
2, 1897, _Wm. Trelease_ (4).
Fairfield Co.: Dry rich field, abundant locally, August 22, 1895, _E. H.
Eames_ (2).—Dry copse on coast, Stratford, September 27, 1903, _Eames_ (1).

**NEW YORK**
_Sartwell_ (3).
Washington Co.: East Greenwich, 1865, _Dr. Asa Fitch_ (11).
Seneca Co.: North of Newton’s Pond, Junius, August 4, 1898, _Jos.
Schrenk_ (4).
ORCHIDACEÆ

H. ciliaris  RICHMOND CO.: South Beach, Staten Isl., August 3, 1890, Mrs. E. G. Britton (6).—Erastina, July 25, 1894, C. L. Pollard (2).

NEW JERSEY

Swamps, July, 1863, Wm. M. Canby (6).—August, 1842, Thos. P. James (2).—Thurber (3).—Durand (3).
Hudson Co.: Circa Hoboken in Canada, lecta 1828, C. J. Moser (10).
Camden Co.: Low ground, July 30, 1871, C. F. Parker (3).
Gloucester Co.: Harrisonville, August, 1874, H. H. Rusby (10).

PENNSYLVANIA, CENTER COUNTY

Mt. Eagle, July, 1895, Miss C. (4).—Bear Meadows, August, 1865, Miss N. J. Davis (2).
Huntington Co.: August 14, 1856, T. C. Porter (3).
Berks Co.: Monterey, August, 1891, K. A. Taylor (2).
Lebanon Co.: Vicinity of Penryn, July 29, 1889, J. K. Small (6); September 13, 1892, A. A. Heller (no. 680) (2, 4).
Bucks Co.: Low ground, Bristol, July 30, 1865, C. F. Parker (2, 4, 5).

DELAWARE

Swamps, July, 1863, Wm. M. Canby (6).
Newcastle Co.: Swamps, Townsend, August, 1862, Canby (16).

MARYLAND, BALTIMORE COUNTY

Near Baltimore, September, 1893, Adam Steitz (2); fruit, October 11, 1894, Steitz (2).—Near Hill's, fruit, South Baltimore, November 4, 1893 Steitz (2); July 25, 1896, Steitz (2).
Prince George Co.: Laurel, August 7, 1897, F. H. Knowlton (2, 5).
Worcester Co.: Meadows, Ocean City, August 8, 1878, Wm. M. Canby (16).

DISTRICT OF COLUMBIA

July, 1887, C. D. White (2); August 8, 1897, Thos. H. Kearney, Jr. (5).
—Mucky ground, August 6 and 12, 1896, E. S. Steele (3, 4).—Near Reform School, July 21, 1878, Lester F. Ward (2).—Kenilworth Swamp, August 4, 1897, Steele (2).—August 8, 1897, Kearney (5, 14).—Benning's, August 15, 1897, C. L. Pollard (2).

VIRGINIA

Dry hills, mountains of Virginia, August, 1858, Wm. M. Canby (16).
ORCHIDACEÆ

CRAIG Co.: Craig's, 600 metres, August 22, 1903, E. S. Steele & Mrs. H. ciliaris Steele (no. 75) (3, 4).

NANSEMOND Co.: About Suffolk, July 24, 1893, Heller (no. 1139) (3).

NORTH CAROLINA
Middle North Carolina, W. W. Ashe (2); August 14, 1884, G. McCarthy (2); 1885, McCarthy (2).

WATAUGA Co.: Blowing Rock, August 9, 1893, Mrs. B. L. Robinson (3).

BUNCOMBE Co.: Moist woodland, Biltmore, August 5, 1896 (Biltmore no. 489) (5); dry woods, August 13, 1897 (Biltmore no. 489b) (2, 3, 4, 5).

CLEVELAND Co.: Base of King's Mt., August 1, 1902 (Biltmore no. 489e) (5).

POLK Co.: Spring Mountain Park, near Columbus, August 16, 1897, E. C. Townsend (2).

SWAIN Co.: Dry hillsides, Great Smoky Mts., 1700–4000 ft., July 15–August 15, 1891, Beardslee & Kofoid (2, 4).

HENDERSON Co.: Flat Rock, L. Gibbs (3).—Swamps of Muddy Creek, August 20, 1881, J. D. Smith (3).

NEW HANOVER Co.: Wilmington, 1881, W. R. Smith (2).

SOUTH CAROLINA, LEXINGTON COUNTY
Moist soil, Batesburg, July 30, 1900 (Biltmore no. 489d) (5).

AIKEN Co.: Aiken, August, 1869, H. W. R[avenell] (2); August 16, 1866, H. W. R. (4).

BEAUFORT Co.: Bluffton, 1872, Dr. Mellichamp (4); 1873, Mellichamp (16).

GEORGIA, FLOYD COUNTY
Rome, July, 1888, Gerald McCarthy (2).

RICHMOND Co.: Augusta, August, 1876, A. Cuthbert (10).

Screven Co.: Scarborough, September, 1884, E. W. Lang (10).

SUMTER Co.: Rather dry pine barrens, July 24, 1901, R. M. Harper (no. 1108) (2, 3, 4).

NORTH Co.: Poulan, August 14 and 15, 1900, C. L. Pollard & W. R. Maxon (no. 552) (2).

Colquitt Co.: Sphagnous bog along Ochlocknee Creek, near Moultrie, August 22, 1903, R. M. Harper (no. 1943) (1).

Thomas Co.: Thomasville, August 21, 1897, S. M. Tracy (no. 5535) (2, 4, 14); July 6, 1902, August 4, 25, September 1, 1903, July 18, 1905, Mrs. A. P. Taylor (1).
**ORCHIDACEÆ**

**H. ciliaris** **FLORIDA**

East Florida, Dr. Edward Palmer (no. 546) (2, 3).

Walton Co.: De Funiak, July, 1896, P. H. Rolfs (no. 692) (4); marsh lands along streams, mostly in open places, common, August 12, 1898, Combs (2).

Calhoun Co.: Swamps and bogs, Wewahitchka, August, 1896, Chapman (Biltmore no. 489a) (2, 3, 5).

St. John Co.: St. Augustine, May 20, 1886, Mary C. Reynolds (2).

Lake Co.: Flat woods, Eustis, August 1–15, 1894, George V. Nash (no. 1534) (2, 3, 4, 5, 10, 14).


**ALABAMA**

Prof. Alexander Winchell (2).

Talladega Co.: Talladega Springs, July 17–19, 1900, C. L. Pollard & W. R. Maxon (no. 244) (2).

Tuscaloosa Co.: Wet borders of streams, common, Tuscaloosa, July 31, 1878, E. A. Smith (12).

Tallapoosa Co.: August 21, 1897, F. S. Earle (14).

Coosa Co.: Low ground, Goodwater, July 31, 1902 (Biltmore no. 489f) (5).


Mobile Co. (?): Common in swamp, Spring Hill, August 4, 1897, B. F. Bush (no. 91) (4).

**MISSISSIPPI, J ACKSON COUNTY**

Scranton, August 5 and 6, 1896, C. L. Pollard (no. 1194) (2, 3, 4, 5).

Harrison Co.: Ocean Springs, August 2, 1889, F. S. Earle (1); August 1, 1895, J. Skehan (4).—Biloxi, July 25 and 26, 1896, Pollard (no. 1025) (2, 3, 4); August 3, 1900, S. M. Tracy (no. 7013) (5).

**TENNESSEE**

Near summit of Great Smoky Mts., 1895, Frank E. Moore (2).

Dickson Co.: Pond Station, July 23, 1886, A. Gattinger (8).—Craggy Hope, August 10, 1882, Gattinger (8).

Lincoln Co.: Low ground in oak barrens, Elora, July 27, 1899 (Biltmore no. 489c) (5).

Coffee Co.: Tullahoma, A. Gattinger (5, 8); August, 1878, Gattinger (7).—Sewanee, August, 1878, Gattinger (8).

Monroe Co.: White Cliff Springs, July, 1890, F. Lamson-Scribner (8).
ORCHIDACEÆ

Cocke Co.: Within three miles of Wolf Creek Station, August 30, 1897, *H. ciliaris* Thos. H. Kearney, Jr. (no. 909) (2, 4, 14).

**OHIO, Lucas County**
Ten miles west of Toledo, August 1, 1898, *E. L. Moseley* (2).

**INDIANA, Steuben County**
Low open clearing one-half mile north of Clear Lake, July 24, 1904, *Chas. C. Deam* (1); prairie conditions around Clear Lake, August 21, 1904, *Deam* (1).

**ILLINOIS**

**MICHIGAN**

**MISSOURI, Ripley County**

**ARKANSAS**
Swamps, southwest Arkansas, August, *F. L. Harvey* (no. 76) (4, 10, 11, 16).
Pulaski Co.: Little Rock, June, 1885 (11); July, 1886, *Dr. H. E. Hasse* (2).

**LOUISIANA**
Red River, *Hale* (?) (3).

**TEXAS, Harding County**


Labellum about 7 mm. long, deeply fringed, more closely resembling *H. cristata* than *H. blephariglottis*; spur 12 mm. long, more or less intermediate between the parent species. The length of the spur is of great value in the identification of the hybrid.

[ 163 ]
× **H. Canby** DELAWARE, SUSSEX COUNTY


**H. blephariglottis**

27. *H. blephariglottis* Hook.,¹ Exot. Fl. 2: t. 87 (1824); Lodd., Bot. Cab. t. 925 (1824); Spreng., Syst. Veg. 3: 690 (1826); Torr., Comp. 317 (1826); Sw., Adnot. Bot. 46 (1829); Beck, Bot. ed. 1, 348 (1833); Gray, in Ann. Lyc. Nat. Hist. N. Y. 3: 290 (1836); Paxt., Mag. 2: 183 (1836); Torr., in Geol. & Nat. Hist. Surv. N. Y. 174 (1840); Eaton & Wr., N. A. Bot. ed. 8, 259 (1840); Dewey, Herbaceous Pl. Mass. 198 (1840); Darby, Bot. S. St. 527 (1866); Gray, Man. ed. 5, 502 (1867), ed. 6, 509 (1890), Field, For. & Gard. Bot. 325 (1868), rev. ed. 408 (1895); Miller & Young, Pl. Suffolk Co. L. I. 13 (1874); Willis, Cat. N. J. 61 (1874); Yale Cat. 45 (1878); J. Robinson, Fl. Essex Co. 108 (1880); Britton, Prel. Cat. N. J. 94 (1881); Perkins, Gen. Cat. Vt. 37 (1882); Dudley, Cayuga Fl. 96 (1886); Gattinger, Tenn. Fl. 83 (1887); Macoun, Cat. 4: 19 (1888); Oceen, Pl. Nantucket 58 (1888); Bennett, Pl. R. I. 43 (1888); Dame & Collins, Fl. Middlesex 103 (1888); Perkins, Fl. Vt. 278 (1888); Macoun, Check-list 53 (1889); Britton, Cat. N. J. 235 (1889); Watson, Orch. Cult. ed. 1, 528 (1890), ed. 2, 528 (1895); Beal & Wheeler, Fl. Mich. 607 (1891); Fernald, in Portl. Cat. 64 (1892); Williams, Orch. Grow. Man. ed. 7, 417 (1894); Baldwin, Orch. N. Eng. 113–115 (1894); Moran, in Journ. des Orch. 6: 254 (1895); Britton & Br., Ill. Fl. 1: 465 f. 1108 (1896); Deane, Fl. Met. Park 79 (1896); Creevey, Fl.

¹ Hooker bases his species on *Orchis blephariglottis* Willd., but he figures the form which was later segregated by Lindley as *Platanthera holopetala*. The consensus of opinion of those who have done close field-work is that var. *holopetala* is untenable, all conditions of petals from entire to fringed sometimes being found on the same spike. See *Bulletin of the Torrey Botanical Club* 20: 86. Niles, in *Bog-trotting for Orchids*, designated a yellowish form as var. *holopetala*. (A. A. E.)
Field, Hill & Swamp 80 (1898); Clute, Fl. Up. Susq. 106 H. blephariglottis (1898); Meehan, Monthly 8: 113, t. 8 (1898); Kearney, in Bail. Cycl. Am. Hort. 2: 707 (1900), in Contr. U. S. Nat. Herb. 5: 522 (1901); Brainerd, Jones & Eggleston, Fl. Vt. 30 (1900); Gattinger, Fl. Tenn. 62 (1901); Mohr, Pl. Life Ala. 454 (1901); Mathews, Field-book 88, 90 (1902); Jelliffe, Gibson's Nat. Orch. 51, t. 24 (1905); Harper, in Rho. 7: 73 (1905).


Platanthera blephariglottis Lindl., Gen. & Sp. Orch. 291 (1835); Hook., Fl. Bor. Am. 2: 199 (1839); Steud., Nomencl. ed. 2, 2: 351 (1841); Torr., Fl. N. Y. 2: 277 (1843); Gray, Man. ed. 1, 472 (1848), ed. 2, 446 (1856), ed. 3, 446 (1859); Darrach, Pl. Phil. 13 (1853); Beck., Bot. ed. 2, 347 (1856); Tatnall, Cat. Pl. Newc. Co. Del. 75 (1860); Hervey, Cat. 21 (1860); Wood, Class-book 684 (1861); Paine, Pl. Oneida Co. 84 (1865); Portl. Cat. 7 (1868); Wood & McCarthy, Wilmington Fl. 50 (1887); Tracy, Essex Fl. 81 (1892); Correvon, Orch. Rust. 166 (1893); Chapm., Fl. S. U. S. ed. 3, 486 (1897); Kränztl., Orch. Gen. et
**H. blephariglottis**


**Platanthera blephariglottis** var. **holopetala** Torr., Fl. N. Y. 2: 277 (1843); *Gray, Man.* ed. 1, 472 (1848), ed. 2, 446 (1856), ed. 3, 446 (1859); *Paine, Pl. Oneida Co.* 84 (1865).—**P. ciliaris** var. **blephariglottis** Chapm., Fl. S. U. S. ed. 1, 460 (1860), ed. 2, 460 (1884).


**Habenaria holopetala** Niles, Bog-trotting for Orchids 256 (1904), based on a cream-colored form.

It is often difficult to distinguish between this species and **H. ciliaris** when herbarium specimens are studied. Usually the fringe of the labellum is shorter in **H. blephariglottis** than in **H. ciliaris**.
ORCHIDACEÆ

The limb of the labellum in *H. ciliaris* is usually narrowly ob- *H. blepharis-
long, the basal segments of the fringe branching in a conspicuous glottis
manner.

NEWFOUNDLAND

Sphagnous soil, hillside, Channel, July 27–August 1, 1901, C. D. Howe &
W. F. Lang (no. 895) (3).—Salmonier, August, 1885, R. Thaxter (3).—
Marsh, Holyrood, August 23, 1894, B. L. Robinson & H. Schrenk (no.
111) (2, 3, 4, 6, 7).

NOVA SCOTIA

Marshes, summit of Smoky Mt., Cape Breton Isl., August 3, 1898, J. Mac-
coun (6).

Pictou Co.: Bogs, August, 1885, Robert (6).

Guysboro Co.: Canso, August 8, 1901, J. Fowler (1).

PRINCE EDWARD ISLAND

Boggy ground, Mt. Steward, August 17, 1888, J. Macoun (2, 3, 6).

NEW BRUNSWICK, Northumberland County

Little Miramichi River, August 11, 1892, J. Fowler (2); July 18, 1892,
Fowler (4).

ONTARIO, Nipissing District

In a peat bog, Catfish Lake, July 21, 1900, J. Macoun (6).

Muskoka Dist.: Peat bogs, Muskoka, July 11, 1892, Spreadborough (6);
mossy borders of lakes, Muskoka, August, 1881, Burgess (6).—Graven-
hurst, July 29, 1897 (Biltmore, no. 4966 c) (5).

Carleton Co.: In peat bogs and swamps, Mer Bleue, near Ottawa, July 28,
1879, Fletcher (6).

MAINE, Penobscot County

Orono, 1882, Mrs. C. H. Fernald (2); Bangor bog, Orono, July 27, 1895,
M. L. Fernald (no. 351) (2, 3, 4); peat bogs, July 21, 1890, Fernald (3).

Franklin Co.: Sphagnum bog, South Chesterville, July 18, 1903, Lillian
O. Eaton (1).—Peat bog, Chesterville, July 19, 1902, C. H. Knowlton (1).

VERMONT

Island Pond, July 25, 1861, Wm. Boott (3).

MASSACHUSETTS, Middlesex County

Big Grassy Pond, Acton, August 9, 1888, Walter Deane (3).
ORCHIDACEÆ

H. blephari-glottis


Bristol Co.: North Easton, August 6, 1902, R. M. Grey (1); August 1, 1903, A. A. Eaton (1); July, 1903, Eaton (1).—Nonquit, July 19, 1889, Miss Cook (4).

Plymouth Co.: Marion, August 7, 1891, Faxon (3).

Barnstable Co.: Pocasset, July, 1883, Miss E. Minot (3).—South Dennis, August, 1879, C. N. Brainerd (5, 7).

Nantucket Co.: Nantucket, August, 1878, P. S. Collins (6); August, 1897, L. L. Dame (3).

Rhode Island, Providence County

Swamps, Providence, July, 1846, Geo. Thurber (3).—North Scituate, August 3, 1878, W. W. Bailey & Mrs. Esten (1).


New York

Long Isl., August 9, 1858, R. Veitch (4).

Jefferson Co.: Sphagnum swamp about a mile below Ludlow Pond, Smithville, August 2, 1884, F. V. Coville (2).


Oneida Co.: Sphagnous swamps, Utica, A. Gray (3).

Onondaga Co.: Near Syracuse, T. M. Fry (1).

Madison Co.: Fiddler's Green, July 13, 1905, H. D. House (no. 1246) (1).

Seneca Co.: Tamarack swamp, West Junius, August 4, 1873, Schrenk (4).—Penn Yan, Sartwell (4).


Richmond Co.: Erastina, July 25, 1894, C. L. Pollard (2); August 21, 1894, Pollard (2, 3).

New Jersey

Austin (4).—Swamps, pine barrens of New Jersey, August, 1862, Wm. M. Canby (16); July 29, 1865, Dr. H. Wood, Jr. (4).

Monmouth Co.: Pine barren swamp, Smithburg, August 8, 1884, O. E. Pearce (2).

Mercer Co.: Trenton, July 10, 1889 (5).

Burlington Co.: Atsion, August, 1874, H. H. Rusby (10).—Quaker Bridge (2).

Camden Co.: Winslow, August, 1878, Isaac C. Martindale (2).
**ORCHIDACEÆ**

**ATLANTIC Co.:** Egg Harbor, August 10 (flowers), September 3, 1888 (fruit), *H. blephariglottis*.

**Dr. J. Bernard Brinton (8).**

**PENNSYLVANIA, MONROE COUNTY**

Pocono Mt., August 1, 1860, *T. C. Porter* (2); August 20, 1860, *Porter* (3); *Dr. Traill* *M. Greene* (16).

**DELAWARE, SUSSEX COUNTY**


**MARYLAND, PRINCE GEORGE COUNTY**

Hyattsville, August 13, 1904, *Philip Dowell* (2).


**VIRGINIA, NANSEMOND COUNTY**

Sphagnum swamps near Suffolk, July 27, 1897 (Biltmore no. 4966a) (2, 3, 4, 5); July 24, 1893, *A. A. Heller* (no. 1137) (2, 3, 4).

**NORTH CAROLINA, SWAIN COUNTY**


*Henderson Co.:* Swamps of Muddy Creek, August 20, 1881, *John Donnell Smith* (3).

**OHIO, SUMMIT COUNTY**

Summit Lake, Akron, July 24, 1889, *Dr. Kent O. Foltz* (11); Akron, *J. L. R.* (3).

**MICHIGAN, INGHAM COUNTY**

In sphagnum, abundant, Towar’s swamp, Agricultural College, July 23, 1894, *C. F. Wheeler* (3).

**H. blephariglottis Hook., var. conspicua (Nash) Ames, H. blephariglottis var. conspicua**


“*Habenaria conspicua* n. sp.

“Whole plant glabrous, 4–8 dm. tall. Leaves linear to lanceolate-linear, erect or ascending, usually acute, the lower one 10–25 cm. long, 1–2 cm. broad, the remaining ones gradually be-
OCHIDACEÆ

*H. blephariglottis* var. *conspicua*

coming shorter and passing into the bracts of the inflorescence; spike ovate to oblong, 6–12 cm. long, 5–7 cm. in diameter; flowers numerous, white; tube of the calyx 2–2.5 cm. long, the sepals orbicular or nearly so, 7 mm. in diameter; petals oblanceolate, about 5 mm. long, from nearly entire to more or less toothed at the apex; lip 12–15 mm. in length, narrowly oblong, the claw 4–5 mm. long, the blade deeply fimbriate; spur curved, narrowly cylindric, 4–5 cm. in length.

“Collected on the edge of a sphagnum bog at Lake City, Columbia Co. [Fla.], No. 2501, and observed at a number of other places. It was distributed in my collection of 1894 under No. 1700, as *H. blephariglottis*, from which it is abundantly distinct, the larger flowers, longer spur, and deeply fimbriate lip readily separating it.” Nash, *loc. cit."

Although characteristic plants of this variety are easily separable from the type, intergrading forms occur which make any attempt at distinction purely arbitrary.

NORTH CAROLINA


Craven Co.: Newburn, July 31, 1898, *Thos. H. Kearney, Jr.* (no. 1939) (2); August 1, 1898, *Kearney* (no. 1979) (2).

Cumberland Co.: Bogs near Fayetteville, August 13, 1903 (Biltmore no. 4966d) (5).

New Hanover Co.: Wilmington, 1881, *W. R. Smith* (2).


SOUTH CAROLINA, Beaufort County

Bluffton, 1873, *Dr. J. H. Mellichamp* (16).

GEORGIA, Chatham County

Moist grassy pine barrens, Savannah, August 17, 1900 (Biltmore no. 691b) (5).

Charleston Co.: Sphagnum bog two miles east of Folkstone, August 12, 1902, *R. M. Harper* (no. 1508) (2, 3, 4).

[ 170 ]
ORCHIDACEÆ

Colquitt Co.: Sphagnous bog along Ochlocknee Creek, near Moultrie, August 22, 1903, R. M. Harper (no. 1944) (1).
THOMAS Co.: Thomasville, August and September, 1903, Mrs. A. P. Taylor (1, 7); August 4, 1902, Mrs. Taylor (1).

FLORIDA, Duval County
Jacksonville, 1875, A. H. Curtiss (2); waste places in Jacksonville, August, 1877, Curtiss (no. 2757) (2, 3, 4, 7, 8); August 14, 1898, Curtiss (no. 4178) (2); springy places near Jacksonville, August 10, 1894, Curtiss (no. 5145) (2); margin of swamp in pine barrens near Jacksonville, August 30, 1900, Curtiss (no. 6707) (2, 3, 4, 7).
Columbia Co.: Lake City, August 29–31, 1895, Geo. V. Nash (no. 2501) (2, 3, 4, 10) (type number of H. conspicua).
Liberty Co.: Swamps, August 26, 1901 (Biltmore no. 691c) (5).
Franklin Co.: Apalachecola, Chapman (4); swamps, Apalachecola, July–August, Chapman (Biltmore dist. no. 4966b) (2, 3, 4, 5).
Lake Co.: Vicinity of Eustis, August 16–25, 1894, Nash (no. 1700) (2, 3, 4, 10).
Orange Co.: Swamps, August 19, 1902, A. Fredholm (no. 5497) (3).

ALABAMA, Winston County
1866, T. M. Peters (16).
Tuscaloosa Co.: Tuscaloosa, Dr. E. A. Smith (12).
Butler Co.: Swamps, Greenville, August 11, 1900 (Biltmore no. 4966d) (5).
Mobile Co.: Mobile, C. Mohr (12).—Biloxi, September 6, 1900, F. E. Lloyd & S. M. Tracy (no. 315) (1).

MISSISSIPPI, Jackson County
Ocean Springs, August 30, 1889, F. S. Earle (1).
Harrison Co.: Beauvoir, September 4, 1898, S. M. Tracy (no. 5079) (2, 4, 14).

TENNESSEE (?)
Cumberland Mts., 1888, Mrs. Bennett (8) (a form with entire labellum).

28. H. lacera (Michx.) R. Br., Prodr. 312 (1810); Lodder., Bot. H. lacera Cab. t. 229 (1818–24); Lindl., in Donn's Hort. Cant. ed. 10, 332

[ 171 ]
Plate 66
I. Habenaria psycodes. II. × H. Andrewsii.
III. H. lacera.
All drawn, enlarged, with the aid of the camera lucida.
ORCHIDACEÆ


*Orchis habenaria* *Walt.*, Fl. Carol. (1788) not *L.*.—*O. lacera*

[ 173 ]
**ORCHIDACEÆ**


*Blephariglottis lacera* Rydb., in Britton’s Man. 296 (1901);
ORCHIDACEÆ


Habenaria lacera × H. clavellata Niles, Bog-trotting for Orchids 257 (1904), reference.

“LACERA. O. foliiis spicaque oblongis; floribus distincte alternis: cornu fere ovari Longitudine: labello longiore, anguste tripartito; lacinis subdigitatis, filiformibus.

“Hab. in Carolina.” Michx. loc. cit.1 (PLATE 66.)

NEWFOUNDLAND

Marsh, Holyrood, August 22, 1894, B. L. Robinson & H. Schrenk (2, 3, 6).

NOVA SCOTIA

In boggy places below Island Pond, Sable Isl., July 26, 1899, J. Macoun (6).

CAPE BRETON Co.: Damp, sandy ground, Sydney, August 18, 1902, M. L. Fernald (3).—Boggy places, North Sydney, July 12, 1883, Macoun (3); moist meadows, July 13, 1883, Macoun (6).

VICTORIA Co.: Meadows, Baddeck, Cape Breton, July 19, 1883, Dr. T. J. W. Burgess (3); rich damp woods, July 18, 1883, Macoun (3); wet meadows and bogs, July 18, 1883, Macoun (6); bogs, July 19, 1883, Macoun (3); fields, July 25, 1898, Macoun (6).

PICTOU Co.: Damp meadow, near Pictou, July 12–18, 1901, C. D. Howe & W. F. Lang (no. 545) (3).

GUYSBOROUGH Co.: Boylston, July, 1890, Dr. C. A. Hamilton (2, 6); July 17, 1879, H. L. Osborn (2).

KINGS Co.: Damp soil along railroad, July 8 and 9, 1901, Howe & Lang (no. 238) (3).—Damp, sandy ground, Kentville, August 22, 1902, Fernald (3).

HALIFAX Co.: Halifax, August 5, 1902, W. H. Blanchard (7).


PRINCE EDWARD ISLAND

August, 1888, J. Macoun (2, 3).

PRINCE Co.: Roadsides and fields, Tignish, July 26, 1888, Macoun (6).

1There remains in the Michaux Herbarium at Paris a flowerless fragment, and two flowers in a pocket. (A. A. E.)
**H. lacera**  Queens Co.: Royalty Junction, July 22, 1901, J. R. Churchill (3).

**NEW BRUNSWICK, VICTORIA COUNTY**

**ONTARIO, HASTINGS COUNTY**
In low rich woods near Belleville, July 15, 1867, J. Macoun (6).
Wellingtong Co.: Wet thickets, Snell’s Lake, July 16, 1890, James White (6).—Cranberry marsh, Killeen, July 6, 1904, A. B. Klugh (1).
Huron Co.: Wingham, July 19, 1891, J. A. Morton (6); July 16, 1892, Morton (5).
Lincoln Co.: Gardener’s Bush, St. Catharines, July 3, 1897, W. C. McCalla (no. 334) (5).
Welland Co.: Damp woods, Niagara Falls, 1893, Cameron (6).
Norfolk Co.: Boggy woods, Port Rowan, July 17, 1892, J. Macoun (6).

**MANITOBA**
Rich meadows, Hamilton, July, 1875, Thomas Morong (2).

**MAINE, FRANKLIN COUNTY**
Sterile field, South Chesterville, July, 1903, Lillian O. Eaton (1).—Wet field, Farmington, July 25, 1902, Clarence H. Knowlton (1).
Androscoggin Co.: East Auburn, July 8, 1895, E. D. Merrill (no. 999) (2).
Cumberland Co.: Fort Preble, July, 1895, E. E. Gayle (no. 804) (2).—Cushing’s Isl., August 4, 1895, J. Fowler (5).—Damp roadside, Cumberland, July 26, 1901, Edward B. Chamberlain (1).—Scarboro, July 21, 1901, Dr. D. W. Fellows (1).
York Co.: Moist meadow, Seabury, July 21, 1901, F. Tracy Hubbard (1).—Swampy woods, York Harbor, August 9, 1901, Hubbard (1).—Kittery, July 17, 1896, Hubbard (1).—South Berwick, July 22, 1891, J. C. Partin (9).

**NEW HAMPSHIRE, CHESHIRE COUNTY**
Low open field, Jaffrey, July 23, 1896, Walter Deane (1); July 26, 1896, Miss Mary A. Day (no. 76) (3).

**VERMONT**
Ashland, De Chalmot (2).
Windsor Co.: Windsor, July 24, 1902, W. H. Blanchard (7).
Rutland Co.: East Hubbardton, July 17, 1898, W. W. Eggleston (5).—Scarce, Hubbardton, July 17, 1898, Eggleston (4).
Bennington Co.: Wet meadow, Pownal, August 5, 1901, A. L. Ander-
MASSACHUSETTS, Essex County
Lynnfield, July 19, 1854, Wm. Boott (3).—Danvers, Susan M. Hallowell (2).
— Bay View, Gloucester, 1904, O. Ames (1); road bank, September 8, 1903, Ames & A. A. Eaton (1).—Wet meadows, Hamilton, July, 1875, Thos. Morong (2).
Middlesex Co.: Edgeworth, July 19, 1853, Wm. Boott (3).—Maiden, June 27, 1881, R. Frohock (6).—Wet field, Natick, July 17, 1898, C. H. Knowlton (1).—South Wilmington, July 19, 1897, Chester C. Kingman (5).
—South Framingham, July 21, 1890, E. L. Sturtevant (4).
Worcester Co.: Grassy roadside, frequent, Webster, July 13, 1899, Leland J. Spalding (17).
Franklin Co.: Shelburne, July 10, 1873, Miss E. L. Anderson (10).
Berkshire Co.: June 19, 1897, Mrs. Mulligan (4).
Hampshire Co.: Cumington, 1838, Dr. Dwight (4).—Southampton, (1892) (5).
Hampden Co.: Granville, August, 1889, A. B. Seymour (1).—Tolland, July, 1874, Mrs. S. M. Piper (7).
Norfolk Co.: Dedham turnpike near Taft's, July 17, 1854, Wm. Boott (3).
—Purgatory swamp, Dedham, July 21, 1888, Faxon (3).—Milton, A. P. Chute (3).—Neponset meadow, Milton, August 1, 1888, Faxon (2, 3).—Wellesley, July, 1893 (2).—Bay Road, Stoughton, July 16, 1903, Eaton (1).
Plymouth Co.: Swamp in Quaker Leonard road, Brockton, July 22, 1903, Eaton (1); July 16, Eaton (1).
Bristol Co.: North Easton, 1893, Ames (1); July, 1898, Carl Blomberg (1, 5); dry field, July 19, 1903, Eaton (1); swamp near railroad, July 25, 1903, Eaton (1).—Taunton, July 12, 1903, Eaton (1).—Nonquit, July 26, 1888, E. L. Sturtevant (4).
Barnstable Co.: Wood's Holl, July 10, 1884, Mrs. Peters (2); August, 1887, Wm. Trelease (4).
Dukes Co.: Martha's Vineyard, August, 1888, Carrie Harrison (2).
RHODE ISLAND, Providence County
Meadows, Providence, July, 1844, Geo. Thurber (3).
Newport Co.: Block Isl., July, 1889, Rev. L. H. Lightthipe (3).
CONNECTICUT
Chas. Wright (4).
H. lacera  Hartford Co.: Weathersfield (3).—Boggy ground, Southington, July 17, 1898, C. H. Bissell (no. 575) (3).

New Haven Co.: Waterbury, July 29, 1881, Constance G. DuBois (2).

NEW YORK
Western New York, A. Gray (3).—Mallonyville, June 26, 1878, Wm. Trelease (4).

Washington Co.: Dry fields, Vaughns, July 11, 1896, Stewart H. Burnham (1).

Oswego Co.: Swamp, North Hannibal, July 9, 1882, O. E. Pearce (2).

Oneida Co.: July 15, 1903, Dr. J. V. Haberer (1).—In a sand bog, Deerfield, June 18, 1901, Haberer (no. 883a) (1).—Hill south of Utica, July 26, 1902, Haberer (no. 883) (1, 3).


Ontario Co.: Canandaigua, 1881, Mrs. Autriss (2).

Chenango Co.: Preston, June 28, 1886, F. V. Coville (2).


NEW JERSEY
Ex Hb. Torrey (3).

Sussex Co.: Bogs, Stockholm, July 20, 1892, Wm. M. Van Sickle (2); August 10, 1894, Van Sickle (2).

Essex Co.: Belleville, July 3, 1897, Clute & Wilson (1).

Mercer Co.: Trenton, July 18, 1886 (5).

Camden Co.: Cooper's Point bogs, Camden, May 25, 1848, Thos. P. James (2).

Cape May Co.: Cape May, July 11, 1888, Dr. J. Bernard Brinton (8).

Pennsylvania, Luzerne County
Lily Lake, August 15, 16, 1889, John K. Small (1, 2); July 29, 1889, A. A. Heller (3).

Blair Co.: July 8, 1860, Boecking (2).

Chester Co.: West Chester, W. W. Jeffers (2); T. S. D. (?) (ex Hb. S. B. Buckley) (4).

Delaware
Swamps, Ogletown, July 12, 1902, Wm. M. Canby (3).
ORCHIDACEÆ

Newcastle Co.: Swamps near Wilmington, June, 1874, Canby (16). H. lacera
Kent Co.: Milford, June, 1866 (16).
Sussex Co.: Upland meadows, Ellendale, July 15, 1878, Canby (16); July 24, 1893, Canby (5).

MARYLAND, Prince George County
Laurel, July 9, 1895, Geo. Marshall (2).
Anne Arundel Co.: Near Glen Burnie, September 4, 1893, Adam Steitz (2).

DISTRICT OF COLUMBIA
In swamps, rare, June, 1903, Th. Holm (1); low grounds, rare, June, 1897, Holm (1).—Swamp beyond East Branch, Kenilworth, July 13, 1897, E. S. Steele (2).—Kenilworth, June 10, 1898, Steele (2).—Rive’s Station, June 26, 1887, L. F. Ward (2).—Terra Cotta, July 12, 1879, Ward (2).

VIRGINIA
Fort Myer, June 28, 1895, D. LeRoy Topping (2).

NORTH CAROLINA
C. W. Short (4).
Iredell Co.: Statesville, M. E. Hyams (5).
Buncombe Co.: Roandale farm, July 5, 1895, A. G. Wetherby (no. 159) (2).
Henderson Co.: Damp soil, margins of swamps near Hendersonville, June 29, 1898 (Biltmore dist. no. 4815a) (2, 3, 4, 5).
Lincoln Co.: Met Curtis (3).
Cumberland Co.: Low ground, Fayetteville, June 17, 1902 (Biltmore dist. no. 4815a) (5).

ALABAMA, Blount County
Moist rocky soil, Sand Mt., June 7, 1900 (Biltmore no. 4815c) (5).

WEST VIRGINIA, Summers County
Near Barger’s Spring, July 13, 1900, E. L. Morris (no. 989) (2).
Pocahontas Co.: Valley of the east fork of the Greenbrier River, September 19, 1904, J. M. Greenman (no. 67) (1).

OHIO, Cuyahoga County
Near Cleveland, Wm. Krebs (1).
Erie Co.: Furnace woods, Vermillion Township, July 25, 1897, E. L. Mosely (2).
ORCHIDACEÆ

**H. lacera** MICHIGAN, KEEWEENAW COUNTY


**INDIANA**

Swales, Miller's, June 27, 1889, L. M. Umbach (2). Steuben Co.: On low border on west side of Long Lake, July 4, 1904, Chas. C. Deam (1).—Around border of Graveyard Lake, July 5, 1904, Deam (1). Wells Co.: On east side of large lake on low border in Jackson Township, June 26, 1904, Deam (1).

**ILLINOIS, OGLE COUNTY**


**WISCONSIN, MARINETTE COUNTY**


**MISSOURI, ST. LOUIS COUNTY**

Dry woods, St. Louis, June 22, 1878, H. Eggert (4); woody hills, June 11, 1878, Eggert (5, 4). Shannon Co.: June 8, 1890, Frank Bush (no. 85) (2).

**H. leucophaea**

29. **H. leucophaea** (Nutt.) Gray, Man. ed. 5, 502 (1867), ed. 6, 509 (1890), Field, For. & Gard. Bot. 325 (1868), rev. ed. 409 (1895); Upham, Fl. Minn. 140 (1884); Tracy, Fl. Mo. 84 (1886); Brendel, Fl. Peor. 60 (1887); Macoun, Cat. 4: 19 (1888); Kellerman, Fl. Kans. 167 (1888); Macoun, Check-list 53 (1889); Beal & Wheeler, Fl. Mich. 608 (1891); MacMillan, Metasp. Minn. [180]
ORCHIDACEÆ

Val. 166 (1892); Britton & Br., Ill. Fl. 1: 465, f. 1110 (1896); H. leuco-Saunders, Fl. S. Dak. 131 (1899); Jelliffe, Gibson's Nat. Orch. 56, phæa

t. 25, f. 2 (1905).


Platanthera leucophaea Lindl., Gen. & Sp. Orch. 294 (1835); Steud., Nomencl. ed. 2, 2: 351 (1841); Gray, Man. ed. 1,

472 (1848), ed. 2, 446 (1856), ed. 3, 446 (1859); Wood, Class-


Blephariglottis leucophaea Rydb., in Britton's Man. 296

(1901); Farwell, in Rep. Mich. Acad. Sci. 2: 42 (1901); Small,

Fl. Se. U. S. 314 (1903); House, in Torreya 3: 52 (1903).

"3. O. leucophaea. Labello tripartito, laciniato, maximo; la-

ciniis lateralibus internis obovatis crenulatis; cornu filiformi

clavato, germine longiore.—Hab. In moist prairies near Kia-

mesha, Red river. Flowering in June.—Obs. Probably the

largest species in the United States; the stem being from eigh-

ten inches to two and a half feet high; leaves oblong-lanceolate, 

diminishing into narrow lanceolate bracts, about the length of 

the germ; flowers white, a little tinged with green; the lateral 

segments of the petaloid calix ovate, and less than half the 

length of the lip, which is divided into three dilated segments, 

divided nearly to the base into many capillary portions. It is 

more nearly allied to O. incisa than psycodes, but differs from 

the former in the laciniated lip, and from the latter by the mul-

tiplicity of its segments, and the obovate instead of linear form 

of the two internal petaloid divisions." Nutt. loc. cit.

NOVA SCOTIA, CAPE BRETON COUNTY

North Sydney, July 11, 1883, J. Macoun (16).

ONTARIO, HURON COUNTY

Wingham, July 16, 1892, J. A. Morton (5).
**ORCHIDACEÆ**

**H. leuco-phyæ**


**MAINE, Aroostook County**

In moss, Caribou bog, Crystal, July 30, 1906, *O. W. Knight* (1).

**NEW YORK, Oswego County**

Lily Marsh, nine miles east of Oswego, 1877, *J. H. Wibbe* (3).

**Wayne Co.**: Fragrant, Newark, *E. L. Hankenson* (3).

**Yates Co.**: *T. Marshall Fry* (1).

**OHIO, Franklin County**

Columbus, 1840, *W. S. Sullivant* (3).


**MICHIGAN**

*A. Gray* (3).

**Menominee Co.**: Prairies, Maraicagenses près Pembina, July 21, 1859, *Bourgeau* (3).

**Gratiot Co.**: Marshes about ponds, Alma, July 20, 1895, *Chas. A. Davis* (2).

**St. Clair Co.**: Near Port Huron, July 1, 1894, *C. K. Dodge* (3).

**Ingham Co.**: Pine Lake, June 30, 1895, *W. E. Mulliken* (5).

**Wayne Co.**: Grassy places on Belle Isle, Detroit River, July 3, 1894, *O. A. Farwell* (no. 1467) (11); Belle Isle, August, 1884, *H. H. Rusby* (10).

**INDIANA, Hamilton County**

Meadows, 1876, *E. F. Shipman* (10).

**ILLINOIS**

*S. B. Mead* (4).—1873, *Dr. F. Brendel* (2).


**McLean Co.**: Bloomington, July 15, 1882, *A. B. Seymour* (1); prairies, low ground, July, 1886, *B. L. Robinson* (3).

**Hancock Co.**: Moist prairies, Augusta, June 22, 1859, *S. B. Mead* (3).

**Champaign Co.**: Flowers white, wet ground, Champaign, July 7, 1880,
ORCHIDACEÆ

A. B. Seymour (1).—Urbana, July 1, 1884, M. B. Waite (2, 11).  
H. leuco-

Adams Co.: La Prairie, near Camp Point, June 15, 1877, A. B. Seymour (1).  

Macon Co.: Decatur, June 22, 1899, Ira W. Clokey (14).  

MADISON Co.: Wet prairies, June 17, 1878, H. Eggert (5); June 22, 1878,  

Eggert (3).

WISCONSIN, Dane County
Madison, S. H. Watson (16); moist meadows, July 15, 1889, Wm. Tre-  

lease (4).

Milwaukee Co.: Milwaukee, Douglass (6); prairies, July, 1843, I. A. Lapham (4).

Racine Co.: Banks of first Ravine, July 20, 1898, S. C. Wadmond (5).  

—Racine, June, 1884 (11).—Moist prairie, July 5, 1883, Dr. H. E. Hasse (16).

MINNESOTA, Nicollet County
Nicollet, July, 1892, C. A. Ballard (5).

IOWA, Emmet County
Low prairies, Armstrong, June 25, 1893, R. I. Cratty (2); July 20,  

1898, Cratty (4).

Harden Co.: Near Iowa Falls, August, 1876, M. E. Jones (7).


Decatur Co.: Prairies, infrequent, May 23, 1898, June, 1898, Fitzpatrick  

(3, 4, 5).

MISSOURI, Jackson County
On prairie, July, 1865, G. C. Broadhead (4).—Uncommon on prairie,  

Grain Valley, July 4, 1898, B. F. Bush (no. 273) (2, 3, 4, 5).—Prairies,  

locally frequent, Lee’s Summit, June 11, 1899, K. K. Mackenzie (5).

St. Louis Co.: Wet prairies near St. Louis, June 11, 1878, H. Eggert  

(4, 7, 16).

Vernon Co.: On prairie, July 25, 1873, G. C. Broadhead (4).

ARKANSAS, White County
West Point, Gunnison (no. 16) (3).

LOUISIANA
Ex Hb. Geo. Thurber (3).

NEBRASKA
Platte bottom, Fremont (3).

Lancaster Co.: Lincoln, July, 1887, H. J. Webber (4).
ORCHIDACEÆ

H. leuco-  

KANSAS, SHAWNEE COUNTY  

Topeka, June 15, 1878, E. A. Popenoe (8).  

DOUGLAS Co.: Lawrence, July, W. C. Stevens (2).

H. psycodes 30. H. psycodes (L.) Sw., Adnot. Bot. 45 (1829); Gray, in Sill. Journ. 38: 310 (1840); Torr., in Geol. & Nat. Hist. Surv. N. Y. 174 (1840); Gray, Man. ed. 5, 502 (1867), ed. 6, 509 (1890), Field, For. & Gard. Bot. 325 (1868), rev. ed. 409 (1895); Willis, Cat. N. J. 61 (1874); Yale Cat. 45 (1878); James, Cat. Cincinnati 18 (1879); J. Robinson, Fl. Essex Co. 108 (1880); Gard. Chron. n. s. 14: 305 (1880); Pl. Malden & Medf. 11 (1881); Britton, Prel. Cat. N. J. 94 (1881); Perkins, Gen. Cat. Vt. 37 (1882); Day, Pl. Buffalo 140 (1882); Jackson, Fl. Worcester Co. 32 (1883); Baker, Fl. Waltham 24 (1883); Upham, Fl. Minn. 140 (1884); Dudley, Cayuga Fl. 96 (1886); Bennett, Pl. R. I. 48 (1888); Macoun, Cat. 4: 19 (1888); Dame & Collins, Fl. Middlesex 103 (1888); Perkins, Fl. Vt. 278 (1888); Britton, Cat. N. J. 235 (1889); Beal & Wheeler, Fl. Mich. 608 (1891); Fernald, in Portl. Cat. 64 (1892); MacMillan, Metasp. Minn. Val. 166 (1892), (excl. syn. Ait., Big., & H. grandiflora Torr.); Baldwin, Orch. N. Eng. 110–113, f. 30 (1894); Millsp. & Nutt., Fl. W. Va. 200 (1896); Britton & Br., Ill. Fl. 1: 466, f. 1112 (1896), excl. syn. Ait.; Deane, Fl. Met. Park 79 (1896); Galen, Fl. Lanc. Co. 15 (1898); Clute, Fl. Up. Susq. 106 (1898); Mill. & Whit., Wild Fl. Northeast. St. 550, t. (1898); Brainerd, Jones & Eggleston, Fl. Vt. 30 (1900); Andrews, in Rho. 2: 114 (1900); Kearney, in Bail. Cyc. Am. Hort. 2: 706 (1900); Gattinger, Fl. Tenn. 62 (1901); Mathews, Field-book 92, fig. (1902); Bissell & Andrews, Fl. Southington 36 (1902); Kennedy, Fl. Willoughby in Rho. 6: 111 (1904); Jelliffe, Gibson’s Nat. Orch. 59, t. 26 (1905). Not H. psycodes Spreng., Syst. Veg. 3: 693 in part; Torr., Comp. 317;


Habenaria fimbriata R. Br., Prodr. 312 (1810), in Ait. Hort. Kew. ed. 2, 5: 193 (1813), excl. syn. (according to Gray & Torr.); Torr., Comp. 319 (1826); Hook., Exot. Fl. 3: t. 224, as to syn. in part; Darl., Fl. Cestr. ed. 1, 508 (1837); Dewey, Herbaceous

1 Persoon gives O. fusa which is undoubtedly a misprint. Nuttall seems to have adopted this spelling.
**ORCHIDACEÆ**

*H. psycodes* Pl. Mass. 197 (1840); *Eaton & Wr., N. A. Bot. ed. 8, 260 (1840).  

*Orchis fimbriata* Big., Fl. Bost. ed. 1, 206 (1814), ed. 2, 320 (1824), ed. 3, 343 (1840); *Pursh, Fl. 2: 588 (1814); (cf. *Gray, Man. ed. 1*); *Provanch., Fl. Canad. 2: 567 (1862).—*O. cristata*  


*Habenaria racemosa* Raf., in Ann. Nat. 15 (1820); (cf. *Torr., Fl. N. Y. 2: 278*).—*H. fissa* Spreng., Syst. Veg. 3: 692 (1826); *Torr., Comp. 319 (1826); *Darl., Fl. Cestr. ed. 1, 508 (1837); *Eaton & Wr., N. A. Bot. ed. 8, 260 (1840). Not *H. fissa* R. Br. etc. (which is equivalent to *H. peramena*).—*H. incisa* Spreng., Syst. Veg. 3: 692 (1826); *Torr., Comp. 319 (1826); *Beck, Bot. ed. 1, 349 (1833); *Eaton & Wr., N. A. Bot. ed. 8, 260 (1840).  


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*1 Lindley thought this might be a hybrid between *Habenaria cristata* and *H. psycodes.*

It is a hopeless task to attempt to arrive at satisfactory conclusions regarding the correct synonymy of Habenaria psycodes and H. fimbriata. Early in the history of these closely allied species confusion was established, and although several authors have endeavored to eliminate it there are obstacles which it is probable will always exist. Botanists have reported their material under one name or the other, and have, with few exceptions, added confusion by unstudied references to literature.

For example, Lindley described two varieties of H. psycodes which are clearly referable to H. lacera, as an examination of his specimens will prove. In his synonymy he refers directly to Orchis psycodes L. His Platanthera crispa, on the other hand, which he suggested was a natural hybrid, is equivalent to H. psycodes, to which species his material identified as P. incisa should also be referred. Lindley's material of P. fimbriata is conspecific with H. psycodes, and his P. grandiflora is simply H. fimbriata.

The difficulties are increased tenfold when it is realized that H. psycodes and H. fimbriata are so similar that they are distinguishable only by arbitrary rules. In the preparation of the Orchidaceae for Gray's New Manual a conscientious effort was made to ascertain the distinctive characters of these two species. Although every conspicuous character was carefully studied it was found that the most reliable distinction was the depth of...
**ORCHIDACEÆ**

*H. psycodes* the fringe on the divisions of the labellum; in *H. psycodes* this being one-third the depth of the divisions or less, and in *H. fimbriata* one-third or more.

It may be found that my treatment of the synonymy is in part incorrect, but it is offered as a basis for further research. (Plate 66.)

**NEWFOUNDLAND**

*Cochrane* (3).—Wet meadow, Placentia, August 24, 1894, *B. L. Robinson* & *H. Schrenk* (no. 165) (2, 3, 4, 6).—Bottom lands, Manuel’s River, August 8, 1894, *Robinson* & *Schrenk* (3).—Wet meadow, Shoal Point, Bay of Islands, July 16, 1895, *A. C. Waghorne* (no. 28) (4).

**NOVA SCOTIA, VICTORIA COUNTY**

Wet meadows and bogs, Baddeck, Cape Breton, July 18, 1883, *J. Macoun* (6); Baddeck, July 22, 1898, *Macoun* (6).—New Campbellton, July 23, 1897, *David White* & *Chas. Schuchert* (no. 27) (2, 6).

*Cape Breton Co.*: Boggy meadow, Sydney, August 18, 1902, *M. L. Fernald* (1, 3).

*Guysborough Co.*: Moist meadows, Boylston, August, 1892, *Dr. C. A. Hamilton* (2, 6).

**PRINCE EDWARD ISLAND**


**NEW BRUNSWICK, KENT COUNTY**

Bass River, July 30 and 31, 1868, *J. Fowler* (2, 3); August 9, 1871, *Fowler* (16).


**QUEBEC, GASpé COUNTY**

Deep cool grassy margins of brooks and swamps, Point Fame, August 1, 1882, *J. Macoun* (6).


*Ottawa Co.*: Along the Gatineau, above Wakefield, July 24, 1903, *Macoun* (6).
ORCHIDACEÆ

Argenteuil Co.: Greenville, July 18, 1890, J. Fowler (2).  

H. psycodes

ONTARIO, Carleton County
Swampy woods, Ottawa, July, 1886, J. Macoun (6).
Simcoe Co.: Damp thickets on meadows, Muskoka, July, 1892, Spreadborough (6).
Addington Co.: Mississippi Station, July 27, 1893, Fowler (4).
Lanark Co.: Almonte, July 12, 1898, Fowler (5).
Hastings Co.: Low meadows and borders of swamps, July 15, 1867, Macoun (6).—Low wet meadows, Belleville, July, 1865, Macoun (16).
Wellington Co.: Wet thicket, Snell Lake, July 16, 1889, Jas. White (6).
Huron Co.: Wingham, July 20, 1890, J. A. Morton (no. 2258) (2).
Middlesex Co.: In bogs and swamps, London, June 11, 1879, Millman (6).
Welland Co.: Edge of marsh, Point Abino, August 18, 1897, W. C. McCalla (no. 333) (5, 6).—Moist woods, Niagara Falls, 1892, Cameron (6).

MAINE, Aroostook County
Rocky river shore at Horseback, St. Francis, July 20, 1904, A. A. Eaton (no. 194) (1).—Alluvial thicket, Beau Lac, August 14, 1902, W. W. Eggleston & M. L. Fernald (1).
Piscataquis Co.: River intervale, Foxcroft, July 18, 1895, Fernald (no. 298) (2, 3, 4).
Franklin Co.: Farmington and New Sharon, July 25, 1899, Leland J. Spalding (17).—Roadside ditch, South Chesterville, August, 1908, Lillian O. Eaton (1).—Swamp, Strong, August 1, 1902, C. H. Knowlton (1).
Oxford Co.: Meadows, Hartford, August, 1885, J. C. Parlin (3).
Kennebec Co.: Meadow, Fayette, August, 1903, L. O. Eaton (1).
Androscoggin Co.: Meadows, East Auburn, July, 1896, E. D. Merrill (no. 1000) (2).
Cumberland Co.: August 6, 1895, E. E. Gayle (no. 853) (2).
York Co.: Alder swamp, York Harbor, August 10, 1901, F. Tracy Hubbard (1).—Seabury, July 7, 1896, Hubbard (1).—Parsonsfield, August 10, 1902, Florence L. Gerrish (1).

NEW HAMPSHIRE, Coos County
Berlin, July 24, 1901, Tinnie Wheeler (3).

VERMONT, Orleans County
Dry roadside, Brownington, July 26, 1904, A. A. Eaton (no. 284) (1).
**H. psycodes**


**MASSACHUSETTS, Middlesex County**


**BERKSHIRE Co.:** Abundant in East Mt. swamps, Great Barrington, August 1, 1894, *C. L. Pollard* (2).—Pittsfield, August 3, 1868, *J. H. Redfield* (4).


**SUFFOLK Co.:** Brookside, near Humphrey’s Avenue, West Roxbury, August 15, 1854, *Wm. Boott* (3).

**NORFOLK Co.:** Brook running into Muddy Pond, Hyde Park, August 6, 1889, *Faxon* (3).


**PLYMOUTH Co.:** Low woods, Scituate, August 13, 1899, *E. F. Williams* (3).

**RHODE ISLAND, PROVIDENCE County**

Providence, 1846, *Geo. Thurber* (3).

**CONNECTICUT**


**HARTFORD Co.:** Hartford, August 2, 1900, *A. W. Driggs* (3).—Swampy
ORCHIDACEÆ

meadow, Churchill Street, Southington, August 5, 1900, C. H. Bissell (3); *H. psycodes*
bogs, frequent, Southington, August 14, 1897, Bissell (5).

**FAIRFIELD Co.:** Low grounds, infrequent, Bridgeport, July 22, 1892, E. H. Eames (2).—Weston, August 13, 1885, A. L. Winton, Jr. (2).

**NEW YORK, ESSEX COUNTY**
July 31, 1893, Miss Fanny Page Robinson (2).—Keen Valley, August 1, 1891, Hermann Schrenk (4).

**JEFFERSON Co.:** Evans Mills, August 6, 1879, Lester F. Ward (2).

**HERKIMER Co.:** Border of marshes, Litchfield, August 3, 1901, Dr. J. V. Haberer (no. 887) (3).

**saratoga Co.:** Border of the pond above the northwest corner of Stillwater village, 1867 (?), Dr. Asa Fitch (10).—Bear Pond, French Mt., July 27, 1899, Stewart H. Burnham (1).

**Onondaga Co.:** Near Syracuse, July, 1895, M. L. Overacker (5).

**YATES Co.:** Penn Yan, T. Marshall Fry (1).

**CHENANGO Co.:** Oxford, July 12, 1884, F. V. Coville (2).—Bainbridge, July 20, 1897, D. LeRoy Topping (2).

**Tompkins Co.:** Little Swamp, north part of Caroline, August 1, 1885, O. E. Pearce (2).

**SCHUYLER Co.:** Cayuta Lake, July 30, 1878, Wm. Trelease (4).

**Delaware Co.:** North Harpersfield, August 6, 1897, Topping (2).

**NEW JERSEY, SUSSEX COUNTY**
Stockholm, August 10, 1894, Wm. M. Van Sickle (2).—Wet woods, Cranberry Lake, July 31, 1904, Kenneth K. Mackenzie (no. 820) (1).

**Essex Co.:** Franklin, August, 1874, H. H. Rusby (10).

**Union Co.:** Summit Mt., July 29, 1898, John C. Buchheister (1).

**Pennsylvania, Luzerne County**
Lily Lake, July 29, 1889, A. A. Heller (3).

**Delaware, newcastle County**
Woodland swamp near Wilmington, June, 1860, Wm. M. Canby (16).

**District of columbia**
Indian River, August 6, 1879 (2).

**Virginia, Grayson County**
Slope of Mt. Rogers, 4800-5000 ft., June 29, 1892, John K. Small (2, 3, 4).

[191]
**H. psycodes**

**NORTH CAROLINA, Mitchell County**

Roandale Farm, June 24, 1895, A. G. Wetherby (no. 160) (2).—North side of Roan Mt., 5000 ft., July 7, 1902, W. A. Cannon (no. 60) (2); woodlands, Roan Mt., June, 1868, Wm. M. Canby (16).

Swain Co.: Ravines, 4000 ft., July 16, 1891, Beardslee & Kofoid (3).

**OHIO, Cuyahoga County**

Near Cleveland, Wm. Krehs (1).

Medina Co.: Swamps, Brunswick, July, 1897, G. B. Ashcroft (5).

Summit Co.: Copley Swamp, Akron, July 21, 1889, Dr. Kent O. Foltz (2).

**MICHIGAN, Keweenaw County**

Clifton, June, 1884, O. A. Farwell (11).

Delta Co.: Escambia, Henry H. Babcock (2).

Kent Co.: Grand Rapids, June 22, 1895, W. E. Mulliken (5).


Wayne Co.: Palmer Park, Detroit, August 1, 1903, O. A. Farwell (11).

Cass Co.: July 30, 1886, H. J. Webber (4).

**INDIANA, Steuben County**

East side of Clear Lake, in low thick woods, July 24, 1904, Chas. C. Deam (1).

**ILLINOIS**

M. S. Bebb (3).

**WISCONSIN**

Chippewa River, 1864, T. J. Hale (16).—Black River, 1861, Hale (3).—1861, Hale (4).

Polk Co.: Wet thickets, August, 1892, H. F. Burglehaus (4, 6).

Brown Co.: July 20, 1878, J. H. Schuette (1).—Flint D. Clark (8).—Peaks Point, Green Bay, July 24, 1891, J. H. Schuette (1).—Scott, near Comfort, August 4, 1901, Schuette (1).—Marsh meadow on the bay, July 20, 1878, Schuette (1).

La Crosse Co.: La Crosse, L. H. Pammel (3).

Milwaukee Co.: Milwaukee, I. A. Lapham (4).

**MINNESOTA, St. Louis County**

Fond du Lac, July, 1889, F. F. Wood (no. 393) (2).

Millelacs Co.: Milaca, July, 1892, E. P. Sheldon (2, 5, 14).

Chisago Co.: Chisago City, July 29, 1891, J. H. Sandberg (no. 679) (2).—Center City, August, 1892, B. C. Taylor (5, 14).

Hennepin Co.: Bogs, Fort Snelling, July 20, 1888, Dr. W. H. Forwood (2).
IOWA, FAYETTE COUNTY

"Rare, only one specimen reported before in Iowa," Fayette, July, 1893, B. Fink (2).

× Habenaria Andrewsii White, ex Niles Bog-trotting for Orchids 258, fig. (1904); Ames, in Gray’s Man. ed. 7, 311 (1908).
—H. psychodes × lacera Andrews, in Rho. 2: 114 (1900), 3: 246 (1901); Ames, in Rho. 5: 263 (1903); Eggleston, in Rho. 6: 139 (1904).


NOVA SCOTIA, PICTOU COUNTY


MAINE, FRANKLIN COUNTY

South Chesterville, Miss L. O. Eaton (1).
VERMONT, BENNINGTON COUNTY
Wet meadow, Pownal, August 5, 1901, A. L. Andrews (3); August 4, 1902, Andrews (1).


H. fimbriata 31. H. fimbriata (Dryander) R. Br., Prodr. 312 (1810), in Ait. Hort. Kew. ed. 2, 5: 193 (1813); Lodd., Bot. Cab. t. 552 (1818–24); Bot. Reg. t. 405 (1819); Lindl., in Donn’s Hort. Cant. ed. 10, 332 (1823); Spreng., Syst. Veg. 3: 693 (1826); Torr., Comp. 319 (1826); Hook., Exot. Fl. 3: t. 224 (1826) in part; Gray, Man. ed. 5, 503 (1867), ed. 6, 510 (1890), Field, For. & Gard. Bot. ed. 1, 324 (1868), rev. ed. 409 (1895); Willis, Cat. N. J. 61 (1874); J. Robinson, Fl. Essex Co. 108 (1880); Britton, Prel. Cat. N. J. 94 (1881); Pl. Malden & Medf. 11 (1881); Perkins, Gen. Cat. Vt. 37 (1882); Baker, Fl. Waltham 24 (1883); Jackson, Fl. Worcester Co. 32 (1883); Dudley, Cayuga Fl. 96 (1886); Dame & Collins, Fl. Middlesex 103 (1888); Perkins, Fl. Vt. 278 (1888); Bennett, Pl. R. I. 43 (1888); Macoun, Cat. 4: 20 (1888), Check-list 53 (1889); Britton, Cat. N. J. 235 (1889); Fernald, in Portl. Cat. 64 (1892); Baldwin, Orch. N. Eng. 93, f. 28 (1894); Rand & Redf., Fl. Mt. Desert 153 (1894); Wats., Orch. Cult. ed. 2, 528 (1895); Galen, Fl. Lanc. Co. (1895), 15 (1898); Deane, Fl. Met. Park 79 (1896); Mill. & Whit., Wild Fl. Northeast. St. 548, t. (1898); Kearney, in Bail. Cycl. Am. Hort. 2: 706 (1900); Brainerd, Jones & Eggleston, Fl. Vt. 30 (1900); Mathews, Field-book 92, fig. (1902).


1Gray, Torrey and others refer this to H. psycodes.
(1807); Martyn, in Mill. Dict. ed. 9, 2: no. 44 (1807); Barton, *H. fimbriata* Comp. Fl. Phil. 2: 137 (1818); Torr., Cat. N. Y. 69 (1819); Eaton, Man. ed. 4, 375 (1824).—O. *grandiflora* Big., Fl. Bost. ed. 2, 321 (1824), ed. 3, 343 (1840); Oakes, in Thompson’s Vt. 199 (1853); Wood, Class-book ed. 41, 585 (1856); Provanch., Fl. Canad. 2: 567 (1862).

_Habenaria grandiflora_ Torr., Comp. 319 (1826); Beck, Bot. ed. 1, 349 (1833); Darl., Fl. Cestr. ed. 1, 509 (1837); Eaton & Wr., N. A. Bot. ed. 8, 260 (1840); Dewey, Herbaceous Pl. Mass. 197 (1840); Steud., Nomencl. ed. 2, 2: 351 (1841); Britton & Br., Ill. Fl. 1: 466, f. 1111 (1896); Clute, Fl. Up. Susq. 106 (1898); Mechan, Monthly 9: 99 (1899); Bailey, in Rho. 3: 34 (1901); Jelliffé, Gibson’s Nat. Orch. 56, pl. 25, f. 3 & 4 (1905); Haberer, in Rho. 7 : 95 (1905). Not *H. grandiflora* Lindl., Wall. Cat. 7032 (1828).


_Habenaria psychodes* var. _grandiflora* Gray, in Sill. Journ. 38: 310 (1840); Torr., in Geol. & Nat. Hist. Surv. N.Y. 174 (1840.)

_Platanthera psychodes* var. _grandiflora_ Torr., Fl. N. Y. [195]


“O. bulbis fasciculatis, nectarii cornu germinibus longiore: labio tripartito ciliari, petalis patentibus, foliis oblongis.

“Fringed Orchis.

“Nat. of Canada and Newfoundland.

“Introd. 1777, by William Pitcairn, M.D.

“Fl. July.


Reference should be made to the notes under H. psycodes for a full consideration of this species.
NEWFOUNDLAND

Banks of Exploits River, near mouth of Badger Brook, August 13, 1894, B. L. Robinson & H. Schrenk (2, 3, 4, 6, 7).

NOVA SCOTIA

Grand Narrows, Cape Breton IsL., July 27, 1898, J. Macoun (4, 6).

NEW BRUNSWICK

Wet meadows, Tobique River, August 2, 1884, Geo. U. Hay (6).

QUEBEC

In boggy woods, East Templeton, July 29, 1903 (6).

MAINE, PISCATAQUIS COUNTY

Wet meadow near Fitzgerald Pond, near Moosehead Lake, July 6, 1895, M. L. Fernald (no. 274) (2, 3, 4).

Penobscot Co.: Very common in moist fields, sometimes 3 or 4 ft. high, Glenburn, Aaron Young, Jr. (3).

Franklin Co.: Open wet woods, South Chesterville, July 18, 1902, C. H. Knowlton (1); July, 1903, L. O. Eaton (1).

Oxford Co.:rafton, August, 1888, J. C. Parlin (3) (forma alba).—Hartford, 1885, Parlin (3).—Black Brook, July 13, 1889 (11).

Hancock Co.: Meadow one mile north of Somesville, Mt. Desert, August 16, 1888, J. H. Redfield (4).—Bar Harbor, July 19, 1871, Wm. Boott (3).

Waldo Co.: Wet roadside, New Guinea, Islesboro, July 29, 1897, F. Tracy Hubbard (1).


Cumberland Co.: Falmouth, Blake (16).—Cape Elizabeth, July 21, 1901, Dr. D. W. Fellows (1).

York Co.: Kennebunk, July 20, 1878, J. W. Chickering (8).—In woods, growing in mud and water, North Parsonsfield, August 1, 1902, F. S. Piper (1).

NEW HAMPSHIRE, Coos County

Bogs, Crawford House, July 12, 1876, J. W. Congdon (7).—Dixville Notch, July 25, 1887, Faxon (3).—Meadow south of Crawford's, July 20, 1884, Faxon (3); Crawford Meadow, July 24, 1894, Faxon (3).

Grafton Co.: Flume House, July 19, 1885, Faxon (3).—Strawberry Hill, Bethlehem, July 21, 1891, J. F. Collins (3).
**ORCHIDACEÆ**

*H. fimbriata*  

**VERMONT,** *Orleans County*  
Willoughby Mt., Westmore, July 29, 1892, *H. H. Rushy* (10); summit of Willoughby Mt., July 24, 1866, *J. H. Redfield* (4).  
Chittenden Co.: Smuggler’s Notch, July 18, 1886, *Faxon* (3).  
Rutland Co.: East Wallingford, alt. 2200 ft., July 7, 1898, *W. W. Eggleston* (no. 373) (3, 4, 5).  
Windham Co.: Stratton Mt., July 4, 1895, *L. R. Jones* (5); *E. Brainard* (1). —West Stratton, July 5, 1897, *Eggleston* (3).

**MASSACHUSETTS**  
Wet meadows, 1892, Hb. Chapman (Biltmore dist. no. 4994 c) (5).  
Bristol Co.; Swampy deciduous woods, Easton, July 17, 1903, *O. Ames*
ORCHIDACEÆ

& A. A. Eaton (1); July 24, 1903, Ames (1).—Fall River, August 4, *H. fimbriata* 1902, S. N. F. Sanford (?) (3).

RHODE ISLAND, PROVIDENCE COUNTY

Providence, I. Metcalf (3).

CONNECTICUT, HARTFORD COUNTY

Wet sandy woods, Southington, June 28, 1901, C. H. Bissell (3).

NEW YORK, HERKIMER COUNTY

Along head-waters of Black River, head of North Lake, Witmurt, July 13, 1902, Dr. J. V. Haberer (no. 879) (1, 3).
Oneida Co.: Along Bear Creek at White Lake Corners, Forestport, July 15, 1903, Haberer (no. 2680) (1).
Yates Co.: Penn Yan, Dr. S(artwell) (4).
Tompkins Co.: Lake Marsh, Dryden, June 26, 1878, Wm. Trelease (4).—Ithaca, June, 1879, Rutherford P. Hayes (2).
Delaware Co.: Fleischmanns, July 23, 1892, Hermann Schrenk (4).
Chemung Co.: Lowman's Swamp, July 3, 1892, T. F. Lucy, M.D. (no. 10,075) (5).

NEW JERSEY, BERGEN COUNTY

Wet woods, Oradell, June 19, 1904, Kenneth K. Mackenzie (no. 765) (1).
Morris Co.: Wet woods, Budd's Lake, June 25, 1869, C. F. Parker (4).

PENNSYLVANIA, PIKE COUNTY

E. A. Rau (nos. 838, 839) (2).
Union Co.: H. R. Nott (2).
Monroe Co.: Meadow, Tobyhauna Creek, Pocono Mt., August 8, 1867, Wm. M. Canby (16).

WEST VIRGINIA, POCAHONTAS COUNTY

June 20, 1896, W. M. Pollock (4); June 21, 1896 (5).

NORTH CAROLINA

Moist soil, Pisgah Mt., July 2, 1897 (Biltmore no. 4994b) (2, 3, 5).
Watauga Co.: Flat Top, Blowing Rock (14).
Yancey Co.: Moist soil along a mountain brook near Yeates Knob, June 24, 1898 (Biltmore no. 4994a) (5).
Buncombe Co.: Rich grounds on the wooded slopes of Craggy Mt.,

[ 199 ]
**H. fimbriata**  
June 23, 1897 (Biltmore no. 4994) (2, 3, 4, 5); September 19, 1900, (fruit) (Biltmore no. 4994d) (5).

**TENNESSEE**  

**H. peramoena**


*Orchis palmata peramoena*, Caryophylli montani floraibus, margine fimbriatis, ex Virginia Pluk., Mant. 141, t. 434, f. 6 (1769).

*Habenaria fissa* *R. Br.*, in Hb. Banks, Prodr. 312 (1810); *Beck*, Bot. ed. 1, 349 (1833); *Darl.*, Fl. Cestr. ed. 1, 508 (1837). Not *H. fissa* Spreng. (= *H. psycodes*).

*Orchis fissa* *Pursh*, Fl. 2: 589 (1814); *Eaton*, Man. ed. 4, 375 (1824). Not of *Muhl.* nor *Willd.* (= *H. psycodes*).—*O. incisa* *Pursh*, Fl. 2: 589 (1814); *Nutt.*, Gen. 2: 189 (1818); *Eaton*, Man. ed. 4, 375 (1824). Not *O. incisa* *Willd.* (= *H. psycodes*).—*O. fusca* *Nutt.*, Gen. 2: 189 (1818).

ORCHIDACEÆ

685 (1861); Correvon, Orch. Rust. 175 (1893); Kränzl., Orch. H. peramêna Gen. et Sp. 1: 608 (1899), excl. syns. Platanthera and Habenaria grandiflora.—P. psycodes Darl., Fl. Cestr. ed. 3, 312 (1853) in part?


Habenaria peramêna is readily distinguished from H. fimbriata, to which it bears a close resemblance, by the denticulate rather than fimbriate divisions of the labellum.

PENNSYLVANIA

1841, McMinn (2).—Alleghany Mts., Nuttall (13).
Chester Co.: Swamps, August, 1863, W. M. Canby (4, 6).—Meadows, August, 1867, Canby (4).
Lancaster Co.: Mouth of the Pequa, August 20, 1862, T. C. Porter (2, 3.)—Pleasantgrove, August 12, 1867, J. J. Carter (1).

DELWARE, NEWCASTLE COUNTY
July, 1864, Canby (?) (16).

MARYLAND

Glades, August, 1843 (3).
Cecil Co.: Risingsun, July 24, 1905, J. J. Carter (1).
Garrett Co.: Deer Park, August 2, 1879, G. Guttenberg (10).
Prince George Co.: Laurel, July, 1892 (2).—July, 1895 (2).—August 7, 1898, Geo. Marshall (2).

DISTRICT OF COLUMBIA
Flat near first lock, July 28, 1897, E. S. Steele (2).

NORTH CAROLINA

1841, Met Curtis (4).
Iredell Co.: Rare, Statesville, July, 1880, Hyams (2, 5).
Buncombe Co.: Roandale Farm, June 15, 1895, A. G. Wetherby (no. 189) (2).
—Biltmore, August 8, 1894 (5); moist soil near Biltmore, August 3, 1898 (Biltmore no. 488 b) (5).
Swain Co.: Great Smoky Mts., alt. 2000, August 15, 1891, Beardslee & Kofoid (3).
**ORCHIDACEÆ**

*H. peramæna*

**ALABAMA, Lauderdale County**


**TENNESSEE**

East Tennessee, *C. C. Parry*, 1870 (2).

Sumner Co.: Mitchellville, September, 1883, *Dr. A. Gattinger* (8).

Robertson Co.: Cedar Hill, July 14, 1882, *Gattinger* (2, 8).


**KENTUCKY**

Damp woods, 1840, *C. W. Short* (4).


**WEST VIRGINIA, Upshur County**

Near Bucklin, July 31, 1895, *W. M. Pollock* (2, 4).

**OHIO, Hamilton County**

Our most common species, in moist woods and meadows. Sometimes four feet high, *Fernbank-ad ripas fluminis* Ohio, *prope* North Bend, 1846, *C. W. Short* (3, 4).

**INDIANA, Jefferson County**

Hanover, August, 1876, *A. H. Young* (10).

**ILLINOIS**

July 18, 1892 (4).

Marion Co.: Salem, 1860, *M. S. Bebb* (3).


**MISSOURI**

St. Francis River, July 14, 1897, *Savage & Stull* (no. 751) (4).

Iron Co.: Wet ground, bank of creek, Pilot Knob, August 10, 1897, *Colton Russell* (4).


Butler Co.: Grassy places, July, 1893, *H. Eggert*.


*H. distans* 33. *H. distans* Griseb., Cat. Pl. Cub. 270 (1866); *Sauv.*, Fl. Cub. 233 (1873); *Chapm.*, Fl. S. U. S. ed. 2, 654 (1884), ed. 3, 

[202]
ORCHIDACEÆ


“184. Habenaria distans Gr. radicellis villosis tuberiferis, caule basi foliato (1’ alto), foliis elliptico-oblongis acutis (4”–6” longis), racemo paucifloro: floribus distantibus: bracteis membranaceis oblongo-lanceolatis ovario duplo brevioribus, perigonii segmentis exterioribus lateralibus reflexis ovato-lanceolatis (4” longis), superiori ovato obtusiusculo, interioribus bipartitis eorumque segmento anteriori falcato-lineari descendente posteriori subaequante, hoc oblongo, labello ad basin trisecto: segmentis linearibus, lateralibus patentissimis incurvis, medio longiori, calcare filiformi descendente versus basin compresso-clavellato (8”–10” longo) ovarium subaequante v. excedente.—Habenaria n. sp. Lindl. Orch. Wr.—Cuba or., pr. Monteverde (Wr. 1481) E.” Griseb. loc. cit.

Habenaria jamaicensis Fawcett & Rendle is a closely allied species characterized in part by the short anterior divisions of the petals.

H. distans is an extremely rare plant in Florida, where it appears to have been collected only once, in 1878, by A. P. Garber. No other collection has been made in Florida of which I have any knowledge.

The Cuban specimens collected by Wright, which constitute the type of H. distans, are large plants very unlike the specimens from Florida.

FLORIDA, LEE COUNTY
Caloosa, August, 1878, A. P. Garber (1, 2, 3, 4, 5, 7, 16).
**H. distans** CUBA

*Prope villam Monte Verde dictam, Cuba Orientali, January–July, 1859, C. Wright (no. 1481) (3, 4), (type).*

Reported as follows:

**PORTO RICO**

*Prope Mayaguez, in sylvis montis Mesa, 30, X, 1884, Sintenis (no. 501).*

**HAYTI**

*Cf. Urban, loc. cit.*


"Plant 1.5–3 dm. l. Leaves 3–9 cm. l., 1.5–4.5 cm. br. Raceme 4–15 cm. l. Bracts, sterile 5–2 cm. l., floral 2.5–1.5 cm. l.
Habenaria jamaicensis
Fawcett & Rendle
Plate 67. *Habenaria jamaicensis*

Plant, natural size, drawn from a dried specimen collected in Jamaica by W. Harris (no. 10,499). 1. Flower, to show comparative lengths of the divisions of the petals and labellum. 2. Petal. The flower and petal drawn, enlarged, with the aid of the camera lucida.
Pedicels about 5 mm. l. Flowers greenish. Sepals, dorsal 6–7 mm. l., 4.5–6 mm. br., lateral 6.5–9 mm. l., 3.5–4 mm. br. Petals, posterior segment 5.5–7 mm. l., 1.5–2 mm. br.; anterior segment 1.5–2 mm. l. Lip, middle lobe, 6.5–10 mm. l., about 1 mm. br.; lateral 9–12 mm. l.; spur 13–16 mm. l.

"Hab.—On rocky, or clayey, shady banks, in flower Dec.–April, Mt. Hybla, 4000 ft., 7851; Clydesdale, 4000–4500 ft., 7854; Moody’s Gap, 3000 ft., 7768; near Cinchona, 4500 ft., 10,449;¹ Harris.

"Resembles H. distans Griseb. in the aggregation of the leaves at the base of the stem, and generally in the shape of the leaves, though those of H. distans are longer. Grisebach’s species also differs in the bracts being about as long as, or longer than, the flower; and in the anterior segment of the petal being about equal to the posterior.” Fawcett & Rendle, loc. cit.

The very short anterior division of the petals is characteristic, and readily distinguishes H. jamaicensis from H. distans. Cogniaux is inclined to regard this as a variety of H. distans.

JAMAICA

4500 ft. alt. amongst mosses on rocky banks, near Cinchona, July 4, 1908, W. Harris (no. 10,499) (1).—4000 ft. alt. growing under shade among mosses, flowers greenish, Clydesdale, February 15, 1900, Harris (no. 7854) (22).—4000 ft. alt., growing in damp clayey land, Mt. Hybla, February 8, 1900, Harris (no. 7851) (22).

H. Tüerrickheimii


"Terrestris, erecta, simplex, c. 20 cm. alta; foliis basilaribus 5–6, plantagineo-rosulatis, ellipticis acuminatis, glabris, textura tenuibus, usque ad 8.5 cm. longis, medio fere vel infra medium

¹ Typographical error in original description. Read 10,499.
ORCHIDACEÆ

usque ad 3.5 cm. latis; caule tereti glabro, substricto, brevi, foliis basilaribus exceptis vaginis foliaceis acuminatis, erectis, plus minusve approximatis obsesso; racemo sublaxo multifloro (c. 20) subelongato, c. 12 cm. alto; floribus erecto-patentibus illis H. entomanthae Ldl. fere æquimagnis, viridibus; sepalo intermedio ovato apiculado, concavo, glabro, 0.7 cm. longo, lateralibus patulis subfalcatis oblique lanceolato-ellipticis acuminatis, glabris, intermedio fere æquilongis; petalis bipartitis, glabris, partitione postica lineari-falcata acuta, sepalo intermedio æquilonga, partitione antica filiformi c. 1.1 cm. longa; labello tripartito, glabro, partitionibus lateralibus partitioni anticae petalorum similibus, c. 1.2 cm. longis, filiformibus, partitione intermedia anguste lineari obtusiuscula c. 0.8 cm. longa, calcare cylindrico dimidio anteriore paulo crassiore subacuto, decurvo, 1.5 cm. longo, glabro; anthera apice emarginata, glabra, rostelli lobo intermedio triangulo obtuso, dimidium locorum altitudine vix excedente, canalibus porrectis, brevibus; processibus stigmatiferis crassiusculis, truncatis, canalibus antherae brevioribus; ovario glabro cylindraceo, c. 1 cm. longa.

"Guatemala: In Felsspalten bei Cubilguitz, c. 350 m. ü. M. — H. v. Türekheim no. 766 (It. II), blühend im August, 1903.


GUATEMALA, ALTA VERAPAZ

Perigon grün, Cubilquitz, alt. 350 m., August, 1903, H. von Türekheim, J. D. Smith distr. (no. 8588) (1); November, 1901, Türekheim, J. D. Smith distr. (no. 8308) (1).

In my herbarium there are two specimens of Habenaria Türekheimii from Guatemala. One is presumably a duplicate from the same collection in which the type was found. The
Plate 68. Habenaria Türkheimii
HABENARIA
"Türckheimii Schlect."
lei
des are approximate, six or more in number, chartaceous, and basal, and somewhat similar to the leaves of *H. distans* in their arrangement. The accompanying plate was prepared from this specimen.


“*Habenaria* (A. § 1. xx. b.) *setifera*; foliis ensiformibus carinatis erectis apice incurvis setiferis, caule foliato 1–2-floro, bracteis inflatis ovario longipedunculato brevioribus, petalis bipartitis: lacinia anteriore lineari posterioris longitudine, labelli tripartiti laciniiis linearibus carnosis intermedia longiore, calcare pendulo clavato pedunculo subæquali.—*Mexico*, ad Choapam, inter graminæ, Junio, Hartweg.

“A plant allied to *H. macroceras*, of which it has much the habit.” Lindl. loc. cit.

*Habenaria setifera*, *H. spathacea* and *H. pauciflora* are very closely allied species, if not conspecific. In the synonymy of *H. setifera* I have included *H. spathacea*, as an examination of the types did not reveal any marked differences between these
Plate 69. Habenaria setifera
Flower, much enlarged. 1. Column. 2. Pollen-mass. Flower and parts drawn from a photograph of the original drawing by Richard preserved in the Muséum d'Histoire Naturelle de Paris. Richard's drawing was prepared, presumably, from a specimen collected in Mexico by Linden.
HABENARIA

setifera Lindl
two species. It is highly probable that \textit{H. pauciflora} should include both \textit{H. setifera} and \textit{H. spathacea}, but my material has been insufficient for a definitive conclusion regarding \textit{H. pauciflora}. \textit{H. pauciflora} appears to be confined to tropical South America.

\textbf{MEXICO, Durango}
August 16, 1897, \textit{J. N. Rose} (no. 2326) (2).
San Luis Potosí: Hillsides, Las Canoas, August 8, 1891, \textit{Pringle} (no. 5024) (3, 7).
Vera Cruz: Terrestre dans les savannas, Zacuapan, petales d'un vert jaunâtre; labelle, blanc, fleur en juillet, Linden (21), (type of \textit{H. spathacea} Rich. & Gal.).
Oaxaca: Choapám, \textit{Hartweg} (20), (type).

\textbf{TRINIDAD}
St. Martha, \textit{Purdie} (20).

\textbf{VENEZUELA}

\textbf{PERU}
Tarapota, \textit{Spruce} (no. 4953) (20).

Reported as follows:

\textbf{COLOMBIA}
Antioquia, \textit{Kalbreyer} (no. 1915).


“225. \textit{H. mesodactyla}, \textit{Gr.} (\textit{n. sp.}). Slender; leaves linear-setaceous, distant; flowers very distant in a 3–5-flowered spike.
**ORCHIDACEÆ**

_H. mesodactyla_ bracts ovate-lanceolate, acuminate, little exceeded by the incurved ovary; perigonal divisions exterior lateral reflexed, oblong-lanceolate, superior deltoid, 2 interior 2-partite: their anterior segments setaceous, twice as long as the linear posterior ones; _lip_ 3-partite: segments filiform: middle twice as long as the lateral ones: spur little shorter than the ovary, filiform, somewhat clavate, descending; appendages of the stigma short, thickish, rounded.—Nearly allied to the preceding,¹ with which it grows intermingled (Cr.), and some characters depend perhaps upon the more advanced state of development in which this was collected. Habit and proportions the same, but stem rather higher, flowers more distant, and lip-segments narrower.—HAB. Trinidad, Cr., in savannahs, Piarco.” Griseb. loc. cit.

I have seen no specimens of this species. In my herbarium there is an excellent sketch of the material in the Kew Herbarium, for which I am indebted to the kindness of Dr. D. Prain. This sketch shows a slender plant with wand-like stems and linear, bract-like leaves. The inflorescence is loose, somewhat one-sided, and few-flowered. Contrary to the description published by Grisebach, the middle division of the labellum, as shown by the sketch, is much shorter than the lateral divisions. The material from which the sketch was prepared was collected in Trinidad by Dr. Crueger, and was used by Grisebach in his work on the _Flora of the British West Indian Islands_; consequently the discrepancy between the description and the material at Kew is of unusual interest.

Kränzlin, in _Orchidacearum Genera et Species_, states that the anterior division of the petals is longer than the posterior division, but not twice longer, as described by Grisebach, and he describes the labellum as tripartite, with the middle division about twice as long as the lateral ones. (Plate 70.)

¹_H. setacea_, which Cogniaux has described as _H. Cruegeri._
HABENARIA
mesodactyla Grisebach

HABENARIA Leprieuri Reichb.
Plate 70

I. Habenaria mesodactyla. Drawn from a sketch, prepared by M. Smith, of the specimens collected in Trinidad, British West Indies, by Dr. Crueger (no. 66), and preserved in the herbarium at the Royal Botanic Garden, Kew. 1. Flower. 2. Labellum and column. 3. Petal.

II. Habenaria Leprieuri. Flower drawn from a dried specimen collected in Trinidad, British West Indies, by W. E. Broadway. 4. Petal. 5. Labellum. Flower and parts drawn, enlarged, with the aid of the camera lucida.


"Zierliche, sehr zarte, fusshohe, steif aufgerichtete Pflanze mit 3-4 linealen, spitzen Blättern, durch das Trocknen schwarz.


I place here specimens gathered in Trinidad (British West Indies) by W. E. Broadway. The flowers agree well with the figure in Warming’s Symbolae ad Floram Brasiliæ and with the description published by Cogniaux in Mart. Fl. Bras. The setaceous, or narrowly linear, leaves are distinctive when compared with other species in our range. The raceme, however, of one of Broadway’s specimens is composed of twenty or more flowers, differing in this respect from the type. The number of flowers may be extremely variable.

The general habit of Broadway’s material suggests H. mesodactyla, but the flower is unlike the drawing prepared from the specimens preserved in the Kew Herbarium. The material from which my illustration is taken is presumably referable to H. Leprieuri. Broadway’s specimens are of unusual interest, as they
ORCHIDACEÆ

exhibit a wide range of variation in the form of the inflorescence and in the relative proportions of the divisions of the petals and labellum. Cogniaux's observations tend to show that great variation may be expected in the anterior division of the petal, this being either well developed or much reduced. Warming's figure shows the anterior division of the petal to be more slender than in the material chosen for illustration here. (Plate 70.)

TRINIDAD

Purdie.—W. E. Broadway (1).

FRENCH GUIANA

Leprieur (no. 291).

BRAZIL, MINAS GERAIÉS

Lagoa Santa, Warming.


"Tuberidiis parvis, ovoideo-oblongis, villosis; caule subfiliiformi, breviusculo, basi vaginato, supra sparse vaginato; foliis erectis, rigidiusculis, linearis-setaceis, non carinatis, basi longiusculo vaginantibus; racemo breviusculo, laxe 5–8-floro; bracteis membranaceis, ovato-lanceolatis, acutissime longeque acuminatis, leviter ventricosis, ovario circiter æquilongis; floribus subsecundis; sepalis trinervii, dorsali ovato, obtuso, lateralibus paulo longioribus, deflexis, triangulari-lanceolatis, acutiusculis; petalis bipartitis, partitionibus æquilongis, sepalo dorsali paulo brevioribus, postica linearis-ligulata acuta, antica erecta setacea; labello carnosulo usque ad basin tripartito, partitionibus subæqualibus, sepalis lateralis æquilongis, anguste linearibus, lateralibus acutiusculis, intermedia vix latiore obtusa; calcare pendulo, filiformi-clavato, obtuso, ovario æquilongo; processibus stigmaticis brevibus, crassis, rotundatis.
H. Cruegeri  "Habenaria setacea Griseb. / Flor. (1864), p. 644 (non Lindl.)."

"Tuberidia obtusa, paulo obliqua, 10–12 mm. longa. Caulis strictus vel leviter flexuosus, teretiusculus, 12–35 cm. altus, \( \frac{1}{2} \)–1 mm. crassus. Folia tenuiter trinervia, limbo 2–4 cm. longo basi 1–2 mm. lato, vagina 1–3 mm. longa. Racemus rectus, 3–8 cm. longus. Bracteae adpressae, basi amplexicaules, 8–13 mm. longae. Flores erecto-patuli, virescentes. Ovarium anguste linearifusiforme, leviter arcuatum, 10–11 mm. longum. Sepala submembranacea, dorsale satis concavum, 3 mm. longum, 2 mm. latum, lateralia subplana, leviter obliqua, \( \frac{3}{2} \)–4 mm. longa, \( \frac{1}{2} \) mm. lata. Petalorum partitiones subrectae, \( \frac{2}{2} \) mm. longae. Labellum deflexum, partitionibus leviter divergentibus, \( \frac{3}{2} \)–4 mm. longis; calcar rectum, 1 cm. longum, inferne \( \frac{1}{3} \) mm. superne \( \frac{2}{3} \) mm. crassum. Capsula erecta, leviter arcuata, fusiformis, crasse 6-costata, 14–16 mm. longa.


Among the orchids collected by Crueger in Trinidad, and described by Grisebach in the *Flora of the British West Indian Islands*, there were two closely allied species of Habenaria, one of which Grisebach referred to *H. setacea*. Subsequent studies have proved that *H. setacea* does not come within our range. Professor Cogniaux has recently decided that Grisebach’s *H. setacea* is an undescribed species; and in Urban’s *Symbolae Antillarum* it appears under the name *H. Cruegeri*.

**H. repens** 40. *H. repens* Nutt., Gen. 2: 190 (1818); *Elliott*, Sketch 2: 489 (1824); *Spreng.*, Syst. Veg. 3: 692 (1826); *Lindl.*, Gen. & Sp. Orch. 310 (1835); *Eaton & Wr.*, N. A. Bot. ed. 8, 260 (1840); *Steud.*, Nomencl. ed. 2, 1: 717 (1841); *Chapm.*, Fl. S. U. S. ed. 1, 461 (1860), ed. 2, 461 (1884), ed. 3, 487 (1897); *Darby*, [ 216 ]
ORCHIDACEÆ


“2. *repens. Root creeping; leaves and bractes lanceolate, acute; lip 3-parted, lateral segments setaceous; spur scarcely the length of the germ, adscendent; inner petals biparted, the lower segment setaceous. Hab. On the margins of ponds near Savannah in Georgia and in Carolina; subaquatic. Obs. Root perennial, fibrous, creeping, base of the stem also radicant; fibres lanuginous. Stem leafy, about 12 inches high. Leaves oblong-lanceolate, approximate, in the spike diminishing to bractes, which are about equal with the flowers. Spike linear, 3 to 5 inches long. Flowers yellowish-green, numerous, but not dense.

[ 217 ]
**ORCHIDACEÆ**

*H. repens* Outer segments of the calix glandularly mucronulate, upper segments vaulted; the 2 inner petals bifid nearly to the base, with the divisions so unequal and divaricate as to appear unconnected, the upper one linear and acute, the lower setaceous; lip 3-parted, the central portion shorter and linear, the 2 lateral setaceous.” Nutt. *loc. cit.*

**NORTH CAROLINA**

**SOUTH CAROLINA**
*Met Curtis* (4).
*Aiken Co.:* Aiken, August, 1869, *H. W. Ravenell* (2).

**GEORGIA, CHATHAM COUNTY**
Swamps near Savannah, August 17, 1900 (Biltmore no. 4032 a) (5).
*McIntosh Co.:* Fresh marshes of Altamaha River just below Darien, September 17, 1903, *R. M. Harper* (no. 2002) (1).
*Lowndes Co.:* Floating with *Piaropus crassipes* in pool, about two miles north of Valdosta, September 1, 1902, *Harper* (no. 1590) (2, 4).

**FLORIDA, VOLUSIA COUNTY**
Wet ground, Beresford, July 11, 1900, *A. H. Curtiss* (no. 6683) (2, 3, 4, 5, 7).
*Sumter Co.:* Ditches and swamps, August, 1877, *Curtiss* (no. 2772) (2, 4, 7, 16).
*Orange Co.:* Low pine woods, Oviedo, May 31, 1904, *A. A. Eaton* (no. 1025) (1).
ORCHIDACEÆ

Polk Co.: In water, on floating bog, May 12, 1894, L. B. Ohlinger *H. repens* (no. 682) (4).

Manatee Co.: Manatee, December, 1877, A. P. Garber (2, 3, 7, 16).
—Swampy head, Oneco, June 4, 1904, Eaton (no. 1075) (1).

Lee Co.: Fort Myers, June 5, 1904, Eaton (no. 1083) (1).—Naples, March, 1904, O. Ames (1).

Dade Co.: Wet sand by railroad, Fort Lauderdale, November 19, 1903, Eaton (1).

ALABAMA, Baldwin County
Borders of ponds and ditches in the shade, Point Clear, September, 1884 (4).

Mobile Co.: Boggy borders of ponds and ditches, Mobile, October, Chas. Mohr (12).

LOUISIANA
Ex Hb. Thurber (3). — Josiah Hale, ex Hb. Thurber (3).

CUBA
1836, Ramon de la Sagra (21), (type of *H. tricuspis*).—1860-4, C. Wright (no. 3305) (3, 4).—Pinales la Catalina, September 11 (1860-4), Wright (no. 3307) (3).—Floating islands in Lagunas San Mateo, near Pinar del Rio, December 8 (1860-4), Wright (no. 3309) (3, 4).

PORTO RICO

VENEZUELA
Sacupana, April, 1896, H. H. Rusby & Roy W. Squires (no. 394) (3, 4).

Reported as follows:

JAMAICA
St. Anne's, McNab.

GUATEMALA
Around lake, Duenas, 4950 ft., Salvin (no. 183).

NICARAGUA
Greytown, Tate (no. 462).

BRITISH GUIANA
Aquatic in trenches, coast region, Jenman (no. 4422).—Near Georgetown, Jenman (no. 7232).
ORCHIDACEÆ

H. repens BRAZIL, SANTA CATHARINA
At Blumenau, Ule (no. 873).


“Habenaria Pringlei. Roots mostly fibrous, but the central one tuberous: stem 3 feet high: leaves sheathing, ensiform, carinate, 6–8 inches long, an inch in breadth, gradually tapering to a long point: bracts lanceolate, sharply acuminate, 2 inches long, 5 lines broad; flowers about 10, large, pedicels 18 lines long; the ovary of equal length: sepals ovate, acuminate, minutely cuspidate, 8–9 lines in length; the upper one erect, scarcely at all galeate; lateral petals 2-cleft to the base, the segments linear, acute, the upper broader, not equalling the sepals; the lower very narrow, more than an inch in length: lip 3-cleft nearly to the base, exceeding an inch in length; the segments all narrow and linear, the lateral somewhat surpassing the thickish, scarcely acute central one: fleshy processes very conspicuous, linear-spatulate, 3–4 lines in length: spur over 5 inches long, exceeding the ovary and pedicel, its tip sheathed in the bracts and apparently adherent to them.—Near Guadalajara, June, 1891 (n. 3823). This striking species is related to H. macroceratitis, Willd., and H. setifera, Lindl., but differs from the former in its much longer narrower leaves, larger flowers, and conspicuous fleshy appendages; from the latter, by its larger more numerous flowers, and in the shape of its petals.” Robinson, loc. cit.

This is a very distinct species which should not be confused with H. macroceratitis. Kränzlin, in Orchidacearum Genera et Species 1: 188, recognized it as distinct, but on page 192 referred
it to the synonymy of \textit{H. macroceratitidis}. This treatment is in-
comprehensible as the same specimen is cited by Kränzlin under both \textit{H. Pringlei} and \textit{H. macroceratitidis}. If number 3823 of
Pringle's Mexican collections is a mixture, this fact is not men-
tioned in Kränzlin's work. As \textit{H. Pringlei} is reduced to syno-
nymy on page 192, it is presumable that Kränzlin reversed his
conclusions, indicated on page 188, in subsequent examinations of
material (cf. p. 887 \textit{Orch. Gen. et Sp.}). The elongated, ensi-
form leaves, broad divisions of the petals and labellum, shorter
spur, and very characteristic inflorescence are only a few of
the salient details which serve to distinguish \textit{H. Pringlei} from
\textit{H. macroceratitidis}.

\textbf{MEXICO, SAN LUIS POTOSI}
Bogs, Las Canoas, August 7, 1891, \textit{C. G. Pringle} (no. 3823) (1, 2, 3, 4, 7).
\textbf{VERA CRUZ}: In marsh, Coatzaocoaleos, March, 1895, \textit{Charles L. Smith} (no.
1049) (2, 3, 4, 22).
\textbf{TABASCO}: In paludosis prope urbem Sancti Joannis Baptistae, April 5, 1889,
\textit{J. M. Rovirosa} (no. 439) (16).

42. \textit{H. bicornis} Lindl., Gen. & Sp. Orch. 309 (1835); \textit{A. Rich.}, \textit{H. bicornis}
16: 61 (1893); \textit{Combs}, in Trans. Acad. Sci. St. Louis 7: 468 (1897); \textit{Kränzl.}, Orch. Gen. et Sp. 1: 187 (1897); \textit{Cogn.}, in
Urban Symb. Antill. 6: 301 (1909).—\textit{H. bidentata} \textit{Kränzl.},
Orch. Gen. et Spec. 1: 188 (1897), not \textit{Poepigg MSS}.

"13. \textit{HABENARIA} bicornis.

"\textit{H. foliis angusto-lanceolatis acuminatis, racemo denso stricto
ferè corymboso, bracteis ovario recto cylindraceo duplò breviori-
bus, petalis bipartitis a galeà planà liberis: lacinià anteriore sub-
æquali falcatim cornutâ, labelli tripartiti carnosi laciniis spatu-
**ORCHIDACEÆ**

*H. bicornis* latis subæqualibus sepalorum longitudine, calcare longissimo inflexo apice compresso.

"Hab. in Cuba, Pöppig. (exam. s. sp. in hb. Hooker.)"


**CUBA, SANTA CLARA**

Dist. Cienfuegos, Cienguita S. W., August 7, 1895, Combs (no. 440) (3, 4); in wet grassland and open woodland, September 3, 1895, Combs (no. 755) (3).

**PINAR DEL RIO:** Herradura, August 26, 1905, Van Hermann (no. 753) (1).


*Satyrium erectum*, folii oblongis, petiolis vaginatiis amplexantibus, spica terminali, nectaris longissimis, *Browne*, Jam. 324 (1756).


Habenaria Habenaria Small, Fl. Se. U. S. 316 (1903).


The specimen in the Linnaean Herbarium is in an excellent state of preservation. Its origin is not indicated by notes of any kind. Walter's Orchis habenaria is conspecific with H. lacera.

FLORIDA, SUMTER COUNTY

September 7, 1893, F. L. Lewton (4).

CITRUS CO.: August, 1898, J. A. Tait (2).

ORANGE CO.: Oviedo, September, 1902, T. L. Mead (1).

CUBA

1860–4, C. Wright (no. 3308) (3, 4, 21).

PINAR DEL RIO: Herradura, September 7, 1905, Van Hermann (no. 824) (1).

JAMAICA

1858, Mr. March (no. 1266) (3).

MEXICO

Pavon (19).

OAXACA: Mt. Alban, 5500 ft., August 15, 1894, C. G. Pringle (no. 5708) (3, 7); dry hills, valley of Oaxaca, alt. 5100–5800 ft., September 8, 1894, E. W. Nelson (no. 1246) (3).—El Fortin, 1700 m., September 19, 1897, C. Conzatti & G. Gonzales (no. 473) (1, 3).
**H. macroceratitis**

Jalisco: Road from San Juan Capistrano, August 23, 1897, J. N. Rose (no. 2509) (2).

Reported as follows:

Jamaica
Swartz; Bancroft; March (no. 1266); Wulfschlaegel (no. 1050).

Guatemala
At San Sebastian near Retalhuleu, Bernouilli & Cairo (no. 679).

Costa Rica
Hoffman.

British Guiana
Parker, Mt. Cunuca; Appun (no. 1443).

Surinam
Anderson; Berthoud-Coulon (no. 77).

**H. macroceratitis var. brevicalcarata**

This is a peculiar plant which resembles *H. macroceratitis*. The leaves are oblong-lanceolate, acute, 1.5 dm. long, 2.7–3.5 cm. wide. The spurs are about 8 cm. long, slender, gradually thickened toward the tip. The filiform, lateral divisions of the labellum are rolled inwards, or somewhat coiled and twice longer than the intermediate, linear division. My material consists of a single specimen.

Guatemala, Sololá
San Lucas Tolimán, alt. 1800 m., February, 1894, Heyde & Lux, J. D. Smith distr. (no. 6383) (1).

**H. lucæcapensis**


“A foot and a half high, leafy; principal root tuber-like, an inch long, with numerous accessory fibers from the summit: leaves thin, broadly elliptical, obtusish, four inches long, half as broad, rather abruptly narrowed to a sheathing base; the lowest smaller, orbicular; the upper reduced to lanceolate acuminate bracts, an
inch in length; raceme six inches long, 8–10-flowered: upper *H. lucæcapensis*

sepal ovate-elliptic, obtusish, four lines long: petals deeply two-parted, upper segment linear, falcate, obtuse, dilated at the base, ascending, nearly equalling the sepals; lower segment filiform, about an inch in length; labellum three-parted to the base; the outer segments about fifteen lines long; the middle one linear obtuse, a third to a half as long; spur clavate, free, 14–17 lines in length: ovary angled and obsolescently winged, about equalling the bracts; the two appendages of the stigma deeply bifid; the segments linear, spreading laterally, and curved ascending, retuse. Collected on mountains of the Cape Region of Lower California, by T. S. Brandegee, September 16, 1893.

"A stout species resembling in habit *H. Michauxii*, Nutt., of the southern states, but differing in its broader leaves, longer segments of petal and lip, and shorter more clavate spur." Fernald, *loc. cit.*

**MEXICO, LOWER CALIFORNIA**


PLATE 71. Habenaria quinqueseta
Plant, natural size, drawn from a living specimen collected in Florida, by A. A. Eaton.
1. Column and labellum, showing the anthers above and the rounded stigmatic processes below in front of the opening to the spur. 2. Petal. 3. Lateral sepal. 4. Upper sepal. All of the parts drawn, enlarged, with the aid of the camera lucida. (The basal leaves are not shown.)
HABENARIA
quinqueseta (Michx.) Sw.
ORCHIDACEÆ


"QUINQUESETA. O. foliis ovalibus, acutis: spica floribus distantier alternis; bracteis acuminatis: cornu dupla ovarii longitudine, subbiunciali: labello in quinque lacinias setaceas partito.

"Obs. Affinis O. habanariae.

"Hab. in Carolina." Michx. loc. cit.

The type of H. quinqueseta is preserved in Michaux’s Herbarium in the Muséum d’Histoire Naturelle de Paris. No notes regarding its habitat are given.

SOUTH CAROLINA, BEAUFORT COUNTY

In sandy soil, Bluffton, September, 1872, Dr. J. H. Mellichamp (4); September, 1880, Mellichamp (16); 1883, Mellichamp (3, 5).

FLORIDA

1889, J. H. Simpson (10); A. W. Chapman (3).

Walton Co.: Wet pine lands, Crest View, August 21, 1899 (no. 4032) (5).

Calhoun Co.: Very rare, Wewahitchka, Chapman (4).

Suwannee Co.: Grassy pine lands, Liveoak, September, 1900 (no. 4032 b) (5).

Lake Co.: Eustis, Hb. Chapman (5).

Hillsboro Co.: 1886, A. H. Curtiss (3).

Manatee Co.: Rich dry hammock woods east of Manatee, August 23, 1890, Simpson (no. 125) (2), (type of H. Simpsonii).

Lee Co.: Caloosa River, August, 1878, A. P. Garber (no. 37) (2, 3, 4, 7, 16).—Flat woods, Myers, July and August, 1900, A. S. Hitchcock (no. 341) (4).
**H. quinqueseta**

Dade Co.: Crevices of lime-rock, pine woods south of Cutler, November 11–13, 1903, A. A. Eaton (1).—Dry sandy soil, in sun, back of Miami, November 21, 1903, Eaton (1).

**ALABAMA, TUSCALOOSA COUNTY**

Plank road, twenty miles from Tuscaloosa, August 2, 1878, E. A. Smith (12).

**TEXAS**

Wright (3).

**H. oreophila**


"Habenaria oreophila. Glabrous throughout: stem erect, leafy, 7 to 8 dm. high: leaves oblong-lanceolate, 1 to 1.5 dm. long, 3 to 3.5 cm. broad, apiculate-acute, entire, membranous; the lowermost leaves reduced to mere sheaths, the uppermost gradually smaller: inflorescence a terminal elongated loose 2 to 3 dm. long raceme; bracts subfoliaceous, lanceolate-acuminate, about equalling the ovary: upper sepal ovate, cucullate, 8 mm. long, 3-nerved; lateral sepals oblong-lanceolate, slightly oblique, obtuse, 3-nerved: lateral petals deeply 2-parted; the upper division lanceolate, upwardly arched, shorter than and coherent with the upper sepal; lower division bent downward, linear-attenuate and somewhat coiled at the tip: labellum deeply 3-parted; the middle lobe ligulate, slightly thickened, 11 to 13 mm. long, obtuse; lateral divisions linear-attenuate, 2.5 cm. long, more or less spirally coiled at the free ends: spur clavate, free, 4 to 4.5 cm. long: column bearing fleshy oblong appendages at the base: ovary narrowly winged.—Mexico. State of Guerrero: mountains near Iguala, 15 September, 1900, C. G. Pringle, no. 9248 (hb. Gr.).

"The affinity of this species is with Habenaria jaliscana, Watson, and H. luccecapensis, Fernald. From the former it is readily distinguished by the height, the longer leaves, the longer
spur, and by the entire absence of the falcate character of the lateral divisions of the labellum; and from the latter it differs in having much longer and narrower leaves." Greenman, loc. cit.

MEXICO, GUERRERO
Mountains near Iguala, September 15, 1900, C. G. Pringle (no. 9248) (3).


**Satyrium erectum simplex**, foliis sessilibus ab altero latere recurrentibus, spica terminali, nectariis longissimis **Browne**, Jam. 324 (1756). ¹


¹ The description of the spur suggests *H. macroceratitis*. 

[ 229 ]

"O. bulbo solitari indiviso, nectarii labio 3-partito: lateribus setaceis, cornu lineari compresso germinis longitudine.

"Orchis setacea? Jacq. am. 220.


"Jamaica, Hispaniola. Η." Sw. loc. cit.

I have been unable to discover the type material of Habenaria monorrhiza. In the British Museum, where many of Swartz's specimens are preserved, I found nothing to throw light upon it. Lindley regarded H. maculosa distinct from H. monorrhiza, but, in my estimation, on insufficient evidence. Several authors have regarded H. monorrhiza Br. and H. alata Hook. conspecific. Reichenbach, however, identified as H. monorrhiza specimens collected in Porto Rico by Sintenis, which are identical with H. maculosa. He also referred H. maculosa to the synonymy of H. monorrhiza, thereby upholding the views which are entertained in the present volume. Lindley laid stress on the fact that Swartz described a flower which was characterized by simple, undivided petals, but the extreme delicacy of the anterior segment of the petals of H. monorrhiza, which renders them easily breakable, he failed to take into account. Furthermore Swartz described the labellum of his flowers as three-parted with the lateral division setaceous, a characterization hardly applicable to H. alata. There is no Jamaican Habenaria of which
I have any knowledge that is characterized by a three-parted labellum and simple petals; therefore, unless it is assumed that Swartz overlooked the filamentous anterior division of the petals in the specimen he described as *Orchis monorrhiza*, there is no species known to us which fits his description.

In a recent publication on Jamaican orchids Fawcett & Rendle compare *H. socialis* with *H. alata* Hook., and apparently sustain the views held by Reichenbach. Cogniaux, on the other hand, in Urban's *Symbolae Antillaneae*, gives *H. alata* Hook. as a synonym of *H. monorrhiza* Br., and refers to *H. maculosa* the species which is here identified with *H. monorrhiza*. Unfortunately Cogniaux does not discuss the matter and in his citation of specimens makes no allusion to Swartz's type.

**GUATEMALA, ALTA VERAPAZ**


**CUBA**

Wright (no. 3308) (19).—*In Cuba Orientali*, 1856-7, C. Wright (no. 625) (3), 1860, Wright (no. 625) (4).—*Prope monte verde*, January–July, 1859, Wright (no. 625) (3).


**PORTO RICO**

H. monorhiza

Hillsides between Ponce and Utuado, March 12, 1906, John F. Cowell (no. 762).

JAMAICA

Mr. March (no. 1273) (3).—Port Antonio, December 23, 1890, A. S. Hitchcock (4).—Two miles west of Port Antonio, February 2, 1906, A. E. Wight (1).—Blue Mt. Peak, December 13, 1890, Hitchcock (4).

ST. THOMAS

Siqualbjagos (?) (1400 ft.), Grosmark, February, 1877, Eggers (3); 1880, Eggers (no. 253) (3, 16).

GRENADA

1905, R. Cameron (1).—St. Andrew’s Parish, January, 1906, W. E. Broadway (1).

TRINIDAD

Ex Hb. Bernhardi, Sieber (no. 202) (4).—In clayey soil among grass in partial shade, St. Francis Valley Road, Belmont, December 22, 1906, W. E. Broadway (1).

VENEZUELA

Prope coloniam Tovar, Caracas, 1856-7, Fendler (no. 1419) (3).

PERU

In pratis Paccha, Hartweg (no. 842) (19).

Reported as follows:

JAMAICA

Swartz (type); Wullschlaegel (nos. 1017 & 1049); Wilson (no. 160).—At Dover Castle, 700 m., Eggers (no. 3775).

PORTO RICO

Stahl (no. 285).

DOMINICA

Imray (no. 304).—In pratis ad Rosehill, Eggers (no. 932).

ST. VINCENT

Guilding; Anderson.

GUADALOUPE

In pratis humidis, Duchassaing.

MARTINIQUE

In woods, Hahn (no. 89).
ORCHIDACEÆ

ST. LUCIA

Crudy.

TRINIDAD

Fendler (no. 753).—Maraval; Crueger (no. 238).

VENEZUELA

Wagener.—Merida, Engel.

COLOMBIA

Linden (no. 706), fide Ill. Hort. 29: 52. —Rio Sucre, 2300 m., Lehmann.

ECUADOR

In arena fluvii pastusa prope Baños, Spruce (no. 5219).

PERU

Prope Tarapota, Spruce (no. 4159).—Cassapi; Mathews (no. 1884).—Chachapoyas, Mathews (no. 3195).—Poeppig.

BRAZIL

Pohl.—At Owayas, Gardner (no. 3989).


“H. foliis ovato-oblongis acuminatis, racemo multifloro, bracteis foliaceis acuminatis ovarii longitudine, petalis bipartitis: laciniiis lateralibus setaceis ascendentiis, labelli tripartiti laciniiis linearibus acutis intermediâ paulo breviore, sepalis lateralibus explanatis acutissimis, calcare recurvo compresso valdè clavato.

“Hab. in Mexico, de Karwinski. (exam. s. sp. in hb. Reg. Monac.)


Galeotti’s type (no. 5051) is represented at Paris by a single individual, a drawing by Richard of a plant, “no. 83, Juguila à 6500 ft.,” and a drawing of a flower and details. The plant is a very characteristic one of H. crassicornis, the thick semi-oblong apex of the spur ascending from a very slender basal portion, giving the whole flower the appearance of an ichneumon fly, the setaceous divisions of the perianth bearing a striking resemblance to the legs, the lateral sepals to the wings, the dorsal sepal to the thorax and head, and the spur to the abdomen. (A. A. E.)

H. crassicornis is very clearly distinguished from nearly related species by the minutely glandulose or denticulate petals and lip. The ovary is also glandulose along the angles or wings. In the drawing at Paris this denticulate character is clearly exhibited, although in the original diagnosis of H. crassicornis no reference to it is made by Lindley.

In all the specimens of H. crassicornis I have examined this denticulate or glandulose character is evident, but I did not look for it in Lindley’s specimen,—at least I made no note relating to it. Lindley’s sketch which accompanies the type exhibits a perfectly smooth flower, as figure 2, plate 72 shows. In all other respects this sketch suggests the flowers of H. adenantha Rich. & Gal. Dr. Prain, in a communication received December 17, 1909, assures me “that the flowers of Habenaria crassicornis are, in Lindley’s original specimen, covered with little rough points.” This observation disposes of uncertainty.

Dr. Kränzlin disregards H. adenantha in Orchidacearum Genera et Species, and in his account of H. crassicornis makes
HABENARIA

crassicornis

Lindl.
Plate 72. Habenaria crassicorns
Plant, etched from a photograph of the drawing by Richard preserved in the Muséum d’Histoire Naturelle de Paris (type of H. adenantha Rich. & Gal.). 1. Copies from a photograph of Richard’s drawing of a flower, column and label-lum. 2. Flower, according to a sketch in Lindley’s herbarium. 3. Flower, from the Brandegee specimen collected in Lower California.
**ORCHIDACEÆ**

*H. crassi-cornis*—no mention of the glandulose protuberances on the labellum and petals.

**MEXICO**


LOWER CALIFORNIA: Cape Region, October, 1893, *T. S. Brandegee* (3); September, 1899, *Brandegee* (1).

JALISCO: Cool soil under pines and oaks, hills near Guadalajara, September 1, 1893, *Pringle* (no. 4511) (2, 3, 4, 7).


Reported as follows:

**MEXICO**

In Hb. Schlechtendahl, *Leibold* (no. 5).


"*Habenaria Schaffneri*. Stem stout, 8 inches high, covered with imbricated ovate or ovate-lanceolate sheathing, acute or acuminate leaves 1 to 1½ inches long; bracts large, foliaceous, much exceeding the ovary; raceme short, few- (6-8-) flowered: flowers large, 5 or 6 lines long; lower sepals lanceolate, acutish, the upper broadly elliptical, obtuse, carinate; petals 2-parted, the lower segments very narrow, the upper oblong-falcate, contiguous or subcoherent to the sepal; lip 3-lobed above the base, 5 lines long, the middle lobe narrowly ligulate, the lateral narrowly linear; spur an inch long or more, dilated toward the end and very acuminate: oblong processes of the stigma and beaks of the anther 1½ lines long.—In the
ORCHIDACEÆ

San Miguelito Mountains (5088 Schaffner, 1876) and near San Luis Potosi (860 Parry and Palmer, 1878); under pines in the Sierra Madre, Chihuahua (1375a Pringle, Sept., 1887)." Wats. loc. cit.

The type specimen of H. Schaffneri in the Gray Herbarium is in an excellent state of preservation. In general habit it has the appearance of a robust form of H. clypeata. Lateral sepals about 1 cm. long. Upper sepal 1 cm. long, galeate, about 6 mm. wide. Petals: posterior division 1 cm. long; anterior division slightly longer, slender, erect. Labellum three-lobed, lateral lobes subfiliform, arising about 5 mm. from the opening to the spur, about 11 mm. long, middle lobe fleshy, linear-oblong, about 7 mm. long from the point of origin of the lateral lobes to the tip. The spur resembles that of H. crassicornis.

MEXICO, CHIHUAHUA

Cool, damp soil under pines, Sierra Madre, September 16, 1887, Pringle (no. 1375a) (2, 3, 7, 16), all past anthesis; September, 1888, Pringle (no. 1678) (4).

SAN LUIS POTOSI: In montibus San Miguelito, 1876, Dr. J. G. Schaffner (3, 16) (type).—Region of San Luis Potosi, 6000–8000 ft. alt., 1878, Parry & Palmer (no. 860) (2, 3, 16), past anthesis.


"98. H. lactiflora Nob. tab. 39.¹ Foliis ellipticis acutis; flor. albis, sepalo superiori dorso cristato, sepalis internis lanceolatis:

¹These tables were never published. The drawings are inserted with the specimens at the Paris Museum. (A. A. E.)
ORCHIDACEÆ


No type of *H. lactiflora* is designated, and it is clear that Richard referred specimens of *H. diffusa* and *H. clypeata* to it, as may be seen by specimens at Paris. (Richard's drawing is of *H. clypeata*?) Certainly Galeotti no. 5218 is not the type, as it has a question mark after it; yet its aspect is more like what must be held as *H. lactiflora*. There is a drawing in the Lindley Herbarium that shows a flower very much like Heyde & Lux no. 3858 (which I refer to var. *buccalis* Reichb. f.). This species may be distinguished readily from *H. clypeata*, which it closely resembles, by the lateral arms arising from near the middle of the lip and the oblong mid-lobe. Lindley's drawing shows these characters perfectly. (A. A. E.)

**MEXICO, SAN LUIS POTOSI**

Hills, Las Canoas, 3500 ft., August 21, 1891, Pringle (no. 5027) (3, 7).

**OAXACA:** *Fl. blanches en août, bois de chênes à 2000*, November–April, 1840, Galeotti (no. 5151) (21), (type?).

**H. lactiflora**


"‘Blüthen hellgrün. Lippe weiss.'

"Aladhuela-Desengaño. 4. 8. 57." Reichb. f. *loc. cit.*

The status of *H. lactiflora* Rich. & Gal. in this monograph is based on Eaton's notes made at Paris in November, 1905. In order to make these notes as clear as possible the accompanying plate has been prepared to represent the drawing by Richard,
HABENARIA lactiflora Rich. & Gab
Plate 73. Habenaria lactiflora


Figs. 2 and 3 drawn, enlarged, with the aid of the camera lucida.
The sketch in Lindley's herbarium at Kew, and a flower taken from the plant collected by Heyde & Lux, which Eaton referred to var. buccalis.

Great caution should be observed in considering the characters of the labellum. The origin of the lateral arms follows no definite rule, and is more likely to cause confusion, if relied on, than to assist in specific distinction.

In my opinion *H. lactiflora* and *H. clypeata* are very closely allied, and will be found to offer no satisfactory characters on which to establish two distinct species.

The position of the var. buccalis, on the other hand, is not clear.

More material than I have seen and a thorough study of types are necessary to establish certainty regarding *H. clypeata* and its allies.

GUATEMALA, SANTA ROSA
Cerro Gordo, August, 1892, Heyde & Lux, J. D. Smith distr. (no. 3858)(1).
I refer this here on account of its green color, prominent stigmas, and its native locality. (A. A. E.)

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ORCHIDACEÆ


“24. Habenaria clypeata.

“H. foliis parvis ovatis sensim decrescentibus, racemo multifloro, bracteis foliaceis cucullatis acuminatis ovario brevioribus, petalis bipartitis: laciniis anterioribus linearibus horizontalibus posticis cum sepalo supremo rotundato galea orbiculatam planam efficientibus, labelli penduli tripartiti laciniâ intermedia lineari-lanceolata lateralibus linearibus paulò longiore, calcare compresso ovarii longitudine.

“Hab. in Mexico, de Karwinski. (exam. s. sp. in hb. Reg. Monac.)


There is no type specimen of this in Lindley’s herbarium, but it is quite probable that sketches of a plant, flower, and petal therein contained were made from Karwinski’s material, which should be in the royal herbarium at Monaco. That these sketches were from this source is the more likely as similar sketches represent the other species founded on Karwinski’s collection. If this view is correct, these sketches prove that the general conception of H. clypeata held by authors is the correct one. It is represented by a mixture of two or three species in the herbaria of Kew, the British Museum, and the Muséum d’Histoire Naturelle de Paris. Perhaps the most closely related species is H. lactiflora Rich., which may be distinguished by the lateral divisions of the broader labellum that arise from near its middle and reach beyond the mid-lobe. In H. clypeata the lateral lobes arise from near the base of the middle lobe which they scarcely

[ 241 ]
**ORCHIDACEÆ**

_H. clypeata_ equal in length. Dr. Kränzlin refers _H. jaliscana_ Wats. and _H. guadalajarana_ Wats. to _H. clypeata_. It is highly probable that he would have refrained from doing so had he studied the type specimens of _H. jaliscana_ and _H. guadalajarana_. Dr. Kränzlin also refers _H. flexuosa_ Lindl. to _H. clypeata_. His reasons for adopting this course are not given in detail.

**MEXICO, CHIHUAHUA**


**LOWER CALIFORNIA:** Cape Region Mts., September, 1893, T. S. Brandegee (3).

**JALISCO:** Flowers white, fragrant, mossy, grassy places near Guadalajara, August, 1893, Pringle (no. 4510) (2, 3, 4, 7).—Sierra Madre west of Bolaños, September 16, 1897, J. N. Rose (nos. 2970, 3712) (2).—Between Dolores and Santa Gertrudis, August 7, 1897, Rose (no. 2062) (2).

**MICHOCÁN:** In pastures, Angangueo, Hartweg (19, 20).—Fl. blanches, Cordillera à Uruapan à 4000, June–October, 1840, H. Galeotti (no. 5219) (21).—Hills near Patzcuaro, July 30, 1892, Pringle (no. 5361) (3).

**FEDERAL DISTR.:** Pedrigal, Valley of Mexico, September 1, 1896, Pringle (no. 7266) (2, 3, 7).—Cool soil, Eslava, 8000 ft., September 7, 1901, Pringle (no. 9358) (2, 3, 4, 7).

**VERA CRUZ:** Région d’Orizaba, 16 août, 1866, Hahn (no. 2872), Herb. Comm. sci. du Mex. (3, ex Hb. Mus. Par.).

Also reported from GUATEMALA


¹Kränzlin (in Engl. Bot. Jahrb. loc. cit.) cites several specimens from Mexico and Guatemala, but he omits these and substitutes South American specimens in Orchidacearum Genera et Species.

A study of the habit sketch and drawing of a flower made by Lindley, probably from Karwinski’s plant, and now preserved in Lindley’s herbarium at Kew, convinces me that this species is represented by _H. filifera_ Wats. rather than by Fendler’s no. 1418 from Vene-

[242]
**ORCHIDACEÆ**


"O. Labello biglanduloso quinque partito; laciniiis linearibus revolutis; calcare ovario longiore; foliis vaginantibus ovatis, quinque nerviis.

"Planta terrestris, vix pedalis.—Bulbus solidus, subglobo sus divisus; radiculae filiformes.—Caulis simplex, angulatus, erectus.—Folia ovata, rugata, alterna, vaginantia, nerviis quinque longitudinalibus.—Spica florum laxa. Flores alterni, bracteis lanceolatis, carinatis involuti.—Perigonium lacteum, concavum, 5 fidum; tribus segmentis superioribus connatis; duobus lateralisbus divergentibus acutis.—Labellum quinque-partitum, concolor, laciniiis lineari-setaceis revolutis.—Gynostemum, capitatum, conico ovatum, obscure bifidum. Anthera bilocularis supra excavata. Pollinis massulæ duæ obovatæ, pedicellatae, lutescentes. Stigma cavum, intra duos loculos antheræ hians.—Ovarium triquetrum, nonnihil contortum. Calcar sive Nectarium longissimum, filiforme, tubulatum, intra labellum et gynostemum excavatum duabus glandulis virecentibus versus faucem corniculi prominentibus.—Capsula ut in congeneribus.

"Habitat prope *Vallisoleum*; floretque Julio et Augusto.

"Obs. Orchidi 5 setæ Michauxii planta parum affinis; characteribus plurimis sane diversa. *L.*

zuela, mounted on the same sheet, and found also in other herbaria, determined by Lindley as *H. entomantha*. The Mexican and Venezuelan plants are of different species, and the name must attach to the Mexican plant. It is possible that *H. maxillaris* Reichb. f. (not *Lindl.*), *Beiträge zu einer Orchideenkunde Central Amerikas* 61, also belongs here. (A. A. E.)

II. Habenaria jaliscana. Flower and column etched from a photograph of the drawing by A. Richard of *H. alata* Rich. & Gal.
Habenaria
entomantha
Lindl.

Habenaria
jaliscana Wats.
ORCHIDACEÆ

“a. Orchis entomantha, floribus herbaceis.—Prope Vallisole-tum.” La Llave, loc. cit. (Plate 74.)

MEXICO

Tracing of plant and drawing of flower, probably from Karwinski’s specimen, in Herb. Lindl. (20).—Hartweg (no. 399) (in hb. 19 as H. clypeata).—Pringle, without label (4).

Chihuahua: Cool ridges of the Sierra Madre, October, 1887, Pringle (no. 1375 b) (3, 4, 7), (type of H. filifera Wats.).

Jalisco: Cool soil under pines and oaks, hills near Guadalajara, September 4, 1893, Pringle (no. 4509) (3, 7).

Michoacán: Cool, wooded hillsides near Patzcuaro, October 10, 1892, Pringle (no. 5223) (1, 5).

Chiapas: Terre froide, croît dans les forêts de pins. Fleure d’un blanc jaunâtre. Fleurit en juillet, 1864–70, Dr. Ghiesbrecht (no. 776) (3).

Vera Cruz: Fl. blanches, Jesus del Monte, 7000 ft., 1840, Galeotti (no. 5212) (21).

Also reported from GUATEMALA


“Habenaria Jaliscana. A foot high from a small tuberous root, stout and leafy: leaves lanceolate, or the lower ovate, acute, sheathing, 3 inches long or less: raceme short and open, with large foliaceous bracts: sepals ovate, acute, nearly equal (4 lines long), the lateral sub-falcate; petals 2-parted and the lip 3-parted, the divisions strongly falcate excepting the ligulate-spatulate obtuse middle lobe of the lip, its longer (6 lines) lateral lobes and the lower lobes of the petals approximate on each side, linear, acuminate, the upper petal-lobes contiguous to the upper sepal; spur narrowly clavate, 12 to 15 lines long: column with
**ORCHIDACEÆ**

*H. jaliscana* fleshy oblong appendages at base, $1\frac{1}{2}$ lines long; stigmatic processes $1\frac{1}{2}$ lines long. Rio Blanco in moist bottoms; August. (343).

—Flowers greenish yellow. This (as the following) may be some one of the species named by Richard & Galeotti, but their descriptions certainly do not apply to the specimens.” Wats. loc. cit.

*H. jaliscana* resembles *H. Schaffneri*. In the mature flowers, however, the spur is much more slender than in *H. Schaffneri* and about 3 cm. long. The anterior divisions of the petals are unusually long, as is shown in the specimen from which Richard prepared his drawing of *H. alata*.

Pringle’s no. 4508 as represented by specimens in my herbarium agrees in almost every detail with the type of *H. alata* Rich. & Gal., preserved in the herbarium of the Muséum d’Histoire Naturelle de Paris. Richard’s material is in excellent condition for comparative studies. The specimens collected by Galeotti at Mirador give the following measurements. *Dorsal sepal* about 6 mm. long, orbicular-oblong, acute. *Lateral sepals* 11 mm. long, 4.5 mm. wide. *Petals*: posterior division 8 mm. long, 1.5 mm. wide, falcate-linear; anterior division 13 mm. long. *Middle lobe* of the labellum 14 mm. long. *Lateral lobes* basal. (Plate 74.)

**MEXICO, DURANGO**

Near El Salto, July 12, 1898, E. W. Nelson (no. 4575) (2).1

San Luis Potosi: September, 1879, Schaffner (no. 508) (20).

Jalisco: In moist bottoms, Rio Blanco, August, 1886, Dr. Edward Palmer (no. 342) (2), (no. 343) (3, 16), (type).—Among pines, hills near Guadalajara, 5500 ft., August 23, 1893, Pringle (no. 4508) (1, 2, 3, 4, 7).—In the Sierra Madre, west of Bolaños, September 15–17, 1897, J. N. Rose (no. 3006) (2).

Vera Cruz: Linden (21).—*Fl. blanches*, Cordillera, Mirador, June–October, 1840, Galeotti (no. 5264) (21), (type of *H. alata* Rich. & Gal.).

Oaxaca: Ghiesbrecht (21).

1In Nelson’s specimen no. 4575 the lateral divisions of the labellum arise 3 mm. from the base.

[ 246 ]


In Lindley’s herbarium there is a duplicate of a Galeotti specimen which is identified as **H. diffusa**. Lindley’s drawing of a flower resembles very closely Richard’s drawing, which was presumably prepared from Galeotti’s no. 5150, although it shows longer anterior divisions on the petals. Measurements from Galeotti’s no. 5150 are as follows:

**Plant** 3.4 dm. tall. **Leaves** about 7 cm. long, 1.5–2.5 cm. wide. **Raceme** 9.5 cm. long, rather loosely flowered. **Ovary** 18 mm. long, very slender; **bracts** about half as long (up to \( \frac{2}{3} \)). **Dorsal sepal** 5 mm. long. **Lateral sepals** reflexed, 7 mm. long, 3 mm. wide. **Petals** shorter than the dorsal sepal, the anterior divisions 5–5.5 mm. long and equal to the lateral divisions of the labellum. **Middle lobe** of the **labellum** wider than the lateral lobes. **Spur** about 1.7 cm. long.

**H. novemfida** Lindl. presents for consideration a remarkable example of inaccuracy of observation. The petals as described by Lindley are 3-parted. In Lindley’s herbarium there is a sketch which shows this character and beside which is written “verified Aug., 1854.” Dr. Prain kindly examined the original specimen
**ORCHIDACEÆ**

*H. diffusa* at my request, and reported that a flower moistened and carefully removed from the type has *bifid petals*, and that Lindley’s drawing is clearly erroneous. In the light of this correction *H. novemflora* appears to be closely allied to *H. diffusa*, to which species I believe it should be referred. (Plate 75.)

**MEXICO, LOWER CALIFORNIA**

Jalisco: Shaded rocky slopes, near Guadalajara, September 26, 1889, *Pringle* (no. 2964) (3, 7, 16); cool banks near Guadalajara, August 19, 1893, *Pringle* (no. 5390) (1, 5).
Michoacán: Damp rocky hills, Coapa, August 8, 1892, *Pringle* (no. 4189) (2, 3, 19).
Mexico: Rocky hills near Lecheria, 7500 ft., August 23, 1904, *Pringle* (no. 8926) (1, 3).

Also reported from GUATEMALA

HABENARIA
orizabensis Rich & Gal

HABENARIA
diffusa Rich & Gal
Plate 75

I. Habenaria orizabensis. Flowers, etched from a photograph of the drawing by A. Richard.

II. Habenaria diffusa. 1 and 2. Flower. 3. Labellum and spur. 4 and 5. Column. Etched from a photograph of the drawing by A. Richard.
H. flexuosa


"23. Habenaria flexuosa.

"H. foliis oblongo-lanceolatis acutis, floribus distantibus, bracteis foliaceis acuminatis eucullatis ovarii longitudine, petalis bipartitis: laciniiis anterioribus filiformibus rectis reflexis galea brevioribus, labelli tripartiti laciniiis filiformibus æqualibus, se-palis lateralibus pendulis supremo æqualibus, calcare filiformi compresso recto pendulo ovario duplò longiore.

"Hab. in Mexico, ad S. Pedro, Oaxaca, de Karwinski (exam. s. sp. in hb. Mart.)

"Caulis subflexuosus, 9 poll. altus, foliis sensim in bracteis de-crescentibus." Lindl. loc. cit.

Lindley's herbarium contains a sketch of a plant and a flower, labelled "Mexico," probably from the type, as he was in the habit of sketching types that were loaned him, especially Karwinski's. On the same sheet is a specimen from Orizaba by Botteri, and under H. clypeata (so referred by Kränzlin) a specimen collected at "Angangueo, Hartweg." This is labelled "clypeata var. ?" by Lindley, and is the H. clypeata var. in Bentham's Plantæ Hartwegianæ 53 (Hartweg no. 399), as shown by specimens in the British Museum. Although similar to H. clypeata it may be known by its looser habit, green flowers, shorter spur, narrower mid-lobe of the lip, which is shorter than the laterals and basal. (A. A. E.)

H. diffusa and H. flexuosa are closely related species which are often extremely difficult to distinguish from one another. The leaves of H. diffusa are larger than those of H. flexuosa and the structure of the flowers offers slight differences, but these characters may prove to be very variable and unreliable for specific distinction.

[ 250 ]
ORCHIDACEÆ

In a series of specimens referred to *H. flexuosa* the leaves average about 4 cm. in length.

MEXICO, Michoacán


56. *H. felipensis* sp. nov. *Habitu* *H. subauriculatae* haud dis-*H. felipensis* similis. *Planta* 12–27 cm. alta, gracilis, foliosa. *Tubera* ovata, 1.5 cm. longa. *Folia* ovato-lanceolata, acuta, 2–3.5 cm. longa, 7–11 mm. lata, in bracteis transeuntia. *Bracteae inflorcentiae* ovariiis longiores excedentes flores insimilis, 1.5–2 cm. longae, acuminatae, acuta. *Inflorcentia* 3–12.5 cm. longa, laxa. *Flores* virides, 5–20 in racemo spicato dispositi. *Sepala lateralia* oblongo-lanceolata, subacuta, uninervia, 6 mm. longa, 2 mm. lata. *Sepalum dorsale* ovatum, lateralis multo latius, 5 mm. longum. *Petala* bipartita: lacinia posterior 4 mm. longa, lineari-oblonga; lacinia anterior filiformis, 4 mm. longa. *Labellum* usque ad basim tripartitum; laciniae laterales media subbreviores; lacinia media [ 251 ]
**ORCHIDACEÆ**

_H. felipensis_ 6.5 mm. longa, 1.5 mm. lata, acuta. _Calcar_ ± 1 cm. longum, ad apicem inflatum. _Processus stigmatici_ prominentis.

Pringle's no. 4806 collected in the state of Oaxaca resembles _H. subauriculata_ so closely that it can be separated with certainty from it only by means of the bifid petals and by the lateral divisions of the labellum which are directed forward and not reflexed. Habitually it is almost a counterpart of _H. subauriculata_, and if it were not for several well marked differences in the flowers the two could be distinguished from one another only with extreme difficulty. The nearest affinity of _H. felipensis_ is _H. flexuosa_, which is larger in all its parts and taller. Pringle's no. 4806, which constitutes the type, was originally distributed as _H. flexuosa_, and in Kränzlin's _Orchidacearum Genera et Species_ is referred to the synonymy of _H. clypeata_, with which it has very little in common. (Plate 77.)

**MEXICO, OAXACA**

Sierra de San Felipe, 9000 ft. alt., August, 1894, C. G. Pringle (no. 4806) (1, 2, 3).


"_Habenaria Guadalajarana_. Habit of the last;¹ leaves ovate, sheathing, shortly acuminate or acute, 1½ inches long or less; raceme rather slender, 4 inches long, the bracts equalling the ovaries: sepals 2½ or 3 lines long, the upper broadly ovate, acute, sharply carinate, the lateral oblong-lanceolate, acute; middle lobe of the lip narrowly ligulate, slightly shorter than the subfiliform lateral lobes and lower segments of the petals, the upper divisions of the petals narrowly lanceolate, acute, slightly falcate;

¹_H. falcata._

[252]
HABENARIA
quadalajarana
Watson
Plate 76. *Habenaria guadalajarana*

Plant and flower etched from the type specimen in the Gray Herbarium of Harvard University. The flower, enlarged, was drawn with the aid of the camera lucida.
H. guadalajarana  spur clavate, equalling the ovary; processes nearly a line long; appendages at the base of the column very thick and verrucose. Guadalajara, in wet bottoms; August. (276.)—Flowers greenish yellow. With this in the Cambridge set is a small specimen with fewer and smaller flowers and narrower acuminate leaves, which belongs to some other species.” Wats. loc. cit.

All other specimens of Palmer no. 276 which have been examined are of the small species mentioned by Watson, and appear to be related to H. subauriculata. Kränzlin reduces both this and H. jaliscana to H. clypeata, apparently without having seen the types.

Habenaria guadalajarana is a very distinct species. The type specimen in the Gray Herbarium is about 2.6 dm. tall, with rigid, ovate-lanceolate, appressed leaves. The spurs are distinctly clavate, slightly exceeding 1 cm. in length. I have only seen three collections of this species, four plants in all, which are undoubtedly H. guadalajarana. (Plate 76.)

MEXICO, JALISCO

Guadalajara, August, 1886, Dr. Edward Palmer (no. 276 in part) (3) (type).—Rio Blanco, July 17, 1893, Pringle (3).—Road between Mesquitec and Monte Escobedo, August 26, 1897, J. N. Rose (no. 2611) (2).


“Glabrous, 5 to 10 inches high: tuberiform root single, ovoid, an inch long: stem flexuous, leafy: leaves ovate, acutish or acute, 3-ribbed, sheathing by the slightly narrowed base, 1 to 1½ inches long, a third or half as broad: spike 2 to 6 inches long, several—many-flowered: bracts ovate-lanceolate, acuminate, about equaling the ovary: flowers green: upper sepals 3-nerved, about 3 lines long, obtusish, the upper broadly ovate, galeate, obtusish,
Plate 77
Habenaria subauriculata. 3. Petal. 4. Flower. Etched from the type specimen preserved in the Gray Herbarium of Harvard University.

Habenaria felipensis. Plant, natural size, etched from specimens collected by C. G. Pringle in Mexico. 1. Flower, much enlarged. 2. Petal. Flower and petal drawn, enlarged, with the aid of the camera lucida.
ORCHIDACEÆ

**H. subauriculata**
3-nerved, 3 lines long; the lateral ones narrowly ovate, obtusish, slightly exceeding the upper one: lateral petals linear-oblong, obtusish, slightly falcate, subauriculate on the lower side at the base, otherwise entire, 2 to 2½ lines long; labellum deeply 3-parted, the divisions linear, the lateral divaricately spreading and slightly curved upwards, 2½ to 3 lines long, about equaling the middle lobe: spur slender, scarcely clavate, green, about 4 lines long.—Collected by C. G. Pringle, on grassy slopes, Las Sedas, Oaxaca, altitude 6000 feet, August, 1894, no. 4830. Habit of *H. flexuosa*, Lindl., and *H. dypeata*, Lindl., but with lateral petals undivided.” Rob. & Greenm. loc. cit. (Plate 77.)

MEXICO, OAXACA
Grassy slopes, Las Sedas, 6000 ft., August, 1894, Pringle (no. 4830) (2, 3, 4, 5, 7), (type).

**H. orizabensis**


Plant 18 cm. high, with 5 leaves along the stem, these elliptic-oblong, abruptly acute, or pointed, 2.5-2.7 cm. long, 1.3 cm. broad. Flowers scattered along the loose spike, bracts foliaceous, the lower equalling the flowers. Ovaries winged. Dorsal sepal 7.5 mm., laterals 8.5 mm. long. Petals ± 6 mm. long, the anterior divisions equal to the posterior. Labellum 9 mm. long. Spur ± 9 mm. long. (Flowers are fragmentary on type). (A. A. E.) (Plate 75.)

MEXICO, VERA CRUZ
Fl. vertes en août, Pic d’Orizaba, 10,000 pd., 1838, Linden (no. 184) (21), (type).


This species has been ignored by later writers. There appears to be no specimen at the Museum of Paris, but there is a drawing of a flower and ovary, petal, gynostemium and lip. From this it appears to be a Euhabenaria with simple lip and petals, and would be related to *H. odontopetala.* (A. A. E.)

The drawing of a flower of *Habenaria stricta* exhibits a species which, as Eaton suggests, appears to be related to *H. odontopetala.* The labellum, however, is ligulate, acute, and probably entire at the base, which is obscured by the elongated, fleshy, stigmatic processes. The petals are not toothed, and as shown in Richard’s drawing are lanceolate and 3-nerved. The slender spur is longer than the labellum and subequal to the ovary. (Plate 78.)

**MEXICO**


“*Habenaria eustachya*:


[257]

HABENARIA

virens
Rich & Gal.

HABENARIA

stricta
Rich & Gal.

"Inflorescentia illi Platantheræ dilatatæ Lindl. similis.


In 1903 I described a Cuban species in the Proceedings of the Biological Society of Washington, naming it H. Sanbornii. At that time I was unable to obtain satisfactory material of H. eustachya, and judged that the specimens described by Reichenbach were different from mine.

H. eustachya is readily distinguished from H. odontopetala by its shorter spur and different labellum. In Cuba both species are frequently found growing together on forested slopes, H. eustachya blooming later than H. odontopetala in Pinar del Rio Province.

H. troyana, Fawcett & Rendle, is a closely allied species from Jamaica.

In my herbarium there are several flowers taken from numbers 511 b and 2880 of the collections made by Sintenis (cf. original description above). These flowers closely resemble the types of H. Sanbornii and H. troyana.

PORTO RICO

Prope Maricào, Sintenis (no. 511 b), (type!).
**H. eustachya**  
CUBA


**Mexico, Vera Cruz**

Orizaba, *Botteri* (3).


**Guatemala, Alta Verapaz**


Reported as follows:

**Porto Rico**

*Prope Aibonito in sylva primeva ad Barrio del pasto, prope Adjuntas in Monte Cedro locas graminosis, prope Maricao, prope Lares in graminosis montanis ad Palma Llanos et in sylvis primævis ad Guajatuco prope Manati; Sintenis* (nos. 511 b (type), 2280, 3995,^1^ 6008, 6125, 6907).

**H. troyana** 62.  


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^1^ No. 3995 in herbaria 2 and 3 is represented by *H. monorrhiza* in fruit.
vato, a basi tenui superne robustiore, quam ovarium pedicellatum breviori; processubus stigmaticis brevibus, compressis; antherae canalibus subaequalibus, leviter curvatis.

"Plant 6 dm. l. Leaves about 10 cm. l., about 2.5 cm. br. Raceme 3 dm. l. Bracts 3.5—1.2 cm. l., 1.3—.6 cm. br. Sepals, median 6 mm. l., 5 mm. br., lateral 7 mm. l., 3.5 mm. br. Petals 5 mm. l., 2.3 mm. br. Lip 8 mm. l., 1.75 mm. br. near apex, rather over 2 mm. br. near base. Spur 9 mm. l.

"Hab.—In damp shady forest; in flower, Nov.; near Troy, 2500 ft., 10,432, Harris!

"Differs from H. Sanbornii Ames in the smaller, narrower, less membranous leaves, and the larger flowers with clavate, not filiform, spur. H. Sanbornii is a larger, coarser-growing plant. Very near H. eustachya Reichenb. f. in Ber. Deutsch. Bot. Ges. iii. 274 (1885), from Porto Rico (Sintenis, no. 511b), which, however, has the median sepal elliptical and obtusely acute. We have not seen this number of H. eustachya, and possibly H. Sanbornii may prove to be the same species." Fawcett & Rendle, loc. cit.

I have seen flowers of this species submitted for examination by Dr. Rendle. They closely resemble flowers of H. eustachya Reichb. f. as represented by Cuban material in my herbarium. The spur is more decidedly inflated and the sepals and petals larger than in the older species. The character of the leaves on which the authors of H. troyana lay emphasis in differentiating it from H. Sanbornii (which I refer to H. eustachya) is of questionable value, as the measurements they give apply in detail to specimens of H. Sanbornii. In the Gray Herbarium there is a specimen from Orizaba, Mexico, collected by Botteri, which is intermediate between H. troyana and H. Sanbornii, and leads to the supposition that H. troyana is perhaps only
**H. troyana** a variety. The Mexican plant has inflated spurs, and slightly larger flowers than the type of *H. Sanbornii*. In the note which accompanies the description of *H. troyana*, *H. Sanbornii* is referred to as a larger, coarser-growing plant. This statement needs modification, as *H. Sanbornii* varies to an extraordinary degree in its dimensions, ranging in height from 3 to 8 dm., with leaves from 8 to 18 cm. long, exclusive of the uppermost ones, which pass gradually into the bracts that subtend the raceme.

In my opinion *H. troyana* is very near *H. eustachya*, and is probably the same species.


"H. caule erecto gracili sesquipedali: foliis lanceolato-lineari-bus acutis, basi laxe vaginantibus, brevibus, erectis, cauli appressis; floribus parvulis spicatis; bracteis foliaceis lanceolatis acutis, ovario dimidio brevioribus; ovario elongato apice sensim attenuato et inde rostrato; sepalo supremo convexo, subgaleato, apice obtuso; lateralis externis dependentibus oblique et inaequilateraltiter ovalibus subacutis apice incrassatis; internis (petalis) oblongo-lanceolatis exappendiculatis internæ suprimi faciei lateraltiter applicatis; labello dependente, sepalorum laterali longitundine oblongo, angustato, apice incrassato incurvo,

\(^1\)There is another edition of this work, bearing the date 1853 on the title-page of the volume in which *H. replicata* is described. Richard's *Flora Cubana* composes volumes 10 and 11 of the *Historia Física, Política y Natural de La Isla de Cuba*, by D. Ramon de la Sagra. These volumes are usually cited as 1 and 2. The end of volume 10 (p. 319) closes with "fin del tomo primaro." *H. replicata* is described in volume 11 of the complete work.
ORCHIDACEÆ

supra basin hinc et illinc dente brevi aucto; antherarum crucibus elongatis versus stigma crassissimum replicatis; calcare elongato, gracili ovarium æquante.

“Crescit in sylvis insulæ Cubæ.

“Observaciones. Esta planta entra en la division de las Rostratæ de M. Lindley, por su ovario sentado muy adelgazado en el vértice. Pero, todas las especies de Habenaria citadas por el célebre botánico en la dicha division de su Genera and Species Orchideous Plants, son originarias del antiguo continente, y la muestra es distinta, no solo por el conjunto de los detalles de su organisacion, sino por su habitat.” Rich. loc. cit.

In this species the lateral lobes of the labellum are obtuse and arise from near the middle.

CUBA

“739 to Gr(isebach),” 1860-4, C. Wright (3).

Pinar del Río: Herradura, September 21, 1905, Van Hermann (no. 939) (1).


“H. triptera f. lanceolatis acutis strictis in squamas abeuntibus, sp. densiflora brevi, br. oblongis, cuspidatis ovariiis longioribus seu æqualibus, ovario trialato, p. ph. supremo ovato, acute, lateralibus externis lanceolatis acuminatis, p. ph. i. oblongis acutis basi antice angulatis, lb. a basi brevi trifido, partitionibus acutis brevissimis, media producta, lineari, acuta, calcare ovario subæquali.

“Mesochiza in Mexico. Scheide.


[ 263 ]
ORCHIDACEÆ

H. triptera MEXICO


“Valde mirum plantam hucdum tantum in Brasilia (terra de Itacolumni Minas Geraës Martius!) lectam in Panama repertam licet varietate adeo micrantha, ut flores bene duplo sint minores. Panama.” Reichb. f. loc. cit.

Probably the only collection of this variety. Kränzlin refers Warming’s Brazilian specimens here, Cogniaux refers them to the type form.


“Gracilis erecta vel adscendens, c. 40 cm. alta; caule tereti, subflexuoso, pennæ anserinæ crassitudine, foliato, glaberrimo; foliis erecto-patentibus oblongis vel oblongo-ellipticis, glaberrimis, reticulato-venosis, basi vaginantibus usque ad 7 cm. longis,
ad apicem caulis versus sensim decrescentibus; racemo oblongo vel cylindrico laxe p[lurifloro; bracteis ovatis acutis vel acuminatis ovario graciliter pedicellato multo brevioribus; floribus viridi-flavescentibus illis *H. alatae* Hk. fere aequimagnis; sepalo intermedio suborbiculari obtuso, 0.6 cm. diam., cucullato, sepalis lateralibus deflexis obliquis late oblongis apice breviter acuminatis 0.6 cm. longis, medio fere 0.4 cm. latis; petalis erectis oblongis apice truncato-obtusismissis, carnosulis, basi haud dentatis, 0.5 cm. longis, medio fere 0.2 cm. latis; labello deflexo, lineari obtuso, basi interdum utrinque denticulo minuto donato, 0.8 cm. longo, vix 0.2 cm. lato, carnosulo, calcare filiformi acuto dependentente, ovarium bene excedente, c. 3 cm. longo; anthera emarginata, canalibus gracilibus adscendentibus; rostello humili, lobo intermedio triangulare obtusiusculo carnoso; processibus stigmaticis crassis, clavatis, canalibus antherarum duplo brevioribus, apice cohaerentibus; capsula clavata, glabra, pedicellata.

"Habitat in Guatemala, in provincia Alta Vera Paz, ad margines silvarum prope Coban: Sel. n. 2492.—Dec." Schltr. loc. cit.

I am indebted to Professor Kränzlin for a sketch of this species. Kränzlin suggests that *H. Selerorum* is very near "*H. monorrhiza*" (*H. alata* of this work), but that a sure determination on this point is impracticable owing to the poor condition of the flowers on the specimen he examined. I have seen no material.

The truncate obtuse petals may prove to be a constant differentiating character when this species is compared with *H. alata*. In general habit, *H. Selerorum* as shown by Kränzlin's sketch very closely resembles *H. alata* Hook., and should be rigidly compared with it.

[ 265 ]


*Plants,* arising from fleshy tuberoids, about 1.6 dm. tall. *Leaves* lanceolate, acute, 4.5–6.7 cm. long, 1.4–1.7 cm. wide. *Floral bracts* equalling the ovaries, lanceolate, acute, the lowermost one nearly 2 cm. long. *Flowers* 5 or more, comparatively large. *Lateral sepals* elliptic-oblong, rounded at the tip, 3-nerved, 1 cm. long, 4 mm. wide. *Upper sepal* elliptical, concave, about 1 cm. long. *Petals* oblong, obtuse, about 8 mm. long, 2.75 mm. wide. *Labellum* ligulate, obtuse, fleshy, entire, 11 mm. long, 2 mm. wide. *Spur* about twice as long as the labellum, somewhat dilated near the apex, 2 cm. long. *Stigmatic processes* comparatively small.

My description is drawn in part from the type and in part from the specimen collected by Pringle in the state of Michoacán. The leaves of the type are broken. The longest one measures 4.5 cm. in length. The spur on the lowermost flower of Galeotti’s specimen is 2 cm. long. The two specimens cited below are the only ones of which I have any knowledge. *H. brevilabiata* is apparently a very distinct species, which on account of its simple labellum and petals I refer to the group represented in our range by *H. alata* and its allies.

**MEXICO, OAXACA**

*Fl. verdâtres en sept. Bois humides près la Mer Pacifique, 6500 pd., Cordillera, 1840, Galeotti (no. 5037) (21), (type).**

**Michoacán:** On oaks, Tarascon, 6500 ft., October 11, 1904, C. G. Pringle (no. 11,911) (1).

HABENARIA
brevilabiata
Rich. & Gal.
Plate 79. Habenaria brevilabiata
I. Plant, natural size, drawn from Pringle's no. 11,911. II. Reduced from a photograph of the type. 1. Column etched from a photograph of Richard's drawing. 2. Column from Pringle's no. 11,911. 3. Labellum from Pringle's no. 11,911.
**H. odontopetala**


**Platanthera Garberi** *Chapm.*, Fl. S. U. S. ed. 3, 486 (1897).


**Habenella Garberi** *Small*, Fl. Se. U. S. 816 (1903).


*H. odontopetala* is readily distinguished from *H. strictissima* by its oblong petals which are characterized by a tooth at the summit and by protuberant anterior basal angles. From *H. cu stachya* it is to be separated by its longer spur and different labellum. In Cuba *H. odontopetala* grows on forested slopes. In Florida I have found it on the edges of wooded areas, mostly in shade. There is no adequate reason for upholding *H. Garberi*. It is clearly referable to *H. odontopetala*.

Dr. Small’s new genus Habenella is in my estimation unnecessary and is founded on characters which are sectional rather
ORCHIDACEÆ

than generic. It is inadvisable to segregate from Habenaria the *H. odonto-
petala* species characterized by simple petals and lip. The direction of
the stigmatic processes on which Dr. Small relies, in part, for
the separation of Habenella from Habenaria does not in my
opinion have sufficient value for generic distinction.

FLORIDA, St. John County
St. Augustine, *Mary C. Reynolds* (3).
Manatee Co.: Hammocks and pine woods, Manatee, December, 1877, *Dr. A. P. Garber* (no. 315) (2, 5, 6, 7, 16), (type of *H. Garberi* ?); (no. 298) (3).—Swamps on hammocks, Oneco, November 7, 1901, *R. M. Grey* (1).—Palmetto, November 30, 1901, *S. M. Tracy* (no. 7529) (2, 3, 4).

CUBA
1860-4, *C. Wright* (3).
Pinar del Río: On border of palm grove, San Isidro farm, near Cayaja-

bos (1); November, 1902, *O. Ames* (1); in rich woodlands near a river, No-

vember 9, 1902, *Ames* (1); rich woods, frequently in open spaces where the
ORCHIDACEÆ


MEXICO


“Plant 4.5 dm. l. Stem about 3 dm. l., 3.5 mm. br. Leaves, blade to 8 cm. l., to 1.9 cm. br. Bracts, lower 1.7 cm. l. Pedicel about 5 mm. l. Ovary 1–1.8 cm. l. Raceme about 12 cm. l. Sepals, median 8.5 mm. l., 7.7 mm. br., lateral about 11 mm. l., nearly 5 mm. br. Spur barely 3 cm. l. Stigmatic processes about 2 mm. l.; anther-canals about 3.3 mm. l.

“*Hab.—Hollis’s Savanna, Clarendon, Purdie!*”

“Differs from *H. obtusa* Lindl., from Brazil and Surinam, in
the smaller lanceolate bracts, and in other details.” Fawcett & H. Purdiei Rendle, loc. cit.

I have been unable to examine the type of H. Purdiei. From the description it does not appear to be separable from H. odontopetala.


NICARAGUA, Segovia

Oersted 1/48. The lower portion of a stem, two or three flowers in a pocket, and a drawing of a flower and column, in Lindley’s herbarium. It has not been reported since.


“105. H. virens Nob. Fol. elliptico-oblongis acutis; flor virid-
This very distinct species has been ignored by subsequent writers. There are three sheets and an excellent drawing of a flower with dissections at the Muséum d'Histoire Naturelle de Paris. *H. virens* has exactly the appearance of *H. strictissima*, but the *labellum* and *petals* are very distinctive. The *lateral lobes*, or teeth, of the *lip* are acute and directed forward. The *spur* is peculiarly up-curved in all the specimens. *Dorsal sepal* orbicular, 5 mm. × 5 mm., *lateral sepals* 7 × 5 mm., *petals* rounded, spathulate, 3 mm. long, lip 9 mm. long, linear beyond the side lobes, blunt, usually appearing as if broadened at the tip, because of revolute edges. (Plate 78.)

**MEXICO, OAXACA** 1842, Ghiesbrecht (21), (type).

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**H. strictissima**


[272]
"Der dicht beblätterte Stengel ist 18" hoch, die untersten, längsten Blätter 9" breit, 3" lang. Die Aehre ist ausserordentli-


Habenaria strictissima is clearly distinguished from H. odonto-

petala by its rounded petals which are about as broad as long, scarcely toothed at the tip, and obscurely if at all protuberant on the anterior basal corner. The labellum of H. strictissima is variable with regard to the basal teeth. These are sometimes pronounced and sometimes almost obsolete. When strongly de-

veloped they resemble those of H. virens.

MEXICO

Dr. Coulter (no. 1524) (3).—Near Menco, August 23, 1904, Pringle (no. 8915) (1, 3).
Sinaloa: Cerro Colorado, near Culiacan, November 5, 1904, T. S. Brandegee (1).
Jalisco: Bolaños, Hartweg (20).
Hidalgo: Rocky mesa, El Salto, September 16, 1903, Pringle (7).
Morelos: Lava beds near Cuernavaca, 5000 ft., September 15, 1896, Pringle (no. 7223) (3, 7).

Reported as follows:
Temperate Mexico (Tierra templada), Leibold (type).—Rarissime, August, 1855, Schaffner (no. 207).

73. H. alata Hook., Exot. Fl. 3: t. 169 (1826); Spreng., Syst. H. alata
Veg. 3: 688 (1826); Steud., Nomencl. ed. 2, 1: 716 (1841);
Griseb., Fl. Br W. Ind. 644 (1864), Cat. Pl. Cub. 271 (1866);
3: 29 (1845) (= H. jaliscana Wats.).
**ORCHIDACEÆ**

**H. alata**  
*Orchis foliosa* Spreng., *Syst. Veg.* 3: 688 (1826); *Steud.*, Nomencl. ed. 2, 2: 223 (1841), not Sw.¹


"*Habenaria alata*; tuberibus subsphæricis, labello basi bidentato petalisque duobus interioribus minoribus lanceolatis, tribus exterioribus ovatis subpatulis, germine alato, cornu lineari-compresso germine breviore.

"Root fibrous, and having one or two small, nearly spherical tubers. *Stem* 1 to 1½ foot high, erect, leafy. *Leaves* lanceolate, acuminate, carinate, erect, glabrous.

"*Spike* about 4 inches long, consisting of many, rather densely placed flowers, each accompanied with a lanceolato-subulate bractea. *Corolla*: with the petals scarcely patulous, the 3 outer ones ovate, free, the inner smaller, lanceolate; the *lip*, which is never pendent, but at most standing forward, is the same size as the inner petals, lanceolate, and has a tooth on each side at the base, whilst on the under side, it runs down into a curved compressed horn, nearly as long as the germen. *Column* very short, thick, projecting forward, and with two tuberculated processes. *Anther*, with the two cells distinct, their bases elongated, so as to reach the tuberculated processes: *Pollen-masses* oval, upon a very long, green, filiform, elastic stalk, having a round gland at the base. *Germen* oblongo-clavate, slightly twisted, furrowed; the six angles of the furrows extended into as many longitudinal winged processes.” Hook. *loc. cit.*

¹Sprengel (*loc. cit.*), and after him Steudel, supposed *Orchis foliosa* Sw. was incorrectly ascribed to Africa and identified it incorrectly with *Habenaria alata* Hook. The Swartzian species is now *H. foliosa* Lindl. from Cape of Good Hope. Correvon (*Orch. Rust.* 140) refers *O. foliosa* Soland. to *H. alata* Hort.

[ 274 ]
ORCHIDACEÆ

My Cuban collections of this species were made in grasslands near the Sierra de los Organos Mountains in Pinar del Rio Province. In February the specimens were maturing their fruit and the perianth was partly withered. The specimens gathered by Pringle in Mexico were found on grassy hillsides. It would seem that *H. alata* prefers sunny locations in the open country, and grows mostly in savannas.

In Lindley's herbarium at Kew under *H. brachyceras* two specimens are preserved which I have referred to *H. alata*. One of these, which is very similar to Pringle's no. 3897 in the Gray Herbarium, is marked "Jamaica, Purdie. R. 27." It has the characteristic ovary of *H. alata*, and linear-lanceolate leaves. The other specimen was collected by Hooker in Jamaica and is accompanied by a note which refers it to *H. alata* Hook.

MEXICO, SAN LUIS POTOSI
Grassy hillside, Las Canoas, August 29, 1891, C. G. Pringle (no. 3897) (3, 4, 7).
VERA CRUZ: 4000 ft., Linden (21).

GUATEMALA, SANTA ROSA
San Juan Utapa, alt. 1100 m., September, 1893, Heyde & Lux, J. D. Smith distr. (no. 6247). (Smith, Enum. loc. cit., gives this number as from Cerro Redondo, 1200 m., September, 1892.)

COSTA RICA, CARTAGO
Cartago, alt. 1300 m., December, 1887, Juan J. Cooper, J. D. Smith distr. (no. 5971).

CUBA, PINAR DEL RIO
In a field, Cayajabos, November 9, 1902, Ames (1, 3); upland fields in full sunlight, January 20 to February 10, 1903, Ames & R. G. Leavitt (1, 3); open fields, in fruit, February 28, 1904, Ames (1).—On a plantation six miles west of Artemisa, in tall grass, red soil, common, February 26, 1904, Ames(1).—Santa Catalina, October 18, 1905, Van Hermann (no. 3281)(1).

JAMAICA
Purdie (3, 20); Hooker (Hb. Lindl. "H. brachyceras").
**ORCHIDACEÆ**

**H. alata**  
*VENEZUELA*

*Prope coloniam Tovar, 1854–5, A. Fendler (no. 1417) (3), (H. brachyceras, fide Lindl.).*

**BOLIVIA**

*Yungas, 1890, A. Miguel Bang (no. 582) (3).*

Reported as follows:

*CUBA, Wright (nos. 1694, 3306); PORTO RICO, ST. THOMAS, JAMAICA, ANTIGUA, ST. VINCENT*

**H. socialis**  


“Plant 3 dm. l. Stem about 2 dm. l., 3 mm. br. Leaves, blade to 8.5 cm. l., to 2 cm. br. Bracts, lower 1.3 cm. l. Pedicel about 3 mm. l. Ovary about 1 cm. l. Raceme about 10 cm. l. Flowers green. Sepals, median about 3.5 mm. l. and br.; lateral about 4.3 mm. l., about 2 mm. br. Petals 3.5 mm. l., about 1 mm. br. Lip about 5.5 mm. l., about 1.2 mm. br. Spur about 1 cm. l.

[ 276 ]
"Hab.—Growing with H. alata Hook. in marshy soil, near H. socialis Mandeville, Purdie!"

"Differs from H. alata Hook. in the texture and venation of the leaves, in the flowers being about half the size, in the form of the sepals and petals, and in the relatively longer lip. Differs from H. quadrata Lindl. in form of petals, length of spur, and other details." Fawcett & Rendle, loc. cit.


"Tuberidiis 1–3, obovato-cylindricis; caule gracillimo, sparse plurifoliato; foliis patulis vel erecto-patulis, tenuiter membranaceis, linearibus vel lineari-ligulatis, acuminatis, basi longiuscule vaginantibus; racemo brevi, laxe paucifloro; bracteis lanceolatis, acuminatis, floribus saepius asquilongis; sepalis tenuiter 5-nervulosis, dorsali ovato-suborbiculari, apice rotundato, cucullato, lateralibus paulo longioribus, patulis, ovato-oblongis, obtusiuscule apiculatis, subfalcatis; petalis anguste linearibus, acuminatis, uninerviis, rectis, sepalo dorsali leviter brevioribus; labello carnosulo, sepalis lateralibus asquilongo, fere usque ad basin tripartito, partitionibus lateralibus patentissimis anguste lineari-subulatis, acutissimis, intermedia satis longiore, triangulare, acutissimis, calcar pendulo, recto, anguste conico, acuto, labello brevior; processibus stigmaticis deflexis, brevibus, crassis, obtusis; antherae canalis crassinibus, ascendentibus.

ORCHIDACEÆ

_H._ Dussii longæ. Sepala membranacea, dorsale 4 mm. longum et 3–3½ mm. latum, lateralia 4½–5 mm. longa et 2½ mm. lata. Petala erecta, 3–3½ mm. longa, 2/3 mm. lata. Petala erecta, 3–3½ mm. longa, 2/3 mm. lata. Labelli lobus terminalis strictus, tenuiter trinervulosus, 4½–5 mm. longus, basi 1½ mm. latus; lobi laterales vix arcuati, 2½ mm. longi; calcar 4 mm. longum, inferne 1 mm. latum.

"Flores virides. Fl. IX–XII; fr. X."

"Hab. in Guadeloupe in sylvis humidis ad Nez-Cassé: Duss n. 3931." Cogn. _loc. cit._

I have seen a single flower of this species taken, presumably, from the type specimen in Urban’s herbarium and given to me by Professor Cogniaux. This flower shows clearly the affinity of _H._ Dussii with _H._ alata, although the ovarian wings are not so strongly developed as in that species.
INDEX
TO THE NAMES OF THE SPECIES

Bicchia albida Parl., 40
Blephariglottis albiflora Raf., 166
bicolor Raf., 166
blephariglottis Rydb., 166
Chapmanii Small, 155
ciliaris Rydb., 158
conspicua Small, 169
cristata Raf., 152
flaviflora Raf., 158
grandiflora Rydb., 196
lacera Rydb., 174
leucophaea Rydb., 181
peramaena Rydb., 201
psyches Rydb., 187
Chamorchis albida Dumort., 40
Caeloglossum albidum Hartm., 40
bracteatum Parl., 22
Vaillanti Guss., 22
viride β bracteatum Richter, 23
Entaticus albidus S. F. Gray, 40
Gymnadenia albidus L. C. Rich., 40
bracteata Presl., 22
conica Lindl., 52, 53
flava Lindl., 44, 50
hyperborea Link, 79
longispica Durand, 111
neottioides Rich. & Gal., 107, 109
nivea Lindl., 52
orchidis Lindl., 52
prasina A. Rich., 108
propinqua Rich. & Gal., 109
tridentata Lindl., 30
tridentata β clavellata Wood, 30
viridis Spreng., 22
Gymnadeniopsis clavellata Rydb., 30
integra Rydb., 50
nivea Rydb., 52
Habenaria acutiflora Rich. & Gal., 243, 244, pl. 74
adenantha Rich. & Gal., 233, 234, 235, 236
aggregata Howell, 102, 103
alata Hook., 20, 229, 230, 231, 265, 266, 273, 274, 275, 277, 278
alata Hort., 274
alata Rich. & Gal., 244, 245, 246, 273, pl. 74
albida R. Br., 15, 38
× Andrewsii White, 172, 193, pl. 66
behringiana Ames, 16, 91, 92, 93, pl. 60
bicornis Lindl., 18, 221
bidentata Kränzl., 221
bidentata Poepp., 274
bifolia R. Br., 149, 150
blephariglottis Hook., 17, 163, 164, 166, 170
blephariglottis var. conspicua Ames, 169
blephariglottis var. holopetala Gray, 166
blephariglottis × cristata, 163
borealis Cham., 59, 60
borealis var. albiflora Cham., 56, 59
borealis var. viridiflora Cham., 59, 78
bracteata R. Br., 21, 134
brachyceras Lindl., 229, 274, 275, 276
brachyceras Spreng., 229
brachyceratitidis Lindl., 229
INDEX

brachyceratitis Willd., 229

brevifolia Greene, 16, 82, 101, 105, 106, pl. 63

brevifolia Kränzl., 72, 82

brevilabiata Rich. & Gal., 20, 266, 267, pl. 79

× Canbyi Ames, 163

× Chapmanii Ames, 155

Chorisiana Cham., 16, 133, 134, 135
ciliaris R. Br., 17, 156, 159, 166, 167
ciliaris var. alba Morong, 166
ciliaris var. albiflora Gower, 166
ciliaris var. holopetala Morong, 166
ciliaris × cristata, 155
clavellata Spreng., 15, 29, 31
clypeata Kränzl., 243, 245, 252
clypeata Reichb. f., 237, 248
clypeata var. Lindl., 248, 250
conspicua Nash, 169

Cooperi Kränzl., 57

Cooperi Wats., 57, 119, 120
crassicornis Lindl., 18, 233, 234, 235, 237, pl. 72
cristata R. Br., 17, 151, 163, 185, 186

Cruegeri Cogn., 18, 212, 215, 216
diffusa Rich. & Gal., 19, 238, 247, 248, 249, 250, 251, pl. 75
dilatata Big., 78
dilatata Bol., 72
dilatata Hook., 15, 55, 58, 59, 60, 61, 80, 82
dilatata Wats., 55, 72
dilatata var. Wats., 72
dilatata var. leucostachys Ames, 15, 60, 71, 110
dilatata var. media Ames, 15, 58
dilatatifloris Rydb., 57, 94
distans Griseb., 17, 202, 203, 206, 209
distans var. ß jamaicensis Cogn., 204

Dussii Cogn., 20, 277, 278
elegans Bol., 16, 111, 112, 115, 120

. 143, pl. 64
elegans var. maritima Ames, 16, 113, 114

Elliottii Beck, 44, 50, 51

entomantha Lindl., 19, 207, 242, 243, 244, pl. 74
eustachya Reichb. f., 6, 19, 231, 257, 259, 261, 262

celifensis Ames, 19, 251, 252, 255, pl. 77
celifera Kränzl., 241

celifera Wats., 242, 243, 245

fimbriata R. Br., 17, 185, 186, 187, 188, 194, 201

fimbriata f. albiflora Rand & Redf., 196

fissa R. Br., 186, 200

cissa Spreng., 186, 200

flagellans Wats., 72, 75

flagellaris, 72 (= flagellans)

flava Spreng., 15, 41, 44, 50

deluosa Lindl., 19, 242, 248, 250, 251, 252, 256

flexuosa Reichb. f., 240, 248

fetida Wats., 119

tilosa Lindl., 274

fragnans Niles, 57, 59

fusescens Torr., 43

Garberi Kränzl., 227

Garberi Porter, 268, 269

Ghiesbrechtiana Hems., 16, 101

gracilis Colebr., 94

gracilis Reichb. f., 99

gracilis Rydb., 57

gracilis Wats., 92

graminea Lindl., 56

[ 282 ]
INDEX

graminea Spreng., 56
grandiflora Lindl., 195
grandiflora Torr., 184, 195, 201
guadalajaranana Kränzl., 240
guadalajaranana Wats., 19, 242, 252, 253, 254, pl. 76
Habenaria Small, 223
herbiola R. Br., 42
hexaptera Lindl., 271
holopetala Niles, 166
Hookeri Torr., 16, 21, 135, 136, 137, 138, 142
Hookeri var. oblongifolia Gray, 136, 137
Hookeriana Torr., 135, 137, 138
huromensis Spreng., 78
hyperborea R. Br., 15, 16, 58, 61, 77, 80, 81, 82, 91, 94
hyperborea var. purpurascens Ames, 16, 90
incisa Spreng., 186
integra Spreng., 15, 44, 49
jaliscana Kränzl., 241
jaliscana Wats., 12, 19, 228, 242, 244, 245, 246, 252, 254, 273, pl. 74
jamaicensis Fawcett & Rendle, 17, 203, 204, 205, 206, pl. 67
lacera R. Br., 17, 30, 171, 172, 185, 186, 187, 193, 223, pl. 66
lacera x clavellata Niles, 30, 175
laetca Rich. & Gal., 251
laetiflora Hems., 247, 248
laetiflora Kränzl., 237, 251
laetiflora Reichb. f., 240
laetiflora Rich. & Gal., 12, 19, 237, 238, 239, 240, 241, 250, pl. 73
laetiflora var. buccalis Reichb. f., 19, 238, 240
latifolia Spreng., 227

Leprieuri Reichb. f., 18, 213, 214, pl. 70
leucophaea Gray, 17, 180
leucostachys Rothr., 72
leucostachys Wats., 56, 60, 72, 103, 109, 114
limosa, Hems., 16, 102, 109, 110
longifolia Lindl., 99
luciacecapensis Fernald, 18, 224, 228
macroceras Spreng., 223
macroceraatitis Kränzl., 220, 221
macroceraatitis Willd., 18, 220, 221, 222, 224
macroceraatitis var. brevicalcarata Ames, 18, 224
macrophylla Goldie, 16, 142, 144, 149
maculosa Lindl., 229, 230, 231
maritima Greene, 113, 114, 115
maxillaris Reichb. f., 217, 243
media Niles, 57
Menziesii Macoun, 143
mesodactyla Griseb., 17, 211, 213, 214, pl. 70
Michaeli Greene, 113, 114, 115, 117
Michauxii Kränzl., 268
Michauxii Nutt., 225
micrantha, 44
monorrhiza Cogn., 274 [260
monorrhiza R. Br., 18, 229, 230, 231
multiflora Blankinship, 113, 115
nivea Spreng., 15, 52, 53
novemfida Lindl., 247, 248
nubigena Ames, 16, 100, 101, pl. 62
oblongifolia Niles, 136, 140
obtusa Lindl., 270
obtusata Richardson, 16, 125, 126, pl. 65
odontopetala Reichb. f., 16, 19, 20, 257, 259, 266, 268, 271, 273
INDEX

Oerstedii Reichb. f., 20, 271
orbiculata Goldie, 135
orbiculata Gray, 149
orbiculata Hook., 142, 149
orbiculata Torr., 16, 142, 144, 149
oreophila Greenm., 18, 228
orizabensis Rich. & Gal., 19, 249, 256, pl. 75
pauciflora Kränzl., 209, 211
pedicellata Kränzl., 57
pedicellata Wats., 72
peramœna Gray, 17, 185, 186, 200, 201
petalodes var. micrantha Reichb. f., 20, 264
Pringlei B. L. Robinson, 18, 220, 221, 222
psychodes Spreng., 174, 184
psychodes × lacera Andrews, 193
psychodes Sw., 17, 172, 174, 184, 186, 187, 188, 193, 195, 196, 200, pl. 66
psychodes var. grandiflora Gray, 195
Purdiei Fawcett & Rendle, 20, 270, 271
pyramidalis Lindl., 272
quadrata Lindl., 257, 277
quinqueseta Sw., 18, 225, 226, 227, pl. 71
racemosa Raf., 186
radicans Griseb., 217
repens Nutt., 18, 158, 216, 217
replicata Hochst., 262
replicata A. Rich., 20, 262
Richardii Ames, 16, 99, pl. 62
saccata Greene, 15, 16, 82, 92, 96, t. 61
Sanbornii Ames, 257, 259, 260, 261, 262
Schaffneri Wats., 12, 19, 236, 237, 246
Schischmæreffiana Cham., 119, 121
Selerorum Schltr., 20, 264, 265
setacea Griseb., 212, 215, 216
setacea Lindl., 229
setifera Lindl., 17, 209, 210, 211, 220, pl. 69
Simpsonii Small (= H. quinqueseta), 227
socialis Fawcett & Rendle, 20, 231, 276
sparsiflora Wats., 15, 16, 56, 72, 82, 96, 99, 102, 103, 107, pl. 61
spathacea Rich. & Gal., 209, 211
speciosa Poepp. & Endl., 229
stricta Rich. & Gal., 19, 94, 257, 258, pl. 78
stricta Ridl., 94
stricta Rydb., 94
strictissima Reichb. f., 6, 20, 268, 272, 273
subauriculata Rob. & Greenm., 19, 251, 252, 254, 255, pl. 77
Thurberi Gray, 72, 103, 109, 110
Thurberi var. Gray, 102, 103
tricuspis A. Rich., 217, 219
tridentata Hook., 29
triptera Reichb. f., 20, 263
troyana Fawcett & Rendle, 19, 259, 260, 261, 262
Türkheimeii Schltr., 17, 206, 207, 208, pl. 68
unalascensis Wats., 16, 119, 120
virens Rich. & Gal., 19, 20, 258, 271, 272, 273, pl. 78
virescens Spreng., 43
viridis R. Br., 9, 24
viridis Cham., 22
viridis var. bracteata Gray, 15, 21, 92
volcanica Wats., 16, 100, 102, 107, 108, 110, pl. 62
vulcanica, 107
# INDEX

<table>
<thead>
<tr>
<th>Species</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habenella Garberi Kränzl.</td>
<td>268</td>
</tr>
<tr>
<td>Helleborine Broccenbergensis Riv.</td>
<td>39</td>
</tr>
<tr>
<td>Herminium congestum Hook. f.</td>
<td>119</td>
</tr>
<tr>
<td>Herminium congestum Lindl.</td>
<td>119</td>
</tr>
<tr>
<td>Helleborine Broccenbergensis Riv.</td>
<td>39</td>
</tr>
<tr>
<td>Herminium congestum Hook. f.</td>
<td>119</td>
</tr>
<tr>
<td>Helleborine Broccenbergensis Riv.</td>
<td>39</td>
</tr>
<tr>
<td>Herminium congestum Lindl.</td>
<td>119</td>
</tr>
<tr>
<td>Leucorchis albida E. Meyer</td>
<td>40</td>
</tr>
<tr>
<td>Leucorchis lucida Fuss</td>
<td>40</td>
</tr>
<tr>
<td>Limnorchis Arizonica Rydb.</td>
<td>109, 110</td>
</tr>
<tr>
<td>Behringiana Rydb.</td>
<td>91</td>
</tr>
<tr>
<td>borealis Rydb.</td>
<td>57</td>
</tr>
<tr>
<td>brachypetala Rydb.</td>
<td>80, 94, 95</td>
</tr>
<tr>
<td>brevifolia Rydb.</td>
<td>105</td>
</tr>
<tr>
<td>convallariifolia Rydb.</td>
<td>57</td>
</tr>
<tr>
<td>dilatata Rydb.</td>
<td>57</td>
</tr>
<tr>
<td>dilatata linearifolia Rydb.</td>
<td>57</td>
</tr>
<tr>
<td>dilatiformis Rydb.</td>
<td>57</td>
</tr>
<tr>
<td>ensifolia Rydb.</td>
<td>102</td>
</tr>
<tr>
<td>foliosa Rydb.</td>
<td>57</td>
</tr>
<tr>
<td>fragrans Rydb.</td>
<td>57, 60</td>
</tr>
<tr>
<td>gracilis Rydb.</td>
<td>57, 94</td>
</tr>
<tr>
<td>graminifolia Rydb.</td>
<td>57, 61</td>
</tr>
<tr>
<td>huronensis Rydb.</td>
<td>80</td>
</tr>
<tr>
<td>hyperborea Rydb.</td>
<td>80, 90</td>
</tr>
<tr>
<td>lariflora Rydb.</td>
<td>94, 102</td>
</tr>
<tr>
<td>leptocerasitis Rydb.</td>
<td>57, 73</td>
</tr>
<tr>
<td>leucostachys Rydb.</td>
<td>72</td>
</tr>
<tr>
<td>leucostachys var. robusta, Rydb.</td>
<td>72</td>
</tr>
<tr>
<td>major Rydb.</td>
<td>80</td>
</tr>
<tr>
<td>media Rydb.</td>
<td>58, 80</td>
</tr>
<tr>
<td>parpurascens, Rydb.</td>
<td>90</td>
</tr>
<tr>
<td>sparsiflora Rydb.</td>
<td>102</td>
</tr>
<tr>
<td>stricta Rydb.</td>
<td>90, 94</td>
</tr>
<tr>
<td>Thurberi Rydb.</td>
<td>72, 109</td>
</tr>
<tr>
<td>viridiflora Rydb.</td>
<td>80</td>
</tr>
<tr>
<td>Limodorum montanum, &amp;c., Chom.</td>
<td>38, 41</td>
</tr>
<tr>
<td>Lysias Hookeriana Rydb.</td>
<td>136</td>
</tr>
<tr>
<td>macrophylla House</td>
<td>149</td>
</tr>
<tr>
<td>orbiculata Rydb.</td>
<td>143, 149</td>
</tr>
<tr>
<td>Lysiella obtusata Rydb.</td>
<td>127</td>
</tr>
<tr>
<td>Mecosa dilatata Bl.</td>
<td>56</td>
</tr>
<tr>
<td>Mesicera Michauxii Raf.</td>
<td>227</td>
</tr>
<tr>
<td>quinqueseta Raf.</td>
<td>227</td>
</tr>
<tr>
<td>Montolivara elegans Rydb.</td>
<td>113</td>
</tr>
<tr>
<td>unalaschensis Rydb.</td>
<td>120</td>
</tr>
<tr>
<td>Nemuranthes Habenaria Raf.</td>
<td>223</td>
</tr>
<tr>
<td>Neottia macrophylla Hook. f.</td>
<td>120</td>
</tr>
<tr>
<td>Ophyrs fimbriata Walt.</td>
<td>194</td>
</tr>
<tr>
<td>Orchis acuta Banks.</td>
<td>56, 58</td>
</tr>
<tr>
<td>agastachys Fisch.</td>
<td>56</td>
</tr>
<tr>
<td>albida Scop.</td>
<td>39</td>
</tr>
<tr>
<td>alpina Crantz</td>
<td>39</td>
</tr>
<tr>
<td>alsaticus Herm.</td>
<td>40</td>
</tr>
<tr>
<td>bidentata Elliott</td>
<td>42</td>
</tr>
<tr>
<td>bifolia Forst.</td>
<td>143</td>
</tr>
<tr>
<td>blephariglottis Willd.</td>
<td>164, 165</td>
</tr>
<tr>
<td>bractealis Salisb.</td>
<td>21</td>
</tr>
<tr>
<td>bracteata Muhl.</td>
<td>21</td>
</tr>
<tr>
<td>bracteata Willd.</td>
<td>23, 24</td>
</tr>
<tr>
<td>bulbis indivisis, &amp;c., L.</td>
<td>157, 158</td>
</tr>
<tr>
<td>bulbis palmatis, &amp;c., Gron.</td>
<td>42</td>
</tr>
<tr>
<td>ciliaris L.</td>
<td>50, 153, 157, 165</td>
</tr>
<tr>
<td>ciliaris var. alba Michx.</td>
<td>165</td>
</tr>
<tr>
<td>clavellata Michx.</td>
<td>29, 31, 35</td>
</tr>
<tr>
<td>clavellata β tridentata Muhl.</td>
<td>29</td>
</tr>
<tr>
<td>convallariifolia Fisch.</td>
<td>56</td>
</tr>
<tr>
<td>cristata Barton</td>
<td>152, 186</td>
</tr>
<tr>
<td>cristata Michx.</td>
<td>152, 186</td>
</tr>
<tr>
<td>crocea Raf.</td>
<td>49, 50</td>
</tr>
<tr>
<td>dilatata Big.</td>
<td>79</td>
</tr>
<tr>
<td>dilatata Pursh.</td>
<td>56</td>
</tr>
<tr>
<td>dolichorrhiza Fisch.</td>
<td>79</td>
</tr>
<tr>
<td>entomantha La Llave</td>
<td>243, 245</td>
</tr>
<tr>
<td>fimbriata Big.</td>
<td>186</td>
</tr>
<tr>
<td>fissa Pursh.</td>
<td>185, 200</td>
</tr>
</tbody>
</table>
INDEX

fissa Willd., 185
flava L., 42, 44
flava Nutt., 42, 49, 50
flava var. virescens Green, 42
floribus aureis, &c., Gron., 152
Floridana flore aureo, &c., Pluk., 157
foliosa Soland., 274
foliosa Spreng., 274
foliosa Sw., 274
fusa Nutt., 185, 200
fuscescens Gmel., 42
fuscescens Pursh., 42
glarescoa Raf., 43
gracilis Fisch., 30
grandiflora Big., 195
habenaria L., 222, 223, 227
habenaria Walt., 173, 223
herbiola Pursh., 42
Hookeri Wood., 136
huronensis Nutt., 78
hyperborea L., 78
hyperborea var. dilatata Oakes, 56
hyperborea b. huronensis Wood, 79
incisa Pursh., 185, 200
incisa Willd., 185, 200
integra Nutt., 44, 49, 50, 53
Koenigii Gunn., 78
lacera Elliott, 217
lacera Michx., 173
lacera psycodes Muhl., 174
lata Walt., 142
leucophea Nutt., 181
Marilandica grandis, &c., Ray, 157, 158
Marilandica spica brevi, &c., Ray, 185
Michauxii Wood, 227
nonorrhiza Sw., 229, 231
nectarii cornu, &c., Gron., 185
nectarii labio, &c., Gron., 165
nectarii labio, &c., Roy., 157, 158
nigra Nutt., 50
nivea Nutt., 52
obtusata Pursh., 127
orbiculata Pursh., 142, 147
oscillata, 32
palmata alpina, &c., Hall., 39, 41
palmata angustifolia, &c., Tourn., 38
palmata elegans Mor., 157, 158
palmata palmis inversis, &c., Loes., 38
palmata peramœna, &c., Pluk., 200
palmata thyro specioso, &c., Dill., 39
parviflora Poir., 39
psycodes L., 152, 174, 181, 185, 187
psycodes Willd., 174, 185
quinqueseta Green., 225
quinqueseta Michx., 225
radice palmata, &c., Gron., 42
radice palmata : foliis Lilii, &c., Gron., 173
radicibus, &c., Hall., 39
radicibus palmatis, &c., Gron., 42
repens Raf., 217
scutellata Raf., 217
setacea Jacq., 229
testiculata floribus, &c., Gron., 165
tipuloides Hook., 30
tipuloides L., 30
tipuloides b. v. Hook., 30
tridentata Muhl., 29
tridentata Scop., 29
virescens Muhl., 42
virescens Zollik., 42
viridis Pursh., 22
viridis b. Vaii. Ten., 22
Peristylus albidus Lindl., 40
bracteatus Lindl., 22
bracteatus f. major Fr. & Sav., 23
Chorissianus Lindl., 133
clavellatus Kraenzl., 30

[ 286 ]
<table>
<thead>
<tr>
<th>Term</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>niveus Kranzl.</td>
<td>52</td>
</tr>
<tr>
<td>virescens Lindl.</td>
<td>8, 44</td>
</tr>
<tr>
<td>viridis var. bracteata Kurtz</td>
<td>23</td>
</tr>
<tr>
<td>Perularia flava Rydb.</td>
<td>8, 44</td>
</tr>
<tr>
<td>fusescens Lindl.</td>
<td>44, 50</td>
</tr>
<tr>
<td>virescens Gray</td>
<td>44</td>
</tr>
<tr>
<td>Piperia Cooperi Rydb.</td>
<td>120</td>
</tr>
<tr>
<td>elegans Rydb.</td>
<td>113</td>
</tr>
<tr>
<td>elongata Rydb.</td>
<td>113</td>
</tr>
<tr>
<td>lancifolia Rydb.</td>
<td>113, 120</td>
</tr>
<tr>
<td>leptopetala Rydb.</td>
<td>113</td>
</tr>
<tr>
<td>Michaeli Rydb.</td>
<td>113</td>
</tr>
<tr>
<td>multiflora Rydb.</td>
<td>113, 114</td>
</tr>
<tr>
<td>Platanthera albida Lindl.</td>
<td>40</td>
</tr>
<tr>
<td>bifolia Rich.</td>
<td>273</td>
</tr>
<tr>
<td>Bigelovii Wood</td>
<td>196</td>
</tr>
<tr>
<td>blephariglottis Lindl.</td>
<td>165</td>
</tr>
<tr>
<td>blephariglottis var. holopetala Torr.</td>
<td>166</td>
</tr>
<tr>
<td>Blumii Lindl.</td>
<td>56</td>
</tr>
<tr>
<td>borealis Reichb. f.</td>
<td>56</td>
</tr>
<tr>
<td>bracteata Torr.</td>
<td>22</td>
</tr>
<tr>
<td>brevifolia Kränzl.</td>
<td>105</td>
</tr>
<tr>
<td>chlorantha Reichb. f.</td>
<td>268</td>
</tr>
<tr>
<td>Chorisiana Kränzl.</td>
<td>23</td>
</tr>
<tr>
<td>Chorisiana Reichb. f.</td>
<td>133</td>
</tr>
<tr>
<td>ciliaris Lindl.</td>
<td>157, 166</td>
</tr>
<tr>
<td>ciliaris var. blephariglottis Chapm.</td>
<td>166</td>
</tr>
<tr>
<td>convallarifolia Reichb. f.</td>
<td>57</td>
</tr>
<tr>
<td>crispa Lindl.</td>
<td>186, 187</td>
</tr>
<tr>
<td>cristata Lindl.</td>
<td>152</td>
</tr>
<tr>
<td>cylindrica de la Pylaie</td>
<td>56</td>
</tr>
<tr>
<td>dilatata Beck</td>
<td>79</td>
</tr>
<tr>
<td>dilatata Lindl.</td>
<td>56, 259</td>
</tr>
<tr>
<td>dilatata a albiflora Ledeb.</td>
<td>57</td>
</tr>
<tr>
<td>dilatata var. angustifolia Hook.</td>
<td>56</td>
</tr>
<tr>
<td>dilatata γ gracilis Ledeb.</td>
<td>56</td>
</tr>
<tr>
<td>dilatata β viridiflora Ledeb.</td>
<td>79</td>
</tr>
<tr>
<td>dolichorrhiza Reichb. f.</td>
<td>79</td>
</tr>
<tr>
<td>elegans Lindl.</td>
<td>111, 113</td>
</tr>
<tr>
<td>fimbriata Lindl.</td>
<td>186, 187, 195</td>
</tr>
<tr>
<td>fimbriata a grandiflora Hook.</td>
<td>195</td>
</tr>
<tr>
<td>fimbriata β floribus minoribus Hook.</td>
<td>187</td>
</tr>
<tr>
<td>fissa Lindl.</td>
<td>200</td>
</tr>
<tr>
<td>flava Lindl.</td>
<td>44</td>
</tr>
<tr>
<td>flava Wood</td>
<td>50</td>
</tr>
<tr>
<td>fistida Geyer</td>
<td>119</td>
</tr>
<tr>
<td>fusescens Kränzl.</td>
<td>8, 44, 50</td>
</tr>
<tr>
<td>Garberi Chapm.</td>
<td>268</td>
</tr>
<tr>
<td>Ghiesbreghtiana Kränzl.</td>
<td>72</td>
</tr>
<tr>
<td>Ghiesbreghtiana Rich. &amp; Gal.</td>
<td>101</td>
</tr>
<tr>
<td>gracilis Lindl.</td>
<td>92, 94, 95</td>
</tr>
<tr>
<td>gracilis Rydb.</td>
<td>57</td>
</tr>
<tr>
<td>graminea Lindl.</td>
<td>56, 59, 61</td>
</tr>
<tr>
<td>grandiflora Lindl.</td>
<td>187, 195, 201</td>
</tr>
<tr>
<td>herbiola Lindl.</td>
<td>8, 43, 45</td>
</tr>
<tr>
<td>holopetala Lindl.</td>
<td>164, 166</td>
</tr>
<tr>
<td>Hookeri Lindl.</td>
<td>135</td>
</tr>
<tr>
<td>Hookeri var. oblongifolia Paine</td>
<td>136</td>
</tr>
<tr>
<td>huronensis Lindl.</td>
<td>79</td>
</tr>
<tr>
<td>hyperborea Lindl.</td>
<td>79</td>
</tr>
<tr>
<td>hyperborea var. genuina Reichb. f.</td>
<td>79</td>
</tr>
<tr>
<td>hyperborea var. graminea Reichb. f.</td>
<td>56</td>
</tr>
<tr>
<td>hyperborea var. leucostachys Kränzl.</td>
<td>72, 101, 102, 105, 109</td>
</tr>
<tr>
<td>hyperborea var. major Lange</td>
<td>80</td>
</tr>
<tr>
<td>hyperborea var. minor Lange</td>
<td>80</td>
</tr>
<tr>
<td>incisa Lindl.</td>
<td>186, 187, 196</td>
</tr>
<tr>
<td>integra Beck</td>
<td>50</td>
</tr>
<tr>
<td>Koenigii Lindl.</td>
<td>79</td>
</tr>
<tr>
<td>lacera Don</td>
<td>174</td>
</tr>
<tr>
<td>leucophaca Lindl.</td>
<td>181</td>
</tr>
</tbody>
</table>

[287]
INDEX

leucostachys Lindl., 71, 73, 108
leucostachys Torr., 111
limosa Lindl., 109
Lindleyi Steud., 56
longifolia Rich. & Gal., 99, 100
Menziesii Kränzl., 113
Menziesii Lindl., 143, 144, 145
Michauxii Wood, 227
nubigena Rich. & Gal., 100, 101
obtusata Lindl., 127
obtusata Schur., 127
orbiculata Lindl., 143, 149
peramoena Gray, 200
psychodes Lindl., 174
psychodes Darl., 201
psychodes var. grandiflora Torr., 195
repens Wood, 217
Schischmareffiana Lindl., 119
sparsiflora Kränzl., 72
sparsiflora Schltr., 102, 108
stricta Lindl., 92, 95
Thurberi var. Grayi Kränzl., 72, 102
tipuloides Hook., 30

tipuloides Lindl., 30
unalascensis Kurtz, 120
viridis Finet, 23
viridis var. bracteata Reichb. f., 23, 24
volcanica Lindl., 107, 108

Pseudo-Orchis alpina, &c., Mich., 39, 41

Satyrium albidum L., 39, 41
bracteale Salisb., 21
bracteatum Pers., 21
bulbis fasciculatis, &c., L., 39
erectum simplex, &c., Browne, 229
erectum, &c., Browne, 222
scanense L., 39, 41
trifidum Vill., 39
triundscens Pers., 42

Sieberia albida Spreng., 39
Spiranthes bracteosa Lindl., 111
macrophylla Hook. f., 120
macrophylla Spreng., 120
unalascensis Spreng., 119, 120

Tipularia Kamtschatica Spreng., 30
Tulotis fuscescens Raf., 44
herbiola Raf., 44